NSRDS-NBS 73, Part 1

U.S. DEPARTMENT OF COMMERCE / National Bureau of Standards

Compilation of Chemical Kinetic Data for Combustion Chemistry.

Part 1. Non-Aromatic C, H, O, N, and S Containing Compounds. (1971–1982)

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- Manufacturing Engineering
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- Ceramics
- Fracture and Deformation[3]
- Polymers
- Metallurgy
- Reactor Radiation

[1] Headquarters and Laboratories at Gaithersburg, MD, unless otherwise noted; mailing address Gaithersburg, MD 20899.
[2] Some divisions within the center are located at Boulder, CO 80303.
[3] Located at Boulder, CO, with some elements at Gaithersburg, MD

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NATIONAL STANDARD NSRDS REFERENCE DATA SYSTEM

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Foreword

The National Standard Reference Data System was established in 1963 for the purpose of promoting the critical evaluation and dissemination of numerical data of the physical sciences. The program is coordinated by the Office of Standard Reference Data of the National Bureau of Standards but involves the efforts of many groups in universities, government laboratories, and private industry. The primary aim of the program is to provide compilations of critically evaluated physical and chemical property data. These tables are published in the *Journal of Physical and Chemical Reference Data*, in the NSRDS-NBS series of the National Bureau of Standards, and through other appropriate channels.

The task of critical evaluation is carried out in various data centers, each with a well-defined technical scope. A necessary preliminary step to the critical evaluation process is the retrieval from the world scientific literature of all papers falling within the scope of the center, followed by the extraction and organization of the numerical data contained in these papers. The present publication presents such a compilation of data prepared by the NBS Chemical Kinetics Data Center.

Further information on NSRDS and the publications which form the primary output of the program may be obtained by writing to the Office of Standard Reference Data, National Bureau of Standards, Gaithersburg, MD 20899.

David R. Lide, Jr., *Director*
Office of Standard Reference Data

Contents

Compilation of Chemical Kinetic Data for Combustion Chemistry. Part 1. Non-Aromatic C, H, O, N, and S Containing Compounds. (1971–1982)

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Chemical kinetics data for reactions of importance in combustion chemistry are compiled. Experimental, theoretical, evaluated, or estimated rate constants are given for reactions of O, O_2, O_3, H, H_2, OH, HO_2, H_2O, H_2O_2, N, N_2, N_3, NO, NO_2, NO_3, N_2O, N_2O_5, NH, NH_2, NH_3, NH=NH, NH_2=NH, NH_2=NH_2, HN_3, HNO, HONO, $HONO_2$, HO_2NO_2, NH_2O, NH_2O_2, S, S_2, SO, SO_2, SH, H_2S, and the aliphatic, alicyclic, and heterocyclic saturated and unsaturated C_1 to C_{15} hydrocarbons, alcohols, aldehydes, ketones, thiols, ethers, peroxides, amines, amides, and their free radicals. The data were taken from the literature published between 1971 and 1982. Data previously issued in 1981 as NBSIR-81-2254, which covered the literature published from 1971 through 1977, are included. The data are reported as rate constants or in terms of the parameters A, n, and B of the extended Arrhenius expression $k = A(T/298)^n \times \exp(-B/T)$, where $B = E/R$. Data are given for 1931 reactions.

Key words: Arrhenius parameters; carbon; chemical kinetics; combustion; compilation; free radicals; gas phase; hydrocarbons; hydrogen; nitrogen; oxygen; rate of reaction; sulfur.

1. Introduction

1.1. Overview

This report provides a compilation of chemical kinetic data for use by modelers, experimentalists, and theoreticians interested in developing a detailed understanding of gas phase combustion processes involving fossil fuels. It is part of a larger effort to develop a comprehensive evaluated chemical kinetic data base, and is a necessary prelude to that effort. The present compilation covers the literature published between 1971 and 1982. It will be followed by subsequent compilations covering the literature published after 1982. These will then be updated approximately every three years.

The present work serves as the foundation for a set of evaluations on specific subsets of the larger data base. Those published or in preparation include:

(1) "Chemical Kinetic Data Base for Combustion Chemistry. Part 1. Methane and Related Compounds", W. Tsang and R. F. Hampson, J. Phys. Chem. Ref. Data **15**, 1087 (1986).

(2) "Chemical Kinetic Data Base for Combustion Chemistry. Part 2. Methanol", W. Tsang, J. Phys. Chem. Ref. Data **16**, (Sept. 1987).

(3) "Chemical Kinetic Data Base for Combustion Chemistry. Part 3. Propane.", W. Tsang, J. Phys. Chem. Ref. Data (submitted).

(4) "Chemical Kinetic Data Base for Combustion Chemistry. Part 4. Isobutane", W. Tsang (to be published).

(5) "Evaluated Chemical Kinetic Data for the Reactions of Atomic Oxygen $O(^3P)$ with Unsaturated Hydrocarbons", R. J. Cvetanović, J. Phys. Chem. Ref. Data **16**, 261 (1987).

(6) "Evaluated Chemical Kinetic Data for the Reactions of Atomic Oxygen $O(^3P)$ with Sulfur Containing Compounds", D. L. Singleton and R. J. Cvetanović (in preparation).

(7) "Evaluated Chemical Kinetic Data for the Reactions of Atomic Oxygen $O(^3P)$ with Saturated Organic Compounds", John T. Herron, J. Phys. Chem. Ref. Data (submitted).

1.2. Scope

Data are given for the reactions of aliphatic, alicyclic, and heterocyclic, saturated and unsaturated hydrocarbons and their derivatives, and for the reactions with inorganic species containing hydrogen, oxygen, nitrogen, and sulfur with themselves and with hydrocarbons and their derivatives. Not included are reactions involving aromatic species, halogens, halogen derivatives, ions, and, with few exceptions, excited states.

The data have been abstracted from the literature published between 1971 and 1982 inclusive. Some references to earlier work are included. All data published earlier in NBSIR-81-2254[1] are included.

Only publications containing numerical data have been abstracted. The abstracted data are either rate constants at some given temperature or the parameters A, n, and B of the extended Arrhenius expression $k = A(T/298)^n\exp(-B/T)$. Additional data on temperature range, pressure, nature of the third body, and the type of data (i. e., experimental, theoretical, estimated, etc.) are also provided.

1.3. Guide to the Table

1.3.1. General

The compilation is divided into two parts — a table of rate constants and a bibliography, which contains the references to the cited literature. The following describes the arrangement of the table with respect to contents and the order in which reactions are listed.

1.3.2. Arrangement of the Table

The table is arranged in eight columns. These list the chemical reaction, the data type, the temperature, the rate constant or the Arrhenius A factor, the n factor, the B factor where $B = E/R$, a term indicating the appropriate units for the rate constants, and an error factor. Other necessary information (such as the bibliographic citation, pressure and nature of bath gas, and notes on methodology or other factors is given in the same column as the chemical reaction. A detailed description follows:

(1) Column 1 gives the chemical reaction. The names of the reactants given are the Chemical Abstracts Standard Names. Synonyms, enclosed in parentheses, are in some cases also given. Product names are given only in those cases in which the product is a bridged compound.

The bibliographic citation is given in the form of a Reference Code, which consists of the last two digits of the year of publication, followed by the first three letters of the names of the first and second author (if present) separated by a slash. An integer index is attached at the end when it is necessary to differentiate between otherwise identical Codes. This is illustrated by the Code 82 ATK/ASC2.

This column may also include information on the experimental method, analytical procedures, nature of the third body, pressure, identity of reference reaction in the case of relative rate measurements, or other comments.

(2) Column 2 indicates the type of data. The following abbreviations are used:

EX = experimental
RL = relative rate measurement
RN = relative rate measurement normalized to an absolute value
TH = theoretical
CO = computed numerically
ES = estimated
SE = selected value in the literature
RE = current NBS recommended value.

(3) Column 3 gives the temperature or temperature range.

(4) Column 4 lists the rate constant or the Arrhenius A factor, or the ratio of the rate constants.

(5) Column 5 gives the factor n for the extended Arrhenius expression $k = A(T/298)^n\exp(-B/T)$.

(6) Column 6 gives the parameter B for the extended Arrhenius expression $k = A(T/298)^n\exp(-B/T)$, where B is the Arrhenius activation energy divided by the gas constant, i.e., $B = E/R$. In the case of relative rate measurements the quantity reported is the difference $B - B(\text{ref})$, where $B(\text{ref})$ is the value of B for the reference reaction.

(7) Column 7 indicates the units of the rate constant or the Arrhenius A factor.

(8) Column 8 gives the error factor as reported in the original work.

1.3.3. Order of Reactions

The reactions are listed following the order of arrangement given in Table 1 of "The NBS Tables of Thermodynamic Properties".[2] In the present compilation the reactants contain any of the elements O, H, S, N, and C, and the order used is: O system, H-O system, S-O-H system, N-O-H-S system, and C-O-H-S-N system. Examples of the ordering of reactant species are given below:

(1) O system: O, O_2, O_3

(2) H-O system: H, H_2, OH, HO_2, H_2O, H_2O_2

(3) S-O-H system: S, S_2, SO, SO_2, SO_3, SH, H_2S

(4) N-O-H-S system: N, N_2, NO_2, NO_3, N_2O, N_2O_3, NH, etc.

(5) C-O-H-S-N system: C, CO, CO_2, CH, CH_2, CH_3, CH_4, etc.

Index of reactions given below in Sec. 3 follows the same order of arrangement and can be used to find the page where a particular reaction is located in the Table of Chemical Kinetic Data for Combustion Chemistry. The reaction of ethylene with oxygen atoms, for example, is located at its proper place in the "O ATOM Reactions" at the beginning of the Index, since O atom (the O system) precedes ethylene (the C system).

1.3.4. Chemical Formulas and Nomenclature

Where possible, chemical formulas are written in semi-structural form. The following conventions are used:

(1) For C_1 through C_5 saturated hydrocarbons and their O, S, and N derivatives, semi-structural formulas are used, e.g., $(CH_3)_2CH_2CH_2ONO$. Beyond C_5 the condensed forms are used, e.g., $CH_3(CH_2)_8CH_2CN$.

(2) Unsaturated compounds are written to show the position of the double or triple bond, e.g., $CH_2{=}C{=}CH_2$.

(3) The structures of all alicyclic and heterocyclic compounds are specified with figures in the text.

1.4. Acknowledgments

This work was supported by the Department of Energy. Division of Basic Energy Sciences and the Office of Standard Reference Data of the National Bureau of Standards. The authors are especially indebted to Mrs. Geraldine Zumwalt and Ms. Rhoda Levin for their attention to many details in the keyboarding, editing and preparation of the manuscript.

1.5. References to the Introduction

[1]F. Westley, "Tables of Experimental Rate Constants for Chemical Reactions Occurring in Combustion (1971-1977)", NBSIR 81-2254, National Bureau of Standards, Gaithersburg, MD 20899 (1981).

[2]D. D. Wagman, W. H. Evans, V. B. Parker, R. H. Schumm, I. Halow, S. M. Bailey, K. L. Churney, and R. L. Nuttall, J. Phys. Chem. Ref. Data **11**, Suppl. 2 (1982).

2. Summary of Symbols and Units

Data Type Codes:

- EX (experimentally measured absolute value),
- RL (experimentally measured relative value),
- RN (RL normalized to absolute value),
- TH (theoretical value),
- DE (derived indirectly, e.g. using reverse rate and equilibrium constant, or computer simulation of a complex mechanism)
- CO (computed numerically),
- ES (estimated, by analogy etc),
- SE (selected in the literature as probable "best" value),
- RE (currently recommended value).

Type of excitation:

- † (vibrationally excited)
- * (electronically excited)

Decadic exponent notation: 1.2(11) (stands for 1.2×10^{11})

Temperature (T): in kelvins (K).

Arrhenius parameters are defined by
$k = A(T/298)^n \exp(-B/T)$

Unit Codes for k, k/k(ref), A, A/A(ref):

- 1 (s^{-1}),
- 2 ($cm^3\ mol^{-1}\ s^{-1}$),
- 3 ($cm^6\ mol^{-2}\ s^{-1}$),
- 1/1, 2/2 etc. (dimensionless),
- 2/1 ($cm^3\ mol^{-1}$), etc.

($T/298$) and n (the exponent of T) are dimensionless.

Units for B, $B-B$(ref): kelvins (K). (Activation energy $E = R \times B$).

k(ref), A(ref) and B(ref) are the values for the "reference reaction" in relative rate determinations.

k err. factor: Estimated overall Uncertainty Factor. It multiplies and divides k or A to indicate approximate error limits. It does not imply that errors in k are necessarily lognormally distributed.

3. Index of Reactions

O ATOM Reactions:

O_2 Reactions:

O_3 Reactions:

H ATOM Reactions:

H_2 Reactions:

OH RADICAL Reactions:

HO_2 RADICAL Reactions:

H_2O Reactions:

H_2O_2 Reactions:

S_x ATOM Reactions:

SO_x-COMPOUND Reactions:

SH_x-COMPOUND Reactions:

N_x-COMPOUND Reactions:

N_xO_y-COMPOUND Reactions:

N_xH_y-COMPOUND Reactions:

NH_xO_y-COMPOUND Reactions:

C ATOM Reactions:

CO_x-COMPOUND Reactions:

CH RADICAL Reactions:

CH_2 Reactions:

CH_3 RADICAL Reactions:

CH_4 Reactions:

CH_xO_y-COMPOUND Reactions:

CS_x-COMPOUND Reactions:

COS Reactions:

CH_xS_y-COMPOUND Reactions:

CN RADICAL Reactions:

CON-COMPOUND Reactions:

CH_xN_y-COMPOUND Reactions:

$CH_xO_yN_z$-COMPOUND Reactions:

C_2 (Carbon dimer) Reactions:

C_2O Reactions:

C_2H_x-COMPOUND Reactions:

$C_2H_xO_y$-COMPOUND Reactions:

$C_2H_xS_y$-COMPOUND Reactions:

C_2N_x-COMPOUND Reactions:

$C_2H_xN_y$-COMPOUND Reactions:

$C_2H_xO_yN_z$-COMPOUND Reactions:

C_3 (Carbon trimer) Reactions:

C_3H_x-COMPOUND Reactions:

$C_3H_xO_y$-COMPOUND Reactions:

$C_4H_xO_y$-COMPOUND Reactions:

$C_4H_xS_y$-COMPOUND Reactions:

$C_4H_xO_yS_z$-COMPOUND Reactions:

$C_4H_xN_y$-COMPOUND Reactions:

$C_4H_xO_yN_z$-COMPOUND Reactions:

C_5H_x-COMPOUND Reactions:

$C_5H_xO_y$-COMPOUND Reactions:

$C_5H_xO_yS_z$-COMPOUND Reactions:

$C_5H_xN_y$-COMPOUND Reactions:

$C_5H_xO_yN_z$-COMPOUND Reactions:

C_6H_x-COMPOUND Reactions:

$C_6H_xO_y$-COMPOUND Reactions:

$C_6H_xS_y$-COMPOUND Reactions:

$C_6H_xO_yS_z$-COMPOUND Reactions:

$C_6H_xN_y$-COMPOUND Reactions:

$C_6H_xO_yN_z$-COMPOUND Reactions:

C_7H_x-COMPOUND Reactions:

$C_7H_xO_y$-COMPOUND Reactions:

$C_7H_xS_y$-COMPOUND Reactions:

$C_7H_xN_y$-COMPOUND Reactions:

$C_7H_xO_yN_z$-COMPOUND Reactions:

C_8H_x-COMPOUND Reactions:

$C_8H_xO_y$-COMPOUND Reactions:

$C_8H_xS_y$-COMPOUND Reactions:

$C_8H_xN_y$-COMPOUND Reactions:

C_9-COMPOUND Reactions:

C_{10} to C_{15}-COMPOUND Reactions:

4. Table of Chemical Kinetic Data for Combustion Chemistry

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$O + O + O \rightarrow O_2 + O(^1S)$							
Oxygen atom							
76 SLA/BLA1	EX	200-302	5.08(17)	0	654±302	3	3.07
$O + O\ (+ M) \rightarrow O_2\ (+ M)$							
Oxygen atom							
72 TCH	EX	298	3.63(15)			3	
$M = O_2$.							
Room temperature, assumed to be 298 K.							
73 CAM/GRA [1])	EX	196	(1.74±0.13)(15)			3	
73 CAM/GRA [1])	EX	298	(4.05±0.17)(15)			3	
[1]) $M = N_2$.							
$O + O_2 + O_2 \rightarrow O_3 + O_2(^1\Delta_g)$							
Oxygen atom + Oxygen molecule							
71 FIN/SNE	DE	283-321	3.16(11)	0	1681	3	
$k_1 = k_{-1}K$.							
$O + O_2\ (+ M) \rightarrow O_3\ (+ M)$							
Oxygen atom + Oxygen molecule							
71 ELL/CAS	RL	298	5.5(-3)			2/2	
M = He, Ar, Xe, N_2 (at 253.7nm.)							
k_{ref}: $O + O_3 \rightarrow O_2 + O_2$.							
71 HIP/TRO	EX	298	1.0(12)			2	1.2
Limiting high-pressure k.							
72 CAS/SCH [1])	RL	261	2.67(-2)			2/2	
72 CAS/SCH [1])	RL	298	5.5(-3)			2/2	
[1]) $M = O_2, O_3, N_2$ (at 334 nm.)							
k_{ref}: $O + O_3 \rightarrow O_2 + O_2$.							
73 STE/NIK1	RL	298	(1.08±0.12)(-3)			2/2	
$M = N_2 + O_2$. k_{ref}: $O + NO_2 \rightarrow O_2 + NO$.							
The rate ratio is given by the expression							
$k[M]/k_{ref}$, therefore it is dimensionless.							
73 CAS/SCH [2])	RL	261	2.67(-2)			2/2	
73 CAS/SCH [2])	RL	298	5.5(-3)			2/2	
[2]) $M = O_2, N_2$ (at 334 nm.)							
k_{ref}: $O + O_3 \rightarrow O_2 + O_2$.							
73 GAE/GLA	RN	300	6.0(11)			2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
75 GAE/TRO M = N_2. Limiting high-pressure k. Reevaluation.	EX	296	(1.7±0.7)(12)			2	
75 HIP/SCH Limiting high-pressure k.	RN	295	(1.7±0.7)(12)			2	
71 HIP/TRO M = N_2. Low-pressure k. Rate constant expressed as: k/[N_2].	EX	298	2.9(14)			3	1.2
71 PRA/KAR O_2 Photolysis. P(M) = (3-5) torr. k_{ref}: $O + O_2 + O_2 \rightarrow O_3 + O_2$. Efficiencies for the rate ratio are: 1.0(O_2), (0.6±0.2)(Ar or He), (0.8±0.2)(Xe), (1.1±0.2)(N_2), (3.2±0.5)(CO_2).	RL	293	1.0			3/3	
71 PRA/MAK M = CO. Photolysis of O_2 + CO mixture. P(O_2) = 40 Tor. P(CO) = (1-60) torr. k_{ref}: $O + CO \rightarrow CO_2$.	RL	293	(2.17±0.42)(7)			3/2	
71 STU/NIK1 M = N_2. M-efficiencies relative to N_2 are: 1.00(N_2), 1.19(O_2), 1.24(CO).	EX	300	2.00(14)			3	1.25
72 TCH M = O_2. Room temperature, assumed to be 298 K.	EX	298	4.35(14)			3	
72 HUI/HER1 M = Ar.	EX	200-346	(2.38±0.21)(13)	0	-510±23	3	
72 HUI/HER1 M = Ar. M-efficiencies relative to Ar are: 1.00(Ar), 1.7(N_2).	EX	218	2.57(14)			3	
72 HUI/HER1 M = Ar. M-efficiencies relative to Ar are: 1.00(Ar), 0.92(He), 1.6(N_2).	EX	298	1.32(14)			3	
73 BAL/LAR M = N_2. M-efficiencies relative to N_2 are: 1.00(N_2), Ar(0.78), 1.09(O_2).	EX	295	(1.97±0.42)(14)			3	
73 BAL/LAR Average of present results and all the previous data. M = N_2. M-efficiencies relative to N_2 are: 1.00(N_2), Ar(0.68), 0.94(O_2).	SE	295	(2.10±0.28)(14)			3	
73 BEV/JOH M = O_2. M-efficiencies relative to O_2 are: 1.00(O2), 0.50(Ar), 2.41(N_2), 2.46(CO_2), 5.74(SF_6).	EX	295	(1.96±0.11)(14)			3	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
73 ROS/TRA $M = O_2$, or N_2. k_{ref}: $O_3^{\dagger} + M \rightarrow O_3 + M$.	RL	300	9.03(3)			3/2	
74 ROS/TRA $M = O_2$, or N_2. Limiting high-pressure k.	EX	300	(1.14±0.20)(14)			3	
74 SNE $M = O_2$.	EX	295	(1.8±0.18)(14)			3	
75 HIP/SCH Limiting low-pressure k. Rate constant ex pressed as k/[N_2]. $M = N_2$. Reevaluation.	RN	295	(2.3±1.0)(14)			3	
76 HOG/BUR $M = O_2$. Computer fit of data.	DE	300	(2.27±0.34)(14)			3	
77 ARE/SAM Discharge flow. $M = O_2$.	EX	298	1.20(14)			3	
79 ARN/COM [3]) M = Ar.	EX	263-298	(2.26±0.56)(13)	0	-525±70	3	
79 ARN/COM [3]) $M = O_2$.	EX	262-318	(2.45±0.16)(13)	0	-635±18	3	
79 ARN/COM [3]) $M = N_2$.	EX	263-309	(6.60±0.83)(12)	0	-995±37	3	
[3]) O_3 laser-pulse-photolysis. Resonance-absorption.							
80 KLA/AND [4]) $M = O_2$. n = 0 assumed.	EX	219-368	7.80(13)	0	-345±60	3	
80 KLA/AND [4]) $M = O_2$.	EX	219-368	(2.53±0.36)(14)	-1.25	0	3	
80 KLA/AND [4]) $M = O_2$.	EX	298	2.47(14)			3	1.15
80 KLA/AND [4]) $M = N_2$. n = 0 assumed.	EX	219-368	3.20(13)	0	-575±60	3	
80 KLA/AND [4]) $M = N_2$.	EX	219-368	(2.28±0.33)(14)	-2.0	0	3	
80 KLA/AND [4]) $M = N_2$.	EX	298	2.21(14)			3	1.15
80 KLA/AND [4]) M = Ar. n = 0 assumed.	EX	219-368	2.29(13)	0	-535±70	3	
80 KLA/AND [4]) M = Ar.	EX	219-368	(1.43±0.18)(14)	-1.9	0	3	
80 KLA/AND [4]) M = Ar.	EX	298	1.38(14)			3	1.15
80 KLA/AND [4]) M = Air. n = 0 assumed.	EX	219-368	3.38(13)	0	-525±60	3	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
80 KLA/AND [4]	EX	219-368	(2.31±0.34)(14)	-1.9	0	3	
M = Air.							
80 KLA/AND [4]	EX	298	2.25(14)			3	1.15
M = Air.							
[4] Flash-photolysis. Resonance-fluorescence. Arrhenius preexponential factor expressed as $P(T/298)^n$ in all the expressions with n μ 0.							
80 LAL/VER	EX	298	(2.36±0.73)(14)			3	
M = Ar. Pulsed photolysis of an O_2/Ar mixture. Resonance-fluorescence. P = 1 torr.							
80 SUG/ISH1	EX	296	(9.07±1.08)(13)			3	
M = He. Pulse-radiolysis. Resonance-absorption. P = (50-950) torr.							
82 LIN/LEU [5]	EX	218-366	(1.75±0.43)(13)	0	-731±67	3	
M = N_2. n = 0 assumed.							
82 LIN/LEU [5]	EX	218-366	(2.11±0.07)(14)	-2.62	0	3	
M = N_2.							
82 LIN/LEU [5]	EX	298	(2.09±0.09)(14)			3	
M = N_2. M-efficiencies relative to N_2 are: 1.00(N_2), 0.99(O_2), 0.69(Ar), 0.60(He).							
82 LIN/LEU [5]	EX	227-353	(2.27±0.38)(13)	0	-668±46	3	
M = O_2. n = 0 assumed.							
82 LIN/LEU [5]	EX	227-353	(2.20±0.13)(14)	-2.37	0	3	
M = O_2.							
82 LIN/LEU [5]	EX	220-353	(1.29±0.50)(13)	0	-703±102	3	
M = Ar. n = 0 assumed.							
82 LIN/LEU [5]	EX	220-353	(1.41±0.10)(14)	-2.54	0	3	
M = Ar.							
[5] Flash-photolysis. Resonance-fluorescence. Arrhenius preexponential factor expressed as $(T/298)^n$ in all the expressions with $n \neq 0$.							

$O + O_3 \rightarrow O_2 + O_2$

Oxygen atom + Ozone

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
71 KRE/SIM	RL	197-299	6.4(-1)	0	-101	2/2	
k_{ref}: O + COS → SO + CO.							
71 KRE/SIM	RN	197-299	7.23(12)	0	2164±101	2	
72 BAL/EGO	EX	292-370	7.07(12)	0	1933±86	2	1.29
72 HUS/KIR1	RN	300	(7.83±3.01)(9)			2	
72 MCC/KAU	EX	269-409	(6.32±1.08)(12)	0	2169±50	2	
72 MCC/KAU	EX	298	(4.52±0.36)(9)			2	
73 DAV/WON	EX	220-353	(1.22±0.11)(13)	0	2276±106	2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
76 DAV	EX	293	(7.23±0.12)(9)			2	
77 SHA	ES	250-2000	1.33(12)	0.75	1575	2	
The Arrhenius preexponential factor expressed as $A(T/298)^{0.75}$.							
78 WES/WES	EX	298	≤9.03(12)			2	
Resonance fluorescence. Upper-limit k. O_3 is in the vibrational symmetric and asymmetric stre-ching modes: O_3(100,001). P = (0-100) torr.							
79 ARN/COM	EX	262-335	(1.28±0.11)(13)	0	2337±26	2	
O_3 laser-pulse-photolysis. Resonance-absorption.							
80 TOB/ULL	RL	348-433	1.0(4)	0	1610±7055	2/2	39.8
M = CO_2. Conventional vacuum system. P <1.0×10^{-5} torr.							

$O(^1D) + O_3 \rightarrow O_2 + O_2$ (or $O + O + O_2$)

Oxygen atom + Ozone

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
71 GOL/GRE 1)	RL	298	(4.1±0.9)			2/2	
At 228.8 nm.							
71 GOL/GRE 1)	RL	298	(2.6±0.4)			2/2	
At 253.7 nm.							
1) k_{ref}: $O(^1D) + N_2O \rightarrow N_2 + O_2$ (a) $\rightarrow NO + NO$ (b)							
72 LIS/HEI 2)	RL	298	(1.25±0.41)(1)			2/2	
k_{ref}: $O(^1D) + N_2 \rightarrow O(^3P) + N_2$. At 228.8, or 280.0 nm.							
72 LIS/HEI 2)	RL	298	(9.09±2.02)			2/2	
k_{ref}: $O(^1D) + N_2 \rightarrow O(^3P) + N_2$. At 253.7 nm.							
72 LIS/HEI 2)	RL	298	(2.50±0.83)			2/2	
k_{ref}: $O(^1D) + CO_2 \rightarrow O(^3P) + CO_2$ At 228.8, or 253.7 nm.							
72 LIS/HEI 2)	RL	298	(2.0±0.5)			2/2	
k_{ref}: $O(^1D) + CO_2 \rightarrow O(^3P) + CO_2$. At 280 nm.							
2) O_3 Photolysis. From the reported reverse rate ratios.							
73 HEI/HUS1	EX	300	(1.62±0.12)(14)			2	
73 HEI/HUS1	RL	300	3.9			2/2	
k_{ref}: $O(^1D) + O_2 \rightarrow$ products.							
73 HEI/HUS3	EX	300	(1.63±0.12)(14)			2	
Time-resolved UV atomic Absorption-spectroscopy.							
75 GAU/SNE	RL	300	(8.0±2.0)			2/2	
k_{ref}: $O(^1D) + O_2 \rightarrow O + O_2(^1\Sigma_g^+)$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
75 GAU/SNE	RN	300	3.55(14)			2	
76 DAV/SAD	RL	298	2.0			2/2	
k_{ref}: $O(^1D) + CO_2 \rightarrow O + CO_2$.							
76 DAV/SAD	EX	298	(1.45±0.03)(13)			2	
76 STR/HOW	EX	103-393	1.45(14)	0	0	2	1.1
78 DAV/SCH [3])	EX	300	(1.45±0.22)(14)			2	
78 DAV/SCH [3])	EX	103-393	1.45(14)	0	0	2	
[3]) Quadrupled-laser photolysis.							
$O + H\ (+ M) \rightarrow OH(A^2\Sigma^+, v{=}n)\ (+ M)$							
Oxygen atom + Hydrogen atom							
76 KOI/MOR	ES	1250-2000	1.0(9)	0	5536	3	
M = Ar. n = 0.							
76 TIC	EX	298	2.71(1)			2	
n = 1.							
76 TIC	EX	298	5.80(11)			3	
M = H. n = 0.							
76 TIC	EX	298	6.17(9)			3	
M = H_2. n = 0.							
76 TIC	EX	298	1.45(10)			3	
M = H. v = 1.							
82 HID/TAK	EX	1200-3200	1.2(13)	0	3493	3	
H_2/O_2 mixtures in Ar diluent, heated behind reflected shock-waves. n = 0. P_o = (50-100 torr.							
82 KOI/MOR1	EX	1250-3450	8.32(13)	0	4177±604	3	1.48
Reaction of O and H atoms in Argon diluent. O and H atoms generated by dissociation of O_2 and H_2 molecules in Ar, behind incident shock-waves. P_o = (6-30) torr. n = 0.							
$O + H_2 \rightarrow OH + H$							
Oxygen atom + Hydrogen molecule							
71 BRA/BEL1	EX	1200-1600	2.96(13)	0	4932±654	2	1.53
72 SCH/GET	RL	1700-2000	(4.0±1.0)			2/2	
k_{ref}: $H + O_2 \rightarrow OH + O$							
72 SCH/GET	RN	1700	4.5(12)			2	
73 GET	RN	1400-1900	3.2(14)	0	7549	2	1.25
74 NAM/TRO	EX	839-924	7.23(10)			2	
E_a not determined. Within the given T-range, k increases from 7.23×10^{10} to $1.33 \times 10^{11} cm^3 mol^{-1} s^{-1}$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
74 RAW/GAR2	RL	1200-2000	2.9	0	3248	2/2	
k_{ref}: $OH + OH \rightarrow H_2O + O$.							
74 RAW/GAR2	RN	1200-2000	1.6(14)	0	6808	2	
74 SCH/GET	RL	1400-1900	(3.60±0.72)			2/2	
k_{ref}: $O_2 + H \rightarrow O + OH$							
74 SCH/GET	RN	1400-1900	2.2(14)	0	6916±2406	2	1.25
75 BIR/KAS	EX	300	≤6.0(10)			2	
Upper-limit k. H_2 is vibrationally excited with v' = 1.							
75 CAM/HAN2	EX	363-490	(3.1±0.5)(13)	0	4950±300	2	
75 DUB/MCK	EX	347-832	(5.30±3.01)(12)	0	4198±241	2	
Air-afterglow.							
75 DUB/MCK	EX	347-832	(4.99±2.29)(12)	0	4330±241	2	
Resonance-fluorescence.							
78 LIG [1]	EX	302	≤2.83(9)			2	
OH is in ground state. Upper-limit k.							
78 LIG [1]	EX	302	(6.02±5.42)(9)			2	
OH is either in ground state or vibrationally excited vith v'' = 1.							
78 LIG [1]	EX	302	(6.02±3.61)(9)			2	
OH is vibrationally excited with v'' = 1.							
[1]) Flow-tube with tunable dye laser. H_2 is vibrationally excited with v' = 1. P(Total) = 3 torr.							
80 BAS/KOG [2]	EX	450-1160	1.51(13)	0	4479±201	2	1.26
n = 0 assumed.							
80 BAS/KOG [2]	EX	450-1160	6.56(12)	0.5	4127±191	2	1.26
80 BAS/KOG [2]	EX	293-1160	8.21(7)	6.4	302±332	2	100.
Extended T-range expression. Given with caution.							
[2]) Combustion of $H_2 + O_2$ mixtures in a jet reactor. Gas-chromatography. Arrhenius preexponential factor expressed as: $A(T/298)^n$ in the expressions with $n \neq 0$.							
80 LIG/MAT	EX	298	(5.5±3.0)(6)			2	
Flow-tube apparatus. Laser-induced Fluorescence. P = 3 torr.							
82 PAM/SKI1	EX	1919-2781	2.3(14)	0	6916	2	
Reaction of O with H_2 behind reflected shock-waves, using $H_2/N_2O/Ar$ mixtures. $[O]_{max} = (1.7\text{-}6.6)\times10^{13}$ molec.cm^{-3}. P = (920-1224) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 PAM/SKI2	EX	1000-2500	4.2(14)	0	6916	2	
Reaction of O with H_2 behind reflected shock-waves, in $H_2/O_2/Ar$ mixtures. Resonance-absorption spectroscopy. P = (1.16-2.67) atm. [O] = $(5.42x10^8-3.49x10^{12})$ molec.cm^{-3}.							
$O + D_2 \rightarrow OD + D$							
Oxygen atom + Deuterium molecule							
75 APP/APP	ES	1700-3100	1.22(13)	1.0	8254	2	2.0
Arrhenius preexponential factor expressed as: $A(T/298)^1$.							
82 PAM/SKI1	EX	2097-2481	1.6(14)	0	7169	2	
Reaction of O with D_2 behind reflected shock-waves, using $H_2/N_2O/Ar$ mixtures. $[O]_{max}$ = $(1.9-7.2)x10^{13}$ molec.cm^{-3}. P = (920-1224) torr.							
82 PAM/SKI2	EX	1000-2500	1.9(14)	0	7169	2	
Reaction of O with D_2 behind reflected shock-waves, in $D_2/O_2/Ar$ mixtures. Resonance-absorption spectroscopy. P = (1.16-2.67) atm. [O] = $5.42x10^8-3.49x10^{12}$ molec.cm^{-3}.							
$O(^1D) + H_2 \rightarrow OH + H$							
Oxygen atom + Hydrogen molecule							
73 HEI/HUS2	EX	300	(1.63±0.18)(14)			2	
73 HEI/HUS2	RL	300	1.23			2/2	
k_{ref}: $O(^1D) + N_2O \rightarrow$ products.							
75 GAU/SNE	RL	300	(4.0±1.0)			2/2	
k_{ref}: $O(^1D) + O_2 \rightarrow O + O_2(^1\Sigma_g^+)$							
75 GAU/SNE	RN	300	1.81(14)			2	
75 STI/PAY	RL	300	(4.23±1.80)			2/2	
k_{ref}: $O(^1D) + O_2 \rightarrow O(^3P) + O_2$							
75 STI/PAY	RN	300	(1.51±0.90)(14)			2	
76 DAV/SAD	RL	298	1.08			2/2	
k_{ref}: $O(^1D) + CO_2 \rightarrow O(^3P) + CO_2$.							
76 DAV/SAD	RN	298	(7.83±0.30)(13)			2	
77 DAV/SCH	RL	298	9.9(-1)			2/2	
k_{ref}: $O(^1D) + CO_2 \rightarrow O(^3P) + CO_2$.							
77 DAV/SCH	RN	298	(5.96±1.81)(13)			2	
78 DAV/SCH [1])	EX	300	(7.83±1.17)(13			2	
78 DAV/SCH [1])	EX	204-35	5.96(13)	0	0	2	

[1]) Quadrupled-laser photolysis.

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 PRA/PAU	RL	298	(5.27±0.31)			2/2	
Photolysis of O_2/H_2 mixtures diluted in He.							
$P(O_2)$ >15 torr. P(He) = 600 torr.							
$k_{ref} = O(^1D) + O_2 \rightarrow O(^3P) + O_2$							
82 OGR/SWO	EX	298	(6.5±0.5)(13)			2	
Flash-photolysis of $O_2/O_3/H_2$ mixtures in a vacuum system. P(Total) = 100 torr.							
$O(^1D) + D_2 \rightarrow OD + D$							
Oxygen atom + Deuterium molecule							
73 HEI/HUS2	EX	300	(1.08±0.12)(14)			2	
76 DAV/SAD	RL	298	1.08			2/2	
k_{ref}: $O(_1D) + CO_2 \rightarrow O(^3P) + CO_2$.							
76 DAV/SAD	RN	298	(7.83±0.30)(13)			2	
$O + OH \rightarrow O_2 + H$							
Oxygen atom + Hydroxyl							
76 KRI	EX	298	1.81(13)			2	
OH is in vibrational state v=9.							
77 CAM/HAN	RL	425	(2.60±0.20)(2)			2/2	
k_{ref}: $CO + OH \rightarrow CO_2 + H$							
77 CAM/HAN	RN	425	(2.65±0.52)(13)			2	
77 SPE/END [1])	EX	295	(5.42±1.81)(13)			2	
77 SPE/GLA [1])	EX	295	(6.32±3.19)(13)			2	
[1]) OH is in vibrational state v=1.							
80 HOW/SMI	EX	298	(2.29±0.54)(13)			2	
Discharge-flow reactor. H_2O Flash-photolysis. Resonance-fluorescence. P(Total) = 3.75 torr.							
80 LEW/WAT [2])	EX	221-499	(1.21±0.11)(1	0	-112±29	2	
n = 0 assumed.							
80 LEW/WAT [2])	EX	221-499	1.82(13)	-0.36	0	2	1.52
The preexponential factor expressed as: $A(T/298)^{-0.362}$.							
[2]) Discharge-flow-Resonance-fluorescence. [O] = $(1-7)x10^{12}$ molec.cm^{-3}. [NO] ~ $1.5x10^{11}$ molec.cm^{-3}.							
81 HOW/SMI	EX	250-515	(2.32±0.08)(13)	-0.50	0	2	
Discharge-flow system. OH formed by Flash-photolysis of H_2O. O atoms formed by reacting N with NO. Resonance-fluorescence. The preexponential factor expressed as: $A(T/298)^{-0.50}$. [O] = $(0.5-6.0)x10^{13}$ molec.cm^{-3}.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$O + HO_2 \rightarrow OH + O_2$							
Oxygen atom + Hydroperoxo							
73 PEE/MAH1	ES	1600	≃5.0(13)			2	
77 BUR/HAR	EX	293	(2.13±0.60)(13)			2	
77 SHA	ES	250-2000	8.25(12)	0.75	0	2	
The preexponential factor expressed as: $A(T/298)^{0.75}$.							
78 CAM/ROG	RL	425	(3.5±1.5)(1)			2/2	
k_{ref}: $H + HO_2 \rightarrow$ products. Discharge-flow reactor. P(Total) = (0.2-0.5) kPa.							
78 PRE	EX	293	(1.5±0.5)(13)			2	
Laser Magnetic Resonance Spectrometry.							
79 BUR/CLI	EX	298	(1.87±0.60)(13)			2	
Conventional discharge-flow system.							
79 HAC/PRE2	EX	298	(2.0±0.6)(13)			2	
Isothermal discharge-flow reactor. ESR-LMR-spectrometry. P(He) < 10 mbar.							
80 LII/SAU	EX	298	(4.21±1.20)(13)			2	
Electron pulse-radiolysis. Kinetic Spectrophotometry. P(Total) = 1200 torr.							
82 KEY2 [1])	EX	229-372	(1.86±0.24)(13)	0	-200±28	2	
82 KEY2 [1])	EX	299	(3.67±0.24)(13)			2	
[1]) Discharge-flow. Resonance-fluorescence. HO_2 generated by reacting F with H_2O_2, or Cl with an excess of CH_3OH and O_2. O atoms produced by disociating O_2 in a microwave-discharge. P = 1 torr. $[HO_2]$ = (0.7-3.3)x10^{12} molec.cm^{-3}. $[O]_o$ = (0.4-1.9)x10^{11} molec.cm^{-3}.							
82 SRI/QIU	EX	296	(3.25±0.54)(13)			2	
Discharge-flow reactor. Laser-induced-fluorescence. UV-resonance-fluorescence. HO_2 radicals generated by reacting F with H_2O_2. F atoms generated by dissociation of CF_4 in a microwave-discharge. H and O atoms generated by dissociation of H_2 and O_2 in a microwave-discharge. $[H]_o = [O]_o$ ~ (4-5)x10^{10} molec.cm^{-3}. $[CF_4]$ = (1-10)x10^{13} molec.cm^{-3}. $[H_2O_2]$ = 8x10^{12} molec.cm^{-3}. [NO] ~ 2x10^{14} molec.cm^{-3}. P(He) ~ 2.5 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$O + H_2O \rightarrow H + HO_2$ (a)							
$\rightarrow OH + OH$ (b)							
Oxygen atom + Water							
79 HAC/PRE1	DE	298	7.4(-30)			2	
k_a. Isothermal flow. Laser Magnetic Resonance-Spectrometry. M = He. $k_1 = Kk_{-1}$. P(Total) = (130-800) Pa.							
71 ALB/HOY	EX	753-1045	4.0(13)	0	8707±252	2	
k_b.							
$O(^1D) + H_2O \rightarrow O_2 + H_2$ (a)							
$\rightarrow OH + OH$ (b)							
$\rightarrow OH^* + OH$ (c)							
Oxygen atom + Water							
80 ZEL/WAG	RL	298	≤1.5(-2)			2/2	
k_a/k_b. Reaction of Oxygen atoms with Water vapor. Flash-photolysis. $O(^1D)$ atoms generated by photolysis of Ozone. $P(O_3)$ = 0.6 torr. $P(H_2O)$ = (2-4) torr. P(He) = (8-11) torr.							
71 SCO/CVE	RL	296	(1.50±0.06)			2/2	
k_b/k_{ref}.							
k_{ref}: $O(^1D) + N_2O \rightarrow N_2 + O_2$ (a) $\rightarrow NO + NO$ (b)							
72 FOR/SNE	RL	295	(3.5±1.5)			2/2	
k_b/k_{ref}.							
k_{ref}: $O(^1D) + N_2 \rightarrow O + N_2$							
72 SIM/HEI2	RL	300-423	3.79(-1)	0	-624	2/2	
k_b/k_{ref}. Estimated ratio.							
k_{ref}: $O(^1D) + CO \rightarrow O(^3P) + CO$							
73 HEI/HUS1	EX	300	(1.81±0.18)(14)			2	
k_b.							
73 HEI/HUS1	RL	300	4.4			2/2	
k_b/k_{ref}. k_{ref}: $O(^1D) + O_2 \rightarrow$ products.							
73 HEI/HUS3	EX	300	(1.81±0.18)(14)			2	
k_b. Time-resolved UV atomic Absorption-spectroscopy.							
73 SIM/HEI2	RL	373	(2.1±0.3)			2/2	
k_b/k_{ref}. k_{ref}: $O(^1D) + N_2O \rightarrow N_2 + O_2$ (a) $\rightarrow NO + NO$ (b)							
75 GAU/SNE	RL	300	(5.0±1.5)			2/2	
k_b/k_{ref}. k_{ref}: $O(^1D) + O_2 \rightarrow O + O_2(^1\Sigma_g^+)$							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
75 GAU/SNE	RN	300	2.23(14)			2	
k_b.							
76 DAV/SAD	RL	298	1.75			2/2	
k_b/k_{ref}.							
k_{ref}: $O(^1D) + CO_2 \rightarrow O + CO_2$.							
76 DAV/SAD	RN	298	(1.26±0.60)(13)			2	
k_b.							
76 STR/HOW	EX	253-353	1.39(14)	0	0	2	1.1
k_b.							
77 DAV/SCH	RL	298	2.3			2/2	
k_b/k_{ref}.							
k_{ref}: $O(^1D) + CO_2 \rightarrow O(^3P) + CO_2$.							
77 DAV/SCH	RN	298	(1.39±0.24)(14)			2	
k_b.							
72 LIS/HEI	RL	298	1.5			2/2	
k_b/k_{ref}. Ozone Photolysis.							
k_{ref}: $O(^1D) + O_3 \rightarrow O_2 + O_2^*$							
78 DAV/SCH [1]	EX	300	(1.26±0.19)(14)			2	
78 DAV/SCH [1]	EX	253-353	1.39(14)	0	0	2	
[1] k_b. Quadrupled-laser photolysis.							
79 LEE/SLA	EX	300	(1.57±0.30)(14)			2	
k_b. O_2-pulsed photolysis.							
81 GER/COM	EX	298	(1.22±0.25)(14)			2	
k_b. UV-Flash-photolysis Ozone in presence of H_2O vapor. $P(H_2O)$ = (2.5-19) torr. $P(O_3)$ = 1.5 torr.							
81 PRA/PAU	RL	298	(6.7±0.4)			2/2	
k_b/k_{ref}. Photolysis of O_2/H_2O mixtures diluted in He. $P(O_2)$ >15 torr. P(He) = 600 torr.							
$k_{ref} = O(^1D) + O_2 \rightarrow O(^3P) + O_2$.							
71 PRA/VIL [2]	RL	293	(2.0±0.5)(1)			2/2	
k_c/k_{ref}. k_{ref}: $O(_1D) + M \rightarrow O + M$.							
71 PRA/VIL [2]	RN	293	≥1.2(14)			2	
k_c. Lower limit k.							
[2] Photolysis of an $O_2 + H_2O$ mixture. $P(O_2)$ = (30-100) Tor.							
71 PAR/CVE [3]	RL	298	1.07(1)			2/2	
k_{ref}: $O(^1D_2) + O_2 \rightarrow$ products.							
71 PAR/CVE [3]	RL	298	9.64			2/2	
k_{ref}: $O(^1D_2) + N_2 \rightarrow$ products.							
71 PAR/CVE [3]	RL	298	2.98			2/2	
k_{ref}: $O(^1D_2) + CO_2 \rightarrow$ products.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
71 PAR/CVE [3])	RL	298	3.76(-1)				2/2
k_{ref}: $O(^1D_2) + (CH_3)_4C \rightarrow$ products.							
[3]) $(k_a + k_b + k_c)/k_{ref}$. Photolysis of N_2O/Neopentane/SF_6 mixtures. P(Total) ~ 320 torr.							
$O + H_2O_2 \rightarrow OH + HO_2$ (a) (predominant path)							
$\rightarrow H_2O + O_2$ (b)							
Oxygen atom + Hydrogen peroxide							
71 ALB/HOY	EX	370-800	2.8(13)	0	3221±302	2	
$k_a + k_b$.							
74 DAV/WON	EX	283-368	(1.66±0.25)(12)	0	2125±261	2	
$k_a + k_b$.							
82 ROS	SE	302-349	(1.66±0.25)(12)	0	2125±261	2	
$k_a + k_b$. (Recommended expression). Conventional fast-flow system. O atoms generated by reacting N with NO in a microwave discharge. Mass-spectrometry. $P[H_2O_2]_o = (0.3\text{-}1.5)\times10^{18}$ molec.cm^{-3}. P = (0.9-1.7) torr.							
$O(^1D) + H_2O_2 \rightarrow OH + HO_2$							
Oxygen atom + Hydrogen peroxide							
76 FLE/HUS	EX	300	(3.13±0.36)(14)			2	
$O + SO\ (+ M) \rightarrow SO_2\ (+ M)$							
Oxygen atom + Sulfur monoxide							
71 MIY/TAK1	EX	298	(7.40±0.73)(16)			3	
M = Ar.							
79 GRI/REE	DE	300-3880	3.36(17)	-1.84	0	3	
M = Ar. Reflected shock-waves. $k_1 = k_{-1}K$. The preexponential factor expressed as: $A(T/298)^{-1.84}$.							
$O + SO_2\ (+ M) \rightarrow O_2 + SO\ (+ M)$ (a)							
$\rightarrow SO_3\ (+ M)$ (b)							
Oxygen atom + Sulfur dioxide							
80 GRI/REE	EX	2630-3570	(4.0±0.4)(12)	0	9210	2	
k_a. Thermolysis of SO_2 diluted in N_2O/Ar mixtures behind reflected shock-waves.							
80 SLA/GRI	EX	3320-3760	(3.8±0.5)(11)	0	0	2	
k_a. Shock-heated mixtures of SO_2/N_2O mixtures behind reflected shock-waves, in presence of Ar.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
75 WES/DEH2	EX	297	(3.0±0.2)(14)				2
k_b. M = He. M-efficiencies relative to He are: 1.0(He), 2.4(N_2), 9.5(SO_2).							
75 WES/DEH2	EX	248-415	(3.9±0.9)(16)	0	1400±50		2
k_b. M = He.							
74 ATK/PIT3	EX	299-392	3.32(16)	0	1007±201		3
k_b. M = N_2.							
78 ATK/PIT4 1)	EX	299-440	1.12(16)	0	1009±151		3
k_b. M = Ar.							
78 ATK/PIT4 1)	EX	299	(3.81±0.76)(14)				3
k_b. M = Ar.							
78 ATK/PIT4 1)	EX	299	(3.45±1.09)(15)				3
k_b. M = SO_2.							
78 ATK/PIT4 1)	EX	300	(4.97±0.98)(14)				3
k_b. M = N_2.							
1) Flash-photolysis. NO_2 chemiluminescence.							
79 AST/GLA	DE	1700-2500	1.06(13)	0	-7870		3
k_b. M = Ar. Incident pr reflected shock-waves. [Ar] = (0.5-4.2)x10^{19} molec.cm^{-3}. Rate constant expressed as k[Ar]. Based on: $k_1 = Kk_{-1}$.							
79 MER/LEV 2)	RL	1685	6.6(3)				3/2
k_b/k_{ref}. k_{ref}: O + SO_2 → O_2 + SO_2							
79 MER/LEV 2)	ES	2250	7.4(14)				3
k_b.							
2) Combustion in a quartz-tube burner. M = CH_4, N_2, O_2, H_2S.							
82 SMI/TSE	EX	1435-1850	4.4(14)	0	-3163		3
k_b. Reaction of SO_2 with O in a CO/O_2/Ar flame. Mass-spectrometry. P = 200 torr.							

O + SO_3 (+ M) → O_2 + SO_2 (+ M)

Oxygen atom + Sulfur trioxide

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
71 MER/LEV	EX	1100-1400	6.5(14)	0	5435		2
k determined in H_2S flame.							
71 MER/LEV	EX	900-1600	2.8(14)	0	6039		2
k determined in COS flame.							
72 JAC/WIN	EX	300	2.79(7)				2
Average of 8 experimental points.							
72 JAC/WIN	EX	413	4.22(7)				2
Average of 7 experimental points.							
72 JAC/WIN	EX	500	5.31(7)				2
Average of 6 experimental points.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
72 JAC/WIN	ES	300-487	(1.40±0.27)(8)	0	487±79	2	
A and B recalculated from the above three k's. The A-factor given in the initial abstract ($3.0x10^{15}$ $cm^3mol^{-1}s^{-1}$) should be $3.0x10_{16}$.							
79 MER/LEV	RN	1685	1.5(11)			2	
Combustion in a quartz-tube burner.							
82 SMI/TSE	EX	1435-1850	1.32(12)	0	3070	2	
Reaction of SO_2 with O in a $CO/O_2/Ar$ flame. Mass-spectrometry. P = 200 torr.							
75 WES/DEH1	EX	298	(7.3±0.2)(17)			3	
M = He. M-efficiencies relative to He are: 1.0(He), 1.4(N_2), <10.0(SO_3).							
75 WES/DEH1	EX	298-507	5.0(16)	0	-785	3	
M = He.							
O + S_2O → SO + SO							
Oxygen atom + Sulfur oxide (S_2O)							
74 STE/ALV	ES	298	(9.03±1.20)(11)			2	
O + SH → H + SO							
Oxygen atom + Mercapto							
75 CUP/GLA	EX	295	(9.64±3.01)(13)			2	
O + H_2S → OH + SH (a)							
→ $[H_2SO]^†$ → HSO + H (b)							
→ $[H_2SO]^†$ → products (c)							
Oxygen atom + Hydrogen sulfide							
76 WHY/TIM	EX	263-495	(4.36±0.64)(12)	0	1661±50	2	
k_a. Flash-photolysis. Resonance-fluorescence. Same data given in 78 WHY/TIM.							
78 SLA/BAI	EX	281-497	(1.30±0.36)(13)	0	1815±139	2	
k_b. Fast flow-reactor. Photoionization Mass-spectrometer. A and B (not explicitly given) recalculated from the reported experimental data.							
79 SIN/IRW	EX	297-502	(1.56±0.83)(13)	0	2171±202	2	
$k_a + k_b + k_c$. Phase-shift. Gas-chromatography.							
82 SIN/PAR [1])	RL	298	(7.6±2.4)(-1)			2/2	
$k_a/(k_a + k_b + k_c)$. Based on the reported lower-limit (0.52) and upper-limit (1.0) ratios.							
82 SIN/PAR [1])	RL	298	<2.0(-1)			2/2	
$k_b/(k_a + k_b + k_c)$. Upper-limit ratio.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 SIN/PAR [1])	RL	298	<4.8(-1)			2/2	
$k_c/(k_a + k_b + k_c)$. Upper-limit ratio.							
Product of path (c) cannot be HSOH.							
[1]) Reaction of O with H_2S in a quartz cell, in $N_2O/H_2/CO$ mixtures. O atom generated by Hg-sensitized decomnposition of N_2O. Gas-chromatogrphy.							
P(Total) = (368-743) torr.							
$P(H_2S)$ = (5.5-21) torr.							
P(CO) = (50-200) torr.							
$O + D_2S \rightarrow OD + SD$							
Oxygen atom + Hydrogen sulfide (D_2S)							
76 WHY/TIM	EX	298-450	(6.32±3.43)(12)	0	2144±156	2	
O + N (+ M) → NO (+ M)							
Oxygen atom + Nitrogen atom							
73 CAM/GRA [1])	EX	196	(4.38±0.38)(15)			3	
73 CAM/GRA [1])	EX	298	(3.34±0.36)(15)			3	
[1]) M = N_2.							
$O + N_2$ (+ M) → NO + N (+ M) (a)							
→ N_2O (+ M) (b)							
Oxygen atom + Nitrogen molecule							
73 BAC/EBE	EX	1900-2500	5.0(13)	0	37947	2	2.0
k_a.							
73 IVE/BAS	ES	1900-2400	1.3(14)	0	37947	2	
k_a.							
76 HAR/NAS	EX	2270-2620	(9.1±0.4)(13)	0	38000	2	
k_a. Best fit to the experimental data.							
77 BLA/SME	EX	1880-2350	7.5(13)	0	38249	2	1.2
k_a.							
77 MON/HAN2	EX	2384-3850	1.84(14)	0	38374	2	1.35
k_a.							
79 MON/HAN	EX	2384-3850	(1.84±0.64)(14)	0	38374	2	
k_a. Shock tube. IR-emission. CO-laser absroption.							
71 STU/NIK1	EX	300	<1.81(10)			3	
k_b. M = N_2. Upper-limit k.							
$O(^1D) + N_2$ (+ M) → N_2O (+ M) (a)							
→ other products (b)							
Oxygen atom + Nitrogen molecule							
73 GAE/GLA	ES	300	≃1.0(12)			2	
k_a. Expressed as: $k = [N_2]1.0\times10^{12}cm^6mol^{-2}s^{-1}$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 PRA/PAU	RL	298	(7.21±0.79)(-1)			2/2	
k_b. Photolysis of O_2/N_2 mixtures diluted in He.							
k_{ref} = $O(^1D) + O_2 \rightarrow O(^3P) + O_2$.							
P(He) = 600 torr.							
$P(O_2)$ >15 torr.							
72 SIM/LIS	RL	298	<4.82(-2)			3/2	
k_a. M = N_2. Upper-limit ratio.							
k_{ref}: $O(^1D) + M \rightarrow O + M$.							
$O + N_3 \rightarrow NO(A^2\Sigma^+) + N_2$							
Oxygen atom + Azide							
79 PIP/KRE	EX	461	(6.02±2.41)(12)			2	
NaN_3 thermolysis. Conventional flow-system.							
$O + NO (+ M) \rightarrow O_2 + N (+ M)$ (a)							
$\rightarrow NO_2 (+ M)$ (b)							
Oxygen atom + Nitrogen oxide (NO)							
74 HAN/FLO	EX	2500-4100	7.03(11)	1.0	19446	2	
k_a. The preexponential factor expressed as: $A(T/298)^1$.							
77 MCC/KRU [1])	EX	1750-2100	5.13(11)	1.0	19446	2	1.26
77 MCC/KRU [1])	RE	1750-2100	1.11(12)	1.0	20851	2	
Based on a curve-fit of all previous k's.							
Recommended k.							
Same data given in 76 MCC/KRU.							
[1]) k_a. Flow reactor. The preexponential factor expressed as: $A(T/298)^1$.							
73 GAE/GLA	RN	300	8.0(12)			2	
k_b. M = N_2. Limiting high-pressure k.							
73 HAR/JOH	RL	296	(1.8±0.1)(-1)			2/2	
$k_b[M]/k_{ref}$. M = N_2. k_{ref}: $O + NO_2 \rightarrow O_2 + NO$.							
75 GAE/TRO	EX	296	(1.8±0.3)(13)			2	
k_b. M = N_2. Limiting high-pressure k.							
75 HIP/SCH	RN	295	(1.8±0.3)(13)			2	
k_b. M = N_2. Limiting high-pressure k.							
75 SIN/FUR	EX	298-473	(6.12±0.45)(15)	0	-619±28	2	
k_b. M = N_2O.							
76 MIC/PAY	EX	217-500	(3.27±0.42)(15)	0	-594±35	2	
k_b. M = Ar. M-efficiencies relative to Ar are: 1.0(Ar), 0.87(He), 0.73(Ne), 0.96(Kr), 1.64(N_2) art 217 K. 1.0(Ar), 0.95(He), 0.80(Ne), 0,99(Kr), 1.66(N_2) at 298 K. 1.0(Ar), 1.04(He), 0.89(Ne), 1.01(Kr), 1.68(N_2) at 500 K.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
76 MIC/PAY	EX	217-500	(3.91±0.44)(15)	0	-523±30	2	
k_b. M = He.							
76 MIC/PAY	EX	217-500	(3.38±0.40)(15)	0	-518±30	2	
k_b. M = Ne.							
76 MIC/PAY	EX	217-500	(3.45±0.40)(15)	0	-574±35	2	
k_b. M = Kr. n = 0 assumed.							
76 WHY/MIC1	EX	217-500	(5.62±0.73)(15)	0	-584±35	2	
k_b. M = N_2.							
76 WHY/MIC1	EX	217-500	4.33(16)	-1.82	0	2	
k_b. M = N_2. The preexponential factor expressed as: $A(T/298)^{-1.82}$							
77 ATK/PER1	EX	298-439	5.30(15)	0	-473±101	2	
k_b. M = Ar.							
77 ATK/PER1	EX	298	(2.55±0.25)(16)			2	
k_b. M = Ar.							
71 ATK/CVE	EX	298	(3.7±0.8)(16)			3	
k_b. M = N_2O.							
71 STU/NIK1	EX	300	2.41(16)			3	1.1
k_b. M = He. M-efficiencies relative to He are: 1.0(He),2.26(NO).							
71 STU/NIK2	EX	300	2.47(16)			3	
k_b.							
72 ATK/CVE	EX	298-473	(2.6±0.21)(15)	0	-805±151	3	
k_b. M = N_2O.							
74 ATK/PIT1	EX	300-392	9.6(15)	0	-453±101	3	
k_b. M = N_2O.							
74 ATK/PIT2	EX	300	(4.30±0.43)(16)			3	
k_b. M = N_2O.							
74 FUR/ATK	EX	298	(5.78±0.08)(16)			3	
k_b. M = N_2O.							
75 CAM/HAN2	EX	285-432	(1.8±0.5)(15)	0	-900±85	3	
k_b. M = N_2. M-efficiencies relative to N_2 are: 1.0(N_2), 0.62(Ar).							
75 HIP/SCH	RN	295	(2.7±0.5)(16)			3	
k_b. M = N_2. Limiting low-pressure k. Reevaluation. Rate constant expressed as k/[M]. M-efficiencies relative to N_2 are: 1.00(N_2), 0.65(He), 0.86(Ne), 1.28(Ar), 1.21(CO), 1.65(CO_2), 1.66(SF_6), 1.43(CH_4), 1.15(C_2H_6), 1.33(cy-C_3H_6), 2.13(C_3F_8), 1.36(2,2-Dimehylpropane), 1.36(2.2-Dimethylbutane), 1.68(Isopropylbromide).							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
78 AND	EX	298	(2.80±0.18)(16)			3	
k_b. M = Ar. NO Flash-photolysis. Time-resolved detection of NO_2 chemiluminescence.							
78 ATK/PIT4 [2])	EX	299	(9.43±3.27)(16)			3	
M = SO_2.							
78 ATK/PIT4 [2])	EX	300	(3.99±0.73)(16)			3	
[2]) k_b. Flash-photolysis. NO_2 chemiluminescence.							
78 MIC/PAY1	EX	217-500	(5.62±0.73)(15)	0	-582±37	3	
k_b. M = N_2. Flash-photolysis.							
79 AND/STE	EX	237-397	(4.61±0.73)(15)	0	-508±50	3	
k_b. M = Ar. NO vacuum-UV Flash-photolysis. Time-resolved detection of NO_2 chemiluminescence.							
79 MIC/LEE [3])	EX	217-500	(3.92±0.44)(15)	0	-523±30	3	
k_b. M = He. n = 0 assumed.							
79 MIC/LEE [3])	EX	217-500	2.60(16)	-1.63	0	3	
k_b. M = He.							
79 MIC/LEE [3])	EX	217-500	(3.27±0.42)(15)	0	-594±35	3	
k_b. M = Ar. n = 0 assumed.							
79 MIC/LEE [3])	EX	217-500	2.50(16)	-1.86	0	3	
k_b. M = Ar.							
79 MIC/LEE [3])	EX	217-500	(5.62±0.73)(15	0	-584±35	3	
k_b. M = N_2. n = 0 assumed.							
79 MIC/LEE [3])	EX	217-500	4.33(16)	-1.82	0	3	
k_b. M = N_2.							
[3]) Flash-photolysis. Resonance-fluorescence. The preexponential factor expressed as: $A(T/298)^n$ in all the expressions with $n \neq 0$.							
80 SUG/ISH2 [4])	EX	298	(2.79±0.18)(16)			3	
k_b. M = N_2.							
80 SUG/ISH2 [4])	EX	298	(1.52±0.18)(16)			3	
k_b. M = He.							
[4]) Pulse-radiolysis technique. Resonance-absorption. P(Total) = (200-100) torr.							
82 FAI/SIN	EX	298	(9.79±2.71)(12)			3	
k_b. M_{eff} = 1.0(N_2O) and 31(CH_3OH). Modulated Phase-shift. O atoms generated by Hg-photosensitized decomposition of N_2O. Gas-chromatography.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$O(^1D) + NO \rightarrow O_2 + N$							
Oxygen atom + Nitrogen oxide (NO)							
73 HEI/HUS2	EX	300	(5.12±0.60)(13)			2	
73 HEI/HUS2	RL	300	4.3(-1)			2/2	
k_{ref}: $O(^1D) + N_2O \rightarrow$ products.							
$O + NO_2 (+ M) \rightarrow O_2 + NO (+ M)$ (a)							
$\rightarrow NO_3 (+ M)$ (b)							
Oxygen atom + Nitrogen oxide (NO_2)							
72 CLY/CRU	EX	298	(3.67±0.36)(12)			2	
k_a.							
72 GER/DEM	EX	298	(4.0±1.0)(12)			2	
k_a.							
73 DAV/HER	EX	230-339	(5.49±0.27)(12)	0	0	2	
k_a.							
73 HAR/JOH	RN	296	5.54(12)			2	
k_a.							
73 SLA/WOO [1]	EX	240	6.32(12)			2	1.15
73 SLA/WOO [1]	EX	296	5.60(12)			2	1.15
[1] k_a.							
74 BEM/CLY [2]	EX	298	(5.72±0.66)(12)			2	
74 BEM/CLY [2]	EX	298-1055	5.43(12)	-0.52	0	2	1.37
The preexponential factor expressed as: $A(T/298)^{-0.52}$.							
[2] k_a.							
74 STE/ALV	RL	298	(6.0±0.5)			2	
k_a. k_{ref}: $O + S_2O \rightarrow SO + SO$.							
75 WU/NIK	EX	298	5.72(12)			2	
k_a. NO_2 Photolysis.							
73 GAE/GLA [3]	RN	300	6.0(12)			2	
75 GAE/TRO [3]	EX	296	(1.3±0.2)(13)			2	
[3] k_b. $M = N_2$. Limiting high-pressure k.							
73 HAR/JOH	RL	296	(2.2±0.1)(-1)			2/2	
$k_b[M]/k_{ref}$. $M = N_2$. k_{ref}: $O + NO_2 \rightarrow O_2 + NO$.							
75 HIP/SCH	RN	295	(1.3±0.2)(13)			2	
k_b. $M = N_2$. Limiting high-pressure k. Reevaluation.							
73 HAR/JOH	RN	296	2.97(16)			3	
k_b.							
73 HUI [4]	EX	263	(1.45±0.44)(17)			3	
73 HUI [4]	EX	298	(7.62±2.18)(16)			3	
[4] k_b. $M = Ar$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
75 HIP/SCH	RN	295	(2.9±0.4)(16)			3	
$M = N_2$. Limiting low-pressure k. Reevaluation. k expressed as k/[M]. M-efficiencies relative to N_2 are: 1.00(N_2), 0.94(He), 1.30(Ne), 1.38(Ar), 1.97(CO), 2.63(CO_2), 3.60(SF_6), 2.59(CH_4), 2.67(C_2H_6), 2.26(C_3H_8), 3.15(cy-C_3H_6), 4.36(CF_4), 4.27(C_2F_6), 7.11(C_3F_8),3.72(2,2-Dimethylpropane), 3.89(2,2-Dimethylbutane), 2.83(Isopropylbromide), 5.95(2,2,3-Trimethylbutane).							
75 WU/NIK	EX	298	4.50(16)			3	
k_b. M = Ar. NO_2 Photolysis.							
$O(^1D) + NO_2 \rightarrow O_2 + NO$							
Oxygen atom + Nitrogen oxide (NO_2)							
73 HEI/HUS2	EX	300	(1.39±0.12)(14)			2	
73 HEI/HUS2	RL	300	1.05			2	
k_{ref}: $O(^1D) + N_2O \rightarrow N_2 + O_2$ (a) $\rightarrow NO + NO$ (b)							
75 GAU/SNE	RL	300	~4.0			2/2	
k_{ref}: $O(^1D) + O_2 \rightarrow O + O_2(^1\Sigma_g{}^+)$ Estimated ratio.							
75 GAU/SNE	RN	300	1.81(14)			2	
$O + NO_3 \rightarrow O_2 + NO_2$							
Oxygen atom + Nitrogen oxide (NO_3)							
75 GRA	RN	298-329	(6.02±1.2)(12)	0	0	2	
78 GRA/JOH	EX	298	(6.02±0.24)(12)			2	
Modulated photolysis technique.							
$O + N_2O \rightarrow O_2 + N_2$ (a) $\rightarrow NO + NO$ (b)							
Oxygen atom + Nitrogen oxide (N_2O)							
72 BOR/SKA	RL	1000-2000	(8.0±3.0)(-1)	0	0	2/2	
k_a/k_b. Reflected shock waves. 20% N_2O + 80% Ar.							
72 SOL	SE	1000-3000	4.5(13)	0	12128	2	
k_a.							
75 DOV/NIP	EX	2160-3400	5.25(13)	0	12557±1122	2	1.58
$k_a + k_b$.							
76 DEA	ES	1950-3075	1.15(13)	0	12630	2	
k_a. Data-fit to a proposed mechanism. Same data given in 75 BAB/DEA.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
77 MON/HAN1	ES	1815-3365	6.23(13)	0	12350	2	1.65
$k_a = k_b$. Best data-fit.							
77 BAL/VAN	EX	1900	(5.9±1.8)(11)			2	
k_a. Supersonic molecular beam. Mass-spectrometer. P = 40 torr. Based on the k for the reaction: $O + N_2O \rightarrow NO + NO$.							
77 DEA/STE1	EX	2100-3200	4.64(13)	0	14073	2	
k_a. M = Ar. Shock-waves. $N_2O/CO/Ar$ mixtures at a Total concentration of $(2.5\text{-}7.7)\times10^{18}$ molec.cm^{-3}.							
80 SUL/KLI	EX	1685-2000	(4.43±3.97)(13)	0	6215±1198	2	
k_a. Thermolysis of N_2O behind shock-waves, diluted in Ar. P = (1300-3500) torr.							
80 ZAS/LOS	EX	1700-2500	2.6(13)	0	11072	2	
k_a. Thermolysis of (0.5-2.5)% N_2O in Ar, He, N_2, or CO, behind shwaves. [M] = $(0.6\text{-}6.0)\times10^{19}$ molec.cm^{-3}.							
71 LIP [1])	RL	1400-2000	(5.1±1.6)(-1)			2/2	
73 LIP/MIL [1])	RL	1300-1950	5.0(-1)			2/2	
73 MIL/MAT [1])	RL	1169-1650	(3.17±2.70)(-1)			2/2	
Average rate-ratio.							
76 MIL [1])	RL	1216-1655	(2.52±1.35)(-1)			2/2	
76 MIL [1])	RL	1370-1655	2.75(-5)			2/2	2.45
Average rate-ratio.							
[1]) k_b/k_a.							
72 SOL	SE	1000-3000	4.5(13)	0	12128	2	
k_b.							
76 DEA	ES	1950-3075	1.15(13)	0	12630	2	
k_b. fit to a proposed mechanism. Same data given in 75 BAB/DEA.							
77 BAL/VAN	EX	1800-2000	(5.4±1.6)(14)	0	16105	2	
k_b. Supersonic molecular beam. Mass-spectrometer. P = 40 torr.							
77 DEA/STE1	EX	2100-3200	4.64(13)	0	14073	2	
k_b. M = Ar. Shoch waves.. $N_2O/CO/Ar$ mixtures. Conc.(Total) = $(2.5\text{-}7.7)\times10^{18}$ molec.cm^{-3}.							
80 SUL/KLI	EX	1685-2000	(4.07±3.26)(13)	0	6215±1198	2	
k_b. M = Ar. Thermolysis of N_2O behind reflected shock-waves. P = (1300-3500) torr.							
80 ZAS/LOS	EX	1700-2500	1.4(14)	0	15098	2	
k_b. Thermolysis of (0.5-2.5)% N_2O in Ar, He, N_2, or CO behind shock-waves. [M] = $(0.6\text{-}6.0)\times10^{19}$ molec.cm^{-3}.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$O(^1D) + N_2O \rightarrow O_2 + N_2$ (a)							
$\rightarrow NO + NO$ (b)							
$\rightarrow N + NO_2$ (c)							
Oxygen atom + Nitrogen oxide (N_2O)							
71 GOL/GRE [1]	RL	298	(3.3±0.3)(-1)				2/2
At 228.8 nm.							
71 GOL/GRE [1]	RL	298	(3.7±0.3)(-1)				2/2
At 253.7 nm.							
[1] $k_a/(k_a + k_b)$.							
71 SCO/PRE	RL	298	(1.01±0.06)				2/2
k_a/k_b. Photolysis of NO_2 and N_2O mixtures.							
72 GRE	RL	298	(5.9±0.1)(-1)				2/2
k_a/k_b. For completely thermalized $O(^1D)$, k_a/k_b = 0.85±0.05.							
72 SIM/GRE	RL	298	(6.5±0.7)(-1)				2/2
k_a/k_b. Rate ratio valid for $O(^1D)$ atoms with translational energy in excess of 10 kcal/mole.							
72 SIM/GRE	RL	300	(9.0±1.0)(-1)				2/2
k_a/k_b. Rate ratio valid for $O(^1D)$ atoms with no excess thermal energy.							
73 GHO/ELL	RL	298	(7.0±0.2)(-1)				2/2
k_a/k_b.							
74 WIE/PAR	RL	298	(1.0±0.17)				2/2
k_a/k_b.							
79 DAV/HOW [2]	RL	300	(6.80±0.18)(-1)				2/2
k_a/k_b. UV-photolysis of pure N_2O.							
79 DAV/HOW [2]	RL	300	8.0(-1)				2/2
k_a/k_b. UV-photolysis of N_2O + He mixtures.							
79 DAV/HOW [2]	RL	170-434	[3]	[3]	[3]		2/2
[2] Chemical-ionization mass spectrometry.							
[3] $k_a/k_b = (0.72±0.11) + (21.6±7.0/T)$. Best data-fit.							
79 MAR/BAH	RL	298	(6.17±0.15)(-1)				2/2
$k_a/(k_a + k_b + k_c)$. N_2O photolysis in excess He. Gas-chromatography.							
79 VOL/FEL [4]	RL	290	(7.34±1.13)(-1)				2/2
k_a/k_b. Photolysis of pure N_2O. $P(N_2O)$ = (39-120) torr.							
79 VOL/FEL [4]	RL	290	(9.19±1.00)(-1)				2/2
k_a/k_b. Photolysis of N_2O in He. P(He) = (622-730) torr. $P(N_2O)$ = (29-97) torr.							
[4] Gas chromatography.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 PRA/PAU	RL	298	(4.6±0.3)				2/2
k_a/k_{ref}. Photolysis of O_2/N_2O mixtures diluted in He. k_{ref} = $O(^1D) + O_2 \rightarrow O(^3P) + O_2$. P(He) = 600 torr. $P(O_2)$ >15 torr.							
72 LIS/HEI [5]	RL	298	2.5(-1)				2/2
At 228.8 nm.							
72 LIS/HEI [5]	RL	298	~4.0(-1)				2/2
At 253.7 nm. Approximate ratio.							
72 LIS/HEI [5]	RL	298	6.7(-1)				2/2
At 280 nm.							
[5]) $(k_a + k_b)/k_{ref}$. O_3 photolysis. k_{ref}: $O(^1D) + O_3 \rightarrow O_2 + O_2$							
72 LOU/CVE [6]	RL	298	(1.25±0.14)				2/2
k_{ref}: $O(^1D) + CO_2 \rightarrow O + CO_2$							
72 PAR/SYM [6]	RL	298	(1.45±0.10)(-1)				2/2
k_{ref}: $O(^1D) + (CH_3)_4C \rightarrow$ products.							
73 GHO/ELL [6]	RL	298	(3.23±0.10)				2/2
k_{ref}: $O(^1D) + O_2 \rightarrow O + O_2$.							
[6]) $(k_a + k_b)/k_{ref}$.							
73 GHO/ELL	RN	298	1.2(14)			2	
$k_a + k_b$.							
73 HEI/HUS2	EX	300	(1.32±0.12)(14)			2	
$k_a + k_b$.							
75 GAU/SNE	RL	300	(3.3±0.5)				2/2
$(k_a + k_b)/k_{ref}$. k_{ref}: $O(^1D) + O_2 \rightarrow O + O_2(^1\Sigma_g^+)$							
75 GAU/SNE	RN	300	1.45(14)			2	
$k_a + k_b$.							
76 DAV/SAD [7]	RL	298	1.25				2/2
$(k_a + k_b)/k_{ref}$.							
76 DAV/SAD [7]	RN	298	(8.43±0.60)(13)			2	
$k_a + k_b$.							
77 DAV/SCH [7]	RL	298	1.1				2/2
$(k_a + k_b)/k_{ref}$.							
77 DAV/SCH [7]	RN	298	(6.63±1.20)(13)			2	
$k_a + k_b$.							
[7]) k_{ref}: $O(^1D) + CO_2 \rightarrow O(^3P) + CO_2$.							
78 DAV/SCH [8]	EX	300	(8.43±1.26)(13)			2	
$k_a + k_b$.							
78 DAV/SCH [8]	EX	204-359	6.63(13)	0	0	2	
$k_a + k_b$.							
[8]) Quadrupled-laser photolysis.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 LAM/HAS [7]	RL	177	(2.9±0.4)			2/2	
$(k_a + k_b)/k_{ref}$.							
81 LAM/HAS [7]	RL	296	(4.0±0.4)			2/2	
$(k_a + k_b)/k_{ref}$.							
81 LAM/HAS [7]	RL	177-296	(6.2±0.9)(-1)			2/2	
k_b/k_{ref}.							
[7]) $N_2O/N_2/He$ photolysis. P(Total) = (100-600) torr.							
k_{ref}: $O(^1D) + N_2 \rightarrow O(^3P) + N_2$.							
71 SCO/PRE	RL	298	<5.0(-3)			2/2	
k_c/k_a. NO_2/N_2O photolysis. Upper-limit ratio.							
$O(^1S) + N_2O \rightarrow$ products							
Oxygen atom +Nitrogen oxide (N_2O)							
76 SLA/BLA2	EX	200-368	(2.29±0.60)(13)	0	423±75	2	
$O + N_2O_5 \rightarrow$ products							
Oxygen atom + Nitrogen oxide (N_2O_5)							
75 GRA	RN	298	≤1.2(10)			2	
Upper-limit k.							
78 GRA/JOH	EX	298	≤1.20(10)			2	
Modulated photolysis. Upper limit k.							
78 KAI/JAP1	EX	223-300	≤1.81(8)			2	
Discharge-flow. Upper-limit k.							
$P(N_2)$ = 4.5 torr.							
$O + NS \rightarrow SO + N$							
Oxygen atom + Nitrogen sulfide (NS)							
72 LIT/DAL	ES	300	~1.2(13)			2	2.0
$O + NH_2 \rightarrow OH + NH$ (a)							
$\rightarrow H + HNO$ (b)							
Oxygen atom + Amidogen							
73 GEH/HOY	EX	298	2.1(12)			2	
$k_a + k_b$.							
$O + NH_3 \rightarrow OH + NH_2$							
Oxygen atom + Ammonia							
74 DOV/NIP	EX	1620-1920	≤1.0(13)	0	3322	2	
Upper-limit k.							
74 KIR/MER	EX	300-450	(4.9±1.5)(12)	0	3091±108	2	
Flow reactor. Ultrasonic molecular beam.							
80 LAL/VER	EX	298	(3.01±0.90)(9)			2	
O_2 photolysis in Ar. Resonance-fluorescence.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$O(^1D) + NH_3 \rightarrow OH + NH_2$							
Oxygen atom + Ammonia							
76 DAV/SAD	EX	298	(2.04±0.18)(14)			2	
76 FLE/HUS	EX	300	(3.79±0.42)(14)			2	
77 DAV/SCH	RL	298	2.5			2/2	
k_{ref}: $CO_2 + O(^1D) \rightarrow CO_2 + O(^3P)$.							
77 DAV/SCH	RN	298	(1.51±0.30)(14)			2	
78 DAV/SCH [1])	EX	300	(2.05±0.31)(14)			2	
78 DAV/SCH [1])	EX	204-354	1.51(14)	0	0	2	
T-independent k.							
[1]) Quadrupled-laser photolysis.							
$O + HNO \rightarrow OH + NO$							
Oxygen atom + Nitrosyl hydride							
75 CAM/HAN2	RN	425	≥1.13(2)			2/2	
k_{ref}: $H + HNO \rightarrow H_2 + NO$. Lower-limit ratio.							
$O + HONO \rightarrow$ products							
Oxygen atom + Nitrous acid							
78 KAI/JAP2	EX	300-355	≤6.02(8)	0	0	2	
Discharge-flow reactor. Upper-limit k.							
$O + HONO_2 \rightarrow OH + NO_3$							
Oxygen atom + Nitric acid							
72 MOR/SMI	EX	300	<7.82(9)			2	
Upper-limit k.							
74 CHA/WAY	EX	300	≤1.81(7)			2	
Upper-limit k.							
$O + HO_2NO_2 \rightarrow$ products							
Oxygen atom + Peroxynitric acid							
81 CHA/TRE	EX	228-297	(4.22±7.36)(13)	0	3369±489	2	
Low-pressure stirred-flow. Discharge-flow. Modulated molecular-beam Mass-spectrometer. P ~2 torr.							
$O(^1D) + CO \rightarrow CO_2$							
Oxygen atom + Carbon monoxide							
73 HEI/HUS1 [1])	EX	300	(4.40±0.42)(13)			2	
73 HEI/HUS1 [1])	RL	300	1.05			2/2	
k_{ref}: $O(^1D) + O_2 \rightarrow$ products.							
[1]) Time-resolved UV atomic Absorption-spectroscopy. Same data given in 73 HEI/HUS3.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 PRA/PAU	RL	298	(9.0±1.3)(-1)			2/2	
Photolysis of O_2/CO mixtures diluted in He. P(He) = 600 torr. $k_{ref} = O(^1D) + O_2 \rightarrow O(^3P) + O_2$							
$O + CO (+ M) \rightarrow CO_2 (+ M)$ (a)							
$\rightarrow CO_2(^3B_2) (+ M)$ (b)							
Oxygen atom + Carbon monoxide							
72 DEM	EX	298	9.77(7)			2	
k_a. M = CO_2. k increasing from $9.77x10^7$ to 3.5x10 $cm^3mol^{-1}s^{-1}$ between 0.74 and 42 atm. Hippler and Troe's expression used.							
72 DEM	EX	298	5.24(7)			2	
k_a. M = CO_2. k increasing from $5.24x10^7$ to $2.75x10^8$ $cm^3mol^{-1}s^{-1}$ between 0.74 and 42 atm. Sauer's expression used.							
72 SIM/HEI1	EX	298-472	1.6(10)	0	1459	2	
k_a. M = N_2O. Limiting high-pressure k.							
73 GAE/GLA	RN	300	≤3.0(8)			2	
k_a. M = CO. Limiting high-pressure k.							
77 DEA/STE1	EX	2100-3200	(5.80±1.09)(13)	0	0	2	
k_a. M = Ar. Shock/waves. N_2O/CO/Ar mixtures.							
71 DON/HUS [1])	EX	300	(5.08±2.54)(12)			3	
k_a. M = Ar.							
71 DON/HUS [1])	EX	300	(5.08±2.54)(12)			3	
k_a. M = He.							
[1]) Kinetic Absorption-spectroscopy.							
71 MIY/TAK1	EX	298	(2.11±0.61)(16)			3	
k_a. M = Ar.							
71 STU/NIK1	EX	300	7.98(11)			3	1.25
k_a. M = N_2. M-efficiencies relative to N_2 are: 1.00(N_2), 0.77(He), 1.45(CO).							
72 BAL/JAC	ES	300-3500	3.0(14)	0	1510	3	
k_a. M = Ar.							
72 SIM/HEI1	EX	298-472	5.9(15)	0	2063	3	
k_a. M = N_2O. Limiting low-pressure k.							
72 SLA/WOO	EX	296	(8.34±1.45)(11)			3	
k_a. M = N_2. M-efficiencies relative to N_2 are: 1.00((N_2), 1.70(CO), 2.70(CO_2).							
72 SLA/WOO	EX	250-370	2.36(15)	0	2184±277	3	
k_a. M = CO.							
72 ZAB/HAR	EX	1400-1500	≤2.0(14)			3	
k_a. Upper-limit k.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
73 INN	EX	296	(3.56±0.73)(12)			3	
k_a. M = Ar. M-efficiencies relative to Ar are: 1.00(Ar), 0.46(CO), 0.55(CO_2).							
74 HAR/VAS	EX	1500	<2.0(14)			3	
k_a. M = Ar. Upper-limit k.							
74 INN	EX	257-277	8.02(14)	0	1782±408	3	
k_a. M = CO_2.							
74 KON	SE	400-500	2.35(12)	0	-1862	3	
k_a. M = O_2. Reevaluation.							
74 WAG/ZAB	RN	298-4000	1.96(15)	-1.5	2516	3	
k_a. M = Ar. Limiting low-pressure k. The preexponential factor expressed as: $A(T/298)^{-15}$.							
76 WEI	EX	2500-2900	1.01(16)	-1.0	2013	3	
k_a. M = Ar(89%) + CO(4%) + O_2(3%) + NO_2(3%). The preexponential factor expressed as: $A(T/298)^{-1}$.							
78 HAR/GAR	EX	1300-2200	2.79(13)	0	-2285	3	
k_a. M = Ar. Reflected shock-waves. Best fit of experimental data. P(Total) = (2-4) atm.							
80 SUG/ISH1 [2])	EX	296	(3.63±0.73)(12)			3	
k_a. M = He.							
80 SUG/ISH1 [2])	EX	296	(1.09±0.73)(13)			3	
k_a. M = CO.							
[2]) Pulse-radiolysis. Resonance-absorption. P = (50-950) torr.							
80 TOB/ULL	EX	348-433	1.26(9)	0	805±755	2	40.0
k_b. M = CO_2. Vacuum system. P <$1.0x10^{-5}$ torr.							

$O + CO_2$ (+ M) → O_2 + CO (+ M) (a)
→ CO_3 (+ M) (b)

Oxygen atom + Carbon dioxide

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
74 BAB/DEA	EX	3015-4675	4.78(12)	0	18168±1459	2	1.58
k_a.							
71 STU/NIK1	EX	300	≤3.27(12)			3	
k_b. M = CO. Upper-limit k.							
80 SUG/ISH1	EX	296	<1.45(12)			3	
k_b. M = He. Pulse-radiolysis. Resonance-absorption. P = (50-950) torr. Upper-limit k.							

$O(^1D) + CO_2$ → O_2 + CO

Oxygen atom + Carbon dioxide

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
73 HEI/HUS1	EX	300	(1.26±0.12)(14)			2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
73 HEI/HUS1	RL	300	3.1			2/2	
k_{ref}: O_2 + $O(^1D)$ → products.							
75 GAU/SNE	RL	300	(2.7±0.5)			2/2	
k_{ref}: $O(^1D) + O_2 \rightarrow O + O_2(^1\Sigma_g{}^+)$.							
75 GAU/SNE	RN	300	1.20(14)			2	
81 PRA/PAU	RL	298	(2.82±0.20)			2/2	
Photolysis of O_2/CO_2 mixtures diluted in He. P(He) = 600 torr. $k_{ref} = O(^1D) + O_2 \rightarrow O(^3P) + O_2$.							
O + CH → products							
Oxygen atom + Methylidyne							
81 MES/FIL	EX	298	(5.72±0.84)(13)			2	
CH produced by IR multiple photon dissociation of CH_3OH in Ar. Same data given in 80 MES/CAR. P(CH_3OH) = 1.3 mtorr. P(Ar) = (5-15) torr.							
O + CH_2 → CO + H + H (a) **→ CHO + H (b)**							
Oxygen atom + Methylene							
73 JON/BAY1	RL	298	(3.1±0.2)			2/2	
k_a/k_{ref}. k_{ref}: CH≡CH + CH_2 → products.							
79 VIN/DEB2	EX	295	(7.83±1.81)(13)			2	
k_a. Oxidation of Acetylene in a fast-flow reactor. P(Total) = 2.2 torr.							
82 GRE/HOM1	EX	298	(5.0±1.0)(13)			2	
k_a. Reaction of the CH≡CH/O/H system diluted with He/N_2 in a discharge-reactor. Resonance-fluorescence. O atoms generated by reacting N with O. H atoms produced by a discharge of the mixture H_2/He. Best fit to experiental data. P = 2 torr.							
81 TSU/HAS	ES	1200-1800	3.02(13)	0	0	2	
k_b. M = Ar. Thermal oxidation of CH_3OH/O_2 mixtures in Ar behind reflected shock-waves.							
O + CH_3 → H + HCHO							
Oxygen atom + Methyl							
72 NIK/MOR2	EX	300	5.42(13)			2	
73 MOR/NIK1	EX	298	>1.81(13)			2	
Unreported T assumed to ne 298K. Lower-limit k.							
73 PEE/MAH1	RL	1100-1900	4.4	0	-2013	2/2	
k_{ref}: OH + CH_4 → H_2O + CH_3							
73 PEE/MAH1	RN	1100-1900	1.3(14)	0	1007	2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
73 WAS/BAY	EX	297	(7.4±0.15)(13)			2	
74 SLA/PRU	EX	300	(1.11±0.17)(14)			2	
75 BIO/LAZ	EX	1550-1725	1.05(14)	0	0	2	
75 BOW1	ES	1900-2400	1.0(14)	0	0	2	
Best data-fit.							
76 WAS/BAY	EX	259-341	(6.02±1.20)(13)	0	0	2	
76 TSU	DE	1500-2000	6.03(13)	0	0	2	
Computer calculation.							
71 CLA/IZO2	ES	1350	2.53(13)			2	
Shock-waves. Time-of-flight Mass-spectrometry. Total conc. = $9x10^{13}$ molec.cm^{-3}.							
71 DEA/KIS	DE	1750-2575	6.02(13)	0	0	2	
Shock-waves. Best-fit to experimental data. Total conc. = $5x10^{17}$ molec.cm^{-3}.							
72 MOR/NIK	EX	298	>1.81(13)			2	
Discharge-flow. Ti-of-flight Mass-spectrometry. Lower-limit k.							
80 BHA/FRA	EX	1700-2300	(8.5±1.0)(13)	0	0	2	
Shock-tube. Atomic Resonance-Absorption.							
80 WAS	EX	298	(8.31±2.77)(13)			2	
Generation of CH_3 by reaction of O with Ethene in a fast-flow reactor. Photoionization Mass-spectrometer. P(Total) = (1.9-3.7) torr. Comparable data in 79 WAS1, 79 WAS2 and 79 WAS3.							
82 PLU/RYA2	EX	295	(6.87±1.75)(13)			2	
Reaction of CH_3 with O in a flow-reactor, in He. CH_3 generated by reacting F with CH_4. O and F atoms generated by dissociation of O_2 and CF_4 in a microwave discharge. Mass-spectrometry. [He] = $(6.3-13.1)x10^{16}$ molec.cm^{-3}. [O] = $(0.6-5.1)x10^{12}$ molec.cm^{-3}. [CH_4] = $(5-10)x10^{12}$ molec.cm^{-3}. [CF_4] = $(3-8)x10^{11}$ molec.cm^{-3}.							

$O + CH_4 \rightarrow OH + CH_3$ (a)

$\rightarrow H_2O + CH_2$ (b)

Oxygen atom + Methane

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
71 AVR/KOL1	EX	373-583	(4.22±2.11)(13)	0	4630±352	2	
k_a.							
71 DEA/KIS	DE	1750-2575	1.57(14)	0	4001	2	
k_a. Shock-waves. Best-fit to experimental data. Total conc. = $5x10^{17}$ molec.cm^{-3}.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
75 BRA/BRO	EX	1300-2000	1.9(14)	0	5900		2
k_a.							
77 ROT/JUS	EX	1500-2250	4.09(14)	0	7030		2
k_a.							
78 SHA	DE	300-2500	4.55(11)	2.0	3240		2
k_a. The preexponential factor expressed as: $A(T/298)^2$.							
79 FEL/FON	EX	525-1250	1.59(12)	2.075	3840		2
k_a. Flash-photolysis. Resonance-fluorescence. High-temperature photolysis. The preexponential factor expressed as: $A(T/298)^{2.075}$. The reported k's are represented reasonably well by the above rate expression of Roth and Just, but are somewhat larger at higher T's.							
80 FEL/FON	EX	1140	(5.60±0.48)(11)				2
k_a. High-T photochemistry reactor. Resonance-fluorescence. $P(N_2)$ = 25 torr.							
80 KLE/TAN	EX	474-1156	(1.29±0.18)(14)	0	5472±97		2
k_a. Flash-photolysis. Discharge-flow. Resonance-fluorescence. P(Ar) = (100-200) torr.							
80 ROT [1])	EX	1500-2200	4.10(14)	0	7030		2
80 ROT [1])	EX	300-2200	1.59(12)	2.075	3840		2
Modified Arrhenius expression over extended T-range by combining the k's of several authors. The preexponential factor expressed as: $A(T/298)^{2.075}$.							
[1]) k_a. Thermolysis of N_2O behind shock-waves. Atomic Resonance-Absorption Spectrophotometry. Same data published in 79 ROT/JUS1.							
81 KLE/TAN [2])	EX	474-1156	(1.20±0.20)(14)	0	5435±112		2
81 KLE/TAN [2])	EX	475-2250	(5.45±0.34)(13)	0.5	5179±54		2
Arrhenius expression extended over the upper T-range, obtained by combining the present data with the results of two previous shock tube studies. The preexponential factor expressed as: $A(T/298)^{0.5}$.							
[2]) k_a. M = Ar. Resonance-fluorescence combined with either Flash-photolysis at a total P of (100-200) torr., or Discharge-flow at a total P of (1.1-2.9) torr.							
71 AVR/KOL1	EX	373-583	(3.31±1.63)(12)	0	3372±352		2
k_b.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$O(^1D) + CH_4 \rightarrow OH + CH_3$ (a) (Main channel)							
$\rightarrow H_2 + HCHO$ (b)							
Oxygen atom + Methane							
72 GRE	RL	298	(2.28±0.20)				2/2
k_a/k_{ref}. k_{ref}: $O(^1D) + N_2O \rightarrow O_2 + N_2$ (m)							
$\rightarrow NO + NO$ (n)							
For completely thermalized $O(^1D)$,							
$k_a/k_{ref} = 1.35±0.3$							
72 GRE/HEI	RL	298	(2.28±0.20)				2/2
k_a/k_{ref}. k_{ref}: $O(^1D) + N_2O \rightarrow O_2 + N_2$ (m)							
$\rightarrow NO + NO$ (n)							
With added He, k_a/k_{ref} = (1.35±0.3)							
73 HEI/HUS2	EX	300	(1.87±0.24)(14)				2
$k_a + k_b$.							
73 HEI/HUS2	RL	300	1.41				2/2
$(k_a + k_b)/k_{ref}$. k_{ref}: $O(^1D) + N_2O \rightarrow O_2 + N_2$ (m)							
$\rightarrow NO + NO$ (n)							
75 GAU/SNE	RL	300	(5.1±1.0)				2/2
$(k_a + k_b)/k_{ref}$. k_{ref}: $O(^1D) + O_2 \rightarrow O + O_2(^1\Sigma_g^+)$							
75 GAU/SNE	RN	300	2.29(14)				2
$k_a + k_b$.							
76 DAV/SAD	RL	298	1.08				2/2
$(k_a + k_b)/k_{ref}$.							
k_{ref}: $O(^1D) + CO_2 \rightarrow O(^3P) + CO_2$.							
76 DAV/SAD	RN	298	(7.83±1.81)(13)				2
$k_a + k_b$.							
76 JAY/SIM	RL	298	(1.1±0.2)(-1)				2/2
$k_b/(k_a + k_b)$.							
77 DAV/SCH	RL	298	1.4				2/2
$(k_a + k_b)/k_{ref}$.							
k_{ref}: $O(^1D) + CO_2 \rightarrow O(^3P) + CO_2$.							
77 DAV/SCH	RN	298	(8.43±2.41)(13)				2
$k_a + k_b$.							
78 DAV/SCH [1])	EX	300	(7.83±1.17)(13)				2
78 DAV/SCH [1])	EX	198-357	8.43(13)	0	0		2
T-independent k.							
[1]) k_a. Quadrupled-laser photolysis.							
81 PRA/PAU	RL	298	(6.85±0.13)				2/2
k_a/k_{ref}.							
Photolysis of O_2/CH_4 mixtures diluted in He.							
$k_{ref} = O(^1D) + O_2 \rightarrow O(^3P) + O_2$							
$P(O_2)$ >15 torr. P(He) = 600 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
O + CHO → OH + CO (a)							
→ H + CO_2 (b)							
Oxygen atom + Methyl, oxo-							
73 MAC/THR	RL	300	5.4(-1)			2/2	
$k_a/(k_a + k_b)$.							
76 KRI	EX	298	3.61(12)			2	
k_a. OH is in vibrational state v = 9.							
72 WES/DEH3	RL	298	(7.3±1.5)(-1)			2/2	
k_b/k_a.							
73 MAC/THR	RL	300	4.6(-1)			2/2	
$k_b/(k_a + k_b)$.							
74 WAS/MAR	EX	297	(1.26±0.24)(14)			2	
$k_a + k_b$. Ethylene used as source of CHO.							
76 MAR	EX	297	(1.33±0.24)(14)			2	
$k_a + k_b$. Formaldehyde used as source of CHO.							
O + HCHO → OH + CHO (a)							
→ OH + CO + H (b)							
→ H + H + CO_2 (c)							
→ products (d)							
Oxygen atom + Formaldehyde							
73 MAC/THR	EX	300	(9.0±1.0)(10)			2	
k_a.							
79 KLE	EX	250-500	(1.67±0.19)(13)	0	1525±40	2	
k_a. Flash-photolysis. Resonance-fluorescence. Mass-spectrometry.							
80 KLE/SKO	EX	250-750	(1.77±0.16)(16)	0	1543±34	2	
k_a. Discharge-flow. Resonance-Fluorescence. k obtained by combining the present data with the data from reference 79 KLE (see above.)							
71 DEA/KIS	DE	1750-2575	6.02(13)	0	0	2	
k_b. Shock-waves. Best-fit to experimental data. Total conc. = $5x10^{17}$ $molec.cm^{-3}$.							
71 IZO/KIS	DE	1400-2200	6.02(13)	0	0	2	
k_b. Shock waves. Best-fit to experimental data. Total conc.: $5x10^{17}$ $molec.cm^{-3}$.							
81 MOR/HEI	RL	296	≤(1.6±0.2)(-1)			2/2	
$k_c/(k_a + k_c)$. Photolysis NO_2 in presence of CHO and O_2, at 360 nm. Upper-limit ratio. P(Total) = 52 torr.							
74 CAD/WIC	EX	~300	3.7(12)	0	1208	2	
k_d. Unspecified T-range near 300K.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
74 CAD/WIC	EX	300	6.6(10)			2	
k_d.							
79 CHA/BAR	EX	296-437	(2.29±0.48)(13)	0	1583±73	2	
k_d. Discharge-flow system. Mas-spectrometry.							
$O + CH_3OH \rightarrow OH + CH_2OH$ (a)							
$\rightarrow OH + CH_3O$ (b)							
Oxygen atom + Methanol							
71 AVR/KOL2	EX	343-413	3.01(11)	0	1409±352	2	
k_a.							
75 BAS/KOG	EX	300-830	(4.28±0.07)(12)	0	1022±67	2	
k_a. Reaction of O with CH_3OH vapor in a cylindrical reactor. O generated by decomposition of an O_2/He mixture in a high-frequency discharge. ESR-spectroscopy. Gas-chromatography.							
76 OWE/ROS	EX	301-451	1.45(9)	0	1540±144	2	1.07
k_a. Initial step of a proposed mechanism. Flow-reactor.							
81 GRO/JUS	EX	300-1006	(3.43±1.14)(14)	0	2750±150	2	
k_a. Conventional fast-flow reactor. Time-of-flight Mass-spectrometry.							
81 KEI/TAN	EX	298-998	(1.63±0.30)(13)	0	2531±81	2	
k_a. Discharge-flow. Flash-photolysis, or Resonance-fluorescence. P(Total) = (2.7-4.4) torr.							
82 FAI/SIN	EX	297-544	(9.79±2.71)(12)	0	2267±111	2	
k_a. Major path. Modulated Phase-shift. O atoms generated by Hg-photosensitized decomposition of N_2O. Gas-chromarography.							
80 LAL/VER	EX	298	(3.61±0.60)(7)			2	
$k_a + k_b$. Pulsed photolysis of an O_2/Ar mixture. Resonance-fluorescence. P = 1 torr.							
71 AVR/KOL2	EX	343-413	6.02(12)	0	3322±352	2	
k_b.							
72 LEF/MEA	EX	273-438	(1.70±0.66)(12)	0	1147±101	2	
k_b.							
$O(^1D) + CH_3OH \rightarrow$ products							
Oxygen atom + Methanol							
75 OSI/SIM	RL	298-345	(5.5±2.0)	0	0	2/2	
k_{ref}: $O(^1D) + N_2O \rightarrow NO + NO$ (a)							
$\rightarrow O_2 + N_2$ (b)							
($k_{ref} = k_a + k_b$)							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
O + CS → CO(v=n) + S							
Oxygen atom + Carbon monosulfide							
71 HAN/SMI	ES	298	8.43(12)			2	
v≤13.							
72 HAN/RID	RL	298	~1.0(-1)			2/2	
k_{ref}: O + CS → CO(v=13) + S. Ratio increasing from 0.1 to 0.9 between between v=7 and v=12, then decreasing to 0.3 from v = 14 to v = 15. Unreported T assumed to be 298 K.							
75 SLA/GRA1	EX	305	(1.24±0.08)(13)			2	
Vibrational levels not indicated.							
76 BID/BRE	EX	300	(1.35±0.22)(13)			2	
Vibrational levels not indicated.							
77 LIL/RIC	EX	150-300	(1.57±0.24)(14)	0	758±144	2	
v≤13. Fast-flow reactor.							
78 KOL	EX	300	(1.35±0.22)(13)			2	
Vibrational levels not indicated. Fast-flow reactor.							
O + CS_2 → SO + CS (a)							
→ S + COS (b)							
→ S_2 + CO (c)							
Oxygen atom + Carbon disulfide							
71 TAK	EX	298	(1.42±0.20)(12)			2	
k_a. Step (a) is followed by the very fast reaction tion: O + CS → CO + S.							
75 WEI/TIM	EX	218-293	(1.66±0.23)(13)	0	644±35	2	
k_a.							
74 SLA/GIL	RL	302	9.3(-2)			2/2	
$k_b/(k_a + k_b + k_c)$.							
77 GRA/GUT	RL	249-500	(9.8±0.4)(-2)			2/2	
$k_b/(k_a + k_b + k_c)$. Within the given T range, the ratio decreases from 0.098±0.004 to 0.081±0.007.							
77 GRA/GUT	EX	249-500	(1.75±0.12)(12)			2	1.3
$k_a + k_b + k_c$. Non-linear Arrhenius behaviour. Within the given T range, k increases from $1.75x10^{12}$ to $6.75x10^{12}$ $cm_3mol^{-1}s^{-1}$.							
74 SLA/GIL	EX	302	2.41(12)			2	
$k_a + k_b + k_c$.							
79 HSU/SHA	EX	298	(3.5±0.5)(10)			2	
k_c. Flash-photolysis. Laser Resonance-absorption.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
O + COS → CO + SO (a)							
→ CO_2 + S (b)							
Oxygen atom + Carbon oxide sulfide							
71 KRE	RN	300-523	9.82(12)	0	2265	2	
k_a.							
71 KRE/SIM	EX	300-523	9.78(12)	0	2265	2	
k_a.							
72 BRE/MIL	EX	297	(7.2±0.4)(9)			2	
k_a. Fast-flow technique with EPR detection. P(Total) = 0.45 torr.							
74 KLE/STI	EX	263-502	(9.94±0.78)(12)	0	2167±28	2	
k_a.							
75 WEI/TIM	EX	239-404	(1.2±0.2)(13)	0	2149±35	2	
k_a.							
78 YOS/SAI	EX	298	(7.1±0.7)(9)			2	
k_a. Fast flow-reactor. Microwave Spectroscopy. P = 0.13 torr.							
80 ROB/SMI	EX	296	(1.02±0.12)(10)			2	
k_a. Pulsed laser photolysis of O_3 in excess N_2 and in presence of COS. P(Total) = 100 torr.							
82 TOP	EX	1200-1900	5.01(13)	0	5527±636	2	
k_b. Oxidation of COS behind reflected shock-waves. Time-of-flight Mass-spectrometry. P = (1.3-2.7) atm.							
81 KRU/WAG [1]	EX	298-1900	7.5(13)	0	2755	2	
k_a + k_b. M = Ar. n = 0 assumed.							
81 KRU/WAG [1]	RE	298-1900	7.45(12)	1.0	2057	2	
k_a + k_b. M = Ar. Recommended k. The preexponential factor expressed as: $A(T/298)^1$.							
[1] Measurement of O atoms concentration profiles by Resonance-absorption spectroscopy in shock-tube. O atoms generated by decomposition of N_2O in Ar.							
$O(^1D)$ + COS → CO + SO							
Oxygen atom + Carbon oxide sulfide							
75 GAU/SNE	RL	300	(4.1±0.6)			2/2	
k_{ref}: $O(^1D) + O_2 \rightarrow O + O_2(^1\Sigma_g^+)$							
75 GAU/SNE	RN	300	1.81(14)			2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$O + CH_3SH \rightarrow OH + CH_3S$ (a)							
$\rightarrow H + CH_3S(O)$ (b)							
$\rightarrow HS(O) + CH_3$ (c)							
$\rightarrow CH_3S(O)H$ (d)							
Oxygen atom + Methanethiol							
78 KIR/VET	EX	300-661	(8.5±1.0)(12)	0	625±36	2	
k_a. Initial step. Fast-flow reactor. Supersonic molecular beam. Mass-spectrometry.							
78 SLA/BAI	EX	254	1.14(12)			2	
k_a. Fast flow-reactor. Photoionization Mass-spectrometer. Non-linear Arrhenius behaviour. k increases to $2.59x10^{12}$ $cm^3mol^{-1}s^{-1}$ at 495 K.							
81 NIP/SIN	EX	298-560	[1])	[1])	[1])	2	
k_a. Phase-shift. O generated by Hg-photosensitized decomposition of N_2O. Gas-chromatography. [1]) The Arrhenius plot for the rate constant of this reaction is sharply curved, but it can be fitted to the empirical expression: $k = (m) + (n)$, where $(m) = (9.15\pm1.02)x10^{11}$ and $(n) = (3.85\pm2.40)x10^{13}exp(-1673\pm322/T)$							
76 SLA/GRA	EX	300	1.14(12)			2	
$k_b + k_c + k_d$.							
$O + CN(v=n) \rightarrow CO + N(^4S)$ (a)							
$\rightarrow CO^\dagger + N(^4S)$ (b)							
$\rightarrow CO^\dagger + N(^2D)$ (c)							
Oxygen atom + Cyanogen							
72 SCH/WOL2	EX	298	8.0(12)			2	
k_a. Unreported T assumed to be 298 K. k unchanged from v=0 to v=5, but decreasing to $6.0x10^{12}$ $cm^3mol^{-1}s^{-1}$ at v=6.							
73 SCH/SCH1	EX	298	1.26(13)			2	
k_a. n = 0 to 6.							
73 SCH/SCH1	EX	298	6.31(13)			2	
k_a. n = 7.							
75 ALB/HOY	EX	298	(1.2±0.4)(13)			2	
k_a. T-independent within the T-range 275-387 K. v = 0.							
77 SCH/WOL	EX	295	(1.1±0.3)(13)			2	
$k_b + k_c$.							
78 SCH/WOL	EX	298	(1.0±0.4)(13)			2	
$k_b + k_c$. Resonance-absorption Spectroscopy.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
O + NCO → NO + CO							
Oxygen atom + Cyanato							
74 SCH/SCH	EX	298	8.91(12)			2	
O + HCN → H + OCN (a)							
→ OH + CN (b)							
Oxygen atom + Hydrocyanic acid							
82 ROT/LOE2 [1])	EX	1500-2600	7.23(13)	0	7460	2	
k_a.							
82 ROT/LOE2 [1])	RL	1500-2600	1.6			2/2	
$(k_a + k_b)/k_a$.							
82 ROT/LOE2 [1])	RN	1500-2600	4.34(13)	0	7460	2	
k_b.							
[1]) M = Ar. Reaction of O atoms with HCN behind reflected shock-waves. O atoms generated by fast N_2O decomposition. Atomic-resonance Absorption-spectrometry. Same data reported in 80 ROT/LOE. [HCN] = $(0.62-4.92)\times10^{15}$ molec.cm^{-3}. P = 1275 torr.							
O + CH_3NH_2 → products							
Oxygen atom + Methanamine							
74 KIR/MER	EX	300-450	(2.7±0.3)(12)	0	770±36	2	
Flow reactor. Ultrasonic molecular beam. Mass-spectrometer.							
78 ATK/PIT1 [1])	EX	298-440	5.43(12)	0	830±101	2	
78 ATK/PIT1 [1])	EX	298	(3.40±0.34)(11)			2	
[1]) Flash-photolysis. NO_2 chemilumcence.							
O + CH_3ONO → OH + HCHO + NO							
Oxygen atom + Nitrous acid methyl ester							
75 DAV/THR	EX	300-410	1.4(13)	0	2622±241	2	
O + CH_3NO_2 → CH_3O + NO_2 (a)							
→ OH + CH_2NO_2 (b)							
Oxygen atom + Methane, nitro-							
75 CAM/GOO1	EX	295	(1.9±0.3)(9)			2	
$k_a + k_b$.							
O + C_2O → CO + CO							
Oxygen atom + Carbon oxide (C_2O)							
72 SHA/MAS	EX	300	5.72(13)			2	1.61

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$O + CH{\equiv}C \rightarrow CO + CH(A^2\Delta)$							
Oxygen atom + Ethynyl							
82 GRE/HOM2	EX	298	≃7.0(11)			2	
Reaction of the $CH{\equiv}CH/O/H$ system, diluted in N_2/He. O atoms generated by reacting N with NO. Discharge-flow. Resonance-fluorescence. P = 2 torr.							
$O + CH{\equiv}CH \rightarrow CO + CH_2$ (a)							
$\rightarrow H + CH{=}C{=}O \rightarrow CH_2{=}C{=}O$ (b)							
$\rightarrow C{=}C{=}O + H_2$ (c)							
Oxygen atom + Ethyne							
73 GAE/GLA	RN	300	≤1.3(11)			2	
k_a. Upper-limit k.							
73 PEE/MAH2	EX	1200-1700	5.2(13)	0	1862	2	
k_a.							
77 VAN/VAN	ES	700-1430	6.7(13)	0	2013	2	
k_a.							
81 LOE/ROT	EX	1500-2570	1.20(14)	0	3300	2	
k_a. Oxydation of $CH{\equiv}CH$ behind shock-waves. Atomic Resonance-absorption Spectroscopy.							
81 TSU/HAS	ES	1200-1800	2.00(13)	0	1563	2	
k_a. M = Ar. Thermal oxidation of CH_3OH/O_2 mixtures, behind reflcted shock-waves.							
82 ROT/LOE2	EX	1500-2600	1.20(14)	0	3300	2	
k_a. M = Ar. Reaction of O atoms with $CH{\equiv}CH$ behind reflected shock-waves. O atoms generated by fast N_2O decomposition. Atomic-Resonance Absorption-spectroscopy. P = 1275 torr. $[CH{\equiv}CH] = (2.46\text{-}3.69)\times10^{15}$ molec.cm^{-3}. $[N_2O] = (0.22\text{-}2.16)\times10^{15}$ molec.cm^{-3}.							
73 GAE/GLA	RN	300	≤1.7(11)			2	
k_b. M = N_2. Limiting high-pressure, upper-limit k.							
81 ALE/ARU	EX	298-608	(9.03±0.24)(12)	0	2285±217	2	
k_b. Recording of O and H atoms under jet conditions. Resonance-fluorescence.							
81 LOE/ROT	EX	1500-2570	4.34(14)	0	6100	2	
k_b. M = Ar. Oxidation of Ethyne behind shock-waves. Atomic-Resonance Absorption-Spectroscopy.							
81 TSU/HAS	ES	1200-1800	2.00(13)	0	1564	2	
k_b. M = Ar. Thermal oxidation of CH_3OH/O_2 mixtures, behind reflected shock-waves.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 ROT/LOE2	EX	1500-2600	4.34(14)	0	6100	2	
k_b. M = Ar. Reaction of O atoms with CH≡CH behind reflected shock-waves. O atoms generated by fast N_2O decomposition. Atomic-resonance Absorption-spectrometry. P = 1275 torr. [CH≡CH] = $(2.46\text{-}3.69)\times10^{15}$ molec.cm^{-3}. $[N_2O]$ = $(0.22\text{-}2.16)\times10^{15}$ molec.cm^{-3}.							
71 STU/NIK2 [1])	EX	300	7.89(10)			2	1.1
77 WES/DEH [1])	EX	297	(7.2±0.2)(10)			2	
76 HAN/MYE [1])	EX	300-408	1.38(13)	0	1500	2	1.23
Discharge-flow . Time-of-flight Mass-spectrometer.							
81 ALE/ARU [1])	EX	298-608	(1.81±0.18)(13)	0	1624±108	2	
Recording of O and H atoms under jet conditions. Resonance-fluorescence.							
[1]) $k_a + k_b$.							
73 JON/BAY2	EX	296	(9.7±1.5)(10)			2	
$k_a + k_b + k_c$.							

O + CD≡CD → CO + CD_2 (a)

→ D + CD=C=O → CD_2=C=O (b)

Oxygen atom + Ethyne-d_2

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
71 STU/NIK2	EX	300	7.89(10)			2	1.1
$k_a + k_b$.							

O + CH_2=CH_2 → HCHO + CH_2 (a)

→ CHO + CH_3 (b)

→ CH_2=C=O + H_2 (c)

→  (d)

Oxygen atom + Ethene

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
73 PEE/MAH2	ES	1200-1600	2.5(13)	0	2516	2	
k_a.							
73 GAE/GLA [1])	ES	300	≈7.0(11)			2	
73 HUI [1])	EX	232-500	(3.26±0.18)(12)	0	569±16	2	
73 KUR/HUI [1])	EX	298	4.79(11)			2	1.1
73 PEE/MAH2 [1])	EX	1200-1700	2.26(13)	0	1359	2	
76 MAN/BRA [1])	EX	298	(4.51±0.24)(11)			2	
Flash-photolysis. Resonance-fluorescence. P(Total) = 5 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
80 SUG/ISH1 [1])	EX	296	(6.02±1.20)(11)			2	
Pulse-radiolysis. Resonance-absorption. Predominant path. P = (50-950) torr.							
[1]) k_b.							
74 PRU/SLA	RL	300	9.5(-1)			2/2	
$k_b/(k_b + k_c)$.							
82 NIC/RAV [2])	EX	298	(4.32±0.44)(11)			2	
82 NIC/RAV [2])	EX	298-500	(7.35±3.73)(12)	0	870±190	2	
Arrhenius plot is linear below 500 K, but exhibits a curvature above 500 K. Measured k's above 500 K are: 552 K: (1.6±0.2)(12); 695 K: (2.4±0.3)(12); 708 K: (2.3±0.2)(12); 736 K: (2.7±0.3)(12); 811 K: (3.0±0.4)(12); 835 K: (3.5±0.9)(12); 944 K: (4.2±1.2)(12).							
[2]) $k_b + k_c$. Flash-photolysis. Resonance-fluorescence. O atoms generated by Flash-photolysis of O_2. $[CH_2{=}CH_2] = (0.01\text{-}2.0)\times10^{15}$ molec.cm^{-3}. $[O] \sim (2\text{-}4)\times10^{10}$ molec.cm^{-3}. P(Ar) = 100 torr.							
82 TEM/WAG2 [3])	RL	298	3.5(-1)			2/2	
$k_b/(k_a + k_b + k_c + k_d)$. P = 0.75 torr.							
82 TEM/WAG2 [3])	RL	298	6.0(-1)			2/2	
$k_b/(k_a + k_b + k_c + k_d)$. P = 3.0 torr.							
[3]) Reaction of O with Ethene in a isothermal discharge-flow reactor, in He. LMR-spectrometry.							
74 PRU/SLA	EX	300	(2.29±0.57)(10)			2	
k_c.							
73 GAE/GLA	ES	300	≈7.0(11)			2	
k_d. Limiting high-pressure k. M = N_2.							
71 ATK/CVE	EX	298	(3.0±2.0)(11)			2	
$k_a + k_b + k_c + k_d$.							
71 STU/NIK2	EX	300	3.79(1)			2	1.15
$k_a + k_b + k_c + k_d$.							
72 ATK/CVE	EX	298-473	8.1(12)	0	976±50	2	
$k_a + k_b + k_c + k_d$.							
72 ATK/CVE	EX	298	(3.0±0.2)(11)			2	
$k_a + k_b + k_c + k_d$.							
72 DAV/HUI	EX	232-500	(3.26±0.18)(12)	0	569±16	2	
$k_a + k_b + k_c + k_d$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
72 STU/NIK3 $k_a + k_b + k_c + k_d$.	EX	298	(3.76±0.38)(11)			2	
74 ATK/PIT1 $k_a + k_b + k_c + k_d$.	EX	300-392	3.37(12)	0	639±101	2	
74 ATK/PIT2 $k_a + k_b + k_c + k_d$.	EX	301	(4.0±0.4)(11)			2	
74 FUR/ATK $k_a + k_b + k_c + k_d$.	EX	298	(4.3±0.5)(11)			2	
74 MCC $(k_a + k_b + k_c + k_d)/k_{ref}$. k_{ref}: O + $(CH_3)2C=CH_2$ → products.	RL	298	(4.2±1.0)(-2)			2/2	
74 SLA/PRU $k_a + k_b + k_c + k_d$.	EX	300	4.64(12)			2	
76 SIN/CVE $k_a + k_b + k_c + k_d$.	EX	298-480	(6.89±0.89)(12)	0	845±47	2	
77 ATK/PIT1 $k_a + k_b + k_c + k_d$.	EX	298-439	5.56(12)	0	742±101	2	1.1
77 ATK/PIT1 $k_a + k_b + k_c + k_d$.	EX	298	(4.58±0.46)(11)			2	

O + CD_2=CD_2 → CDO + CD_3 (a)

→ CD_2=C=O + D_2 (b)

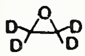
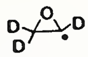
Oxygen atom + Ethene-d_4

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
73 KUR/HUI k_a.	EX	298	4.93(11)			2	1.1
72 STU/NIK3 $k_a + k_b$.	EX	298	(3.37±0.34)(11)			2	
82 NIC/RAV [1]) $k_a + k_b$.	EX	298	(4.48±0.38)(11)			2	
82 NIC/RAV [1]) $k_a + k_b$. Arrhenius plot is linear below 500 K, but exhibits a curvature above 500 K. Measured k's above 500 K are: 523 K: (1.5±0.1)(+12); 595 K: (1.8±0.2)(+12); 708 K: (2.3±0.2)(+12); 811 K: (2.6±0.3)(+12).	EX	298-500	(7.35±3.73)(12)	0	870±190	2	

[1]) Flash-photolysis. Resonance-fluorescence, O atoms generated by Flash-photolysis of O_2.
$[CD_2=CD_2]$ = (0.01-2.0)x10^{15} molec.cm^{-3}.
[O] ~ (2-4)x10^{10} molec.cm^{-3}.
P(Ar) = 100 torr.

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$O(^1D) + CH_2{=}CH_2 \rightarrow$ products							
Oxygen atom + Ethene							
79 KAJ/FUE	RL	298	(1.8±0.4)			2/2	
N_2O photolysis. Gas-chromatography.							
P(Total) = 200 torr.							
k_{ref}: $O(^1D) + N_2O \rightarrow N_2 + O_2$							
$O + CH_3CH_2 \rightarrow H + CH_3CHO$ (a)							
$\rightarrow CH_3 + HCHO$ (b)							
Oxygen atom + Ethyl							
79 HOY/SIE3	RL	298	(5.0±1.0)			2/2	
k_a/k_b. Nozzle reactor. Mass-spectrometry.							
$O + CH_3CH_3 \rightarrow HCHO + H_2 + CH_2$ (a)							
$\rightarrow OH + CH_3CH_2$ (b)							
Oxygen atom + Ethane							
71 AVR/KOL1	EX	313-523	(1.23±0.60)(12)	0	2164±352	2	
k_a.							
71 AVR/KOL1 [1])	EX	313-523	(2.29±1.14)(13)	0	3775±352	2	
71 PAP/ASH [1])	EX	300-365	2.75(13)	0	3271±126	2	1.48
80 TAN/KLE [1])	EX	416-1048	(1.12±0.04)(14)	0	3949±36	2	
Reaction of O atom with Ethane in a Quartz tube.							
Flash-photolysis. Discharge-flow. Resonance-fluorescence. [O] = (1.0-3.0) atoms.cm^{-3}.							
Pressure-independent k.							
82 CAY/PEE [1])	EX	600-1030	(1.9±0.8)(14)	0	4806±159	2	
Discharge flow. Molecular beam sampling.							
Mass-spectrometry.							
[1]) k_b.							
$O(^1D) + CH_3CH_3 \rightarrow OH + CH_3CH_2$							
Oxygen atom + Ethane							
74 MIC/PAR	RL	300	(5.12±0.05)(-1)			2/2	
k_{ref}: $O(^1D) + (CH_3)_4C \rightarrow$ products.							
76 FLE/HUS	EX	300	(4.39±0.48)(14)			2	
81 PRA/PAU	RL	298	(1.24±0.06)(1)			2/2	
Photolysis of O_2/CH_3CH_3 mixtures diluted in He.							
$P(O_2)$ >15 torr. P(He) = 600 torr.							
k_{ref} = $O(^1D) + O_2 \rightarrow O(^3P) + O_2$							
$O + CH{=}C{=}O \rightarrow CO + CO + H$							
Oxygen atom + Ethenyl, 2-oxo-							
73 JON/BAY1	EX	298	(1.2±0.3)(12)			2	

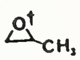
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
O + CH_2=C=O → products							
Oxygen atom + Ethenone (Ketene)							
73 JON/BAY2	EX	296	(1.7±0.4)(11)			2	
74 MAC/THR2	EX	293	(3.4±0.3)(11)			2	
The predominant step is: O + CH_2=C=O → CHO + CHO							
75 GAF/ATK1 [1])	RL	296	(2.4±0.2)(-2)			2/2	
k_{ref}: O + CH=CH$CH_2CH_2CH_2$ → products.							
75 GAF/ATK1 [1])	RN	296	(2.78±0.35)(11)			2	
Determined relative to the reaction: O + CH=CH$CH_2CH_2CH_2$ → products.							
[1]) Competitive technique. Static high-vacuum technique. O atoms generated by Hg-photosensitized dissociation of N_2O. Gas-chromatography.							
O + CH_3CHO → OH + CH_3CO (a)							
→ OH + CH_2CHO (b)							
→ HCHO + H_2 + CO (c)							
→ CO_2 + H_2 + CH_2 (d)							
Oxygen atom + Acetaldehyde							
71 AVR/KOL2 [1])	EX	373-428	1.60(10)	0	604	2	
74 MAC/THR1 [1])	EX	300	(2.88±0.3)(11)			2	
77 MIC/LEE [1])	EX	298	(2.95±0.30)(11)			2	
Discharge-flow. Resonance-fluorescence.							
77 SIN/IRW [1])	ES	298-472	(7.00±1.40)(12)	0	977±77	2	
Phase-shift.							
81 MOR1 [1])	EX	298	(2.9±0.4)(11)			2	
Discharge-flow. Time-of-flight. Mass-spectrometry. Gas-chromatography.							
[1]) k_a.							
77 SIN/IRW	EX	298-472	(7.21±1.49)(12)	0	986±77	2	
k_a + k_b. Phase-shift.							
71 AVR/KOL2	EX	373-428	4.28(12)	0	2919	2	
k_b.							
71 AVR/KOL2	EX	373-428	8.79(10)	0	1158	2	
k_c + k_d.							
O +  **→ OH +** 							
Oxygen atom + Oxirane (Ethylene epoxide)							
78 BOG/HAN [1])	EX	298-691	1.91(12)	0	2642±75	2	1.20
Suggested realistic error limits are: a factor of 3 at 300 K and a factor of 1.5 AT 700 k.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
78 BOG/HAN [1])	RL	482-691	(9.0±2.0)(1)	0	-735±116	2/2	
k_{ref}: O +  → OD + 							
[1]) Discharge-flow. Mass-spectrometry. Photometry.							
O + HC(O)OCH$_3$ → OH + C(O)OCH$_3$							
Oxygen atom + Formic acid methyl ester (Methyl formate)							
81 MOR1	EX	298	(5.6±1.1)(9)			2	
Discharge-flow. Mass-spectrometry.							
82 FAU/HOY	EX	298	(6.4±2.5)(8)			2	
Reaction of O with HCOOCH$_3$ in a flow-system. P = (4-8) torr. [O] = (2.2-6.6)x10^{14} molec.cm^{-3}.							
O + CH$_3$CH$_2$OH → OH + CH$_3$CHOH (a)							
→ OH + CH$_2$CH$_2$OH (b)							
→ OH + CH$_3$CH$_2$O (c)							
→ HCHO + CH$_2$ + H$_2$O (d)							
→ H$_2$O + CH$_3$CHO (e)							
Oxygen atom + Ethanol							
76 OWE/ROS	EX	301-439	4.17(8)	0	758±204	2	1.12
k_a. Flow reactor.							
71 AVR/KOL2 [1])	EX	343-413	1.87(13)	0	2944	2	
81 WAS [1])	EX	298	(1.02±0.18)(11)			2	
Fast-flow reactor. Mass-spectrometry. O atoms generated by a He/O$_2$ mixture, by a microwave-discharge. P(Total) = (3.73-3.88) torr.							
[1]) $k_a + k_b + k_c$.							
71 AVR/KOL2	EX	343-523	3.43(11)	0	1334	2	
k_d.							
71 AVR/KOL2	EX	343-413	7.47(11)	0	1485	2	
k_e.							
O + CD$_3$CD$_2$OH → OD + CD$_3$CDOH (a)							
→ OD + CD$_2$CD$_2$OH (b)							
→ OH + CD$_3$CD$_2$O (c)							
Oxygen atom + Ethan-d$_5$-ol							
81 WAS	EX	298	(6.62±2.41)(10)			2	
$k_a + k_b + k_c$. Fast-flow reactor. Photoionization Mass-spectrometry. O atoms generated in a He/O$_2$ mixture, in a microwave-discharge. P(Total) = 3.73 mtorr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$O + (CH_3)_2O \rightarrow OH + CH_2OCH_3$							
Oxygen atom + Methane, oxybis- (Dimethyl ether)							
72 LEF/MEA	EX	217-366	(5.0±1.0)(12)	0	1434±101	2	
82 FAU/HOY	EX	298	(2.3±0.7)(10)			2	
Reaction of O with $HCOOCH_3$ in a flow-system.							
$[O] = (2.2\text{-}6.0)\times10^{14}$ molec.cm^{-3}.							
P = (41-101) torr.							
O +  $\rightarrow SO + CH_2{=}CH_2$							
Oxygen atom + Thiirane (Ethylene episulfide)							
76 LEE/TIM	EX	298-478	(8.07±0.54)(12)	0	18±20	2	
$O + CH_3CH_2SH \rightarrow OH + CH_3CH_2S$ (a)							
$\rightarrow HS(O) + CH_3CH_2$ (b)							
$\rightarrow H + CH_3CH_2S(O)$ (c)							
$\rightarrow CH_3CH_2S(O)H$ (d)							
Oxygen atom + Ethanethiol (Ethyl mercaptan)							
78 KIR/VET	EX	304-421	(5.75±0.3)(12)	0	391±18	2	
k_a. Initial step in a suggested mechanism.							
Supersonic molecular beam.							
Fast flow-reactor.							
Mass-spectrometry.							
78 SLA/BAI	EX	257	1.93(12)			2	
k_a. Fast flow.							
Photoionization Mass-spectrometry.							
Non-linear Arrhenius behaviour.							
k increasing to 3.19×10^{12} cm^{3}mol^{-1}s^{-1}							
at 495 K.							
81 NIP/SIN	EX	298-560	[1])	[1])	[1])	2	
k_a. Phase-shift technique. $\dot{O}$ atoms generated by							
Hg-photosensitized decomposition of N_2O.							
Gas-chromatography.							
[1]) The Arrhenius plot for k of this reaction is							
sharply curved, but it can be fitted to the							
empirical expression:							
k = (m) + (n),							
where: $(m) = (1.37\pm0.07)\times10^{12}$ and							
$(n) = (8.73\pm4.46)\times10^{13}\exp(-2075\pm268/T)$							
76 SLA/GRA	EX	300	1.69(12)			2	
$k_b + k_c + k_d$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$O + (CH_3)_2S \rightarrow CH_3S(O) + CH_3$ (a)							
$\rightarrow CH_3O + CH_3S$ (b)							
Oxygen atom + Methane, thiobis- (Dimethyl sulfide)							
78 SLA/BAI	EX	252	3.79(13)				2
k_a. Fast flow. Photoionization Mass-spectrometry. Possible non-linear Arrhenius behaviour. k decreasing to: $2.17x10^{13}$ $cm^3mol^{-1}s^{-1}$ at 493 K.							
80 LEE/TAN1	EX	272-472	(7.71±0.72)(12)	0	-404±30		2
k_a. Fast-flow. Resonance-fluorescence.							
81 NIP/SIN	EX	298-560	(6.69±0.72)(12)	0	-460±41		2
k_a. Phase-shift. O atoms formed by Hg-photosensitized decomposition of N_2O. Gas-chromatography.							
74 CAD/WIC [1])	EX	300	3.3(11)				2
76 LEE/TIM [1])	EX	268-424	(8.55±0.42)(12)	0	-366±16		2
76 SLA/GRA [1])	EX	300	3.79(13)				2
[1]) $k_a + k_b$.							
$O + CH_3SSCH_3 \rightarrow$ products							
Oxygen atom + Disulfide, dimethyl-							
80 LEE/TAN2	EX	270-329	(1.28±0.13)(14)	0	0		2
Discharge fast-flow. Resonance-fluorescence. P = (0.52-2.60) torr.							
81 NIP/SIN	EX	298-560	(2.62±0.42)(13)	0	-251±61		2
Phase-shift. O atoms formed by Hg-photosensitized decomposition of N_2O. Gas-chromatography.							
$O + CH_3CN \rightarrow OCN + CH_3$							
Oxygen atom + Acetonitrile							
77 BON/TIM	EX	383-500	(4.38±1.05)(11)	0	2401±101		2
77 BON/TIM [1])	RL	383	(1.2±0.3)				2/2
77 BON/TIM [1])	RL	423	(1.5±0.6)				2/2
[1]) k_{ref}: $O + CD_3CN \rightarrow OCN + CD_3$							
$O + CH_3CH_2NH_2 \rightarrow$ products							
Oxygen atom + Ethanamine							
74 KIR/MER	EX	300-450	(3.9±0.3)(12)	0	529±24		2
Flow reactor. Ultrasonic molecular beam. Mass-spectrometer.							
78 ATK/PIT1 [1])	EX	298-440	6.81(12)	0	642±101		2
78 ATK/PIT1 [1])	EX	299	(8.01±0.84)(11)				2
[1]) Flash-photolysis. NO_2 chemiluminescence.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$O + (CH_3)_2NH \rightarrow$ products							
Oxygen atom + Methanamine, N-methyl-							
74 KIR/MER	EX	300	3.2(12)			2	
Ultrasonic molecular beam.							
Mass-spectrometer.							
Flow reactor.							
78 ATK/PIT1 [1])	EX	298-440	9.15(12)	0	277±101	2	
78 ATK/PIT1 [1])	EX	298	(3.69±0.37)(12)			2	
[1]) NO_2 chemiluminescence.							
Flash-photolysis.							
$O + CH_3CH_2ONO \rightarrow OH + CH_3CHO + NO$							
Oxygen atom + Nitrous acid ethyl ester							
75 DAV/THR	EX	300-410	2.6(13)	0	2442±241	2	
$O + O{=}C{=}C{=}C{=}O \rightarrow CO + CO + CO$							
Oxygen atom + 1,2-Propadiene-1,3-dione							
74 PIL/WAG	EX	250-450	(1.0±0.2)(13)	0	1100±170	2	
$O(^1D) + O{=}C{=}C{=}C{=}O \rightarrow CO + CO + CO$							
Oxygen atom + 1,2-Propadiene-1,3-dione							
73 HEI/HUS2	EX	300	(2.41±0.24)(14)			2	
$O + CH_3C{\equiv}CH \rightarrow CO + CH_3CH$ (a)							
$\rightarrow H + [C_3H_3O]$ (b)							
Oxygen atom + 1-Propyne							
73 HER	EX	275-360	1.6(13)	0	1010	2	
k_a.							
Assumed to pass through a vibrationally excited intermediate: 2-Methyloxirene.							
74 HER/WAG	EX	290-360	1.3(13)	0	1007±201	2	
k_a.							
Isothermal flow-system.							
P = (5-40) torr.							
81 ALE/DUB [1])	EX	295-545	(3.61±1.20)(12)	0	1323±217	2	
k_b.							
81 ALE/DUB [1])	EX	295-545	(8.43±2.42)(12)	0	866±108	2	
$k_{overall}$.							
[1]) Recording of O and H atoms under jet conditions.							
Resonance-fluorescence.							
75 ARR/COX	EX	298-600	(1.39±0.36)(13)	0	981±352	2	
$k_{overall}$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$O + CH_2{=}C{=}CH_2 \rightarrow CO + CH_2{=}CH_2$ (a)							
$\rightarrow H + [C_3H_3O]$ (b)							
Oxygen atom + 1,2-Propadiene (Allene)							
72 HER/WAG	EX	275-375	7.8(12)	0	805	2	1.3
k_a.							
73 HER	EX	275-360	7.8(12)	0	806	2	
k_a. Assumed to pass through a vibrationally excited interediate: Methyleneoxirane.							
74 HAV [1])	RL	298	6.6(-1)			2/2	
k_{ref}: $O + CH_3CH_2CH{=}CH_2 \rightarrow$ products.							
74 HAV [1])	RL	298	1.97(-1)			2/2	
k_{ref}: $O + (CH_3)_2C{=}CH_2 \rightarrow$ products.							
[1]) k_a/k_{ref}. Two vibrationally excited precursors are suggested: Methyleneoxirane, or Cyclopropanone.							
80 ALE/ARU2	EX	295-860	6.63(12)	0	1535±151	2	
k_b. Resonance-fluorescence.							
77 ATK/PIT2 [2])	EX	297-439	1.23(13)	0	883±101	2	1.1
77 ATK/PIT2 [2])	EX	298	(6.44±0.66)(11)			2	
79 NIP/SIN [2])	EX	297-574	(1.80±0.25)(13)	0	941±54	2	
Modulated, Hg-sensitized N_2O decomposition. Phase-shift.							
80 ALE/ARU2 [2])	EX	295-860	1.02(13)	0	956±101	2	
Resonance-fluorescence.							
[2]) $k_{overall}$.							
$O + CH_3CH{=}CH_2 \rightarrow$  (a)							
$\rightarrow OH + CH_2CH{=}CH_2$ (b)							
$\rightarrow CH_3CHO + CH_2$: (c)							
$\rightarrow HCHO + H_2 + CH_2{=}C$: (d)							
Oxygen atom + 1-Propene							
72 KUR1	EX	201-424	(2.51±0.20)(12)	0	38±22	2	
k_a, or possibly k_b.							
73 GAE/GLA	RN	300	≈2.9(12)			2	
k_a. M = N_2. Estimated k.							
73 HER	EX	275-360	4.2(12)	0	253	2	
k_a.							
71 AVR/KOL1	EX	373-583	7.23(12)	0	2718	2	
k_b.							
71 AVR/KOL1	EX	361-483	5.06(10)	0	755	2	
k_c.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
71 AVR/KOL1	EX	361-483	5.42(11)	0	1258	2	
k_d.							
71 ATK/CVE [1])	EX	298	(1.18±0.06)(12)			2	
71 STU/NIK2 [1])	EX	300	2.17(12)			2	1.1
72 ATK/CVE [1])	EX	298-473	6.7(12)	0	518±50	2	
72 ATK/CVE [1])	EX	298	(1.18±0.06)(12)			2	
73 GAE/GLA [1])	RN	300	≈2.7(12)			2	
74 ATK/PIT1 [1])	EX	300-392	2.08(12)	0	0±151	2	
74 ATK/PIT2 [1])	EX	300	(2.01±0.22)(12)			2	
74 FUR/ATK [1])	EX	298	(2.02±0.17)(12)			2	
75 GAF/ATK1 [1])	RN	296	2.10(12)			2	
76 SIN/CVE [1])	EX	298-480	(7.58±0.42)(12)	0	363±20	2	
77 ATK/PIT1 [1])	EX	298-439	6.32(12)	0	259±101	2	1.1
77 ATK/PIT1 [1])	EX	299	(2.69±0.27)(12)			2	
77 MIC/LEE [1])	EX	298	(2.38±0.25)(12)			2	
Resonance-fluorescence.							
Discharge-flow.							
80 SUG/ISH1 [1])	EX	296	(2.83±0.18)(12)			2	
Resonance-absorption.							
Pulse-radiolysis.							
P = (50-950) torr.							
82 BIE/HAR [1])	EX	298	(2.65±0.36)(12)			2	
Photoionization Mass-spectrometry.							
Discharge-flow system.							
P(Total) ~ 2 torr.							
[1]) $k_{overall}$.							
74 MCC	RL	298	(2.0±0.5)(-1)			2/2	
$k_{overall}/k_{ref}$.							
k_{ref}: O + $(CH_3)_2C{=}CH_2$ → products.							
75 GAF/ATK1	RL	296	(1.81±0.10)(-1)			2/2	
$k_{overall}/k_{ref}$.							
Competitive technique. Static system.							
O-atoms generated by Hg-photosensitized dissociation of N_2O.							
Gas-chromatography.							
k_{ref}: O + $CH{=}CHCH_2CH_2CH_2$ → products.							

$O(^1D) + CH_3CH{=}CH_2$ → products

Oxygen atom + 1-Propene

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
79 KAJ/FUE	RL	298	(5.0±1.0)			2/2	
N_2O photolysis. Gas-chromatography.							
k_{ref}: $O(^1D) + N_2O \rightarrow N_2 + O_2$							
P(Total) = 200 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
O +  → OH + 							
Oxygen atom + Cyclopropane							
76 LEE	EX	298-478	(3.31±0.42)(12)	0	3120±60	2	
$O + CH_3CH_2CH_2 \rightarrow H + CH_3CH_2CHO$ (a)							
$\rightarrow HCHO + CH_3CH_2$ (b)							
Oxygen atom + Propyl							
79 HOY/SIE3	RL	298	(6.0±1.5)			2/2	
k_a/k_b. Low pressure nozzle reactor. Mass-spectrometry.							
$O + (CH_3)_2CH \rightarrow H + (CH_3)_2CO$ (a)							
$\rightarrow CH_3 + CH_3CHO$ (b)							
Oxygen atom + Ethyl, 1-methyl- (Isopropyl)							
79 HOY/SIE3	RL	298	(1.0±0.2)			2/2	
k_a/k_b. Low pressure nozzle reactor. Mass-spectrometry.							
$O + CH_3CH_2CH_3 \rightarrow OH + (CH_3)_2CH$ (a)							
$\rightarrow OH + CH_3CH_2CH_2$ (b)							
Oxygen atom + Propane							
75 HAR/BUR	EX	329	(3.9±0.7)(10)			2	
$k_a + k_b$.							
81 JEW/HOL	EX	306	(4.7±0.8)(9)			2	
$k_a + k_b$. Discharge-flow reactor. O atoms produced by reacting N with NO. Gas-chromatography.							
$O(^1D) + CH_3CH_2CH_3 \rightarrow OH + (CH_3)_2CH$ (a)							
$\rightarrow OH + CH_3CH_2CH_2$ (b)							
Oxygen atom + Propane							
75 GAU/SNE [1])	RN	300	4.82(14)			2	
76 FLE/HUS [1])	EX	300	(5.72±0.60)(14)			2	
[1]) $k_a + k_b$.							
74 MIC/PAR	RL	300	(6.52±0.27)(-1)			2/2	
$(k_a + k_b)/k_{ref}$. k_{ref}: $O(^1D) + (CH_3)_4C \rightarrow$ products.							
75 GAU/SNE	RL	300	(1.08±0.20)(1)			2/2	
$(k_a + k_b)/k_{ref}$. k_{ref}: $O(^1D) + O_2 \rightarrow O + O_2(^1\Sigma_g^+)$							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 PRA/PAU	RL	298	(1.34±0.04)(1)			2/2	
$(k_a + k_b)/k_{ref}$. Photolysis of O_2/Propane mixtures in He. $P(O_2)$ >15 torr. P(He) = 600 torr. $k_{ref} = O(^1D) + O_2 \rightarrow O(^3P) + O_2$							
$O + CH_2{=}CHCHO \rightarrow$ products							
Oxygen atom + 2-Propenal (Acrolein)							
72 CAD/LIN	EX	300-480	(4.7±1.6)(12)	0	1007±151	2	
75 GAF/ATK1	RL	296	(2.0±0.2)(-2)			2/2	
k_{ref}: O +  → products.							
75 GAF/ATK1	RN	296	(2.3±0.23)(11)			2	
75 GAF/ATK2	RL	296	(2.0±0.2)(-2)			2/2	
75 GAF/ATK2 [1])	RN	296-423	1.4(13)	0	1208±136	2	
75 GAF/ATK2 [1])	RN	296	(2.32±0.23)(11)			2	
[1]) Competitive technique. Static system. O atoms generated by Hg-photosensitized dissociation of N_2O. Gas-chromatography. k determined relative to the reaction: O +  → products, and placed on an absolute basis by using the k expression from the literature, for the reaction: $O + CH_3CH{=}CH_2 \rightarrow$ products. Supersedes 75 GAF/ATK1.							
$O + CH_2{=}CHOCH_3 \rightarrow$ products							
Oxygen atom + Ethene, methoxy-							
77 ATK/PIT2	EX	297-439	3.81(12)	0	-38±101	2	1.1
77 ATK/PIT2	EX	297	(4.30±0.43)(12)			2	
$O + CH_3CH_2CHO \rightarrow OH + CH_3CH_2C)$ (a)							
$\rightarrow OH + CH_3CHCHO$ (b)							
$\rightarrow OH + CH_2CH_2CHO$ (c)							
Oxygen atom + Propanal							
72 CAD/LIN	EX	300-480	(8.5±2.8)(13)	0	1912±252	2	
$k_a + k_b + k_c$.							
77 SIN/IRW [1])	ES	298-472	(5.67±0.51)(12)	0	777±31	2	
k_a.							
77 SIN/IRW [1])	EX	298-472	(7.78±0.75)(12)	0	869±33	2	
$k_a + k_b + k_c$.							
[1]) Phase-shift technique.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$O + (CH_3)_2CO \rightarrow OH + CH_3COCH_2$							
Oxygen atom + 2-Propanone							
72 AZA/GYU	EX	873	8.43(10)			2	
76 AMB/BRA	EX	298-621	4.27(12)	0	2863±84	2	1.26
Discharge-flow. ESR detection.							
76 LEE	EX	298-478	(1.86±0.37)(12)	0	2536±101	2	
77 LEE/TIM	EX	298-478	(1.9±0.4)(12)	0	2536±91	2	
82 FAU/HOY	EX	298	(6.8±2.9)(8)			2	
Reaction of O with $HCOOCH_3$ in a flow-system. $[O] = (3.3-4.0)x10^{14}$ molec.cm^{-3}. P = (5-10) torr.							
$O + HC(O)OCH_2CH_3 \rightarrow OH + C(O)OCH_2CH_3$							
Oxygen atom + Formic acid ethyl ester (Ethyl formate)							
82 FAU/HOY	EX	298	(1.0±0.4)(9)			2	
Reaction of O with $HCOOCH_3$ in a flow-system. $[O] = (2.2-7.2)x10^{14}$ molec.cm^{-3}. P = (5-17) torr.							
$O + CH_3C(O)OCH_3 \rightarrow OH + CH_3C(O)OCH_2$ (a)							
$\rightarrow OH + CH_2C(O)OCH_3$ (b)							
Oxygen atom + Acetic acid methyl ester (Methyl acetate)							
82 FAU/HOY	EX	298	(4.9±2.0)(8)			2	
$k_a + k_b$. Reaction of O with $HCOOCH_3$ in a flow-system. P = (4-8) torr. $[O] = (3.3-7.8)x10^{14}$ molec.cm^{-3}.							
$O + CH_3CH_2CH_2OH \rightarrow OH + CH_3CH_2CHOH$ (a)							
$\rightarrow OH + CH_3CH_2CH_2O$ (b)							
Oxygen atom + 1-Propanol							
79 AYU/ROS	EX	463-308	7.92(11)	0	1500±165	2	1.10
$k_a + k_b$. Initial steps in a suggested mechanism. Fast-flow system. Microwave-discharge. Gas-chromatography. Mass-spectrometry.							
$O + (CH_3)_2CHOH \rightarrow OH + (CH_3)_2COH$ (a)							
$\rightarrow OH + (CH_3)_2CHO$ (b)							
Oxygen atom + 2-Propanol							
79 AYU/ROS	EX	306-428	3.19(11)	0	1100±143	2	1.07
$k_a + k_b$. Initial steps in a suggested mechanism. Gast-flow system. Microwave-discharge. Gas-chromatography. Mass-spectrometry.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$O + CH_3CH_2CH_2SH \rightarrow OH + CH_3CH_2CH_2S$							
Oxygen atom + 1-Propanethiol (Propyl mercaptan)							
78 KIR/VET	EX	303-421	(8.33±0.54)(12)	0	494±22	2	
Initial step in a suggested mechanism.							
Supersonic molecular beam.							
Fast-flow reactor.							
Mass-spectrometry.							
$O + (CH_3)_3N \rightarrow$ products							
Oxygen atom + Methanamine, N,N-dimethyl-							
74 KIR/MER	EX	300	9.4(12)			2	
Ultrasonic molecular beam.							
Mass-spectrometer.							
Flow reactor.							
78 ATK/PIT1 [1])	EX	298-440	6.50(12)	0	209±101	2	
78 ATK/PIT1 [1])	EX	298	(1.33±0.13)(13)			2	
[1]) NO_2 chemiluminescence.							
Flash-photolysis.							
$O + CH{\equiv}CC{\equiv}CH \rightarrow$ products							
Oxygen atom + 1,3-Butadiyne							
73 JON/BAY2	EX	296	(1.6±0.5)(12)			2	
75 HOM/SCH	EX	297-343	8.0(13)	0	1230	2	
$O + CH_2{=}CHC{\equiv}CH \rightarrow$ products							
Oxygen atom + 1-Buten-3-yne							
75 HOM/SCH	EX	295	(2.95±0.10)(12)			2	
$O + CH_3CH_2C{\equiv}CH \rightarrow CO + CH_3CH{=}CH_2$							
Oxygen atom + 1-Butyne							
75 HER/WAG1	EX	290-357	1.7(13)	0	800	2	
77 UMS/LIN	EX	298	5.0(11)			2	
CO laser resonant absorption.							
NO_2 Flash-photolysis.							
$O + CH_3C{\equiv}CCH_3 \rightarrow CO + CH_3CH{=}CH_2$							
Oxygen atom + 2-Butyne							
75 HER/WAG2	ES	290-360	6.0(13)	0	900	2	
77 UMS/LIN	EX	298	1.6(12)			2	
CO laser resonant absorption.							
NO_2 Flash-photolysis.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
O + $CH_3CH{=}C{=}CH_2$ → products							
Oxygen atom + 1,2-Butadiene							
74 HAV	RL	298	1.39			2/2	
k_{ref}: O + $CH_3CH_2CH{=}CH_2$ → products.							
74 HAV	RL	298	4.3(-1)			2/2	
k_{ref}: O + $(CH_3)_2C{=}CH_2$ → products.							
O + $CH_2{=}CHCH{=}CH_2$ → products							
Oxygen atom + 1,3-Butadiene							
74 MCC	RL	298	(9.6±3.5)(-1)			2/2	
k_{ref}: O + $(CH_3)_2C{=}CH_2$ → products.							
77 ATK/PIT2	EX	297-439	1.36(13)	0	53±101	2	1.1
77 ATK/PIT2	EX	297	(1.17±0.11)(13)			2	
79 NIP/SIN	EX	299-488	(1.25±0.13)(13)	0	0	2	
Hg-sensitized N_2O decomposition. Phase-shift.							
80 SUG/ISH1	EX	296	(1.20±0.12)(13)			2	
Pulse-radiolysis. Resonance-absorption. P = (50-950) torr.							
O + $CH_3CH_2CH{=}CH_2$ → products							
Oxygen atom + 1-Butene							
71 ATK/CVE	EX	298	(1.55±0.12)(12)			2	
71 HUI/HER	EX	259-493	(8.79±0.90)(12)	0	382±30	2	
72 ATK/CVE	EX	298-473	6.1(12)	0	408±50	2	
72 ATK/CVE	EX	298	(1.55±0.12)(12)			2	
72 HUI/HER2	EX	190-491	[1])	[1])	[1])	2	1.6
Flash-photolysis. Resonance-fluorescence. [1]) Curved Arrhenius plot. Authors give two additive empirical exponential terms: $k_a = (2.23\pm1.08)\times10^{12}\exp(-25\pm105/T)$ and $k_b = (9.64\pm5.42)\times10^{12}\exp(-991\pm216/T)$ in units of $cm^3mol^{-1}s^{-1}$. They ascribe k_a O-atom addition and k_b to H-abstraction.							
74 FUR/ATK	EX	298	(2.40±0.32)(12)			2	
74 HAV	RL	298	2.3(-1)			2/2	
k_{ref}: O + $(CH_3)_2C{=}CH_2$ → products.							
74 MCC	RL	298	(1.8±0.7)(-1)			2/2	
k_{ref}: O + $(CH_3)_2C{=}CH_2$ → products.							
76 SIN/CVE	EX	298-480	(7.21±0.44)(12)	0	333±23	2	
77 ATK/PIT1	EX	298-439	8.37(12)	0	335±101	2	1.1
77 ATK/PIT1	EX	299	(2.73±0.28)(12)			2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
80 SUG/ISH1	EX	296	(2.83±0.30)(12)			2	
Pulse-radiolysis. Resonance-absorption.							
P = (50-950) torr.							
O + cis-CH_3CH=$CHCH_3$ → products							
Oxygen atom + 2-Butene, (Z)-							
73 DAV/HUI	EX	268-443	(5.84±0.58)(12)	0	-161±32	2	
74 FUR/ATK	EX	298	(9.00±1.76)(12)			2	
74 HAV	RL	298	9.5(-1)			2/2	
k_{ref}: O + $(CH_3)_2C$=CH_2 → products.							
74 MCC	RL	298	(7.9±2.5)(-1)			2/2	
k_{ref}: O + $(CH_3)_2C$=CH_2 → products.							
76 SIN/CVE	EX	298-480	(6.68±0.23)(12)	0	-135±13	2	
77 ATK/PIT1	EX	298-439	7.29(12)	0	-118±101	2	1.1
77 ATK/PIT1	EX	299	(1.09±0.11)(13)			2	
80 SUG/ISH1	EX	296	(1.20±0.18)(13)			2	
Pulse-radiolysis. Resonance-absorption.							
P = (50-950) torr.							
$O(^1D)$ + cis-CH_3CH=$CHCH_3$ → products							
Oxygen atom + 2-Butene, (Z)-							
79 KAJ/FUE	RL	298	(7.2±1.5)			2/2	
N_2O photolysis. Gas-chromatography.							
k_{ref}: $O(^1D) + N_2O \rightarrow N_2 + O_2$							
P(Total) = 200 torr.							
O + trans-CH_3CH=$CHCH_3$ → products							
Oxygen atom + 2-Butene, (E)-							
74 MCC	RL	298	(1.25±0.35)			2/2	
k_{ref}: O + $(CH_3)_2C$=CH_2 → products.							
77 ATK/PIT1	EX	298-439	1.36(13)	0	-10±101	2	1.1
77 ATK/PIT1	EX	299	(1.42±0.14)(13)			2	
80 SUG/ISH1	EX	296	(1.39±0.18)(13)			2	
Pulse-radiolysis. Resonance-absorption.							
P = (50-950) torr.							
$O(^1D)$ + trans-CH_3CH=$CHCH_3$ → products							
Oxygen atom + 2-Butene, (E)-							
79 KAJ/FUE	RL	298	(4.9±1.0)			2/2	
N_2O photolysis. Gas-chromatography.							
k_{ref}: $O(^1D) + N_2O \rightarrow N_2 + O_2$							
P(Total) = 200 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$O + (CH_3)_2C{=}CH_2 \rightarrow$ products							
Oxygen atom + 1-Propene, 2-methyl-							
71 ATK/CVE	EX	298	(6.2±1.5)(12)			2	
72 ATK/CVE	EX	298-473	6.3(12)	0	0±201	2	
72 ATK/CVE	EX	298	(6.2±1.5)(12)			2	
74 FUR/ATK	EX	298	(9.85±1.34)(12)			2	
76 SIN/CVE	EX	298-480	(8.74±0.53)(12)	0	-51±22	2	
77 ATK/PIT1	EX	298-439	1.06(13)	0	43±101	2	1.1
77 ATK/PIT1	EX	299	(9.22±0.11)(12)			2	
80 SUG/ISH1	EX	296	(1.02±0.12)(13)			2	
Pulse-radiolysis. Resonance-absorption.							
P = (50-950) torr.							
$O(^1D) + (CH_3)C{=}CH_2 \rightarrow$ products							
Oxygen atom + 1-Propene, 2-methyl-							
79 KAJ/FUE	RL	298	(3.7±1.0)			2/2	
N_2O photolysis. Gas-chromatography.							
P(Total) = 200 torr.							
k_{ref}: $O(^1D) + N_2O \rightarrow N_2 + O_2$							
$O + (CH_3)_2C{=}CHD \rightarrow$ products							
Oxygen atom + 1-Propene-1-d_1, 2-methyl-							
76 HAV/HUN	RL	298-302	(1.03±0.01)	0	0	2/2	
k_{ref}: $O + (CH_3)_2C{=}CH_2 \rightarrow$ products.							
$O + (CH_3)_2C{=}CD_2 \rightarrow$ products							
Oxygen atom + 1-Propene, 1,1-d_2, 2-methyl-							
76 HAV/HUN	RL	298-302	(1.05±0.01)	0	0	2/2	
k_{ref}: $O + (CH_3)_2C{=}CH_2 \rightarrow$ products.							
$O + (CH_3)_2CHCH_2 \rightarrow H + (CH_3)_2CHCHO$ (a)							
$\rightarrow HCHO + (CH_3)_2CH$ (b)							
Oxygen atom + Propyl, 2-methyl-							
79 HOY/SIE3	RL	298	(7.0±2.0)			2/2	
k_a/k_b. Low pressure nozzle reactor.							
$O + (CH_3)_3C \rightarrow OH + (CH_3)_2C{=}CH_2$ (a)							
$\rightarrow CH_3 + (CH_3)_2CO$ (b)							
Oxygen atom + Ethyl, 1,1-dimethyl-							
80 WAS/BAY	RN	297	(5.24±1.14)(14)			2	
$k_a + k_b$. Fast-flow reactor system. Photoionization Mass-spectrometer. k measurements by Stern-Volmer plots. P(Total) = (1.8-5.7) torr.							

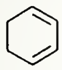
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$O + CH_3CH_2CH_2CH_3 \rightarrow OH + CH_3CH_2CH_2CH_2$ (a)							
$\rightarrow OH + CH_3CH_2CHCH_3$ (b)							
Oxygen atom + Butane							
71 PAP/ASH [1])	EX	300-365	1.66(13)	0	2280±121	2	1.45
74 ATK/PIT2 [1])	EX	301	(1.88±0.20)(10)			2	
77 ATK/PER1 [1])	EX	298-439	1.51(13)	0	2099±151	2	
77 ATK/PER1 [1])	EX	298	(1.32±0.24)(10)			2	
[1]) $k_a + k_b$.							
$O(^1D) + CH_3CH_2CH_2CH_3 \rightarrow$ products							
Oxygen atom + Butane							
74 MIC/PAR	RL	300	(8.63±0.33)(-1)			2/2	
k_{ref}: $O(^1D) + (CH_3)_4C \rightarrow$ products.							
$O + (CH_3)_3CH \rightarrow OH + (CH_3)_3C$ (a)							
$\rightarrow OH + (CH_3)_2CHCH_2$ (b)							
Oxygen atom + Propane, 2-methyl-							
80 WAS/BAY	EX	297	(6.02±1.20)(10)			2	
$k_a + k_b$. Fast-flow. Photoionization Mass-spectrometer. P(Total) = (1.8-5.7) torr.							
82 JEW/HOL	EX	307	(7.9±1.4)(10)			2	
$k_a + k_b$. Reaction of O with Isobutane. Discharge-flow. Gas-chromatography. P = (2-4) torr.							
$O + CH_3CH{=}CHCHO \rightarrow$ products							
Oxygen atom + 2-Butenal (Crotonaldehyde)							
74 CAD/WIC	EX	~300	2.0(13)	0	1158	2	
74 CAD/WIC	EX	300	5.0(11)			2	
75 GAF/ATK1	RL	296	(4.4±0.5)(-2)			2/2	
k_{ref}: O +  → products.							
75 GAF/ATK1	RN	296	(5.10±0.58)(11)			2	
75 GAF/ATK2	RL	296	(4.4±0.5)(-2)			2/2	
75 GAF/ATK2 [1])	RN	296-423	1.5(13)	0	996±65	2	
75 GAF/ATK2 [1])	RN	296	(5.10±0.58)(11)			2	
[1]) Competitive technique. Static system. O atoms generated by Hg-photosensitized dissociation of N_2O. Gas-chromatography. k determined relative to the reaction:							
O +  → products,							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
and placed on an absolute basis by using the k expression from the literature, for the reaction: O + $CH_3CH=CH_2$ → products. Supersedes 75 GAF/ATK1.							
O + $CH_3CH_2CH_2CHO$ → OH + $CH_3CH_2CH_2CO$ (a)							
→ OH + CH_3CH_2CHCHO (b)							
→ OH + CH_3CHCH_2CHO (c)							
→ OH + $CH_2CH_2CH_2CHO$ (d)							
Oxygen atom + Butanal							
74 JAF/WAN [1])	ES	298	1.5(11)			2	
77 SIN/IRW [1])	ES	298-472	(6.23±0.13)(12)	0	719±8	2	
Phase-shift.							
[1]) k_a.							
77 SIN/IRW	EX	298-472	(9.99±0.56)(12)	0	857±20	2	
$k_a + k_b + k_c + k_d$.							
Phase-shift.							
O + $(CH_3)_2CHCHO$ → OH + $(CH_3)_2CHCO$ (a)							
→ OH + $(CH_3)_2CCHO$ (b)							
→ OH + $CH_2CH(CH_3)CHO$ (c)							
Oxygen atom + Propanal, 2-methyl-							
77 SIN/IRW	ES	298-472	(7.18±0.87)(12)	0	700±43	2	
k_a.							
Phase-shift.							
77 SIN/IRW	EX	298-472	(7.92±1.02)(12)	0	727±46	2	
$k_a + k_b + k_c$.							
Phase-shift.							
O + $(CH_3CH_2)_2O$ → OH + $CH_3CHOCH_2CH_3$ (a)							
→ OH + $CH_2CH_2OCH_2CH_3$ (b)							
Oxygen atom + Ethane, 1,1'-oxybis-							
82 FAU/HOY	EX	298	(6.7±3.5)(10)			2	
$k_a + k_b$. Reaction of O with $HCOOCH_3$ in a flow-system. P = (12-50) torr. [O] = (3.3-4.0)x10(14) molec.cm^{-3}.							
O +  **→ products**							
Oxygen atom + Thiophene							
81 LEE/TAN	EX	262-448	(2.01±0.20)(13)	0	569±30	2	
Discharge-flow system. Resonance-fluorescence. $[O]_o = (0.5-1.0)x10^{11}$ atoms.cm^{-3}.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$O + CH_3CH_2CH_2CH_2SH \rightarrow OH + CH_3CH_2CH_2CH_2S$							
Oxygen atom + 1-Butanethiol (Butyl mercaptan)							
78 KIR/VET	EX	306-419	(5.78±0.33)(12)	0	321±19	2	
Initial step in a suggested mechanism. Supersonic molecular beam. Fast flow-reactor. Mass-spectrometry.							
$O + NCC{\equiv}CCN \rightarrow NCCO + CCN$							
Oxygen atom + 2-Butynedinitrile							
72 HAN/OBE1	EX	298	(6.63±1.81)(8)			2	
Predominant first step. Discharge-flow reactor. Time-of-flight Mass-spectrometry. P(Total) = 137 torr.							
76 HAN/MYE	EX	300-408	7.94(12)	0	2768±554	2	5.01
Predominant first step. Discharge-flow reactor. Time-of-flight Mass-spectrotry. P = (0.73-1.10) torr.							
$O + CH_3CH_2CH_2C{\equiv}CH \rightarrow CO^{\dagger} + CH_3CH_2CH_2CH{:}$							
Oxygen atom + 1-Pentyne							
80 SHA/BUR	EX	293	(4.9±0.6)(11)			2	
Flash-photolysis. CO laser Resonance-absorption.							
$O + (CH_3)_2C{=}C{=}CH_2 \rightarrow$ products							
Oxygen atom + 1,2-Butadiene, 3-methyl-							
74 HAV	RL	298	7.6(-1)			2/2	
k_{ref}: $O + (CH_3)_2C{=}CHCH_3 \rightarrow$ products.							
O +  → products							
Oxygen atom + Cyclopentene							
75 GAF/ATK2	RN	296-423	5.6(12)	0	-216±40	2	
Competitive technique. Static system. O atoms generated by Hg-photosensitized dissociation of N_2O. Gas-chromatography. k placed on an absolute basis by using the k expression from theliterature, for the reaction: $O + CH_3CH{=}CH_2 \rightarrow$ products. Supersedes 75 GAF/ATK1.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
O +  → products							
Oxygen atom + Spiropentane							
72 HUI/HER3	EX	337-652	3.98(13)	0	2890±100	2	1.26
Discharge-flow. Mass-spectrometry.							
O + $CH_3CH_2CH_2CH{=}CH_2$ → products							
Oxygen atom + 1-Pentene							
82 BIE/HAR	EX	298	(2.83±0.30)(12)			2	
Photoionization Mass-spectrometry.							
Discharge-flow.							
P(Total) ~ 2 torr.							
O + $(CH_3)_2CHCH{=}CH_2$ → products							
Oxygen atom + 1-Butene, 3-methyl-							
74 MCC	RL	298	(2.2±0.5)(-1)			2/2	1.2
k_{ref}: O + $(CH_3)_2C{=}CH_2$ → products.							
76 SIN/CVE	EX	298-480	(6.02±0.44)(12)	0	266±26	2	
O + $(CH_3)_2C{=}CHCH_3$ → products							
Oxygen atom + 2-Butene, 2-methyl-							
74 FUR/ATK	EX	298	(3.11±0.30)(13)			2	
78 ATK/PIT2	EX	299-441	1.51(13)	0	-191±101	2	
NO_2 chemiluminescence.							
Flash-photolysis.							
80 SUG/ISH1	EX	296	(3.31±0.30)(13)			2	
Resonance-absorption.							
Pulse-radiolysis.							
P = (50-950) torr.							
$O(^1D)$ + $(CH_3)_2C{=}CHCH_3$ → products							
Oxygen atom + 2-Butene, 2-methyl-							
79 KAJ/FUE	RL	298	(8.9±2.0)			2/2	
N_2O photolysis. Gas-chromatography.							
P(Total) = 200 torr.							
k_{ref}: $O(^1D)$ + N_2O → N_2 + O_2							
O +  → products							
Oxygen atom + Cyclopentane							
72 HUI/HER3	EX	337-652	1.26(14)	0	2210±100	2	1.23
Discharge-flow. Mass-spectrometry.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$O + (CH_3)_3CCH_2 \rightarrow H + (CH_3)_3CCHO$ (a)							
$\rightarrow HCHO + (CH_3)_3C$ (b)							
Oxygen atom + Propyl, 2,2-dimethyl-							
79 HOY/SIE1	RN	300	3.3(13)			2	
$k_a + k_b$.							
Low pressure nozzle reactor.							
Mass-spectrometry.							
P = (0.01-0.2)torr.							
$O(^1D) + CH_3CH_2CH_2CH_2CH_3 \rightarrow$ products							
Oxygen atom + Pentane							
74 MIC/PAR	RL	300	(9.88±0.32)(-1)			2/2	
k_{ref}: $O(^1D) + (CH_3)_4C \rightarrow$ products.							
$O + (CH_3)_4C \rightarrow OH + (CH_3)_3CCH_2$							
Oxygen atom + Propane, 2,2-dimethyl- (Neopentane)							
82 MIC/KEI	EX	415-922	(9.15±1.69)(13)	0	3595±99	2	
Reaction of O atoms with Neopentane in Ar/N_2 buffer gas.							
Discharge-flow. Resonance-fluorescence.							
O atoms generated by the photodecomposition of O_2.							
P(Neopentane) = (44.3-215) mtorr.							
P(Total) = (30-100) torr.							
P(O_2) = (0.40-6.0) torr.							
$O(^1D) + (CH_3)_4C \rightarrow$ products							
Oxygen atom + Propane, 2,2-dimethyl- (Neopentane)							
71 SCO/CVE	RL	296	(4.29±0.25)			2/2	
k_{ref}: $O(^1D) + N_2O \rightarrow O_2 + N_2$ (a)							
$\rightarrow NO + NO$ (b)							
75 GAU/SNE	RL	300	(1.4±0.2)(1)			2/2	
k_{ref}: $O(^1D) + O_2 \rightarrow O + O_2(^1\Sigma_g^+)$							
75 GAU/SNE	RN	300	6.26(14)			2	
76 FLE/HUS	EX	300	(7.41±0.78)(14)			2	
$O + CH_3CH_2CH_2CH_2CH_2SH \rightarrow OOH + CH_3CH_2CH_2CH_2CH_2S$							
Oxygen atom + 1-Pentanethiol (Pentyl mercaptan)							
78 KIR/VET	EX	302-409	(6.18±0.35)(12)	0	328±19	2	
Initial strep in a suggested mechanism.							
Supersonic molecular beam.							
Fast flow-reactor.							
Mass-spectrometry.							

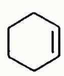
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
O +  → **products**							
Oxygen atom + 1,3-Cyclohexadiene							
75 GAF/ATK2 [1])	RN	296-423	5.1(12)	0	-664±91	2	
75 GAF/ATK2 [1])	RN	296	(5.03±0.23)(13)			2	

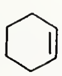
[1]). Competitive technique. Static system. O atoms generated by Hg-photosensitized dissociation of N_2O. Gas-chromatography.
k determined relative to the reaction:

O +  → products,

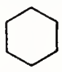
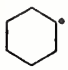
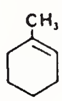
and placed on an absolute basis by using the k expression from the literature, for the reaction:
O + $CH_3CH{=}CH_2$ → products.
Supersedes 75 GAF/ATK1.

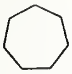
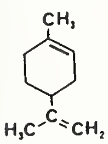
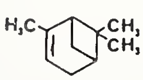
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
O + $CH_3CH_2CH_2CH_2C{\equiv}CH$ → $CO^{\dagger}$ + $CH_3CH_2CH_2CH_2CH$:							
Oxygen atom + 1-Hexyne							
80 SHA/BUR	EX	293	(3.6±0.4)(11)			2	
Flash-photolysis. CO laser Resonance-absorption.							
O + $(CH_3)_2C{=}C{=}CHCH_3$ → products							
Oxygen atom + 2,3-pentadiene, 2-methyl-							
74 HAV	RL	298	3.03			2/2	

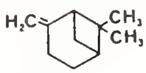
k_{ref}: O +  → products.

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
O +  → **products**							
Oxygen atom + Cyclohexene							
82 WAS/TAK	EX	298	(1.20±0.03)(13)			2	

Reaction of Cyclohexene with O atoms in a fast flow-reactor.
O atoms generated by a microwave-discharge in a He/O_2 mixture.
Mass-spectrometry.
P(Cyclohexene) = (0.004-0.012) mtorr.
$[O_2]_o$ = (0.266-0.560) mtorr.
P(Total) = 3.7 torr.

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$O + (CH_3)_2C{=}C(CH_3)_2 \rightarrow$ products							
Oxygen atom + 2-Butene, 2,3-dimethyl-							
74 FUR/ATK	EX	298	(4.44±0.41)(13)			2	
73 DAV/HUI	EX	298-355	(3.36±0.64)(12)	0	-790±60	2	
75 SIN/FUR	EX	298-481	(1.24±0.12)(13)	0	-390±38	2	
O +  → OH + 							
Oxygen atom + Cyclohexane → Hydroxyl + Cyclohexyl							
75 KIM/TIM	EX	344-513	(3.2±0.6)(14)	0	2214±201	2	
Reaction of Oxygen atom with Cyclohexane in an ESR-flow apparatus. Mass-spectrometry. [Cyclohexane] = (1.8-6.0)10^{13} molec.cm^{-3}. P = (0.33-0.94) torr.							
82 WAS/TAK	EX	298	(5.84±0.36)(10)			2	
Reaction of Cyclohexane with O atoms in a fast-flow reactor. O atoms generated by a microwave-discharge in a He/O_2 mixture. Mass-spectrometry. P(Cyclohexane) = (0.010-0.028) mtorr. P(Total) = (3.8-3.9) torr. $[O_2]_o$ = (13.7-16.1) mtorr.							
72 HUI/HER3	EX	337-652	2.23(14)	0	2350±100	2	1.23
k_b. Discharge-flow. Mass-spectrometry.							
O +  → products							
Oxygen atom + Cyclohexene, 1-methyl-							
75 GAF/ATK2 [1])	RN	296-423	5.3(12)	0	-669±111	2	
75 GAF/ATK2 [1])	RN	296	(4.89±0.20)(13)			2	
[1]) Competitive technique. Static system. O atoms generated by Hg-photosensitized dissociation of N_2O. Gas-chromatography. k determined relative to the reaction: O +  → products, and placed on an absolute basis by using the k′ expression from the literature, for the reaction: $O + CH_3CH{=}CH_2 \rightarrow$ products. Supersedes 75 GAF/ATK1.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
O +  → products							
Oxygen atom + Cycloheptane							
72 HUI/HER3	EX	337-652	2.88(14)	0	2230±100	2	1.3
Discharge-flow. Mass-spectrometry.							
$O(^1D) + (CH_3)_3CCH_2CH(CH_3)_2$ → products							
Oxygen atom + Pentane, 2,2,4-trimethyl-							
74 MIC/PAR	RL	300	(1.257±0.041)			2/2	
k_{ref}: $O(^1D) + (CH_3)_4C$ → products.							
O +  → products							
Oxygen atom + Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R)- (d-Limonene, or (+)-Limonene)							
75 GAF/ATK2 [1])	RN	296-423	1.1(14)	0	151±75	2	
75 GAF/ATK2 [1])	RN	296	(6.50±0.53)(13)			2	
[1]) Competitive technique. Static system. O atoms generated by Hg-photosensitized dissociation of N_2O. Gas-chromatography. k determined relative to the reaction: O +  → products, and placed on an absolute basis by using the k expression from the literature, for the reaction: $O + CH_3CH{=}CH_2$ → products. Supersedes 75 GAF/ATK1.							
O +  → products							
Oxygen atom + Bixcyclo[3.1.1]hept-2-ene, 2,6,6-trimethyl- (α-Pinene)							
75 GAF/ATK2 [1])	RN	296-423	7.5(13)	0	458±70	2	

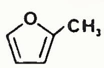
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
75 GAF/ATK2 [1])	RN	296	(1.60±0.06)(13)			2	
[1]) Competitive technique. Static system. O-atoms generated by Hg-photosensitized dissociation of N_2O. k determined relative to the reaction:							
O +  → products,							
and placed on an absolute basis by using the k expression from the literature, for the reaction:							
$O + CH_3CH{=}CH_2 \rightarrow$ products.							
Supersedes 75 GAF/ATK1.							
O +  → products							
Oxygen atom + Bicyclo[3.1.1]heptane, 6,6-dimethyl-2-methylene- (β-Pinene)							
75 GAF/ATK2 [1])	RN	296-423	6.0(13)	0	413±70	2	
75 GAF/ATK2 [1])	RN	296	(1.51±0.06)(13)			2	
[1]) Competitive technique. Static system. O atoms generated by Hg-photosensitized dissociation of N_2O. k determined relative to the reaction:							
O +  → products,							
and placed on an absolute basis by using the k expression from the literature, for the reaction: $O + CH_3CH{=}CH_2 \rightarrow$ products.							
Supersedes 75 GAF/ATK1.							
O2 (+ M) → O + O (+ M)							
Oxygen molecule							
71 BRE/BIR	EX	4000-8500	7.87(13)	0	52743	2	
M = Kr. M-efficiencies relative to Kr are: 1.0(Kr), ~1.6(Xe), ~1.0(Ar), ~9.0(O_2).							
$O_2(^1\Delta_g) + O_3 \rightarrow O_2 + O_2 + O$							
Oxygen molecule + Ozone							
71 FIN/SNE	EX	283-321	2.74(13)	0	2828±181	2	
72 BEC/GRO	EX	296-360	3.61(13)	0	2854±143	2	
72 HUS/KIR1	EX	300	<6.02(9)			2	
Upper-limit k.							

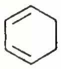
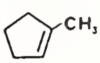
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
73 COL/HUS	EX	300	(2.65±0.78)(9)			2	
74 SNE	EX	298	(1.39±0.30)(13)			2	
80 ARN/COM	EX	298	(3.07±0.30)(9)			2	
UV-photolysis of Ozone.							
74 KUR/BRA	RL	300	(2.63±0.91)(-2)			2/2	
k_{ref}: $O_2(^1\Delta_g) + O_3^\dagger \rightarrow O_2 + O_2 + O$							
$O_3^\dagger$ formed by absorption of CO_2 laser radiation.							
$O_2(^1\Sigma_g^+) + O_3 \rightarrow O_2 + O_2 + O$ (a)							
$\rightarrow O_2 + O_3$ (b)							
Oxygen molecule + Ozone							
82 OGR/SWO	EX	298	(1.1±0.2)(13)			2	
$k_a + k_b$.							
Flash-photolysis of O_2/O_3 mixtures in a vacuum system.							
P(Total) = 100 torr.							
$O_2^\dagger + O_3 \rightarrow O + O_2 + O_2$							
Oxygen molecule + Ozone							
80 ARN/COM	EX	298	(1.69±0.18)(9)			2	
UV-photolysis of Ozone. O_2 is vibrationally excited, with v ≤30.							
$O_2 + H_2 \rightarrow OH + OH$ (a)							
$\rightarrow HO_2 + H$ (b)							
Oxygen molecule + Hydrogen molecule							
71 BEL/BRA	ES	1128-1152	2.10(12)	0	19628	2	
k_a. Constant tube-area.							
71 BEL/BRA	ES	1128-1152	1.20(12)	0	19628	2	
k_a. Varying tube-area.							
71 JAC/HOU	EX	1200-1800	1.7(13)	0	24233	2	3.0
k_a. Reaction behind incident shock-waves, in Ar.							
UV-Absorption-spectroscopy.							
75 AZA/ALE	EX	1076-1523	1.90(4)	0	21892±503	2	1.58
k_a.							
72 SKI/LIF	ES	1000-2500	3.0(13)	0	31706	2	
k_b.							
79 HAC/PRE1	DE	298	2.9(-29)			2	
k_b. Isothermal flow-reactor.							
Laser Magnetic Resonance Spectrometry.							
P(Total) = (130-800) Pa.							

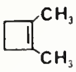
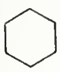
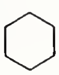
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$O_2 + D_2 \rightarrow OD + OD$							
Oxygen molecule + Deuterium molecule							
75 AZA/ALE	EX	843	(1.02±0.24)(3)			2	
75 AZA/ALE	EX	843	(7.83±3.01)(2)			2	
k based on induction period.							
$O_2(^1\Delta_g) + SO_2 \rightarrow O + SO_3$							
Oxygen molecule + Sulfur dioxide							
76 DUM	EX	298	1.3(8)			2	
$O_2 + CO_2^* \rightarrow O_3 + CO$							
Oxygen molecule + Carbon dioxide							
71 PRA/MAK	RL	293	(5.0±2.0)(2)			2/2	
M = CO.							
Photolysis of O_2 + CO mixture.							
P(CO) = (1-60) torr.							
$P(O_2)$ = 40 torr.							
k_{ref}: $CO_2^* + M \rightarrow CO_2^{**} + M$.							
CO^* formed by $O(^1D)$ + CO.							
$O_2 + CH_4 \rightarrow HO_2 + CH_3$							
Oxygen molecule + Methane							
72 SKI/LIF	ES	1000-2500	8.00(13)	0	28183	2	
78 SHA	DE	300-2500	7.56(11)	2.0	26153	2	
The preexponential factor expressed as: $A(T/298)^2$.							
82 PAR	EX	1097	<9.53(5)			2	
Reaction of CH_4 with O_2 in single-pulse sohck-waves.							
Mass-spectrometry.							
Upper-limit k.							
O_2 + HCHO → HO_2 + CHO							
Oxygen molecule + Formaldehyde							
71 BAL/LAN	RN	713	1.3(1)			2	
74 BAL/FUL2	EX	713-816	2.04(13)	0	19577±755	2	
O_2 + $HCHO^*$ [or HC(:)OH] → [HC(:)OH.O_2]							
Oxygen molecule + Formaldehyde (or Methylene, hydroxy-)							
79 MOR/HEI	RL	296	(7.9±0.6)(6)			2/1	
HCHO photolysis at 313 nm.							
k_{ref}: $HCHO^*$ [or HC(:)OH] → H + CHO							

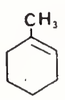
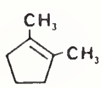
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$O_2 + CH_3O_2NO + CH_3O_2NO \rightarrow CH_3ONO_2 + CH_3ONO_2 + O_2$							
Oxygen molecule + Peroxynitrous acid methyl ester							
73 SPI/VIL	ES	298	≈3.79(13)			3	
Determined on the basis of a suggested mechanism.							
$O_2 + C_2O \rightarrow CO_2 + CO$							
Oxygen molecule + Carbon oxide (C_2O)							
80 DON/PIT	EX	298	(1.99±0.07)(11)			2	
Laser photodissociation of C_3O_2 at 266 nm. Dye-laser induced fluorescence.							
$O_2(a^1\Delta_g)$ + CH≡CH → products							
Oxygen molecule + Ethyne							
79 DAT/RAO	EX	298	(1.03±0.08)(7)			2	
Microwave discharge-flow system.							
$O_2 + CH_3CHO (+ M) \rightarrow HO_2 + CH_3CO (+ M)$							
Oxygen molecule + Acetaldehyde							
74 DIX/SKI1 [1])	RN	336	6.8(-3)			2	
74 DIX/SKI1 [1])	RN	345	7.4(-3)			2	
74 DIX/SKI1 [1])	RN	393	6.15(-2)			2	
[1]) Surface/volume ratio = 0.6 cm^{-1}.							
74 DIX/SKI1 [2])	RN	345	2.9(-2)			2	
74 DIX/SKI1 [2])	RN	393	5.1(-1)			2	
[1]) Surface/volume ratio = 6.1 cm^{-1}.							
77 COL/NAE	ES	1030-1115	3.45(14)	0.5	21238±604	2	2.0
The preexponential factor expressed as: $A(T/298)^{0.5}$.							
76 BRY/LEV	EX	393-473	5.01(17)	0	7549±856	3	7.08
$M = O_3$.							
$O_2 + CH_3CH_2CHO \rightarrow HO_2 + CH_3CH_2CO$							
Oxygen molecule + Propanal							
71 BAL/LAN	RN	713	7.6(1)			2	
74 DIX/SKI1	RN	337	3.4(-2)			2	
79 BAL/LEW1	EX	713	(8.1±1.5)(1)			2	
Oxidation in an aged boric-acid-coated vessel.							
$O_2(a^1\Delta_g) + (CH_3)_2CO \rightarrow$ products							
Oxygen molecule + 2-Propanone							
79 DAT/RAO	EX	298	(5.9±0.8)(6)			2	
Microwave discharge flow system.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$O_2(a^1\Delta_g) + CH_3CH_2CH{=}CH_2 \rightarrow$ products							
Oxygen molecule + 1-Butene							
79 DAT/RAO	EX	298	(1.11±0.05)(7)			2	
Microwave discharge-flow system.							
$O_2(a^1\Delta_g)$ + cis-$CH_3CH{=}CHCH_3 \rightarrow$ products							
Oxygen molecule + 2-Butene, (Z)-							
75 ASH/OGR	EX	300-500	1.26(11)	0	3256±141	2	1.38
79 DAT/RAO	EX	298	(1.42±0.05)(7)			2	
Microwave discharge-flow system.							
$O_2(a^1\Delta_g)$ + trans-$CH_3CH{=}CHCH_3 \rightarrow$ products							
Oxygen molecule + 2-Butene, (E)-							
75 ASH/OGR	EX	300-500	1.518(11)	0	3664±181	2	1.51
79 DAT/RAO	EX	298	(1.50±0.07)(7)			2	
Microwave discharge-flow system.							
$O_2(a^1\Delta_g) + (CH_3)_2C{=}CH_2 \rightarrow$ products							
Oxygen molecule + 1-Propene, 2-methyl-							
79 DAT/RAO	EX	298	(2.02±0.02)(7)			2	
Microwave discharge-flow system.							
$O_2(a^1\Delta_g) + CH_3CH_2CH_2CH_3 \rightarrow$ products							
Oxygen molecule + Butane							
79 DAT/RAO	EX	298	(1.05±0.40)(6)			2	
Microwave discharge-flow system.							
$O_2(a^1\Delta_g) + CH_3C(O)OCH{=}CH_2 \rightarrow$ products							
Oxygen molecule + Acetic acid ethenyl ester (Vinyl acetate)							
79 DAT/RAO	EX	298	(8.2±0.9)(6)			2	
Microwave discharge-flow system.							
$O_2(a^1\Delta_g) + CH_2{=}CHC(O)OCH_3 \rightarrow$ products							
Oxygen molecule + 2-Propenoic acid methyl ester							
79 DAT/RAO	EX	298	(1.27±0.02)(7)			2	
Microwave discharge-flow system.							
$O_2 + (CH_3)_2CHCHO \rightarrow HO_2 + (CH_3)_2CHCO$							
Oxygen molecule + Propanal, 2-methyl-							
79 BAL/CLE	EX	713	(1.2±0.1)(2)			2	
Aged boric-acid-coated vessel. P(Total) = 60 torr.							

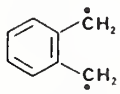
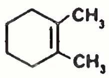
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$O_2(a^1\Delta_g)$ + $CH_3C(O)OCH_2CH_3$ → products							
Oxygen molecule + Acetic acid ethyl ester (Ethyl acetate)							
79 DAT/RAO	EX	298	(6.3±0.1)(6)			2	
Microwave discharge flow system.							
$O_2(^1\Delta_g)$ +  **→ products**							
Oxygen molecule + Cyclopentene							
75 ASH/OGR	EX	300-500	2.24(11)	0	3719±357	2	2.29
$O_2(^1\Delta_g)$ + $CH_3CH{=}C(CH_3)_2$ → products							
Oxygen molecule + 2-Butene, 2-methyl-							
73 HUI/HER	RL	298	4.4(-2)			2/2	
k_{ref}: $O_2(^1\Delta_g)$ + $(CH_3)_2C{=}C(CH_3)_2$ → products.							
73 HUI/HER	RN	298	3.3(7)			2	
75 ASH/OGR	EX	300-500	1.26(11)	0	2466±141	2	1.45
O_2 + $(CH_3)_2CHCH_2CH_3$ → HO_2 + $(CH_3)_2CCH_2CH_3$ (a)							
→ HO_2 + $(CH_3)_2CHCHCH_3$ (b)							
Oxygen molecule + Butane, 2-methyl- (Isopentane)							
73 DEG/DEN	EX	410-439	1.5(15)	0	19124	2	
$k_a + k_b$.							
$O_2(^1\Delta_g)$ +  **→ products**							
Oxygen molecule + Furan, 2-methyl-							
73 HUI/HER	RL	298	1.3			2/2	
k_{ref}: $O_2(^1\Delta_g)$ + $(CH_3)_2C{=}C(CH_3)_2$ → products.							
73 HUI/HER	RN	298	1.0(8)			2	
$O_2(a^1\Delta_g)$ + $CH_2{=}CHC(O)OCH_2CH_3$ → products							
Oxygen molecule + 2-Propenoic acid ethyl ester							
79 DAT/RAO	EX	298	(1.54±0.11)(7)			2	
Microwave discharge flow system.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$O_2(a^1\Delta_g)$ + $CH_2=C(CH_3)C(O)OCH_3$ → products							
Oxygen molecule + 2-Propenoic acid, 2-methyl-, methyl ester							
79 DAT/RAO	EX	298	(1.09±0.09)(7)			2	
Microwave discharge flow system.							
$O_2(^1\Delta_g)$ +  → products							
Oxygen molecule + 1,3-Cyclohexadiene							
73 HUI/HER	RL	298	9.0(-2)			2/2	
k_{ref}: $O_2(^1\Delta_g)$ + $(CH_3)_2C=C(CH_3)_2$ → products.							
73 HUI/HER	RN	298	6.8(7)			2	
$O_2(a^1\Delta_g)$ +  → products							
Oxygen molecule + 1,4-Cyclohexadiene							
79 DAT/RAO	EX	298	(1.36±0.06)(7)			2	
Microwave discharge-flow system.							
$O_2(a^1\Delta_g)$ +  → products							
Oxygen molecule + Cyclohexene							
75 ASH/OGR	ES	300-500	2.51(11)	0	>4127	2	
Lower-limit estimate.							
79 DAT/RAO	EX	298	(4.7±1.5)(6)			2	
Microwave discharge-flow system.							
$O_2(^1\Delta_g)$ +  → products							
Oxygen molecule + Cyclopentene, 1-methyl-							
73 HUI/HER	RL	298	1.5(-1)			2/2	
k_{ref}: $O_2(^1\Delta_g)$ + $(CH_3)_2C=C(CH_3)_2$ → products.							
73 HUI/HER	RN	298	1.1(7)			2	
75 ASH/OGR	EX	300-500	2.51(11)	0	3010±141	2	1.45

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$O_2(^1\Delta_g)$ +  → **products**							
Oxygen molecule + Cyclobutene, 1,2-dimethyl-							
75 ASH/OGR	EX	300-500	2.75(11)	0	2011±91	2	1.29
$O_2(^1\Delta_g)$ + trans-$CH_3CH_2C(CH_3)$=$CHCH_3$ → products							
Oxygen molecule + 2-Pentene, 3-methyl-, (E)-							
73 HUI/HER	RL	298	~1.2(-2)			2/2	
Estimated ratio.							
k_{ref}: $O_2(^1\Delta_g)$ + $(CH_3)_2C$=$C(CH_3)_2$ → products.							
73 HUI/HER	ES	298	~9.0(6)			2	
$O_2(^1\Delta_g)$ + $(CH_3)_2C$=$C(CH_3)_2$ → products							
Oxygen molecule + 2-Butene, 2,3-dimethyl-							
72 ACK/PIT	EX	298	(4.9±0.3)(8)			2	
P > 3 torr.							
73 HUI/HER	EX	298	7.6(8)			2	
75 ASH/OGR	EX	300-500	1.32(11)	0	1626±75	2	1.23
76 DUM	EX	298	2.0(7)			2	
O_2 +  → **HO_2** + 							
Oxygen molecule + Cyclohexane							
75 SHA/DEN	EX	373-413	1.58(110)	0	12582±805	2	
$O_2(a^1\Delta_g)$ +  → **products**							
Oxygen molecule + Cyclohexane							
79 DAT/RAO	EX	298	(1.08±0.30)(6)			2	
Microwave discharge-flow system.							
$O_2(a^1\Delta_g)$ + $CH_3(CH_2)_4CH_3$ → products							
Oxygen molecule + Hexane							
79 DAT/RAO	EX	298	(9.2±3.0)(5)			2	
Microwave discharge flow system.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$O_2(^1\Delta_g)$ +  → **products**							
Oxygen molecule + Furan, 2,5-dimethyl-							
73 HUI/HER	RL	298	1.9(1)			2/2	
k_{ref}: $O_2(^1\Delta_g)$ + $(CH_3)_2C{=}C(CH_3)_2$ → products.							
73 HUI/HER	RN	298	1.5(10)			2	
$O_2(a^1\Delta_g)$ + $(CH_3)_2CHCH_2OCH{=}CH_2$ → products							
Oxygen molecule + Propane, 1-(ethenyloxy)-2-methyl-							
79 DAT/RAO	EX	298	(1.17±0.12)(7)			2	
Microwave discharge-flow system.							
$O_2(a^1\Delta_g)$ + $CH_3C(O)CH_2CH(CH_3)_2$ → products							
Oxygen molecule + 2-Pentanone, 4-methyl-							
79 DAT/RAO	EX	298	(4.9±0.9)(6)			2	
Microwave discharge-flow system.							
$O_2(^1\Delta_g)$ + $(CH_3)_2C{=}CHN(CH_3)_2$ → products							
Oxygen molecule + 1-Propen-1-amine, N,N,2-trimethyl-							
73 HUI/HER	RL	298	2.0(1)			2/2	
k_{ref}: $O_2(^1\Delta_g)$ + $(CH_3)_2C{=}C(CH_3)_2$ → products.							
73 HUI/HER	RN	298	1.5(10)			2	
$O_2(^1\Delta_g)$ +  → **products**							
Oxygen molecule + Cyclohexene, 1-methyl-							
75 ASH/OGR	EX	300-500	2.40(11)	0	3785±151	2	1.41
$O_2(^1\Delta_g)$ +  → **products**							
Oxygen molecule + Cyclopentene, 1,2-dimethyl-							
73 HUI/HER	RL	298	4.0(-1)			2/2	
k_{ref}: $O_2(^1\Delta_g)$ + $(CH_3)_2C{=}C(CH_3)_2$ → products.							
73 HUI/HER	RN	298	3.0(8)			2	
75 ASH/OGR	EX	300-500	3.16(11)	0	2023±141	2	1.45

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$O_2(^1\Delta_g)$ + $(CH_3)_2C{=}C(CH_3)CH_2CH_3$ → products							
Oxygen molecule + 2-Pentene, 2,3-dimethyl-							
73 HUI/HER	RL	298	6.9(-1)			2/2	
k_{ref}: $O_2(^1\Delta_g)$ + $(CH_3)_2C{=}C(CH_3)_2$ → products.							
73 HUI/HER	RN	298	5.2(8)			2	
O_2 + $CH_3(CH_2)_5CH_3$ → HO_2 + $CH_3(CH_2)_5CH_2$ (a)							
→ HO_2 + $CH_3(CH_2)_4CHCH_3$ (b)							
→ HO_2 + $CH_3(CH_2)_3CHCH_2CH_3$ (c)							
→ HO_2 + $CH_3(CH_2)_2CH(CH_2)_2CH_3$ (d)							
Oxygen molecule + Heptane							
75 SHA/DEN	EX	397-434	3.16(17)	0	21792±2013	2	
$k_a + k_b + k_c + k_d$.							
$O_2(a^1\Delta_g)$ + $CH_2{=}CHCOOCH_2CH_2CH_2CH_3$ → products							
Oxygen molecule + 2-Propenoic acid butyl ester							
79 DAT/RAO	EX	298	(1.36±0.08)(7)			2	
Microwave discharge-flow system.							
$O_2(a^1\Delta_g)$ + $CH_3(CH_2)_5CHO$ → products							
Oxygen molecule + Heptanal							
79 DAT/RAO	EX	298	(6.9±0.1)(6)			2	
Microwave discharge-flow system.							
$O_2(a^1\Delta_g)$ + $CH_3COOCH_2CH_2CH(CH_3)_2$ → products							
Oxygen molecule + 1-Butanol, 3-methyl-, acetate							
79 DAT/RAO	EX	298	(5.2±1.1)(6)			2	
Microwave discharge-flow system.							
O_2 + 							
Oxygen molecule + 1,3-Cyclohexadiene, 5,6-bis(methylene)- → 2,3-Benzodioxin, 1,4-dihydro-							
82 ROT/SCH1	EX	461-521	(1.9±1.2)(10)	0	5687±301	2	
Thermal reaction in an air thermostat.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
5,6-bis(Methylene)-1,3-cyclohexadiene is in equilibrium with its intermediate form, the bi-radical							
							
(1,2-Phenylenebismethyl) before reacting with O_2.							
$O_2(^1\Delta_g)$ +  → products							
Oxygen molecule + Cyclohexene, 1,2-dimethyl-							
73 HUI/HER	RL	298	4.0(-1)			2/2	
k_{ref}:							
$O_2(^1\Delta_g) + (CH_3)_2C{=}C(CH_3)_2 \rightarrow$ products.							
73 HUI/HER	RN	298	3.0(8)			2	
$O_2(^1\Delta_g) + (CH_3)_2C{=}C(CH_3)CH_2CH_2CH_3 \rightarrow$ products							
Oxygen molecule + 2-Hexene, 2,3-dimethyl							
73 HUI/HER	RL	298	6.6(-1)			2/2	
k_{ref}:							
$O_2(^1\Delta_g) + (CH_3)_2C{=}C(CH_3)_2 \rightarrow$ products.							
73 HUI/HER	RN	298	5.0(8)			2	
$O_2 + (CH_3)_3CCH_2CH(CH_3)_2 \rightarrow HO_2 + (CH_3)_3CCH_2C(CH_3)_2$ (a)							
$\rightarrow HO_2 + (CH_3)_3CCHCH(CH_3)_2$ (b)							
Oxygen molecule + Pentane, 2,2,4-trimethyl-							
73 DEG/DEN	EX	400-465	1.0(15)	0	19124	2	
$k_a + k_b$.							
$O_2(^1\Delta_g) + CH_3CH_2OCH{=}C(CH_2CH_3)CH_2CH_2CH_2CH_3 \rightarrow$ products							
Oxygen molecule + 1-Hexene, 1-ethoxy-2-ethyl-							
73 HUI/HER	RL	298	~5.0(-1)			2/2	
Estimated ratio.							
k_{ref}:							
$O_2(^1\Delta_g) + (CH_3)_2C{=}C(CH_3)_2 \rightarrow$ products.							
73 HUI/HER	RN	298	~4.0(8)			2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
O_3 (+ M) → O_2 + O (+ M)							
Ozone							
79 END/GLA	EX	800	3.5(8)			2	
M = N_2. M-efficiencies relative to N_2 are: 1.29(He), 0.79(Ne), 0,46(Ar), 0.66(Kr), 0.51(Xe), 1.00(N_2), 0.94(O_2), 3.86(CO_2), 2.43(CF_4), 6.43(SF_6). Thermal dissociation in shock-waves. Rate constants expressed as k[M].							
79 HEI/COF	EX	300-3000	4.32(14)	0	11173	2	
M = O_3. Critical evaluation.							
80 KLA/LAU	EX	298	≤3.01(11)			2	
M = $O_2(a^1\Delta_g, v>1)$. Flash-photolysis of Ozone. Absorption-Spectroscopy. Resonance-fluorescence. Upper-limit k.							
80 TOB/ULL	EX	348-433	2.00(15)	0	11726±705	2	7.94
M = CO_2. Vacuum system. P <1.0x10^{-5} torr.							
82 EGO/POP	EX	423	1.87(3)			2	
M = O_3. Thermolysis of O_3 in a static system. P = (75-100) torr.							
O_3 + SO → O_2 + SO_2							
Ozone + Sulfur monoxide							
80 ROB/SMI	EX	296	(5.24±0.96)(10)			2	
Pulsed laser photolysis of O_3 in excess N_2 and in presence of COS. P(Total) = 100 torr.							
82 BLA/SHA1 [1])	EX	298	(6.38±0.96)(10)			2	
82 BLA/SHA2 [1])	EX	230-420	2.89(13)	0	1170±120	2	1.33
[1]) SO generated by ArF laser-photodissociation of SO_2 at 193 nm. in He diluent. P(SO_2) ~ 30 mtorr. P(O_2) < 550 torr. P(O_3) < 0.4 torr. P(He) = 200 torr.							
O_3(v=n) + SO → O_2 + $SO_2(^1B_1)$							
Ozone + Sulfur monoxide							
74 KAL/BRA	RL	300	(2.4±0.6)			2/2	
$O_3^{\dagger}$ produced by CO_2 laser radiation. k_{ref}: O_3 + SO → O_2 + $SO_2(^1B_1)$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$O_3 + SO_2 \rightarrow O_2 + SO_3$							
Ozone + Sulfur dioxide							
74 DAV/PRU	EX	300	≤6.02(1)			2	
Upper-limit k.							
$O_3 + H_2S \rightarrow HO_2 + HSO$ (a)							
$\rightarrow OH + HSO_2$ (b)							
Ozone + Hydrogen sulfide							
75 BEC/INO	EX	298	<1.20(4)			2	
$k_a + k_b$. Upper-limit k. Unreported T assumed to be 298 K.							
75 GLA/TOB1	ES	298	5.0(5)			2	
$k_a = k_b$.							
75 GLA/TOB1	ES	293-343	1.26(11)	0	3422±302	2	2.51
$k_a + k_b$.							
75 GLA/TOB2	EX	298-343	1.58(12)	0	2617±604	2	6.31
$k_a + k_b$.							
$O_3 + NO \rightarrow O_2 + NO_2(^2A_1)$ (a)							
$\rightarrow O_2 + NO_2^{\dagger}(^2A_1)$ (b)							
$\rightarrow O_2 + NO_2^{*}(^2B_{1,2})$ (c)							
$O_3 + NO^{\dagger} \rightarrow O_2 + NO_2(^2A_1)$ (d)							
$\rightarrow O_2 + NO_2^{*}(^2B_{1,2})$ (e)							
$O_3^{\dagger} + NO \rightarrow O_2 + NO_2(^2A_1)$ (f)							
$\rightarrow O_2 + NO_2^{\dagger}(^2A_1)$ (g)							
$\rightarrow O_2 + NO_2^{*}(^2B_{1,2})$ (h)							
$\rightarrow O_3 + NO$ (i)							
Ozone + Nitrogen oxide (NO)							
73 GHO/ELL	EX	298	(8.5±0.1)(9)			2	
k_a.							
73 STE/NIK1	EX	298	(1.04±0.06)(10)			2	
k_a.							
74 BEC/SCH	EX	290	1.02(10)			2	
k_a.							
74 BEM/CLY	EX	298	(1.09±0.08)(10)			2	
k_a.							
75 HUI/HER2	EX	224-364	(2.09±0.24)(12)	0	1533±32	2	
k_a. Tubular flow reactor. Mass-spectrometer.							
75 WU/NIK	EX	298	1.11(10)			2	
k_a. NO_2 Photolysis.							
76 BIR/SHO	EX	203-361	(1.41±0.14)(12)	0	1450±50	2	
k_a.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
76 FRE/STE	EX	298	(1.46±0.15)(11)			2	
$k_a + k_c + k_f + k_h$.							
$O_3^\dagger = O_3(001)$ (asymmetric stretch.)							
76 STE/FRE	RL	298	≤2.2(1)			2/2	
$(k_a + k_c + k_f)/k_a$.							
Upper-limit ratio.							
80 LIP/JES	EX	283-443	(2.59±0.36)(12)	0	1598±50	2	
k_a. Stainless-steel reactor. P <0.1 mtorr.							
81 MIC/ALL	EX	195-369	(1.57±0.48)(12)	0	1435±64	2	
k_a. Fast-flow. Induced fluorescence detection of [NO].							
81 RAY/WAT [1])	EX	212-422	(1.90±0.54)(12)	0	1556±80	2	
81 RAY/WAT [1])	EX	299	(1.08±0.05)(10)			2	
[1]) k_a. Discharge-flow Mass-Spectrometry.							
$[O_3]_o = (0.05\text{-}1.82)\times10^{12}$ molec.cm^{-3}							
$[NO]_o = (0.07\text{-}1.94)\times10^{16}$ molec.cm^{-3}							
81 SCH/LIP	EX	283-433	(1.37±0.24)(12)	0	1475±62	2	
k_a. Spherical reactor. (7-120)x10-6 torr.							
82 BOR/BIR [2])	EX	200-350	(1.49±0.15)(11)	2.2	765±116	2	
Preexponential factor expressed as: $A(T/298)^{2.2}$.							
82 BOR/BIR [2])	EX	298	(1.14±0.11)(10)			2	
[2]) k_a. Reaction of NO with O_3 in He, by using a dual flow-tube technique. Mass-spectrometry.							
$[O_3] = (0.05\text{-}1.00)\times10^{13}$ molec.cm^{-3}.							
$[NO] = (0.5\text{-}6.0)\times10^{15}$ molec.cm^{-3}.							
81 SCH/LIP	EX	283-433	(1.75±0.18)(12)	0	1951±34	2	
k_c. Spherical reactor. (7-120)x1o^{-6} torr.							
78 BAR/MOY [3])	EX	158	(1.06±0.08)(11)			2	
78 BAR/MOY [3])	EX	225	(7.5±1.1)(10)			2	
78 BAR/MOY [3])	EX	296	(9.2±0.4)(10)			2	
78 BAR/MOY [3])	EX	300	9.9(10)			2	
78 BAR/MOY [3])	EX	345	(1.24±0.07)(11)			2	
78 BAR/MOY [3])	EX	437	(1.85±0.16)(11)			2	
[3]) $k_d + k_e + k_i$. $O_3^\dagger$ is either $O_3(001)$ (asymmetric stretch), or $O_3(010)$ (bending mode), but not both. Other rate constants within the (158-437) K range are given. Non-Arrhenius behaviour. The k is minimum at 225K. Laser-enhanced fluorescence.							
76 STE/FRE	RL	298	5.7			2/2	1.45
k_e/k_c. $NO^\dagger$ is NO(v=1).							
76 GOR/LIN	ES	308	(5.4±0.7)(10)			2	
k_f. $O_3^\dagger = O_3(001)$ (asymmetric stretch.) Fit of experimental data to a proposed mechanism.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
75 KUR/BRA k_f. $O_3^{\dagger} = O_3(010)$ (bending mode.) Fit of experimental data to a proposed mechanism.	ES	153-373	2.23(13)	0	1610		2
75 KUR/BRA k_f. $O_3^{\dagger} = O_3(001) + O_3(100)$ (asymmetric + symmetric stretch.) Fit of experimental data to a proposed mechanism.	ES	153-373	1.20(13)	0	1107		2
75 KUR/BRA k_f. $O_3^{\dagger} = O_3(001) + O_3(010) + O_3(100)$. (Sum of all three vibrational modes: asymmetric stretch + bend + symmetric stretch.) Fit of experimental data to a proposed mechanism.	ES	153-373	1.20(13)	0	1525		2
77 MOY/BAR k_f/k_a. $O_3^{\dagger} = O_3(001)$ (asymmetric stretch.) Pulsed CO_2 laser.	RL	153-303	(8.7±2.1)(-1)	0	-649±55		2/2
73 GOR/LIN k_g. $O_3^{\dagger} = O_3(010)$ (bending mode.) Fit of experimental data to a proposed mechanism.	ES	350	(1.5±0.2)(11)				2
73 GOR/LIN k_g/k_b. $O_3^{\dagger} = O_3(010)$ (bending mode.) Fit of experimental data to a proposed mechanism.	RL	350	≃2.2(1)				2/2
74 KUR/BRA k_g/k_c. $O_3^{\dagger} = O_3(010)$ (bending mode.) Fit of experimental data to a proposed mechanism.	RL	300	(1.71±0.43)(1)				2/2
74 KUR/BRA $(k_g + k_h)/(k_b + k_c)$. $O_3^{\dagger} = O_3(010)$ (bending mode.) Fit of experimental data to a proposed mechanism.	RL	300	(1.62±0.40)(1)				2/2
74 KUR/BRA $k_g + k_b$. $O_3^{\dagger} = O_3(010)$ (bending mode.) Fit of experimental data to a proposed mechanism.	EX	300	(1.63±0.06)(11)				2
78 HUI/COO2 k_g. $O_3^{\dagger} = O_3(001) + O_3(010) + O_3(100)$. Sum of all three vibrational modes, of which (001) and (100), - asymmetric and symmetric stretch-, are predominant.) Laser-enhanced fluorescence method.	EX	138-410	(2.29±0.54)(11)	0	518±131		2
76 GOR/LIN k_h. $O_3^{\dagger} = O_3(001)$ (asymmetric stretch.) Fit of experimental data to a proposed mechanism.	ES	308	(4.3±0.7)(9)				2
74 KUR/BRA k_h/k_c. $O_3^{\dagger} = O_3(010)$ (bending mode.) Fit of exerimental data to a proposed mechanism.	RL	300	(4.1±2.0)				2/2

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
74 BRA/KUR	RL	300	(5.6±1.0)			2/2	
k_h/k_c. $O_3^{\dagger}$ = O_3(010) (bending mode.) Fit of experimental data to a proposed mechanism. The authors suggest that the $NO_2^{*}(^2B_2)$ electronic state might very well be the primary emission source, instead of the $^2B_1$ state.							
77 MOY/BAR	RL	153-303	(7.6±2.1)			2/2	
k_h/k_c. $O_3^{\dagger}$ = O_3(001) (asymmetric stretch.)							
77 MOY/BAR	RL	153-303	(8.7±5.5)(-1)	0	-649±126	2/2	
k_h/k_c. $O_3^{\dagger}$ = O_3(001) (asymmetric stretch.)							
78 HUI/COO2	EX	138-410	(6.02±0.18)(11)	0	1449±211	2	
k_h. $O_3^{\dagger}$ = O_3(001) + O_3(010) + O_3(100). (Sum of all three vibrational modes, of which (001) and (100), - asymmetric and symmetric stretch-, are predominant.) Laser-enhanced fluorescence method.							
75 KUR/BRA	ES	153-373	6.02(10)	0	39.2	2	
k_i. $O_3^{\dagger}$ = O_3(010) (bending mode.) Fit of experimental data to a proposed mechanism.							
$O_3 + NO_2 \rightarrow O_2 + NO_3$							
Ozone + Nitrogen oxide (NO_2)							
73 STE/NIK1	EX	298	(3.91±0.48)(7)			2	
73 WU/MOR	EX	299	2.65(7)			2	1.15
74 BEC/SCH	EX	289	1.95(7)			2	
74 DAV/PRU	EX	260-343	(5.42±0.49)(10)	0	2428±116	2	
74 GHO/ELL	EX	298	(1.9±0.3)(7)			2	
Corrected rate constant from 73 GHO/ELL.							
74 GRA/JOH	EX	231-298	(8.07±0.66)(10)	0	2466±30	2	
74 HUI/HER	EX	259-362	(9.44±2.46)(10)	0	2509±76	2	
75 GRA	EX	231-298	(8.07±0.66)(10)	0	2466±30	2	
75 HER/HUI	EX	259-363	(9.44±2.46)(10)	0	2509±76	2	
$O_3 + HONO \rightarrow O_2 + HONO_2$							
Ozone + Nitrous acid							
77 KAI/JAP [1])	EX	226	≤3.01(5)			2	
77 KAI/JAP [1])	EX	300	≤6.02(4)			2	
[1]) Upper limit k's. Pyrex reactor in evacuated chamber. P(Total) = (20-30) torr.							
79 STR/WEL	EX	296	≤(2.71±1.81)(5)			2	
Tunable diode-laser. Static reactor. Upper-limit k.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$O_3 + CH_4 \rightarrow$ products							
Ozone + Methane							
73 STE/NIK2	EX	298	≤7.22(2)			2	
Upper-limit k.							
$O_3 + HCHO \rightarrow OH + HCO_3$ (a)							
$\rightarrow HO_2 + HCO_2$ (b)							
Ozone + Formaldehyde							
76 BRA/HEI	EX	298	→1.26			2	
$k_a + k_b$.							
Upper-limit k.							
$O_3 + CH_3ONO \rightarrow O_2 + CH_3ONO_2$							
Ozone + Nitrous acid methyl ester (Methyl nitrite)							
76 HAS/FRE	EX	298-352	4.07(11)	0	5315±172	2	1.70
$O_3 + CH{\equiv}CH \rightarrow$ products							
Ozone + Ethyne							
71 DEM	EX	294	(1.8±0.3)(4)			2	
73 STE/NIK2	EX	298	(5.18±0.54)(4)			2	
76 PAT/ATK1	EX	297	(2.29±0.36)(4)			2	
$O_3 + CH_2{=}CH_2 \rightarrow [C_2H_4.O_3]^{\dagger} \rightarrow CH_2OO^{\dagger} + HCHO$ (a)							
$\rightarrow$ any other products (b)							
Ozone + Ethene							
80 SU/CAL [1])	EX	298	(1.08±0.06)(6)			2	
81 KAN/SU [1])	EX	282-303	1.55(10)	0	2828±181	2	1.86
[1]) k_a. Fourier-transform IR-spectroscopy in O_2/N_2 mixtures. P(Total) = 700 torr. The biradical decomposes further to other products.							
73 STE/WU	EX	299	(9.34±0.90)(5)			2	
$k_{overall}$.							
74 BEC/SCH [2])	EX	280-360	7.23(9)	0	2491±101	2	
74 BEC/SCH [2])	EX	298	1.69(6)			2	
[2]) $k_{overall}$.							
74 FIN/PIT	EX	298	(1.0±1.0)(6)			2	
$k_{overall}$. In O_2 carrier gas.							
74 FIN/PIT	EX	298	(5.0±2.0)(6)			2	
$k_{overall}$. In N_2 carrier gas.							
74 HER/HUI	EX	235-362	(5.42±3.19)(9)	0	2557±167	2	
$k_{overall}$.							
74 JAP/WU2	EX	298	(1.14±0.06)(6)			2	
$k_{overall}$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
76 JAP/WU	EX	299	(1.14±0.06)(6)			2	
$k_{overall}$. In 760 torr. Air.							
76 JAP/WU	EX	299	(1.56±0.12)(6)			2	
$k_{overall}$. In 760 torr. He.							
76 TOB/TOB	EX	303	(1.02±0.08)(6)			2	
$k_{overall}$.							
76 WIL	EX	298	8.8(5)			2	
$k_{overall}$.							
81 ADE/KER 3)	EX	260	2.65(5)			2	
81 ADE/KER 3)	EX	294	9.64(5)			2	
81 ADE/KER 3)	EX	260-294	~1.9(10)	0	~2919	2	
Tentative k.							
3) $k_{overall}$. Reaction carried out in two Tedlar plastic bags, in synthetic air. Gas-chromatography. P ~ 760 torr.							
82 ATK/ASC1	EX	296	(8.61±1.14)(5)			2	
$k_{overall}$. Reaction of O_3 with Ethene in a Teflon bag. Gas-chromatography. $[O_3] < 2.4x10^{13}$ molec.cm^{-3}.							
O_3 + cis-CDH=CDH → $[C_2D_2H_2.O_3]^†$ → $CDHOO^†$ + HCDO							
Ozone + Ethene-1,2-d_2, (Z)-							
80 SU/CAL	EX	298	(1.33±0.24)(6)			2	
FTIR Spectroscopy in O_2/N_2 mixtures. The biradical decomposes further to other products. P(Total) = 700 torr.							
O_3 + trans-CDH=CDH → $[C_2D_2H_2.O_3]^†$ → $CDHOO^†$ + HCDO							
Ozone + Ethene-1,2-d_2, (E)-							
80 SU/CAL	EX	298	(1.33±0.06)(6)			2	
FTIR Spectroscopy in O_2/N_2 mixtures. The biradical decomposes further to other products. P(Total) = 700 torr.							
O_3 + CD_2=CD_2 → $[C_2D_4.O_3]^†$ → $CD_2OO^†$ + DCDO							
Ozone + Ethene-d_4							
74 JAP/WU2	EX	298	(1.38±0.06)(6)			2	
80 SU/CAL	EX	298	(1.26±0.06)(6)			2	
FTIR spectroscopy in O_2/N_2 mixtures. The biradical decomposes further to other products. P(Total) = 700 torr.							

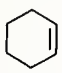
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
O_3 + CH_3CHO → products							
Ozone + Acetaldehyde							
73 STE/NIK2	EX	298	(2.05±0.30)(4)			2	
81 ATK/ASC	EX	296	≤3.61(3)			2	
Reaction in a Teflon bag, in ultra-high purity air. Upper-limit k. P(Total) = 735 torr.							
O_3 +  → CH_2=CH_2 + SO_2 + HCHO + CO_2 (major products)							
Ozone + Thiirane (Ethylene episulfide)							
80 MAR/HER	EX	296	<1.0(4)			2	
Stopped-flow autocatalytic reaction. Mass-spectrotrometry. Upper-limit k. P(Total) = 8 torr.							
O_3 + CH_3CH_2ONO → O_2 + $CH_3CH_2ONO_2$							
Ozone + Nitrous acid methyl ester							
76 HAS/FRE	EX	298-352	1.90(8)	0	2351±116	2	1.45
O_3 + $CH_3C≡CH$ → products							
Ozone + 1-Propyne							
71 DEM	EX	294	(1.3±0.7)(4)			2	
O_3 + CH_2=C=CH_2 → [CH_2=C=CH_2.O_3] → products							
Ozone + 1,2-Propadiene							
74 TOB/TOB	ES	499-598	1.0(9)	0	2768±503	2	5.01
O_3 + CH_3CH=CH_2 → products							
Ozone + 1-Propene							
72 COX/PEN	EX	295	7.6(6)			2	
73 STE/WU	EX	299	(7.53±0.60)(6)			2	
74 BEC/SCH	EX	280-360	6.63(9)	0	1968±101	2	
74 BEC/SCH	EX	298	8.73(6)			2	
74 HER/HUI	EX	235-362	(3.70±1.42)(9)	0	1897±109	2	
74 JAP/WU2	EX	299	(7.82±0.60)(6)			2	
76 JAP/WU	EX	299	(7.95±0.18)(6)			2	
In 760 torr. Air.							
76 JAP/WU	EX	299	(1.01±0.06)(7)			2	
In 760 torr. He.							
76 WIL	EX	298	5.79(6)			2	

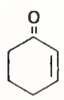
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 ADE/KER [1]	EX	260	3.07(6)			2	
81 ADE/KER [1]	EX	294	7.59(6)			2	
81 ADE/KER [1]	EX	260-294	~7.58(9)	0	~2013	2	
Tentative k.							
[1]) Reaction in two Tedlar plastic bags, in synthetic air. Gas-chromatography. P ~ 760 torr.							
82 ATK/ASC1	EX	296	(6.26±0.84)(6)			2	
Reaction of O_3 with 1-Propene in a Teflon bag. Gas-chromatography. $[O_3] < 2.4x10^{13}$ molec.cm^{-3}.							
O_3 + $CD_3CD{=}CD_2$ → products							
Ozone + Propene-d_6							
74 JAP/WU2	EX	298	(9.09±0.18)(6)			2	
O_3 + $CH_2{=}CHCHO$ → products							
Ozone + 2-Propenal (Acrolein)							
81 ATK/ASC	EX	296	(1.69±0.30)(5)			2	
Reaction in a Teflon bag, in ultrahigh-purity air. P(Total) = 735 torr.							
O_3 + $CH_3C(O)CHO$ → products							
Ozone + Propanal, 2-oxo-							
76 PAT/ATK1	EX	297	(6.63±3.01)(2)			2	
81 ATK/ASC	EX	296	<4.22(4)			2	
Reaction in a Teflon bag, in ultrahigh-purity air. Upper-limit k. P(Total) = 735 torr.							
O_3 + $CH_2{=}CHCN$ → products							
Ozone + 2-Propenenitrile (Acrylonitrile)							
82 ATK/ASC1	EX	296	<6.02(4)			2	
Reaction of O_3 with 2-Propenenitrile in a Teflon bag. Gas-chromatography. Upper-limit k. $[O_3] < 2.4x10^{13}$ molec.cm^{-3}.							
O_3 + $CH_3CH_2C{\equiv}CH$ → products							
Ozone + 1-Butyne							
71 DEM	EX	294	(2.4±0.8)(4)			2	
O_3 + $CH_3C{\equiv}CCH_3$ → products							
Ozone + 2-Butyne							
71 DEM	EX	294	(2.0±0.3)(4)			2	

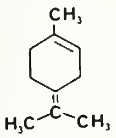
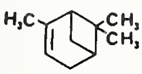
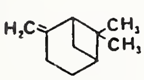
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
O_3 + CH_2=CHCH=CH_2 → products							
Ozone + 1,3-Butadiene							
74 BEC/SCH	EX	280-360	3.28(10)	0	2682±101	2	
74 BEC/SCH	EX	298	4.04(6)			2	
74 JAP/WU2	EX	298	(5.06±0.12)(6)			2	
75 TOB/TOB	EX	273-343	6.31(10)	0	2919±403	2	3.16
O_3 + CH_3CH_2CH=CH_2 → products							
Ozone + 1-Butene							
74 JAP/WU2	EX	298	(7.41±0.24)(6)			2	
75 HUI/HER1	EX	225-363	1.77(9)	0	1686±20	2	1.08
In 0.0015 torr. of O_2 as scavenger.							
76 WIL	EX	298	5.6(6)			2	
81 ADE/KER [1])	EX	260	3.19(6)			2	
81 ADE/KER [1])	EX	294	7.59(6)			2	
81 ADE/KER [1])	ES	260-294	~6.02(9)	0	~1963	2	
[1]) Reaction in two Tedlar plastic bags, in synthetic air. Gas-chromatography. P ~ 760 torr.							
O_3 + CH_3CH=$CHCH_3$ → products							
Ozone + 2-Butene							
74 BEC/SCH	EX	280-360	5.66(9)	0	1147±75	2	
74 BEC/SCH	EX	298	1.20(8)			2	
cis-, and trans-2-Butene mixture.							
O_3 + cis-CH_3CH=$CHCH_3$ → products							
Ozone + 2-Butene, (Z)-							
72 COX/PEN	EX	295	8.5(7)			2	
72 COX/PEN [1])	EX	295	9.0(7)			2	
74 FIN/PIT [1])	EX	298	(1.5±0.2)(8)			2	
[1]) In N_2 carrier gas.							
74 FIN/PIT	EX	298	(6.3±1.9)(7)			2	1.3
In O_2 carrier gas.							
74 JAP/WU2	EX	298	(9.70±0.42)(7)			2	
75 HUI/HER1	EX	225-336	1.87(9)	0	956±54	2	1.22
In 0.0075 torr. of O_2 as scavenger.							
76 WIL	EX	298	7.3(6)			2	
O_3 + trans-CH_3CH=$CHCH_3$ → products							
Ozone + 2-Butene, (E)-							
72 COX/PEN	EX	295	1.55(8)			2	
73 STE/WU	EX	299	(1.66±0.14)(8)			2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
74 JAP/WU2	EX	298	(1.57±0.05)(8)			2	
75 HUI/HER1	EX	225-363	3.59(9)	0	1051±43	2	1.17
In 0.0075 torr. of O_2 as scavenger.							
76 JAP/WU	EX	299	(1.54±0.09)(8)			2	
In 760 torr. Air.							
76 JAP/WU	EX	299	(1.70±0.04)(8)			2	
In 760 torr. He.							
81 ADE/KER	EX	294	1.73(8)			2	
Reaction in two Tedlar plastic bags, in synthetic air. Gas-chromatography. P ~ 760 torr.							
$O_3 + (CH_3)_2C{=}CH_2 \rightarrow$ products							
Ozone + 1-Propene-, 2-methyl-							
74 BEC/SCH	EX	283	1.08(7)			2	
74 FIN/PIT	EX	298	(5.4±2.3)(6)			2	
In O_2 carrier gas.							
74 FIN/PIT	EX	298	(3.6±0.6)(7)			2	
In N_2 carrier gas.							
75 HUI/HER1	EX	225-363	1.91(9)	0	1671±23	2	1.06
In 0.0075 torr. of O_2 as scavenger.							
74 JAP/WU2	EX	298	(8.19±0.12)(6)			2	
76 WIL	EX	298	7.4(6)			2	
81 ADE/KER	EX	294	7.23(6)			2	
Reaction in two Tedlar plastic bags, in synthetic air. Gas-chromatography. P ~ 760 torr.							
$O_3 + CH_3CH{=}CHCHO \rightarrow$ products							
Ozone + 2-Butenal (Crotonaldehyde)							
81 ATK/ASC	EX	296	(5.42±1.08)(5)			2	
Reaction in a Teflon bag, in ultrahigh-purity air. P(Total) = 735 torr.							
$O_3 + CH_3C(O)CH{=}CH_2 \rightarrow$ products							
Ozone + 3-Buten-2-one							
81 ATK/ASC	EX	296	(2.87±0.36)(6)			2	
Reaction in a Teflon bag, in ultrahigh-purity air. P(Total) = 735 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
O_3 + CH_2=C(CH_3)CHO → products							
Ozone + 2-Propenal, 2-methyl- (Methacrolein)							
81 ATK/ASC	EX	296	(6.75±0.78)(5)			2	
Reaction in a Teflon bag, in ultrahigh-purity air.							
P(Total) = 735 torr.							
O_3 +  **(+ M) → adduct**							
Ozone + Thiophene							
77 KAD/TOB [1])	EX	303-356	6.31(10)	0	4227±352	2	3.16
77 KAD/TOB [1])	EX	303-356	2.51(18)	0	2365±201	3	2.51
M = O_2.							
[1]) High vacuum reaction vessel.							
P(Thiophene) ≤1.0 torr. P(O_3) ≤03. torr.							
O_3 + CH_2=C(CH_3)CH=CH_2 → products							
Ozone + 1,3-Butadiene, 2-methyl- (Isoprene)							
81 ADE/KER [1])	EX	260	9.94(6)			2	
81 ADE/KER [1])	EX	294	4.22(6)			2	
[1]) Reaction in two Tedlar plastic bags, in synthetic air. Gas-chromatography.							
P ~760 torr.							
82 ATK/WIN	EX	276-324	9.28(9)	0	2153±430	2	
Reaction in a thermostated environmental chamber.							
[O_3] = (4.7-9.5)x10^{12} molec.cm^{-3}.							
O_3 +  **→ products**							
Ozone + Cyclopentene							
74 JAP/WU2	EX	298	(4.89±0.48)(8)			2	
81 ADE/KER [1])	EX	260	3.45(8)			2	
81 ADE/KER [1])	EX	294	5.84(8)			2	
[1]) Reaction in two Tedlar plastic bags, in synthetic air. P ~760 torr. Gas-chromatography.							
O_3 + $CH_3CH_2CH_2CH$=CH_2 → products							
Ozone + 1-Pentene							
74 JAP/WU2	EX	298	(6.44±0.24)(6)			2	
O_3 + cis-CH_3CH_2CH=$CHCH_3$ → products							
Ozone + 2-Pentene, (Z)-							
72 COX/PEN	EX	295	1.26(8)			2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
O_3 + trans-$CH_3CH_2CH{=}CHCH_3$ → products							
Ozone + 2-Pentene, (E)-							
72 COX/PEN	EX	295	1.9(7)			2	
O_3 + $CH_3CH{=}C(CH_3)_2$ → products							
Ozone + 2-Butene, 2-methyl-							
72 COX/PEN	EX	295	4.8(8)			2	
74 JAP/WU2	EX	298	(2.97±0.10)(8)			2	
75 HUI/HER1	EX	227-363	3.82(9)	0	826±78		1.32
In 0.0075 torr. of O_2 as scavenger.							
O_3 + $CH_3C(O)CH{=}CHCH_3$ → products							
Ozone + 3-Penten-2-one							
81 ATK/ASC	EX	296	(1.28±0.23)(7)			2	
Reaction in a Teflon bag, in ultrahigh-purity air. P(Total) = 735 torr.							
O_3 +  → products							
Ozone + Cyclohexene							
74 JAP/WU1	EX	298	(1.02±0.06)(8)			2	
M = Air. Ozonolyzis of Cyclohexenein a static reactor. Same data given in 74 JAP/WU2. $[Cyclohexene]_o$ = $(0.51-1.09)x10^{14}$ $molec.cm^{-3}$. $[O_3]_o$ = $(1.22-6.13)x10^{12}$ $molec.cm^{-3}$. P(Total) = 760 torr.							
81 ADE/KER [1])	EX	260	7.23(8)			2	
81 ADE/KER [1])	EX	294	7.11(7)			2	
[1]) Reaction in two Tedlar plastic bags, in synthetic air. Gas-chromatography. P ~ 760 torr.							
O_3 + $CH_3CH_2CH_2CH_2CH{=}CH_2$ → products							
Ozone + 1-Hexene							
72 COX/PEN	EX	295	8.2(6)			2	
72 COX/PEN	EX	295	7.2(6)			2	
In N_2 atmosphere.							
73 STE/WU	EX	299	(6.63±0.90)(6)			2	
74 JAP/WU2	EX	298	(6.69±0.18)(6)			2	
81 ADE/KER	EX	294	6.50(6)			2	
Reaction in two Tedlar plastic bags, in synthetic air. Gas-chromatography. P ~ 760 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 ATK/ASC1	EX	296	(7.29±1.69)(6)			2	
Reaction of O_3 with 1-Hexene Teflon bag.							
Gas-chromatography.							
$[O_3] < 2.4 \times 10^{13}$ molec.cm^{-3}.							
$O_3 + CH_3CH_2CH_2C(CH_3){=}CH_2 \rightarrow$ products							
Ozone + 1-Pentene, 2-methyl-							
72 COX/PEN	EX	295	1.02(7)			2	
$O_3 + (CH_3)_2CHCH_2CH{=}CH_2 \rightarrow$ products							
Ozone + 1-Pentene, 4-methyl-							
72 COX/PEN	EX	295	6.4(6)			2	
O_3 + cis-$CH_3CH_2C(CH_3){=}CHCH_3 \rightarrow$ products							
Ozone + 2-Pentene, 3-methyl-, (Z)-							
74 JAP/WU2	EX	298	(2.75±0.48)(8)			2	
O_3 + trans-$CH_3CH_2C(CH_3){=}CHCH_3 \rightarrow$ products							
Ozone + 2-Pentene, 3-methyl-, (E)-							
74 JAP/WU2	EX	298	(3.39±0.10)(8)			2	
$O_3 + (CH_3)_2C{=}C(CH_3)_2 \rightarrow$ products							
Ozone + 2-Butene, 2,3-dimethyl-							
74 JAP/WU2	EX	298	(9.09±0.48)(8)			2	
75 HUI/HER1	EX	227-363	1.70(9)	0	294±196	2	1.73
In 0.0075 torr. of O_2 as scavenger.							
O_3 +  **→ products**							
Ozone + 2-Cyclohexen-1-one							
81 ATK/ASC	EX	296	(7.35±1.57)(5)			2	
Reaction in a Teflon bag,							
in ultrahigh-purity air.							
P(Total) = 735 torr.							
$O_3 + CH_3(CH_2)_4CH{=}CH_2 \rightarrow$ products							
Ozone + 1-Heptene							
82 ATK/ASC1	EX	296	(1.04±0.17)(7)			2	
Reaction in a Teflon bag.							
Gas-chromatography.							
$[O_3] < 2.4 \times 10^{13}$ molec.cm^{-3}							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
O_3 +  → products							
Ozone + Cyclohexene, 1-methyl-4-(1-methylethylidene)- (Terpinolene)							
74 JAP/WU1	EX	296	(4.40±0.66)(8)			2	
M = Air. Ozonolyzis of Terpinolene in a static reactor.							
P(Total) = 760 torr.							
$[Terpinolene]_o$ = $(0.39\text{-}2.55)x10^{13}$ molec.cm^{-3}.							
$[O_3]_o$ = $(0.61\text{-}1.47)x10^{12}$ molec.cm^{-3}.							
O_3 +  → products							
Ozone + Bicyclo[3.1.1]hept-2-ene, 2,6,6-trimethyl- (α-Pinene)							
74 JAP/WU1 [1])	EX	298	(1.99±0.18)(8)			2	
M = Air.							
$[O_3]_o$ = $(0.61\text{-}1.47)x10^{12}$ molec.cm^{-3}.							
$[\alpha\text{-Pinene}]_o$ = $(0.52\text{-}1.32)x10^{13}$ molec.cm^{-3}.							
74 JAP/WU1 [1])	EX	298	(2.17±0.18)(8)			2	
M = He.							
$[\alpha\text{-Pinene}]_o$ = $(1.05\text{-}1.14)x10^{13}$ molec.cm^{-3}.							
$[O_3]_o$ = $(0.61\text{-}1.35)x10^{12}$ molec.cm^{-3}.							
[1]) Ozonolyzis of α-Pinene in a static reactor. P(Total) = 760 torr.							
82 ATK/WIN	EX	276-324	5.66(8)	0	731±173	2	
Reaction in a thermostated environmental chamber.							
Gas-chromatography.							
$[O_3]$ = $(4.7\text{-}9.5)x10^{12}$ molec.cm^{-3}.							
O_3 +  → products							
Ozone + Bicyclo[3.1.1]heptane, 6,6-dimethyl- 2-methylene- (β-Pinene)							
82 ATK/WIN	EX	296	(1.26±0.30)(7)			2	
Reaction in Teflon bag. Gas-chromatography.							
$[O_3]$ = $(4.7\text{-}9.5)x10^{12}$ molec.cm^{-3}.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$H + O_2$ (+ M) → OH + O (+ M) (a)							
→ HO_2 (+ M) (b)							
Hydrogen atom + Oxygen molecule							
71 BEL/BRA	ES	1128-1152	2.10(14)	0	8354	2	
k_a. Constant tube-area.							
71 BEL/BRA	ES	1128-1152	1.44(14)	0	8354	2	
k_a. Varying tube-area.							
71 BRA/BEL1	EX	1150-1400	1.245(14)	0	8203±554	2	1.24
k_a.							
71 BRA/BEL2	EX	30-90	1.38(14)	0	8254	2	1.05
k_a. Rankine-Hugoniot measurements in shock-tube at low temperatures.							
71 EBE/HOY	DE	650-1000	2.3(14)	0	8455	2	
k_a.							
73 KOC/MOI	EX	913-1473	2.7(14)	0	8354±237	2	1.23
k_a.							
73 SCH1	EX	1250-2500	6.95(14)	-0.907	8369	2	
k_a. Preexponential factor expressed as: $A(T/298)^{-0.907}$.							
74 NAM/TRO	EX	839-924	4.82(9)			2	
k_a. E_a not determined. Within the given T-range k increases from $4.82x10^9$ to $9.64x10^9$ $cm^3mo91^{-1}s^{-1}$.							
75 BOW1	ES	1900-2400	6.0(14)	0	8450	2	
k_a.							
80 CHI/SKI	EX	925-1825	1.1(14)	0	8107	2	
k_a. H_2 oxidation in $H_2/O_2/Ar$ mixtures behind reflected shock-waves. Resonance-absorption Spectroscopy.							
82 PAM/SKI2	EX	1000-2500	1.2(14)	0	8107	2	
k_a. Reaction of O with H_2 behind reflected shock-waves, in $H_2/O_2/Ar$ mixtures. Resonance-absorption Spectroscopy. [O] = $5.42x10^8$-$3.49x10^{12}$ molec.cm^{-3}. P = (1.16-2.67) atm.							
71 GAY/PRA [1])	EX	1950-2575	(9.9±5.0)(14)	0	0	3	
k_b. Expansion channel experiments.							
71 GAY/PRA [1])	EX	1220-2370	(1.2±0.3)(15)	0	0	3	
k_b. Radical overshoot experiments. [1]) M = Ar. M-efficiencies relative to Ar are: 1.00(Ar), 2.0(N_2), 18.0(H_2O).							
71 HIK/EYR	EX	298	(5.9±0.7)(15)			3	
k_b. M = Ar.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
71 OSB	EX	298	2.12(15)			3	
k_b. M = Ar. M-efficiencies relative to Ar are: 1.00(Ar), 0.27(Ne), 1.27(He), 1.85(Kr), 2.20(H_2).							
72 AHU/MIC	EX	298	(2.18±0.15)(15)			3	
k_b. M = Ar. M-efficiencies relative to Ar are: 1.0(Ar), 0.2(Ne), 1.2(He), 1.8(Kr), 2.0(H_2).							
72 JAC/HOU	EX	948-1125	2.3(15)	0	0	3	
k_b. M = Ar.							
72 KUR2	EX	203-404	2.41(15)	0	-238±46	3	1.18
k_b. M = He.							
72 KUR2	EX	226	6.93(15)			3	
k_b. M = He. M-efficiencies relative to He are: 1.0(He), 4.56(N_2).							
72 KUR2	EX	298	5.70(15)			3	
k_b. M = He. M-efficiencies relative to He are: 1.0(He), 1.0(Ar), 3.4(N_2), 15.7(CH_4).							
72 MOO/ALL	EX	297	(5.4±0.2)(15)			3	
k_b. M = He. M-efficiencies relative to He are: 1.00(He), 1.04(Ar), 4.26(H_2).							
72 WES/DEH1	EX	298	(6.8±1.0)(15)			2	
k_b.							
73 KOC/MOI	EX	913-1473	3.24(15)	0	-770±101	3	1.02
k_b. M = H_2.							
73 PEE/MAH1	EX	1900	2.5(15)			3	
k_b. M = O_2.							
74 HAC/HOY2	EX	300	(5.0±1.0)(15)			3	
k_b. M = He.							
74 WON/DAV	EX	220-360	(2.45±0.40)(15)	0	-345±64	3	
k_b. M = Ar.							
74 WON/DAV	EX	220	(1.12±0.07)(16)			3	
k_b. M = Ar. M-efficiencies relative to Ar are: 1.00(Ar), 2.69(N_2).							
74 WON/DAV	EX	298	7.73(15)			3	
k_b. M = Ar. M-efficiencies relative to Ar are: 1.00(Ar), 0.93(He), 3.0(H_2), 2.8(N_2), 22.0(CH_4).							
75 VAS/MAK	RN	300	4.35(15)			3	
k_b. M = Ar. M-efficiencies relative to Ar are: 1.00(Ar), 1.00(He), 4.08(CO_2).							
76 HAC/WAG	EX	293	(9.0±1.0)(15)			3	
k_b. M = He.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
77 SLA	ES	964-1075	(3.3±0.6)(15)	0	0	3	
k_b. M = N_2. M-efficiencies relative to N_2 are: 1.0(Ar), Ar(0.67).							
77 SLA 2)	SE	200-2200	7.05(15)	-1.0	0	3	
k_b. M = Ar. Best-fit of all available data.							
77 SLA 2)	SE	200-2000	2.05(16)	-1.42	0	3	
k_b. $M_{eff}(N_2)$ = 3.1 at 300 K, decreasing to 1.5 1.5 above 1000 K. Best fit all aailable data.							
2) Preexponential factor expressed as: $A(T/298)^n$.							
78 CAM/ROG	EX	425	(1.2±0.2)(13)			3	
k_b. M = N_2. Discharge-flow. P(Total) = (0.2-0.5) kPa.							
78 HAC/WAG	EX	293	(9.0±1.0)(15)			3	
k_b. M = He. Isothermal discharge-flow reactor. P = 3.8 torr.							
79 ISH/SUG2	EX	298	(1.09±0.22)(16)			3	
k_b. M = H_2. Pulse-radiolysis. Absorption-spectroscopy. P = 747 torr. H_2 + 0.93 torr. O_2.							
79 MOR/HEI	RL	298	(6.1±1.8)(5)			3/2	
k_b/k_{ref}. HCHO photolysis at 313 nm. M = O_2 + N_2 + 2CO + 3HCHO. k_{ref}: HCHO + H → CHO + H_2							
80 CHI/SKI	EX	1000	7.0(14)			3	
k_b. M = Ar. H_2 oxidation in $H_2/O_2/Ar$ mixtures behind reflected shock-waves. Resonance-absorption Spectroscopy.							
82 PAM/SKI2	EX	1000-2500	4.5(14)	0	505	3	
k_b. M = Ar. Reaction of O with H_2 behind reflected shock-waves in $H_2/O_2/Ar$ mixtures. Resonance-absorption spectroscopy. [O] = $5.42x10^8$-$3.49x10^{12}$ molec.cm^{-3}. P = (1.16-2.67) atm.							
H + $O_2(^1\Delta_g)$ → OH + O (principal channel)							
Hydrogen atom + Oxygen molecule							
73 SCH/SCH2	EX	300	(1.51±0.30)(10)			2	
82 CUP/TAK	EX	300-431	(8.79±2.95)(12)	0	2013±101	2	
Discharge-flow apparatus. EPR-spectrometry. $O_2(^1\Delta_g)$ generated by microwave-discharge of O_2/Ar mixtures. H atoms generated by microwave-discharge of H_2/Ar mixtures.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$D + O_2$ (+ M) → OD + O (+ M) (a)							
→ DO_2 (+ M) (b)							
Deuterium atom + Oxygen molecule							
75 APP/APP	ES	1700-3100	3.13(14)	0	9935	2	1.3
k_a. Data fit.							
80 CHI/SKI	EX	1700-2200	1.6(13)	0	7554	2	
k_a. D_2 oxidation in $D_2/O_2/Ar$ mixtures behind reflected shock-waves. Resonance-absorption.							
82 PAM/SKI2	EX	1000-2500	5.8(13)	0	7554	2	
k_a. Reaction of O with D_2 behind reflected shock-waves in $D_2/O_2/Ar$ mixtures. [O] = $5.42x10^8$-$3.49x10^{12}$ molec.cm^{-3}. Resonance-absorption. P = (1.16-2.67) atm.							
75 VAS/MAK	EX	300	4.35(15)			3	
k_b. M = Ar. M-efficiencies relative to Ar are: 1.0(Ar), 1.0(He), 4.0(CO_2).							
79 ISH/SUG2	EX	298	(1.05±0.47)(16)			3	
k_b. M = D_2. Pulse-radiolysis. Absorption-Spectroscopy. P = 748 torr. (D_2 + O_2)							
80 CHI/SKI	EX	1000	1.6(14)			3	
k_b. M = Ar. D_2 oxidation in $D_2/O_2/Ar$ mixtures behind reflected shock-waves. Resonance-absorption.							
82 PAM/SKI2	EX	1000-2500	2.2(14)	0	505	3	
k_b. M = Ar. Reaction of O with D_2 behind reflected shock-waves in $D_2/O_2/Ar$. Resonance-absorption. [O] = $5.42x10^8$-$3.49x10^{12}$ molec.cm^{-3}. P = (1.16-2.67) atm.							
$H + O_3$ → $OH + O_2$ (a)							
→ HO_2 + O (b)							
Hydrogen atom + Ozone							
77 CLY/MON	EX	298-638	5.95(13)	0	224±26	2	1.26
k_a.							
77 SHA	ES	250-2000	1.64(13)	0.75	0	2	
k_a. Preexponential factor expressed as: $A(T/298)^{0.75}$.							
78 LEE/MIC2	EX	219-360	(8.01±1.93)(13)	0	449±58	2	
k_a. Flash-photolysis. Resonance-fluorescence.							
79 KEY	EX	196-424	(9.03±1.08)(11)	0	499±32	2	
k_a. Discharge-flow. Resonance-fluorescence. OH is vibrationally excited, with v ≤9.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 FOR/WIE	EX	298	(1.69±0.06)(13)			2	
$k_a + k_b$. M = He. Laser photolysis of O_3/H_2 mixtures. H atoms produced by the reaction: $O(^1D) + H_2 \rightarrow OH + H$. $P(H_2)$ = 110 mtorr. P(He) = 20 torr. $P(O_3)$ = (1.7-3.8) mtorr.							
H + H (+ M) → H_2 (+ M)							
Hydrogen atom							
71 BEN/BLA	EX	298	(3.4±0.5)(15)			3	
M = H_2. M-efficiencies relative to H_2 are: 1.0(H_2), 1.1(N_2), 1.3(He), 1.7(Ar), 1.6(CO_2), 1.7(CH_4), 9.0(N_2O).							
71 GAY/PRA [1]	EX	1950-2575	3.3(14)	0	0	3	1.97
Expansion channel experiments.							
71 GAY/PRA [1]	EX	1220-2370	(3.8±0.5)(14)	0	0	3	
Radical overshoot experiments.							
[1] M = Ar. M-efficiencies relative to Ar are: 1.0(Ar), 1.0(N_2), 6.0(H_2O).							
73 AZA/BOR	EX	298	(4.5±0.7)(15)			3	
M = Ar. M-efficiencies relative to Ar are: 1.00(Ar), 1.31(He).							
73 TEN/WIN [2]	RN	298	(4.0±0.09)(16)			3	
M = NH_3. Based on k_{ref} reported in 71 BEN/BLA.							
73 TEN/WIN [2]	RN	298	5.14(16)			3	
M = NH_3. Based on k_{ref} estimated by: Ham, D.Trainer, D.W., and Kaufman, F., in J. Chem. Phys. 53, 4395(1079).							
[2] Determined by adding NH_3 to He carrier gas, then using the literature values for the H atom recombination in presence of He, to calculate the k in presence of NH_3. k_{ref} : H + H + He.							
73 TRA/HAM	EX	77	(4.35±0.54)(15)			3	
M = He. M-efficiencies relative to He are: 1.00(He), 1.54(H_2), 2.28(Ar).							
73 TRA/HAM	EX	298	(2.54±0.15)(15)			3	
M = He. M-efficiencies relative to He are: 1.00(He), 1.16(H_2), 1.31(Ar).							
74 MAL/OWE	EX	1300-1700	1.0(15)	0	0	3	1.20
M = Ar.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
75 WAL/KAU [3])	EX	77-298	2.21(15)	0	-86	3	1.1
M = H_2.							
n = 0 assumed.							
75 WAL/KAU [3])	EX	77-298	2.94(15)	-0.6	0	3	1.1
M = H_2.							
75 WAL/KAU [3])	EX	175-295	1.01(15)	0	-523	3	1.1
M = CO_2.							
n = 0 assumed.							
75 WAL/KAU [3])	EX	175-295	5.80(15)	-2.27	0	3	1.1
M = CO_2.							
[3]) A-factors recalculated from the E_a (or the given n of the T^{-n} factor) and the experimental k at 298 (or 295) K. The preexponential factors expressed as: $A(T/298)^n$ in all the expressions with n ≠ 0.							
75 WAL/KAU	EX	77	(6.71±0.80)(15)			3	
M = H_2. M-efficiencies relative to H_2 are: 1.00(H_2), 0.65(He), 1.48(Ar), 2.97(N_2), 3.99(CH_4).							
75 WAL/KAU	EX	298	(2.94±0.15)(15)			3	
M = H_2. M-efficiencies relative to H_2 are: 1.00(H_2), 0.87(He), 1.13(N_2), 1.14(Ar), 1.89(CH_4), 2.02(CO_2), 2.41(SF_6).							
76 LYN/SCH	EX	298	(3.48±0.51)(15)			3	
M = N_2. M-efficiencies relative to N_2 are: 1.00(N_2),0.61(Ne), 0.72(He), 0.83(Ar), 0.89(H_2), 1.06(Kr).							
77 MIT/LER	EX	297	(2.10±0.07)(15)			3	
M = He. About 25% p-H_2 formed.							
78 HAR/KUM [4])	EX	298	(5.44±1.09)(15)			3	
M = H_2. In the presence of H_2O vapor traces.							
78 HAR/KUM [4])	EX	298	(7.62±2.54)(14)			3	
M = H2. In the absence of H_2O vapor traces.							
[4]) Microwave discharge-flow system.							
D + D (+ M) → D_2 (+ M)							
Deuterium atom							
73 AZA/BOR	EX	298	(2.90±0.54)(15)			3	
M = Ar. M-efficiencies relative to Ar are: 1.00(Ar), 1.38(He).							
73 TRA/HAM [1])	EX	77	5.5(15)			3	1.1
73 TRA/HAM [1])	EX	298	2.2(15)			3	1.1
[1]) M = D_2.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$H + H_2(v=1) \rightarrow H_2 + H$							
Hydrogen atom + Hydrogen molecule							
78 GOR/IVA1 [1]	EX	300	(3.11±0.12)(12)			2	
78 GOR/IVA1 [1]	EX	356	(5.61±0.48)(12)			2	
[1]) Hydrogen maser storage-bulb. Mass-spectrometry. $[H_2] = (0.5\text{-}6.5)\times10^{13}$ molec.cm^{-3}.							
$H + HD \rightarrow H_2 + D$							
Hydrogen atom + Deuterium hydride							
72 NIK/MAI	CO	1000	(1.39±0.12)(13)			2	
$H + HD(v=1) \rightarrow HD + H$ (a)							
$\rightarrow H_2 + D$ (b)							
Hydrogen atom + Deuterium hydride							
78 GOR/IVA1 [1]	EX	300	(4.40±2.05)(12)			2	
78 GOR/IVA1 [1]	EX	356	(3.13±1.08)(12)			2	
[1]) $k_a + k_b$. Hydrogen maser storage-bulb. Mass-spectrometry. $[H_2] = (0.5\text{-}6.5)\times10^{13}$ molec.cm^{-3}.							
$H + D_2 \rightarrow HD + D$							
Hydrogen atom + Deuterium molecule							
72 NIK/MAI	CO	1000	(2.77±0.30)(13)			2	
75 APP/APP	EX	1860	4.01(12)			2	
75 APP/APP	EX	2680	9.40(12)			2	
75 APP/APP	EX	2730	1.00(13)			2	
76 PRA/ROG1	EX	274-1220	2.01(11)	3.21	2851±88	2	3.39
The preexponential factor expressed as: $A(T/298)^{3.21}$.							
$H + D_2(v=1) \rightarrow HD + D$							
Hydrogen atom + Deuterium molecule							
75 GOR/IVA [1]	EX	470	(1.42±0.18)(10)			2	
$[H_2] = [D_2] = (0.1\text{-}1.0)^{14}$ molec.cm^{-3}.							
78 GOR/IVA1 [1]	EX	300	(5.06±0.60)(11)			2	
78 GOR/IVA1 [1]	EX	356	(5.48±0.90)(11)			2	
$[H_2] = [D_2] = (0.5\text{-}6.5)\times10^{13}$ molec.cm^{-3}.							
[1]) Hydrogen maser storage-bulb.. Mass-spectrometry.							
$D + H_2 \rightarrow HD + H$							
Deuterium atom + Hydrogen molecule							
72 NIK/MAI	CO	1000	(3.67±0.36)(13)			2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
73 MIT/LER	EX	167-346	(1.46±0.09)(12)	2.0	2698±20	2	
The preexponential factor expressed as: $A(T/298)^2$.							
75 APP/APP	EX	2600	1.54(13)			2	
76 PRA/ROG1	EX	274-1220	7.77(11)	2.51	2491±70	2	2.75
The preexponential factor expressed as: $A(T/2.5198)^{2.51}$.							
$D + H_2(v=n) \rightarrow DH + H$							
Deuterium atom + Hydrogen molecule							
82 GLA/CHA 1)	EX	297	(1.51±0.60)(8)			2	
v = 0.							
82 GLA/CHA 1)	EX	297	(5.90±1.81)(11)			2	
v = 1.							
1) Discharge-flow system. EPR-spectrometry.							
$D + HD \rightarrow D_2 + H$							
Deuterium atom + Deuterium hydride							
72 NIK/MAI	CO	1000	(1.87±0.18)(13)			2	
$H + OH (+ M) \rightarrow H_2O (+ M)$							
Hydrogen atom + Hydroxyl							
72 FRI/SUT	ES	2130	4.4(10)			2	
$M = O_2$, N_2. Rate constant expressed as: $k[M] = 4.4x10^{10}cm^3mol^{-1}s^{-1}$.							
77 ZEL/ERL	EX	230-300	1.56(10)	0	0	2	1.2
71 GAY/PRA	EX	1950-2575	(2.4±0.8)(15)	0	0	3	
Expansion channel experiments.							
71 GAY/PRA	EX	1220-2370	(2.7±0.7)(15)	0	0	3	
Radical overshoot experiments.							
1) M = Ar. M-efficiencies relative to Ar are: 1.0(Ar), 4.0(N_2), 18.0(H_2O).							
77 ZEL/ERL	EX	230-300	(5.76±4.02)(16)	-2.6	0	3	
M = He. The preexponential factor expressed as: $A(T/298)^{-2.6}$.							
77 ZEL/ERL	EX	300	(5.44±1.45)(16)			3	
M = He. M-efficiencies relative to He are: 1.0(He), 1.5(Ar), 3.2(N_2), 6.0(CO_2).							
$D + OH \rightarrow OD + H$							
Deuterium atom + Hydroxyl							
75 MAR/KAU2	EX	295	(7.83±1.81)(13)			2	
Discharge-flow. UV Resonance-fluorescence.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 HOW/SMI	EX	300-515	(3.15±0.50)(13)	-0.63	0	2	
Laser flash-photolysis. Time-resolved Resonance-fluorescence. OH generated by pulse Laser-photolysis of $HONO_2$ or H_2O. D atom generated by D_2 microwave discharge. The preexponential factor expressed as: $A(T/298)^{-0.63}$.							
$H + OH + OH \rightarrow H_2O + OH(^2\Sigma)$							
Hydrogen atom + Hydroxyl							
74 DAV/MCG	EX	1740-1860	(8.34±0.33)(15)	0	0	3	
$H + OH + CO \rightarrow HCHO + O$							
Hydrogen atom + Hydroxyl + Carbon monoxide							
78 SME/PAV	EX	1500-3500	[1])			3	
Shock-waves. Non-Arrhenius expression. [1]) $k = 4.35x10^{20}(1/T)\ cm^6mol^{-2}s^{-1}$.							
$H + HO_2 \rightarrow H_2 + O_2$ (a)							
$\rightarrow OH + OH$ (b)							
$\rightarrow H_2O + O$ (c)							
Hydrogen atom + Hydroperoxo							
71 BEN/BLA	RL	298	(7.5±2.5)(-1)			2/2	
k_a/k_b. Estimated ratio.							
72 WES/DEH1	RL	298	6.2(-1)			2/2	
$k_a/(k_a + k_b + k_c)$. Estimated ratio.							
74 BAL/FUL1	RL	773	1.7(-1)			2/2	
k_a/k_b. Reaction vessel in electric furnace. Second limit measurement.							
74 BAL/FUL1	ES	300-773	3.1(14)	0	868	2	
$k_a + k_b$. Reaction vessel in electric furnace. Second limit measurement.							
76 HAC/WAG	RL	293	2.9(-1)			2/2	
$k_a/(k_a + k_b + k_c)$.							
76 HAC/WAG	RN	293	(6.7±1.5)(12)			2	
k_a.							
77 SHA	ES	250-2000	8.25(12)	0.75	0	2	
k_a. The preexponential factor expressed as: $A(T/298)^{0.75}$.							
78 HAC/WAG [1])	RL	293	4.2(-1)			2/2	
k_a/k_b.							
78 HAC/WAG [1])	RL	293	2.9(-1)			2/2	
$k_a/(k_a + k_b + k_c)$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
78 HAC/WAG [1])	RN	293	(1.0±0.5)(13)				2
k_a.							
[1]) Isothermal discharge-flow reactor.							
P = 3.8 torr.							
82 SRI/QIU	EX	296	(4.03±2.04)(12)				2
k_a. Discharge-flow reactor. Laser-induced Fluorescence. UV-Resonance-Fluorescence. HO_2 generated by reacting F with H_2O_2. F atoms generated by dissociation of CF_4 in a microwave-discharge. H and O atoms generated by dissociation of H_2 and O_2 in a microwave-discharge. [NO] ~ $2x10^{14}$ molec.cm^{-3}. P(He) ~ 2.5 torr. $[H]_o = [O]_o$ ~ $(4-5)x10^{10}$ molec.cm^{-3}. $[CF_4]$ = $(1-10)x10^{13}$ molec.cm^{-3}. $[H_2O_2]$ = $8x10^{12}$ molec.cm^{-3}.							
72 DAY/DIX [2])	RL	300-1800	(6.5±1.0)	0	0		2/2
73 DAY/THO [2])	RL	300-1050	(6.5±1.0)	0	0		2/2
[2]) $(k_b + k_c)/k_a$.							
Estimated ratio.							
72 WES/DEH1	RL	298	2.7(-1)				2/2
$k_b/(k_a + k_b + k_c)$.							
Estimated ratio.							
76 HAC/WAG	RL	293	6.9(-1)				2/2
$k_b/(k_a + k_b + k_c)$.							
76 HAC/WAG	RN	293	(1.6±0.8)(13)				2
k_b.							
77 COL/NAE [3])	RL	1113	2.5(-2)				2/2
k_{ref}: $H + CH_3CHO \rightarrow H_2 + CH_3CO$							
77 COL/NAE [3])	RL	1113	2.9(-2)				2/2
k_{ref}: $HO_2 + CH_3CHO \rightarrow H_2O_2 + CH_3CO$							
77 COL/NAE [3])	RL	1113	3.1(-2)				2/2
k_{ref}: $H_2O_2 + M \rightarrow OH + OH + M$							
[3]) k_b/k_{ref}.							
77 SHA	ES	250-2000	8.25(12)	0.75	0		2
k_b. The preexponential factor expressed as: $A(T/298)^{0.75}$.							
78 HAC/WAG [4])	RL	293	6.9(-1)				2/2
$k_b/(k_a + k_b + k_c)$.							
78 HAC/WAG [4])	RN	293	(2.5±1.0)(13)				2
k_b.							
[4]) Isothermal discharge-flow reactor.							
P = 3.8 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 SRI/QIU	EX	296	(3.85±0.60)(13)				2
k_b. Discharge-flow reactor. Laser-induced Fluorescence. UV-Resonance-Fluorescence. HO_2 generated by reacting F with H_2O_2. F, H and O atoms generated by dissociation of CF_4, H_2 and O_2, respectively, in a microwave-discharge. P(He) ~ 2.5 torr. [NO] ~ $2x10^{14}$ molec.cm^{-3}. $[H]_o$ = $[O]_o$ ~ $(4-5)x10^{10}$ molec.cm^{-3}. $[CF_4]$ = $(1-10)x10^{13}$ molec.cm^{-3}. $[H_2O_2]$ = $8x10^{12}$ molec.cm^{-3}.							
72 WES/DEH1	RL	298	1.1(-1)				2/2
$k_c/(k_a + k_b + k_c)$. Estimated ratio.							
76 HAC/WAG	RL	293	2.0(-2)				2/2
$k_c/(k_a + k_b + k_c)$.							
76 HAC/WAG	RN	293	5.0(11)				2
k_c.							
78 HAC/WAG [5]	RL	293	2.0(-2)				2/2
$k_c/(k_a + k_b + k_c)$.							
78 HAC/WAG [5]	RN	293	≤7.0(11)				2
k_c. Upper-limit k.							
[5]) Isothermal discharge-flow. P = 3.8 torr.							
82 SRI/QIU	EX	296	(1.81±0.90)(12)				2
k_c. Discharge-flow. Laser-induced Fluorescence. UV-Resonance-Fluorescence. HO_2 generated by reacting F with H_2O_2. F, H and O atoms generated by dissociation of CF_4, H_2nd O_2, respectively, in a microwave discharge. P(He) ~ 2.5 torr. [NO] ~ $2x10^{14}$ molec.cm^{-3}. $[H]_o$ = $[O]_o$ ~ $(4-5)x10^{10}$ molec.cm^{-3}. $[CF_4]$ = $(1-10)x10^{13}$ molec.cm^{-3}. $[H_2O_2]$ = $8x10^{12}$ molec.cm^{-3}.							
77 HAC/PRE	EX	293	(3.6±1.0)(13)				2
$k_a + k_b + k_c$. Isothermal flow.							
78 PRE	EX	293	(3.2±1.0)(13)				2
$k_a + k_b + k_c$. Laser Magnetic Resonance Spectroscopy.							
79 HAC/PRE1	EX	293	(2.8±0.6)(13)				2
$k_a + k_b + k_c$. Isothermal flow. Laser Magnetic Resonance Spectrometry. P(Total) = (130-800) Pa.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 THR/WIL2	EX	298	(3.01±0.78)(13)				2
$k_a + k_b + k_c$. Laser magnetic Resonance Spectrometry.							
82 SRI/QIU	EX	296	(4.46±0.72)(13)				2
$k_a + k_b + k_c$. Discharge-flow. Laser-induced Fluorescence. UV-Resonance-Fluorescence. HO_2 radicals generated by reacting F with H_2O_2. F, H and O atoms generated by dissociation of CF_4, H_2, and O_2, respectively, in a microwave-discharge. $[H]_o = [O]_o \sim (4-5)x10^{10}$ molec.cm^{-3}. $[CF_4] = (1-10)x10^{13}$ molec.cm^{-3}. $[H_2O_2] = 8x10^{12}$ molec.cm^{-3}. $[NO] \sim 2x10^{14}$ molec.cm^{-3}. P(He) ~ 2.5 torr.							
$H + H_2O \rightarrow H_2 + OH$							
Hydrogen atom + Water							
79 COH/WES	RE	250-3000	9.52(12)	1.2	9610		2
Critical review. $k_1 = Kk_{-1}$. The preexponential factor expressed as: $A(T/298)^{1.2}$. Δlogk = 0.1 at 300 K, and 0.4 at 2000 K.							
$H + H_2O_2 \rightarrow H_2 + HO_2$ (a)							
$\rightarrow OH + H_2O$ (b)							
Hydrogen atom + Hydrogen peroxide							
72 VOL/GOR	RL	298	(3.0±1.0)				2/2
k_b/k_a.							
73 GOR	ES	298	(2.41±1.20)(8)				2
k_a.							
74 GOR/VOL	ES	298	(1.87±0.48)(9)				2
k_a.							
75 KLE/PAY	EX	283-353	(3.13±1.20)(12)	0	1399±141		2
$k_a + k_b$. Channel (b) assumed to be predominant.							
72 GOR/VOL	RL	298	(2.0±1.0)				2/2
k_b/k_a. (Corrected rate ratio.)							
73 GOR	RL	298	(3.0±1.0)				2/2
k_b/k_a.							
73 GOR	ES	298	(7.23±0.36)(8)				2
k_b.							
74 GOR/VOL	RL	298	(1.86±0.14)				2/2
k_b/k_a.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
74 GOR/VOL	ES	298	(3.4±0.84)(9)			2	
k_b.							
75 MEA/HEI	RL	298	1.3			2/2	
k_b/k_a.							
$D + H_2O_2 \rightarrow HD + HO_2$ (a)							
$\rightarrow OH + HDO$ (b)							
Deuterium atom + Hydrogen peroxide							
71 ALB/HOY	EX	294-464	7.0(12)	0	2114±201	2	
$k_a + k_b$.							
$H + SO_2 \rightarrow HSO_2$							
Hydrogen atom + Sulfur dioxide							
78 GOR/IVA2 [1])	EX	305	1.81(11)			2	
78 GOR/IVA2 [1])	EX	375	2.23(11)			2	
[1]) Based on collision-induced shifts and HF-transition line broadening in H atoms.							
$H + SH \rightarrow H_2 + S$							
Hydrogen atom + Mercapto							
72 LAN/OLD	ES	293	≤6.02(12)			2	
Upper-limit k.							
73 BRA/TRU	EX	298	2.5(13)			2	
75 CUP/GLA	EX	295	(1.51±0.48)(13)			2	
79 NIC/AMO	DE	295	(1.3±0.2)(13)			2	
Radio-frequency pulse. Kinetic spectroscopy. Computer simulation. High-vacuum. P = (0.1-2) torr.							
$H + H_2S \rightarrow H_2 + SH$							
Hydrogen atom + Hydrogen sulfide							
71 KUR/PET1	EX	190-464	(7.77±0.90)(12)	0	860±30	2	
72 ROM/SCH	EX	298	(2.29±0.24)(11)			2	
73 BRA/TRU	EX	298	5.0(11)			2	
77 PRA/ROG	EX	808-937	2.75(13)	0	330±220	2	1.78
Conventional static system.							
79 NIC/AMO	DE	295	(5.0±0.4)(11)			2	
Radio-frequency pulse. Kinetic Spectroscopy. High-vacuum system. Computer simulation. P = (0.1-2) torr.							
80 HUS/SLA1	EX	300	(5.18±0.30)(11)			2	
Time-resolved Resonance-Fluorescence.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 ROT/LOE1	EX	1965-2560	1.08(13)	0	1500	2	
Thermolysis of H_2S behind reflected shock-waves. Atomic-resonance Absorption-Spectroscopy. P(Total) = (1350-15000) torr. $[H_2S] = (0.6\text{-}4.9)\times10^{15}$ molec.cm^{-3}. $[Ar] = (5.0\text{-}8.0)\times10^{18}$ molec.cm^{-3}.							
$D + D_2S \rightarrow D_2 + SD$							
Deuterium atom + Hydrogen sulfide (D_2S)							
80 HUS/SLA1	EX	300	(4.76±0.24)(11)			2	
Time-resolved Resonance-Fluorescence.							
H + N (+ M) → NH (+ M)							
Hydrogen atom + Nitrogen atom							
73 BRO	EX	298	(1.82±1.05)(16)			3	
Central k value by averaging: $k < (6.4\pm1.5)\times10^{-32}$ cm^{6}molec^{-2}s^{-1} and $k > (3.1\pm1.0)\times10^{-32}$ cm^{6}molec^{-2}s^{-1}.							
$H + N_2 \rightarrow NH + N$							
Hydrogen atom + Nitrogen molecule							
78 ROO/HAN	ES	1700-3000	5.18(13)	0.5	71465	2	
Shock-waves. The preexponential factor expressed as: $A(T/298)^{0.5}$.							
H + NO (+ M) → OH + N (+ M)							
Hydrogen atom + Nitrogen oxide (NO)							
75 BRA/CRA [1])	DE	2530-3020	3.5(14)	0	23937	2	
75 DUX/PRA [1])	DE	2200-3250	2.6(14)	0	24560	2	
[1]) Optimization based on a proposed mechanism.							
75 FLO/HAN	EX	2403-4500	1.34(14)	0	24761±403	2	1.15
Best fit to the experimental data.							
75 KOS/AND	ES	2000-4000	3.16(13)	0	24157±151	2	2.0
Data-fit to a proposed mechanism.							
76 AND/ASA	DE	2300-3500	5.01(13)	0	24509	2	1.41
Reevaluation of the experimental data reported in 75 KOS/AND by using computer simuulation.							
77 FLO/HAN	EX	2415-4200	2.22(14)	0	25415±302	2	1.20
Best data-fit to a proposed mechanism.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
77 MCC/KRU [2]	EX	1750-2040	1.74(14)	0	24761	2	1.58
77 MCC/KRU [2]	RE	1750-2040	1.71(14)	0	24560	2	
Based on a curve fit of all previous rate constants. Recommended k.							
[2] Flow reactor.							
Same data given in 76 MCC/KRU.							
77 OKA/SIN2	EX	298-477	(4.61±0.16)(15)	0	-363±13	2	
M = H_2.							
Photomultiplier with lock-in amplifier.							
81 FOR [3]	EX	313	5.01(14)			2	
M = N_2. P >400 atm.							
81 FOR [3]	EX	313	1.50(14)			2	
M = Ar. P <100 atm. Extrapolation by using the Cassel curve method of Troe.							
[3] Steady-state quasi-monochromatic Photolysis of NO/HI mixtures. Limiting high-pressure k's.							
71 HIK/EYR	EX	298	(1.4±0.2)(16)			3	
M = H_2.							
71 OSB	EX	298	1.40(16)			3	
M = Ar. M-efficiencies relative to Ar are: 1.00(Ar), 0.56(Ne), 1.11(He), 1.40(Kr), 1.63(H_2).							
72 AHU/MIC	EX	298	(1.41±0.04)(16)			3	
M = Ar. M-efficiencies relative to Ar are: 1.0(Ar), 0.5(Ne), 1.1(He), 1.4(Kr), 1.6(H_2).							
73 ATK/CVE [4]	EX	285-390	8.9(15)	0	-272±75	3	
73 ATK/CVE [4]	EX	298	(2.150±0.13)(16)			3	
[4] M = H_2.							
75 CAM/HAN2	EX	392	(8.7±0.7)(15)			3	
M = Ar. M-efficiencies relative to Ar are: 1.00(Ar), 1.64(N_2).							
77 OKA/SIN1	EX	298	(1.56±0.06)(16)			3	
M = H_2.							
77 OKA/SIN2 [5]	EX	298	(1.55±0.23)(16)			3	
M = H_2.							
77 OKA/SIN2 [5]	EX	298	(1.91±0.38)(16)			3	
M = NO.							
[5] Photomultiplier with lock-in amplifier.							
79 ISH/SUG2	EX	298	(1.66±0.22)(16)			3	
M = H_2. Pulse-radiolysis. Absorption-spectroscopy. P = (100-300) torr. H_2 + (0.05-0.65) torr. NO							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
D + NO (+ M) → DNO (+ M)							
Deuterium atom + Nitrogen oxide (NO)							
79 ISH/SUG2	EX	298	(1.60±0.36)(16)			3	
M = D_2. Pulse-radiolysis.							
Absorption-spectroscopy.							
P = (100-900) torr. (D_2 + NO)							
H + NO_2 → OH + NO							
Hydrogen atom + Nitrogen oxide (NO_2)							
76 WAG/WEL	EX	240-460	(4.3±1.8)(14)	0	505±84	2	
77 BEM/CLY	EX	298	(6.81±1.39)(13)			2	
77 CLY/MON	EX	298-653	2.89(14)	0	174±31	2	1.21
79 MIC/NAV2	EX	195-400	(8.49±1.57)(13)	0	0	2	
T-independent. Mean value of two techniques:							
Flash-photolysis-, and Discharge-flow-							
Resonance-fluorescence.							
81 AGR/MAN	EX	300	7.53(13)			2	
Flowing-afterglow apparatus. Rotationless Ein-							
stein coefficient of Rosmus. P(Ar) = 0.7 torr.							
H + N_2O → OH + N_2 (a)							
→ NH + NO (b)							
Hydrogen atom + Nitrogen oxide (N_2O)							
73 BAL/GET	RL	773	(6.4±0.7)(-1)			2/2	
k_a/k_{ref}. k_{ref}: H + O_2 → OH + O.							
73 BAL/GET [1])	RN	773	2.6(9)			2	1.4
73 BAL/GET [1])	SE	460-2500	7.6(13)	0	7599±503	2	
[1]) k_a.							
73 WAL1	RL	773	(6.4±0.07)(-1)			2/2	
k_a/k_{ref}. k_{ref}: H + O_2 → OH + O.							
73 WAL1 [2])	RN	773	2.6(10)			2	1.4
73 WAL1 [2])	SE	700-2503	7.6(13)	0	7599±503	2	
Present and independent data combined.							
[2]) k_a.							
75 ALB/HOY	EX	718-1111	(2.2±0.7)(14)	0	8709±349	2	
k_a.							
77 BAL/VAN	EX	1000-1700	(6.0±2.0)(13)	0	6593	2	
k_a. Supersonic molecular beam.							
Mass-spectrometry. P = 40 torr.							
78 DEA/STE	EX	1950-2850	1.81(15)	0	13592	2	
k_a. M = Ar. Reflected shock waves. Best fit.							
79 GLA/QUY	EX	1473-2710	(3.82±0.66)(13)	0	8505±377	2	
k_a. Discharge-flow shock-tube.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
79 QUY	EX	1475-2875	(3.26±0.47)(13)	0	8153±302	2	
k_a. Shock-tube technique. P <760 torr.							
80 DEA/JOH1	EX	1700-2500	3.31(14)	0	5281	2	
k_a. HCHO Decomposition behind shock-waves. Best data fit. Total conc. = $5x10^{18}$ molec.cm^{-3}.							
80 MUR/BOR1 [3])	RN	1550	9.77(11)			2	
80 MUR/BOR1 [3])	RN	1923	1.26(12)			2	
[3]) k_a. Oxidative pyrolysis of CH_4 behind reflected shock-waves, initiated by the N_2O decomposition. Other k values are given for various T's within (1550-1923) K range. E_a not given. Determined relative to the reaction: $H + CH_4 \rightarrow H_2 + CH_3$							
78 BOR/ZAM	EX	850-2000	6.31(13)	0	14595±755	2	2.0
k_b. Static system. Reflected shock-waves.							
$H + N_2O(v=3) \rightarrow OH + N_2$							
Hydrogen atom + Nitrogen oxide (N_2O)							
77 GER/EGO	EX	298	<6.02(10)			2	
Upper-limit k.							
$H + NH \rightarrow H_2 + N$							
Hydrogen atom + Imidogen							
81 MOR2	EX	1790	~3.01(13)			2	2.0
Premixed $H_2/O_2/Ar$ flames. Laser-fluorescence. P = 760 torr.							
$H + NH_2 (+ M) \rightarrow H_2 + NH (+ M)$ (a)							
$\rightarrow NH_3 (+ M)$ (b)							
Hydrogen atom + Amidogen							
71 BOY/WIL	ES	298	(2.9±0.7)(12)			2	
k_a. Radiolysis of gaseous NH_3. $P(NH_3)$ = 700 torr.							
79 DOV/NIP	RN	2500-3000	6.17(13)	0	2630	2	
k_a. Pyrolysis behind reflected shock-waves.							
81 YUM/ASA	EX	2450-3020	3.02(13)	0	4308	2	
k_a. M = Ar. Thermolysis of NH_3 behind incident shock-waves. Vacuum-UV Absorption-Spectroscopy. $[NH_3]_o$ = $(1.2-2.4)x10^{14}$ molec.cm^{-3}. [Ar] = $(0.2-1.8)x10^{18}$ molec.cm^{-3}.							
71 BOY/WIL	ES	298	(1.8±0.4)(13)			2	
k_b. Radiolysis of gaseous NH_3. $P(NH_3)$ = 700 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
79 PAG/ERI	EX	349	1.6(13)			2	
k_b. Gaseous NH_3 pulse-radiolysis.							
71 GOR/MUL	EX	298	2.2(18)			3	
k_b. Unreported T assumed to be 298 K.							
$H + NH_3 \rightarrow H_2 + NH_2$							
Hydrogen atom + Ammonia							
74 DOV/NIP	EX	1500-2150	2.75(13)	0	8757±654	2	1.45
81 YUM/ASA	EX	1860-2480	1.24(14)	0	10820±5184	2	11.0
M = Ar. Thermolysis of NH_3 behind incident shock-waves.							
Vacuum-UV Absorption-Spectroscopy.							
$[NH_3]_o = (0.6-1.8)x10^{15}$ molec.cm^{-3}.							
$[Ar] = (0.1-1.2)x10^{19}$ molec.cm^{-3}.							
$H + NH_2NH \rightarrow NH_2 + NH_2$							
Hydrogen atom + Hydrazyl							
71 GEH/HOY	EX	300	(1.6±0.8)(12)			2	
$H + NH_2NH_2 \rightarrow H_2 + NH_2NH$							
Hydrogen atom + Hydrazine							
71 FRA/JON	EX	300-540	(1.5±0.3)(12)	0	654±101	2	
71 GEH/HOY	EX	213-473	1.3(13)	0	1258	2	
76 STI/PAY	EX	228-400	(5.94±0.70)(12)	0	1198±50	2	
$H + HN3 \rightarrow NH_2 + N_2$							
Hydrogen atom + Hydrazoic acid							
73 LEB/COM	EX	300-460	1.53(13)	0	2315	2	
$H + HNO \rightarrow H_2 + NO$							
Hydrogen atom + Nitrosyl hydride							
72 SMI	EX	2100	(2.35±1.14)(12)			2	
75 CAM/HAN2	RL	425	≤8.86(-3)			2/2	
k_{ref}: O + HNO → OH + NO.							
Upper-limit ratio.							
78 WAS/AKI	EX	298	>9.64(11)			2	
Fast flow.							
Lower-limit k.							
Photoionization Mass-spectrometer.							
80 DOD/ZEL	EX	295	(7.23±3.00)(13)			2	
High-frequency discharge.							
Mass-spectrometry.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$H + HONO_2 \rightarrow$ products							
Hydrogen atom + Nitric acid							
74 CHA/WAY	EX	300	≤1.20(9)				2
Upper-limit k.							
$H + HO_2NO_2 \rightarrow$ products							
Hydrogen atom + Peroxynitric acid							
81 TRE/BAR [1])	EX	248-315	(1.48±0.21)(10)	0	0		2
81 TRE/BAR [1])	EX	238	(3.86±0.84)(10)				2
[1]) Stirred-flow reactor. Modulated molecular-beam Spectrometer. P(Total) = (1-3) torr.							
$H + CO (+ M) \rightarrow CHO (+ M)$							
Hydrogen atom + Carbon monoxide							
78 GOR/IVA2 [1])	EX	305	>1.51(10)				2
78 GOR/IVA2 [1])	EX	375	>2.41(11)				2
[1]) Collision-induced shifts. HF-transition line broadening in H atoms. Lower-limit k's.							
71 BEN/BLA	EX	298	≤1.2(14)				3
$M = H_2$. Upper-limit k.							
71 HIK/EYR	EX	298	(2.6±0.4)(13)				3
M = Ar. M-efficiencies relative to Ar are: 1.00(Ar), 1.54(H_2).							
72 AHU/MIC	EX	298	(2.18±0.25)(15)				3
M = Ar. M-efficiencies relative to Ar are: 1.0(Ar), 1.0(He), 0.8(Ne), 1.1(Kr), 1.3(H_2).							
72 BAL/JAC	DE	773	2.3(14)				3
$M = H_2$.							
73 AZA/AND	EX	298	(3.99±2.18)(13)				3
M = Ar. M-efficiencies relative to Ar are: 1.0(Ar), 2.0(CO).							
80 HOC/SWO1	EX	298	(3.8±0.4)(13)				3
$M = H_2$. M-efficiencies relative to H_2 are: 1.00(H_2), 0.95(CO), 1.53(CH_4). H_2 Flash-photolysis in presence of CO. P = 760 torr.							
$H + CO + OH \rightarrow HCHO + O$							
Hydrogen atom + Carbon monoxide + Hydroxyl							
78 SME/PAV	EX	1500-3500	[1])				3
Shock-waves. Non-Arrhenius expression:							
[1]) $k = 4.35 \times 10^{20} (1/T)\ cm^6 mol^{-2} s^{-1}$							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$H + CO_2 \rightarrow OH + CO$							
Hydrogen atom + Carbon dioxide							
75 VAN/PEE	DE	650-1800	4.8(14)	0	12582	2	
$k_1 = k_{-1}K$.							
78 WAW/ZIE	EX	1013-1243	9.0(13)	0	12028	2	
H_2 dissociation in a quartz vessel using the system $^{14}CO_2/CO/H_2$. P(Total) = (100-200) torr.							
$H + CH \rightarrow H_2 + C$							
Hydrogen atom + Methylidyne							
82 GRE/HOM2	EX	298	≃3.0(13)			2	
Reaction of the Ethyne/O/H system, diluted in N_2/He, in a discharge-flow reactor. Resonance-fluorescence. O atoms generated by reacting N with NO. P = 2 torr.							
$H + CH_2 \rightarrow H_2 + CH$							
Hydrogen atom + Methylene							
82 GRE/HOM1	EX	298	(5.0±1.0)(13)			2	
Reaction of the CH≡CH/O/H system diluted in N_2/He, in a discharge-flow reactor. Resonance-fluorescence. O atoms generated by reacting N with NO. H atoms produced by a discharge of the mixture H_2/He. Best data fit. P = 2 torr.							
$H + CH_3\ (+ M) \rightarrow CH_4\ (+ M)$							
Hydrogen atom + Methyl							
72 TEN/JON	CO	303-603	1.17(12)	0	25	2	
Data-fit to a proposed mechanism.							
74 CAM/MAR	EX	503-753	(1.64±0.55)(12)	0	0	2	
Average of three k's at 8, 12, and 16 torr., over the given T-range.							
77 CHE/LEE	EX	308	1.5(14)			2	
77 CHE/YEH	ES	308	(2.0±0.9)(14)			2	
Extrapolated limiting high-pressure k.							
79 SEP/MAR [1]	EX	750	2.82(12)			2	
P(Ar) ~ 14 torr.							
79 SEP/MAR [1]	EX	768-818	1.58(12)			2	
P(Ar) = 7.4 torr.							

[1]) Discharge-flow system. Best data-fit.

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
80 PAT/PIL	EX	300	(9.03±4.22)(13)			2	
Azomethane-Ethene flash-photolysis. Gas-chromatography. Limiting high-pressure k. M = Ar, or SF_6. P = (50-1000) torr.							
80 SWO/HOC	EX	296	(1.2±0.3)(14)			2	
H_2O flash-photolysis. P ~760 torr. M = N_2, H_2.							
74 PRA/VEL	EX	295	(5.3±1.0)(18)			3	
M = He. M-efficiencies relative to He are: 1.00(He), 37.74(NO).							
76 PRA/VEL1	EX	321-521	1.06(19)	-0.33	0	3	5.01
M = He. The preexponential factor expressed as: $A(T/298)^{-0.33}$.							
$H + CH_4 \rightarrow H_2 + CH_3$							
Hydrogen atom + Methane							
71 BAK/BAL	CO	298-753	3.1(13)	0	5989	2	
Rate constant per CH bond.							
73 CLA/DOV1	CO	300-1800	5.93(11)	3.0	4404±20	2	1.05
BEBO calculation. The preexponential factor expressed as: $A(T/298)^{3.0}$.							
73 PEE/MAH1	EX	1600	(3.2±0.6)(12)			2	
75 ROT/JUS	EX	1700-2300	7.23(14)	0	7578	2	
78 SHA	CO	300-2500	1.25(12)	2.0	4449	2	
The preexponential factor expressed as: $A(T/298)^2$.							
79 SEP/MAR [1])	EX	640-818	1.822(14)	0	6628±421	2	1.82
$P(CH_4)$ = (17-346) mtorr. P(Ar) = (5.2-14.8) torr.							
79 SEP/MAR [1])	RE	400-1800	7.59(13)	0	6002±96	2	1.15
Extended T-range by combining the data of several workers. Recommended by author.							
[1]) Discharge-flow system.							
80 ROT	EX	1800-2300	7.23(14)	0	7600	2	
CH_4 thermolysis behind shock-waves. Atomic Resonance-Absorption. Same data given in 79 ROT/JUS1.							
80 MUR/BOR1 [2])	RL	1550	8.0(-1)			2/2	
80 MUR/BOR1 [2])	RL	1923	1.46			2/2	
[2]) Oxidative pyrolysis of CH_4 behind reflected shock-waves, initiated by the N_2O decomposiion. Within the T-range (1550-1923) K, the ratio of rate constants shows a trend to increase from about 0.7 to 1.5.							
k_{ref}: $N_2O + M \rightarrow N_2 + O + M$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$D + CD_4 \rightarrow D_2 + CD_3$							
Deuterium atom + Methane-d_4							
80 CHI/BAK	EX	1780-2440	2.1(15)	0	11223	2	
CD_4 Pyrolysis behind shock-waves.							
Resonance-absorption Spectroscopy.							
$H + CHO \rightarrow H_2 + CO$ (a)							
$\rightarrow HCHO$ (b)							
$\rightarrow O + CH_2$ (c)							
Hydrogen atom + Methyl, oxo-							
73 MAC/THR	RL	300	4.0			2/2	
k_a/k_{ref}. k_{ref}: $CHO + O \rightarrow CO + OH$ (m)							
$\rightarrow CO_2 + H$ (n)							
78 REI/CLA	EX	298	3.31(14)			2	2.0
k_a. HCHO photolysis with tunable pulsed UV laser.							
79 NAD/SAR4	EX	298	>3.01(13)			2	
k_a. Intracavity laser spectroscopy. Unreported							
T assumed to be 298 K. Lower-limit k.							
81 CHE/RHO	ES	250-2000	(4.0±1.0)(13)			2	
k_a. Kinetic modelling of CO oxidation in flames.							
78 NAD/SAR [1]	RL	298	(6.7±2.7)			2/2	
$k(a + b)/k_{ref}$.							
k_{ref}: CHO + CHO → products.							
78 NAD/SAR [1]	RN	298	1.45(14)			2	
k(a + b).							
[1] HCHO Flash-photolysis. Laser-spectroscopy.							
79 NAD/SAR2	EX	298	(1.20±0.42)(14)			2	
$k_a + k_b$. Pulse-photolysis of CH_3CHO.							
80 HOC/SWO1	EX	298	(6.9±1.7)(13)			2	
$k_a + k_b$. H_2 flash-photolysis in presence of CO.							
P = 760 torr.							
81 TSU/KAT [2]	RN	1500-1900	1.28(10)	0	-2285	2	
Total conc. = 6.0×10^{18} molec.cm^{-3}.							
81 TSU/KAT [2]	RN	1500-1900	4.68(10)	0	-2285	2	
Total conc. = 3.0×10^{19} molec.cm^{-3}.							
81 TSU/KAT [2]	DE	1500-1900	6.61(10)	0	-2285	2	
Total conc. = 6.0×10^{19} molec.cm^{-3}.							
[2] k_b. M = Ar. Thermal oxidation of CH_3OH/O_2 in							
Ar behind reflected shock-waves. UV-absorption.							
IR-emission. $k_1 \sim k_{-1}K$.							
81 TSU/HAS	ES	1200-1800	3.98(13)	0	51602	2	
k_c. M = Ar. Thermal oxidation of CH_3OH/O2 in							
Ar behind reflected shock-waves.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$H + HCHO \rightarrow H_2 + CHO$ (a)							
$\rightarrow CH_2OH$ (b)							
Hydrogen atom + Formaldehyde							
72 RID/DAV	EX	297	(3.25±0.30)(10)			2	
k_a.							
72 WES/DEH2	EX	297-652	1.35(13)	0	1892	2	
k_a.							
77 SLE/WAR	EX	298	(2.59±1.81)(10)			2	
k_a.							
78 NAD/SAR	EX	298	(1.81±0.78)(10)			2	
k_a. HCHO Flash-photolysis. Laser-spectroscopy.							
79 KLE	EX	250-500	(1.97±0.97)(13)	0	1847±184	2	
k_a. Flash-photolysis. Resonance-fluorescence. Mass-spectrometry.							
80 DEA/JOH1	EX	1700-2500	3.31(14)	0	5281	2	
k_a. HCHO Decomposition behind shock-waves. Best data-fit. Total conc. = $5x10^{18}$ molec.cm^{-3}.							
81 TSU/KAT [1])	ES	1200-1800	2.95(9)	0	601	2	
Total conc. = $6.0x10^{18}$ molec.cm^{-3}.							
81 TSU/KAT [1])	ES	1200-1800	1.26(10)	0	601	2	
Total conc. = $3.0x10^{19}$ molec.cm^{-3}.							
81 TSU/KAT [1])	DE	1200-1800	2.34(10)	0	601	2	
Total conc. = $6.0x10^{19}$ molec.cm^{-3}.							
[1]) k_b. M = Ar. Thermal oxidation of CH_3OH/O_2 mixtures diluted in Ar behind reflected shock-waves. UV-absorption. IR-emission. $k_1 = Kk_{-1}$. Same data given in 81 TSU/HAS.							
$H + CH_3O \rightarrow H_2 + HCHO$ (a)							
$\rightarrow OH + CH_3$ (b)							
Hydrogen atom + Methoxy							
77 MOO/SLE	RL	223-398	(3.1±3.0)(-1)			2/2	
$k_a/(k_a + k_b)$. Most probable ratio.							
77 MOO/SLE	RL	223-398	(6.9±3.0)(-1)			2/2	
$k_b/(k_a + k_b)$. Most probable ratio.							
81 HOY/LOF [1])	RL	300	6.7(-1)			2/2	
$(k_a + k_b)/k_{ref}$. k_{ref}: $H + CH_2OH \rightarrow$ products.							
81 HOY/LOF [1])	RN	300	2.0(13)			2	
$k_a + k_b$.							
[1]) Discharge-flow. Laval nozzle. Mass-spectrometry. Channel (a) the major path. P = (0.1-2.0) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$H + CD_3O \rightarrow HD + HCHO$ (a)							
$\rightarrow OH + CD_3$ (b)							
Hydrogen atom + Methoxy-d_3							
81 HOY/LOF [1])	RL	300	(6.8±1.9)(-1)			2/2	
$(k_a + k_b)/k_{ref}$. k_{ref}: $H + CD_2OH \rightarrow$ products.							
81 HOY/LOF [1])	RN	300	1.9(13)			2	
$k_a + k_b$.							
[1]) Discharge fast flow-reactor. Laval nozzle reactor. Mass-spectrometry. Channel (a) is the major path. P = (0.1-2.0) torr.							
$D + CH_3O \rightarrow HD + HCHO$ (a)							
$\rightarrow OD + CH_3$ (b)							
Deuterium atom + Methoxy							
81 HOY/LOF [1])	RL	300	7.1(-1)			2/2	
$(k_a + k_b)/k_{ref}$. k_{ref}: $D + CH_2OD \rightarrow$ products.							
81 HOY/LOF [1])	RN	300	2.2(13)			2	
$k_a + k_b$.							
[1]) Discharge fast flow-reactor. Laval nozzle reactor. Mass-spectrometry. Channel (a) is the major path. P = (0.1-2.0) torr.							
$H + CH_2OH \rightarrow H_2 + HCHO$ (a)							
$\rightarrow OH + CH_3$ (b)							
Hydrogen atom + Methyl, hydroxy-							
81 HOY/LOF	RN	300	3.0(13)			2	
$k_a + k_b$. Discharge fast-flow reactor. Laval nozzle reactor. Mass-spectrometry. Channel (a) is the major path. P = (0.1-2.0) torr.							
$H + CD_2OH \rightarrow H_2 + DCDO$ (a)							
$\rightarrow HD + HCDO$ (b)							
$\rightarrow OH + CD_2H$ (c)							
Hydrogen atom + Methyl-d_2, hydroxy-							
81 HOY/LOF	RN	300	2.9(13)			2	
$k_a + k_b + k_c$. Discharge fast flow-reactor. Laval nozzle reactor. Mass-spectrometry. Channels (a) and (b) are major. P = (0.1-2.0) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$D + CH_2OD \rightarrow D_2 + HCHO$ (a)							
$\rightarrow DH + HCDO$ (b)							
$\rightarrow OD + CH_2D$ (c)							
Deuterium atom + Methyl, hydroxy-d							
81 HOY/LOF	RN	300	3.2(13)			2	
$k_a + k_b + k_c$. Discharge fast flow-reactor. Laval Laval nozzle reactor. Mass-spectrometry. Channels (a) and (b) are major. P = (0.1-2.0) torr.							
$H + CH_3OH \rightarrow H_2O + CH_3$ (a)							
$\rightarrow H_2 + CH_2OH$ (b)							
$\rightarrow OH + CH_4$ (c)							
$\rightarrow H_2 + CH_3O$ (d)							
Hydrogen atom + Methanol							
71 ADE/WAG	EX	295-653	(2.3±0.2)(13)	0	2667±151	2	
$k_a + k_b + k_c + k_d$.							
73 ADE	EX	298-650	1.3(13)	0	2670	2	
$k_a + k_b$.							
74 MEA/KIM	EX	298-565	(1.80±0.33)(12)	0	2738±65	2	
k_b. Flow-discharge method with ESR detection.							
74 MEA/KIM	RE	298-575	6.5(12)	0	2738±75	2	
k_b. Assumed A-factor on the basis of stoichiometric considerations. Recommended k.							
81 HOY/SIE	EX	500-680	1.3(13)	0	2646	2	
$k_b + k_d$. Isothermal discharge-flow reactor. Mass-spectrometry. P = (1.5-6) torr.							
81 VAN/VAN	DE	1000-2000	3.4(13)	0	1309	2	
k_b. Methanol oxidation in lean flames. CH_3OH/O_2 mixtures, with or without added Ar or H_2, burned at 40 torr. Molecular beam sampling. Mass-spectrometry.							
$H + CD_3OH \rightarrow H_2 + CD_3O$ (a)							
$\rightarrow HD + CD_2OH$ (b)							
Hydrogen atom + Methan-d_3-ol							
81 HOY/SIE	EX	500-680	1.3(13)	0	2646	2	
$k_a + k_b$. Isothermal discharge-flow reactor. Mass-spectrometry. P = (1.5-6) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$H + CD_3OD \rightarrow HD + CD_3O$ (a)							
$\rightarrow HD + CD_2OD$ (b)							
Hydrogen atom + Methanol-d_4							
81 HOY/SIE	EX	500-680	1.3(13)	0	2646	2	
$k_a + k_b$. Discharge-flow. P = (1.5-6) torr.							
$D + CH_3OH \rightarrow DH + CH_3O$ (a)							
$\rightarrow DH + CH_2OH$ (b)							
Deuterium atom + Methanol							
81 HOY/SIE	EX	500-680	1.3(13)	0	2646	2	
$k_a + k_b$. Discharge-flow. P = (1.5-6) torr.							
74 MEA/KIM	ES	298-575	(2.82±0.40)(13)	0	2617±50	2	
k_b. Discharge-flow with ESR detection.							
$H + CH_3OOH \rightarrow H_2O + CH_3O$ (a)							
$\rightarrow H_2 + CH_3O_2$ (b)							
$\rightarrow H_2 + CH_2OOH$ (c)							
Hydrogen atom + Hydroperoxide, methyl-							
75 SLE/WAR2	EX	250-358	(1.69±0.54)(11)	0	956±101	2	
$k_a + k_b + k_c$.							
77 SLE/WAR	EX	250-358	(7.27±0.18)(10)	0	936±96	2	
k_a = (43±7)% of k(overall).							
77 SLE/WAR	EX	250-358	(8.79±0.18)(10)	0	936±96	2	
k_b = (52±7)% of k(overall).							
77 SLE/WAR	EX	250-358	8.45(9)	0	936±96	2	
k_c = 5% of k(overall).							
77 SLE/WAR [1])	EX	250-358	(1.69±0.54)(11)	0	936±96	2	
77 SLE/WAR [1])	EX	298	(7.83±1.20)(9)			2	
[1]) $k_a + k_b + k_c$.							
$D + CH_3OOH \rightarrow DHO + CH_3O$ (a)							
$\rightarrow DH + CH_3O_2$ (b)							
$\rightarrow DH + CH_2OOH$ (c)							
Deuterium atom + Hydroperoxide, methyl-							
77 SLE/WAR	EX	298	(7.23±0.60)(9)			2	
$k_a + k_b + k_c$.							
$H + COS \rightarrow SH + CO$							
Hydrogen atom + Carbon oxide sulfide							
72 ROM/SCH	EX	298	(1.33±0.24)(10)			2	
75 TSU/YOK	EX	300-525	(9.1±1.2)(12)	0	1963±186	2	
76 LEE	EX	298-478	(9.77±1.00)(13)	0	2774±39	2	
77 LEE/STI	EX	261-500	(5.46±0.92)(12)	0	1938±55	2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$H + CH_2{=}N{\equiv}N \rightarrow CH_3 + N_2$							
Hydrogen atom + Methane, diazo-							
72 NIK/MOR2	EX	300	9.64(12)			2	
$H + CH_3NO_2 \rightarrow$ products							
Hydrogen atom + Methane, nitro-							
75 SLE/WAR2	EX	298-398	(1.63±0.60)(12)	0	1761±126	2	
$H + CH_3ONO \rightarrow NO + CH_3OH$ (a)							
$\rightarrow H_2 + CH_2ONO$ (b)							
$\rightarrow HNO + CH_3O$ (c)							
Hydrogen atom + Nitrous acid methyl ester (Methyl nitrite)							
77 MOO/SLE	EX	223-398	(1.21±0.13)(11)	0	956±55	2	
k_a = (47±5)% of k(overall).							
77 MOO/SLE	EX	223-398	(1.37±0.13)(11)	0	956±55	2	
$k_b + k_c$ = (53±5)% of k(overall).							
77 MOO/SLE	EX	223-398	(2.58±0.51)(11)	0	956±55	2	
$k_a + k_b + k_c$.							
$H + CD_3ONO \rightarrow NO + CD_3OH$ (a)							
$\rightarrow HD + CH_2ONO$ (b)							
$\rightarrow HNO + CD_3O$ (c)							
Hydrogen atom + Nitrous acid methyl-d_3 ester (Methyl-d_3 nitrite)							
77 MOO/SLE	EX	298	(8.31±1.39)(9)			2	
$k_a + k_b + k_c$.							
$H + CH{\equiv}CH (+ M) \rightarrow H_2 + CH{\equiv}C (+ M)$ (a)							
$\rightarrow CH_2{=}CH (+ M)$ (b)							
Hydrogen atom + Ethyne							
74 YAM/LAV	EX	1063-1233	4.78(13)	0	8254±2013	2	2.51
k_a.							
71 OSB [1])	EX	298	2.71(10)			2	
75 IBU/TAK [1])	EX	296	(5.5±0.5)(10)			2	
[1]) k_b.							
76 KEI/LYN [2])	EX	298	(6.32±0.60)(9)			2	
k increasing from $(6.32±0.60)x10^9$ to $(1.29±0.12)x10^{10}$ $cm^3mol^{-1}s^{-1}$ within the (1-10) torr. P=range.							
Loww P-range.							
$k_b = k_{app}/s$, where s ~ 2.0.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
76 KEI/LYN [2]	EX	298	(2.37±0.86)(10)			2	
k increasing from (2.37±0.26)x10^{10} to (9.43±0.58)x10^{10} $cm^3mol^{-1}s^{-1}$ within the (6-742) torr. P-range. High P-range. k_{bi} = k_{app}/s, where s ~ 1.15.							
[2]) k_b. Initial step in a proposed mechanism. Addition product vibrationally excited. P-dependent k's.							
76 PAY/STI	EX	193-400	(5.54±1.57)(12)	0	1213±70	2	
k_b. M = He. Limiting high-pressure k. Initial step in a proposed mechanism.							
78 GOR/IVA2 [3]	EX	305	(2.11±0.18)(11)			2	
Method based on collision-induced shifts and HF-transition line broadening in H atoms.							
78 GOR/IVA2 [3]	EX	305	(2.11±0.12)(11)			2	
Method based on H-maser relaxation.							
78 GOR/IVA2 [3]	EX	305	(9.43±3.63)(16)			3	
Method based on collision-induced shifts and HF-transition line broadening in H atoms.							
[3]) k_b.							
79 ISH/SUG2	EX	298	(2.29±0.24)(11)			2	
k_b. Pulse-radiolysis. Absorption-Spectroscopy. P = (200-1100) torr. H + 0.073 torr. CH≡CH.							
81 SUG/OKA2	EX	206-461	(2.28±0.12)(13)	0	1374±18	2	
k_b. Pulse-radiolysis. Resonance-absorption. Limiting high-pressure k.							

H + CD≡CD (+ M)→ D + CH≡CD (+ M)(a)
→ CHD=CD (+ M) (b)

Hydrogen atom + Ethyne-d_2

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
71 HOY/WAG	EX	300-470	2.0(13)	0	2667±252	2	
k_a.							
76 KEI/LYN [1]	EX	298	(3.98±0.42)(10)			2	
k increasing from (3.98±0.42)x10^{10} to (5.84±0.60)x10^{10} $cm^3mol^{-1}s^{-1}$ within the (1.2-5.6) torr. pressure range. Experiments in excess [CD≡CD].							
76 KEI/LYN [1]	EX	298	(2.11±0.24)(10)			2	
k increasing from (2.11±0.24x10^{10} to (3.49±0.36)x10^{10} $cm^3mol^{-1}s^{-1}$ within the (1-5) torr. pressure range. Experiments in excess [H].							
[1]) k_a. Overall reaction of a proposed mechanism. P-dependent rate constants.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
78 GOR/IVA2 [2])	EX	305	(2.35±0.48)(11)			2	
78 GOR/IVA2 [2])	EX	305	(9.98±5.44)(16)			3	
[2]) k_b. Collision-induced shifts.							
HF-transition line broadening in H atoms.							
79 ISH/SUG2	EX	298	(2.29±0.12)(11)			2	
k_b. Pulse-radiolysis. Absorption-spectroscopy.							
P = (200-1100) torr. (H_2 + CD≡CD)							
81 SUG/OKA2	EX	206-461	(1.91±0.12)(13)	0	1330±24	2	
k_b. Pulse-radiolysis. Resonance-absorption.							
Limiting high-pressure k.							
D + CH≡CH → H + CH≡CD (a)							
→ CHD=CH (b)							
Deuterium atom + Ethyne							
71 HOY/WAG	EX	200-465	3.1(13)	0	1862±101	2	
k_a.							
76 KEI/LYN	EX	298	(7.35±0.72)(10)			2	
k_a. Overall reaction of a proposed mechanism.							
Average k for the pressure range (1-6.7) torr.							
79 ISH/SUG2	EX	298	(1.57±0.12)(11)			2	
k_b. Pulse-radiolysis. Absorption-spectroscopy.							
P = (200-1100) torr. (D_2 + CH≡CH)							
81 SUG/OKA2	EX	206-461	(2.07±0.37)(13)	0	1521±59	2	
k_b. Pulse-radiolysis. Resonance-absorption.							
Limiting high-pressure k.							
D + CD≡CD → CD_2=CD							
Deuterium atom + Ethyne-d_2							
76 KEI/LYN	EX	298	(6.63±0.60)(9)			2	
k increasing from (6.63±0.60)x10^9 to							
(1.08±0.12)x10^{10} $cm^3mol^{-1}s^{-1}$ within the							
(1-5 6) torr. P-range. P-dependent k.							
k_{bi} = k_{app}/s, where s ~ 2.0.							
The addition product is vibrationally							
excited.							
79 ISH/SUG2	EX	298	(1.51±0.12)(11)			2	
Pulse-radiolysis.							
Absorption-spectroscopy.							
P = (200-1100) torr. (D_2 + CD≡CD)							
81 SUG/OKA2	EX	206-461	(2.64±0.87)(13)	0	1602±18	2	
Pulse-radiolysis.							
Resonance-absorption.							
Limiting high-pressure k.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$H + CH_2{=}CH \rightarrow H_2 + CH{\equiv}CH$							
Hydrogen atom + Ethenyl							
80 TAN/GAR1	ES	2000-2450	1.0(13)	0	0	2	
Thermolysis of $CH_2{=}CH_2$ in Ar behind incident shock-waves. Optimization. Total conc. = $(1.1\text{-}2.2)\times10^{18}$ molec.cm^{-3}.							
$H + CH_2{=}CH_2$ (+ M) $\rightarrow H_2 + CH_2{=}CH$ (+ M) (a)							
$\rightarrow CH_3CH_2$ (+ M) (b)							
Hydrogen atom + Ethene							
72 FAL/SUN	RL	298	≤3.0(-4)			2/2	
k_a/k_b. Upper-limit ratio.							
73 PEE/MAH2 1)	ES	1200-1700	1.1(14)	0	4278	2	
74 YAM2 1)	EX	1093-1213	1.91(13)	0	5184±1007	2	2.51
75 NAM/SHE 1)	EX	1073-1173	(1.5±0.4)(11)			2	
75 NAM/SHE 1)	ES	1073-1173	8.47(12)	0	4529±201	2	
A-factor recalculated from the author's estimated value for E_a.							
77 JUS/ROT 1)	ES	1700	5.0(12)			2	
77 JUS/ROT 1)	ES	2000	1.5(13)			2	
77 JUS/ROT 1)	ES	1700-2000	5.0(15)	0	11500	2	
81 HAU/SAN 1)	EX	1110-1235	3.54(14)	0	7217	2	
Propane pyrolysis. Adiabatic flcw-reactor.							
1) k_a.							
71 COW/KEI 2)	RL	298	(8.6±1.3)			2/2	
k_b/k_{ref}.							
k_{ref}: $H + CH{\equiv}CH \rightarrow CH_2{=}CH^{\dagger}$							
71 COW/KEI 2)	RN	298	(2.35±0.60)(11)			2	
k_b.							
2) M = Ne, Ar. Steady-state photolysis method. The addition product is vibrationally excited. P(Total) = (10-15) torr.							
71 HIK/EYR	EX	298	(5.5±0.5)(11)			2	
k_b. M = H_2, or Ar. Limiting high-pressure k. The addition product is vibrationally excited.							
71 OSB	EX	298	3.70(11)			2	
k_b.							
71 PEN/DAR 3)	RL	303-478	3.0(-1)	0	425	2/2	
k_b/k_{ref}.							
k_{ref}: $H + HI \rightarrow H_2 + I$.							
71 PEN/DAR 3)	RN	298	(6.9±0.7)(11)			2	
k_b.							
3) Photolysis of HI in presence of Ethene.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
72 TEN/JON	CO	303-603	7.89(11)	0	367	2	
k_b. Data-fit to a proposed mechanism.							
73 MIC/OSB	EX	298	(9.70±0.19)(11)			2	
k_b. M = He. Limiting high-pressure k.							
74 LAU/BUE [4])	RL	298	(5.6±0.2)(-1)			2/2	
k_{ref}: H + $CH_3CH{=}CH_2$ → $(CH_3)_2CH^{\dagger}$							
74 LAU/BUE [4])	RL	298	(1.2±0.2)			2/2	
k_{ref}: H + $CH_3CH{=}CHCH_3$ → $CH_3CH_2CHCH_3^{\dagger}$							
74 LAU/BUE [4])	RL	298	(8.0±2.0)(-1)			2/2	
k_{ref}: H + $(CH_3)_2C{=}CHCH_3$ → $(CH_3)_2CCH_2CH_3^{\dagger}$ (c)							
→ $(CH_3)_2CHCHCH_3^{\dagger}$ (d)							
[4]) k_b/k_{ref}. The product is vibrationally excited.							
74 LAU/BUE	EX	298	2.47(11)			2	
k_b. The product is vibrationally excited.							
75 IBU/TAK	RL	296	9.99±0.16			2/2	
k_b/k_{ref}. Conventional vacuum aparatus.							
k_{ref}: H + CH≡CH → $CH_2{=}CH$							
75 MIH/SCH	EX	295	(7.53±0.24)(11)			2	
k_b. The product is vibrationally excited.							
78 GOR/IVA2	EX	305	(6.32±0.60)(11)			2	
k_b. Method based on collision-induced shifts and HF-transition line broadening in H atoms.							
78 GOR/IVA2	EX	305	(6.63±0.12)(11)			2	
k_b. Method based on H-maser relaxation.							
78 GOR/IVA2	EX	305	(4.35±1.45)(17)			3	
k_b. Method based on collision-induced shifts and HF-transition line broadening in H atoms.							
78 ISH/YAM	EX	298	(6.63±0.60)(11)			2	
k_b. Pulse-radiolysis. Resonance-absorption. $P(H_2)$ = (200-1200) torr.							
78 LEE/MIC1	EX	198-320	(2.21±0.40)(13)	0	1040±42	2	
k_b. M = Ar. Flash-photolysis. Resonance-fluorescence. $P(CH_2{=}CH_2)$ = (13-150) torr. P(Ar) = (300-760) torr.							
79 OKA/CVE [5])	RL	298	(3.41±0.06)(-2)			2/3	
k_b/k_{ref}.							
k_{ref}: H + NO + M → HNO + M.							
79 OKA/CVE [5])	RN	298	(4.69±0.15)(11)			2	
k_b.							
[5]) Modulated Hg-photosensitization. Chemiluminescence. k is P-dependent, decreasing with lower P-values. The product is vibrationally excited. P = 100 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
80 BIL/BAR	RN	793-829	3.98(13)	0	2345	2	
k_b. Ethane pyrolysis. k determined relative to the reaction: $H + CH_3CH_3 \rightarrow H_2 + CH_3CH_2$							
81 EKW/SAF2	RL	358-461	4.66(-1)	0	-871±35	2/2	
k_b/k_{ref}. H atoms generated by Hg-photosensitized decomposition of H_2. General vacuum apparatus. Gas-chromatography. $P(H_2) \sim 580$ torr. P(Diethylsulfide) = (1-32) torr. k_{ref}: $H + (CH_3CH_2)_2S \rightarrow CH_3CH_2SH + CH_3CH_2$							
81 SUG/OKA2	EX	206-461	(2.83±0.30)(13)	0	1096±29	2	
k_b. Pulse-radiolysis. Resonance-absorption. Limiting high-pressure k. Supersedes 81 SUG/OKA1.							
$H + CH_2{=}CHD \rightarrow CH_3CHD$ (a)							
$\rightarrow CH_2DCH_2$ (b)							
Hydrogen atom + Ethene-d							
81 SUG/OKA2	EX	206-461	(2.67±0.46)(13)	0	1084±50	2	
$k_a + k_b$. Pulse-radiolysis. Resonance-absorption. Limiting high-pressure k. Supersedes 81 SUG/OKA1.							
$H + CD_2{=}CD_2$ (+ M) $\rightarrow D + CD_2{=}CDH$ (+ M) (a)							
$\rightarrow CD_2HCD_2$ (+ M) (b)							
Hydrogen atom + Ethene-d_4							
74 YAM1	EX	1000-1200	6.75(12)			2	1.35
k_a. Averaged over the given T-range.							
71 OSB	EX	298	5.44(11)			2	
k_b.							
71 PEN/DAR [1])	RL	303-478	3.0(-1)	0	425	2/2	
k_b/k_{ref}. k_{ref}: $H + HI \rightarrow H_2 + I$.							
71 PEN/DAR [1])	RN	298	(7.6±0.8)(11)			2	
k_b.							
[1]) Photolysis of HI in presence of $CD_2{=}CD_2$.							
75 COW/MIC	EX	297	4.16(11)			2	
k_b. In excess H, at 0.91rr. k increasing to 5.90×10^{11} $cm^3mol^{-1}s^{-1}$ at 4.93 torr.							
75 MIH/SCH	EX	295	(6.93±0.24)(11)			2	
k_b. The product is vibrationally excited.							
78 GOR/IVA2	EX	305	(6.99±0.48)(11)			2	
k_b. Collision-induced shifts. HF-transition line broadening in H atoms.							
78 GOR/IVA2	EX	305	(6.02±0.12)(11)			2	
k_b. Method based on H-maser relaxation.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
78 GOR/IVA2	EX	305	(3.63±1.09)(17)			3	
k_b. Collision-induced shifts. HF-transition line broadening in H atoms.							
81 SUG/OKA2	EX	206-461	(2.75±0.30)(13)	0	1087±26	2	
k_b. Pulse-radiolysis. Resonance-absorption. Limiting high-pressure k. Supersedes 81 SUG/OKA1.							
+ CH_2=CH_2 → CDH_2CH_2							
)euterium atom + Ethene							
75 COW/MIC	EX	297	(4.60±0.04)(11)			2	
In excess D. P-independent from 0.96 to 5 torr.							
75 COW/MIC	EX	297	(4.68±0.34)(11)			2	
In excess CH_2=CH_2. Relatively stable k from 1.25 to 1.76 torr., but increasing to $7.29x10^{11}$ $cm_3mopl^{-1}a^{-1}$ at 4.16 torr.							
75 MIH/SCH	EX	295	(5.24±0.18)(11)			2	
The product is vibrationally excited.							
79 ISH/SAT	EX	298	(4.82±0.60)(11)			2	
Pulse-radiolysis. Resonance-absorption.							
81 SUG/OKA2	EX	206-461	(2.02±0.09)(13)	0	1100±12	2	
Pulse-radiolysis. Resonance-absorption. Limiting high-pressure k. Supersedes 81 SUG/OKA1.							
D + CH_2=CHD → CDH_2CHD (a)							
→ CD_2HCH_2 (b)							
Deuterium atom + Ethene-d							
81 SUG/OKA2	EX	206-461	(2.15±0.20)(13)	0	1104±28	2	
k_a + k_b. Pulse-radiolysis. Resonance-absorption. Limiting high-pressure k. Supersedes 81 SUG/OKA1.							
D + CD_2=CD_2 → CD_3CD_2							
Deuterium atom + Ethene-d_4							
71 OSB	EX	298	4.37(11)			2	
75 COW/MIC	EX	297	1.33(11)			2	
In excess D, at 0.95 torr. k increasing to $2.77x10^{11}cm^3mol^{-1}s^{-1}$ at 5 torr.							
75 MIH/SCH	EX	295	(5.12±0.30)(11)			2	
The product is vibrationally excited.							
81 SUG/OKA2	EX	206-461	(2.14±0.26)(13)	0	1115±36	2	
Pulse-radiolysis. Resonance-absorption. Limiting high-pressure k. Supersedes 81 SUG/OKA1.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$H + CH_3CH_2 \rightarrow CH_3 + CH_3$ (a)							
$\rightarrow H_2 + CH_2{=}CH_2$ (b)							
Hydrogen atom + Ethyl							
72 TEN/JON [1])	DE	303-603	1.08(14)	0	438	2	
Data-fit to a proposed mechanism.							
74 CAM/MAR [1])	EX	503-753	3.72(13)	0	0	2	
74 PRA/VEL [1])	EX	295	(4.3±0.4)(13)			2	
76 PRA/VEL1 [1])	EX	321-521	6.46(13)	0	112±35	2	1.12
79 TAB/BAU [1])	EX	1950-2770	1.0(13)	0	0	2	
M = Ar. CH_4 pyrolysis in shock-waves.							
Best data-fit.							
Total conc. = $(1.4\text{-}5.4)\times10^{18}$ molec.cm^{-3}.							
[1]) k_a.							
74 CAM/MAR	EX	503-753	1.70(12)	0	0	2	
k_b.							
$H + CH_3CH_3 \rightarrow H_2 + CH_3CH_2$							
Hydrogen atom + Ethane							
71 BAK/BAL	CO	298-753	2.2(13)	0	4882	2	
Rate constant per CH bond.							
72 KAL/KOR	ES	1073-1173	(3.31±2.71)(12)	0	0	2	
Average of two given values.							
73 CLA/DOV1	CO	300-1800	2.45(11)	3.5	2617±35	2	1.07
BEBO calculation. The preexponential factor expressed as: $A(T/298)^{3.5}$.							
74 CAM/MAR	SE	290-1290	1.32(14)	0	4715±108	2	1.23
74 CAM/MAR	EX	503-753	1.86(14)	0	4920±192	2	1.35
74 KAL/SHE	EX	1023-1123	(2.4±0.6)(12)			2	
77 JON/MOR	EX	357-544	1.07(14)	0	4642±313	2	1.86
Discharge-flow. Mass-spectrotry.							
78 LED/VIL	EX	281-1485	5.01(13)	0	4580±302	2	3.98
Discharge-flow reactor.							
79 BAL/WAL1	CO	753-773	1.32(14)	0	4715	2	
A and B recalculated from an empirical formula.							
$H + CH_2{=}C{=}O \rightarrow CH_3 + CO$							
Hydrogen atom + Ethenone (Ketene)							
75 SLE/WAR1	EX	218-363	(3.61±1.20)(12)	0	1178±101	2	
75 SLE/WAR1	EX	300	(7.23±0.60)(10)			2	
79 MIC/NAV1 [1])	EX	298-500	(1.13±0.67)(13)	0	1725±190	2	
79 MIC/NAV1 [1])	EX	298	(3.73±1.01)(10)			2	
79 MIC/NAV1 [1])	EX	298	(4.40±0.78)(10)			2	
[1]) Flash-photolysis. Discharge-flow.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$H + CH_3CO \rightarrow H_2 + CH_2{=}C{=}O$ (a)							
$\rightarrow CHO + CH_3$ (b)							
Ethyl, 1-oxo- + Hydrogen atom							
75 SLE/WAR1	RL	298	(6.3±0.7)(-1)				2/2
$k_a/(k_a + k_b)$.							
75 SLE/WAR1	RL	298	3.7(-1)				2/2
$k_b/(k_a + k_b)$.							
$H + CH_3CHO \rightarrow H_2 + CH_3CO$							
Hydrogen atom + Acetaldehyde							
73 ADE/WAG1	EX	295-389	(2.6±0.2)	0	1309±75		2
75 SLE/WAR1	RL	298	(4.6±0.2)(-1)				2/2
k_{ref}: $H + CH_2{=}C{=}O \rightarrow CO + CH_3$							
75 SLE/WAR1	RN	298	3.19(10)				2
76 WHY/MIC2	EX	298-500	(1.34±0.23)(13)	0	1661±60		2
77 MIC/LEE	EX	298	(5.90±0.48)(10)				2
Discharge-flow. Resonance-fluorescence.							
$H + CH_2CH_2OH \rightarrow H + [C_2H_4O]$							
Hydrogen atom + Ethyl, 2-hydroxy-							
82 BAR/HOY	EX	~295	≃5.0(13)				2
Discharge-flow. Laval-nozzle.							
P < 0.2 torr.							
$H + CH_3CH_2OH \rightarrow H_2 + CH_3CHOH$ (a)							
$\rightarrow H_2O + CH_3CH_2$ (b)							
Hydrogen atom + Ethanol							
73 ADE/WAG2	EX	295-700	≃4.4(12)	0	2300		2
k_a.							
73 ADE/WAG2	EX	295-700	≃5.9(11)	0	1736		2
k_b.							
73 ADE [1])	EX	298-470	4.2(12)	0	2117		2
73 ADE/WAG2 [1])	EX	295-700	(4.2±0.4)(12)	0	2115±150		2
[1]) $k_a + k_b$.							
$H + (CH_3)_2O \rightarrow H_2 + CH_3OCH_2$							
Hydrogen atom + Methane, oxybis-							
74 MEA/KIM [1])	EX	300-404	(2.61±0.13)(13)	0	2365±25		2
Electron-Spin-Resonance measurements.							
74 MEA/KIM [1])	EX	300-404	(1.3±0.5)	0	2365±50		2
Mass-spectrometric measurements, assumed free from stoichiometric factors.							
[1]) Flow-discharge method.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
77 SLE/WAR	EX	298	(7.83±2.41)(8)			2	
78 ARO [2])	ES	1062	2.0(12)			2	
78 ARO [2])	ES	1223	2.0(13)			2	
[2]) Pyrolysis in a flow-reactor.							
78 LEE/MAC	EX	273-426	(2.64±0.36)(12)	0	1956±43	2	
Flash-photolysis. Resonance-fluorescence.							
79 FAU/HOY	EX	250-620	(1.9±0.9)(13)	0	2600±100	2	
Discharge-flow. Mass-spectrometry.							
81 LEE/MAC	EX	273-426	(2.64±0.36)(12)	0	1956±43	2	
Flash-photolysis. Resonance-fluorescence.							
$[(CH_3)_2O]_o$ ~1.0×10^{16} molec.cm^{-3}.							
$[H]_o$ <1.0×10^{11} molec.cm^{-3}.							
$D + (CH_3)_2O \rightarrow DH + CH_3OCH_2$							
Deuterium atom + Methane, oxybis-							
74 MEA/KIM	EX	198-363	(4.14±0.73)(13)	0	2229±50	2	
Flow-discharge method with ESR detection.							
$H + CH_3OOCH_3 \rightarrow H_2 + CH_2OOCH_3$							
Hydrogen atom + Peroxide, dimethyl-							
77 SLE/WAR	EX	298	(7.23±0.60)(8)			2	
H +  **$\rightarrow SH + CH_2{=}CH_2$**							
Hydrogen atom + Thiirane (Ethylene episulfide)							
75 YOK/AHM	RN	300-425	(5.7±0.7)(13)	0	978±88	2	
76 LEE	EX	298	(7.10±1.08)(11)			2	
77 LEE/STI	EX	223-423	(1.73±0.07)(13)	0	946±12	2	
$H + (CH_3)_2S \rightarrow H_2 + CH_3SCH_2$ (a)							
$\rightarrow CH_3 + CH_3SH$ (b)							
Hydrogen atom + Methane, thiobis-							
76 LEE	EX	300	(9.0±3.0)(10)			2	
$k_a + k_b$.							
81 LEE/MAC [1])	EX	212-500	(7.83±2.59)(12)	0	1118±81	2	
81 LEE/MAC [1])	EX	212-298	(2.60±0.36)(12)	0	853±23	2	
81 LEE/MAC [1])	EX	298-500	(1.51±0.04)(13)	0	1372±9	2	
[1]) k_a. Flash-photolysis.							
Resonance-fluorescence. Gas-chromatography.							
Arrhenius plot seems curved over the whole							
whole T-range of (212-500) K.							
$[(CH_3)_2S]_o$ ~1.0×10^{14} molec.cm^{-3}.							
$[H]_o$ <1.0×10^{11} molec.cm^{-3}.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
79 YOK/STR	EX	300-472	(1.71±0.26)(13)	0	1319±44	2	
k_b. H atoms generated by H_2S photolysis in excess He, or CO_2. General-vacuum system. P = 760 torr.							
$H + CH_3SSCH_3 \rightarrow CH_3SH + CH_3S$							
Hydrogen atom + Disulfide, dimethyl-							
80 EKW/JOD	EX	298-428	(5.7±1.2)(12)	0	50±50	2	
Hg-sensitized reaction. $P(H_2)$ = (570-590) torr.							
$H + NCCN \rightarrow HCN + CN$ (a)							
$\rightarrow HC_2N_2^{\dagger}$ (b)							
Hydrogen atom + Ethanedinitrile							
71 DUN/FRE	EX	298	(5.18±1.81)(8)			2	
k_a. P(Total) ~ 1 torr.							
78 PHI	EX	300	(9.03±1.20)(8)			2	
k_b. Discharge-flow. Resonance-fluorescence. High-pressure k.							
$H + O{=}C{=}C{=}C{=}O \rightarrow CO + OC{=}CH$							
Hydrogen atom + 1,2-Propadiene-1,3-dione							
77 FAU/WAG1	EX	295-480	(1.7±0.6)(13)	0	1480±180	2	
$H + CH_3C{\equiv}CH \rightarrow CH_3C{=}CH_2^{\dagger}$ (a)							
$\rightarrow CH_3CH{=}CH^{\dagger} \rightarrow CH_3 + CH{\equiv}CH$ (b)							
Hydrogen atom + 1-Propyne							
72 WAG/ZEL2	EX	195-503	(6.5±1.2)(12)	0	1007±101	2	
k_a.							
72 WAG/ZEL2	EX	195-503	(5.8±1.2)(12)	0	1560±126	2	
k_b.							
76 WHY/PAY	EX	215-460	(3.61±0.72)(13)	0	1233±50	2	
$k_a + k_b$.							
77 MIC/LEE	EX	298	(3.79±0.24)(11)			2	
k_b. Discharge-flow. Resonance-fluorescence. $[H]_o$ ~ 1.0×10^{11} molec.cm^{-3}. P(He) = 2 torr.							
$H + CH_2{=}C{=}CH_2 \rightarrow CH_3C{=}CH_2^{\dagger}$ (a)							
$\rightarrow CH_2CH{=}CH_2^{\dagger}$ (b)							
Hydrogen atom + 1,2-Propadiene (Allene)							
72 WAG/ZEL3	EX	273-470	(8.5±2.0)(12)	0	1007±101	2	
k_a.							
72 WAG/ZEL3	EX	273-470	(4.0±2.0)(12)	0	1359±201	2	
k_b.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
80 ALE/ARU1 [1])	EX	295	1.51(11)				2
P = 4.0 torr.							
80 ALE/ARU1 [1])	EX	363	2.89(11)				2
P = 3.9 torr.							
80 ALE/ARU1 [1])	EX	523	1.16(12)				2
P = 4.0 torr.							
80 ALE/ARU1 [1])	EX	853	1.69(12)				2
P = 4.9 torr.							
[1]) $k_{overall}$. Resonance-fluorescence. k values are given for other, lower pressures.							
$H + CH_3CH{=}CH_2 \rightarrow H_2 + CH_2{=}CHCH_2$ (a)							
$\rightarrow CH_3CH_2CH_2$ (b)							
$\rightarrow (CH_3)_2CH$ (c)							
$\rightarrow CH_3 + CH_2{=}CH_2$ (d)							
Hydrogen atom + 1-Propene							
72 FAL/SUN	RL	298	2.0(-3)				2/2
$k_a/(k_b + k_c)$.							
72 WAG/ZEL1	EX	195-390	(4.4±0.6)(12)	0	1384±101		2
k_b.							
78 MAR/PUR	RL	718	2.2				2/2
k_b/k_{ref}. 2,2,3,3-Tetramethylbutane pyrolysis. Static system. P = (3-19) torr. k_{ref}: $H + (CH_3)_2C{=}CH_2 \rightarrow (CH_3)_3C$ Rate ratio determined on the basis of reaction: $(CH_3)_3CC(CH_3)_3 \rightarrow (CH_3)_3C + (CH_3)_3C$							
71 COW/KEI [1])	EX	298	(4.00±0.36)(11)				2
$k_b + k_c$. M = He. Discharge-flow. k increasing to $(4.82±0.48)x10^{11}$ $cm^3mol^{-1}s^{-1}$ for (0.96-4.91) torr.							
71 COW/KEI [1])	RL	298	(2.08±0.09)(1)				2/2
$(k_b + k_c)/k_{ref}$. M = Ne, Ar. Steady-state photolysis method. P = (10-15) torr. k_{ref}: $H + CH{\equiv}CH \rightarrow CH_2{=}CH^{\dagger}$							
71 COW/KEI [1])	RN	298	(5.66±0.84)(11)				2
$k_b + k_c$. M = Ne, Ar. P = (10-15) torr. Steady-state photolysis method.							
[1]) The products of channels (b) and (c) are vibrationally excited.							
71 DAB/NIK	EX	298	(4.55±0.26)(11)				2
$k_b + k_c$. M = He. P = (1.0-2.4) torr. The products of channels (b) and (c) are vibrationally excited.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
71 KUR/PET2 $k_b + k_c$. Resonance-fluorescence. The products of (b) and (c) are vibrationally excited. P(Total) = 50 torr.	EX	177-473	(6.13±0.16)(12)	0	609±6	2	
75 MIH/SCH $k_b + k_c$. The products of channels (b) and (c) are vibrationally excited.	EX	295	(1.01±0.30)(12)			2	
78 ISH/YAM $k_b + k_c$. Pulse-radiolysis. Resonance-absorption. Predominant paths. $P(H_2)$ = (200-1200) torr.	EX	298	(1.02±0.06)(12)			2	
79 OKA/CVE [2]) $(k_b + k_c)/k_{ref}$. k_{ref}: H + NO + M → HNO + M	RL	298	(4.81±0.07)(-2)			2/3	
79 OKA/CVE [2]) $k_b + k_c$. [2]) Modulated Hg-photosensitization. Chemiluminescence. The products are vibrationally excited. P = 50 torr.	RN	298	(8.33±0.16)(11)			2	
82 HAR/PIT $k_b + k_c$. Flash-photolysis. Resonance-fluorescence. H atoms generated by pulsed vacuum-UV Photolysis of CH_4. Gas-chromatography. Predominant paths. The products of channels (b) and (c) are vibrationally excited. P(Total) = 50 torr.	EX	298-445	(1.33±0.15)(13)	0	785±54	2	
82 WAT/KYO $k_b + k_c$. Pulse-radiolysis. Resonance-absorption. Gas-chromatography. $P(H_2)$ ~ 500 torr. $P(CH_3CH{=}CH_2)$ = (0.01-0.1) torr.	EX	200-500	(1.81±0.23)(13)	0	811±33	2	
72 WAG/ZEL1 k_c.	EX	195-390	(5.4±0.6)(12)	0	629±50	2	
74 LAU/BUE k_c/k_{ref}. k_{ref}: H + $CH_2{=}CH_2$ → $CH_3CH_2^{\dagger}$. The products of channel (c) are vibrationally excited.	RL	298	(1.79±0.04)			2/2	
75 CAM/MAR k_c. Determined from k_{-c} and published thermochemical data.	CO	676-813	6.31(12)	0	842	2	
71 LEX/MAR1 k_d/k_c. M = Ar. Discharge flow method. The product of channel (c) is vibrationally excited. P(Ar) = (4-16) torr.	RL	290	(4.04±0.29)(-2)			2/2	
72 KAL/KOR k_d.	EX	1073-1173	(4.52±0.90)(12)	0	0	2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$H + CD_3CD{=}CD_2 \rightarrow CD_3CDHCD_2$ (a)							
$\rightarrow CD_3CDCD_2H$ (b)							
Hydrogen atom + 1-Propene-1,1,2,3,3,3-d_6							
82 WAT/KYO	EX	200-500	(1.54±0.34)(13)	0	759±64	2	
$k_a + k_b$. Pulse-radiolysis. Resonance-absorption.							
$P(CD_3CD{=}CD_2)$ = (0.01-0.1) torr. $P(H_2)$ ~ 500 torr.							
$D + CH_3CH{=}CH_2 \rightarrow CH_3CHDCH_2$ (a)							
$\rightarrow CH_3CHCH_2D$ (b)							
Deuterium atom + 1-Propene							
71 DAB/NIK	EX	298	(6.20±0.66)(11)			2	
$k_a + k_b$. M = He. P = (0.6-2.2) torr. The products of channels (a) and (b) are vibrationally excited.							
75 MIH/SCH	EX	295	(6.87±0.24)(11)			2	
$k_a + k_b$. The products of channels (a) and (b) are vibrationally excited.							
79 ISH/SAT	EX	298	(7.83±1.20)(11)			2	
$k_a + k_b$. Pulse-radiolysis. Resonance-absorption.							
82 WAT/KYO	EX	200-500	(1.20±0.03)(13)	0	780±8	2	
$k_a + k_b$. Pulse-radiolysis. Resonance-absorption.							
$P(CH_3CH{=}CH_2)$ = (0.01-0.1) torr. $P(D_2)$ ~ 500 torr.							
77 YAN	RL	1260-1360	(6.5±1.5)(-1)	0	0	2/2	
k_a/k_b. Estimated ratio. Thermolysis of 1-Propene in presence of D_2, in Ar, in a single shock-tube. $P(D_2)$ ~ 500 torr.							
$D + CD_3CD{=}CD_2 \rightarrow CD_3CD_2CD_2$ (a)							
$\rightarrow (CD_3)_2CD$ (b)							
Deuterium atom + 1-Propene-1,1,2,3,3,3-d_6							
82 WAT/KYO	EX	200-500	(1.33±0.16)(13)	0	799±34	2	
$k_a + k_b$. Pulse-radiolysis. Resonance-absorption.							
$P(CD_3CD{=}CD_2)$ = (0.01-0.1) torr. $P(D_2)$ ~ 500 torr.							
$H + (CH_3)_2CH \rightarrow H_2 + CH_3CH{=}CH_2$ (a)							
$\rightarrow CH_3CH_2CH_3$ (b)							
Hydrogen atom + Ethyl, 1-methyl-							
71 LEX/MAR1 [1])	RL	290	(7.19±0.12)(-1)			2/2	
k_a/k_b. P(Ar) = (4-16) torr.							
71 LEX/MAR2 [1])	RL	290	(5.4±1.1)(-1)			2/2	
k_a/k_b. P(Ar) = (4-12) torr.							
[1]) Discharge flow. The product of channel (b) is vibrationally excited.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$H + (CH_3)_2CH^{\dagger} \rightarrow CH_3 + CH_3CH_2$							
Hydrogen atom + Ethyl, 1-methyl-							
71 LEX/MAR1	RL	290	(4.84±0.28)(1)			2/2	
Discharge-flow. P(Total) = (4-16) torr.							
$(CH_3)CH^{>}$ assumed to be formed from $H + CH_3CH{=}CH_2$.							
k_{ref}: $(CH_3)_2CH^{\dagger} + M \rightarrow (CH_3)_2CH + M$							
$H + CH_3CH_2CH_3 \rightarrow H_2 + CH_3CH_2CH_2$ (a)							
$\rightarrow H_2 + (CH_3)_2CH$ (b)							
Hydrogen atom + Propane							
79 BAL/WAL1	CO	753-773	1.32(14)	0	4715	2	
k_a. A and B recalculated from an empirical formula proposed by the authors.							
76 SHE/KAL	EX	1123	3.7(12)			2	
$k_a + k_b$.							
77 LED/VIL	EX	295	1.46(8)			2	
$k_a + k_b$.							
78 LED/VIL	EX	281-1485	6.31(13)	0	3926±50	2	2.0
$k_a + k_b$. Discharge-flow.							
71 BAK/BAL	CO	298-753	5.1(13)	0	4253	2	
k_b. Rate constant per secondary CH bond.							
79 BAL/WAL1	CO	753-773	9.8(13)	0	4005	2	
k_b. A and B recalculated from an empirical formula proposed by the authors.							
82 SHE/GUS	RL	1023-1123	(4.7±0.7)(-1)			2/2	
k_b/k_a. Recalculated from the given secondary per primary bond rate constant ratio of 1.4±0.2. Pyrolysis of Propane/Isobutane mixtures, in a quartz flow-reactor. P = 100 torr.							
$H + CH_2{=}CHCHO \rightarrow$ products							
Hydrogen atom + 2-Propenal (Acrolein)							
78 KOD/NAK	EX	298	(8.1±0.8)(11)			2	
Fast flow-reactor. Time-of-flight Mass-spectrometry. $P(Ar + H_2)$ = 0.29 torr.							
$H + (CH_3)_2CO \rightarrow H_2 + CH_3C(O)CH_2$							
Hydrogen atom + 2-Propanone							
72 AZA/GYU	EX	843-928	(2.29±0.90)(14)	0	6995±755	2	
76 AMB/BRA	EX	298-465	1.86(14)	0	3200±144	2	1.58
Discharge-flow. ESR detection.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
H + CH≡CC≡CH → CH≡CCH=CH† (a)							
→ CH≡CC=CH$_2$† (b)							
Hydrogen atom + 1,3-Butadiyne							
75 SCH/WAR	EX	298	1.3(12)			2	
$k_a + k_b$.							
H + CH$_2$=CHC≡CH → products							
Hydrogen atom + 1-Buten-3-yne							
75 SCH/WAR	ES	298	(2.0±0.2)(12)			2	
H + CH$_2$=CHCH=CH$_2$ (+ M) → CH$_3$CHCH=CH$_2$ (+ M) (a)							
→ CH$_2$CH$_2$CH=CH$_2$ (+ M) (b)							
→ H$_2$ + CH$_2$=CHCH=CH (+ M) (c)							
→ H$_2$ + CH$_2$=CHC=CH$_2$ (+ M) (d)							
Hydrogen atom + 1,3-Butadiene							
71 DAB/NIK	EX	298	(5.02±0.65)(12)			2	
$k_a + k_b$. P(He) = 1.3 torr.							
78 GOR/IVA2 [1])	EX	305	(3.19±0.42)(11)			2	
78 GOR/IVA2 [1])	EX	305	≥4.57(18)			3	
Lower-limit k.							
[1]) $k_a + k_b$. Method based on collision-induced shifts and HF-transition line broadening in H atoms.							
79 ISH/SUG2	EX	298	(5.12±0.90)(12)			2	
$k_a + k_b$. Pulse-radiolysis. Absorption-spectroscopy. P = (500-600) torr. H + (0.02-0.09) torr. Ol.							
79 OKA/CVE [2])	RL	298	(2.76±0.05)(-1)			2/3	
$(k_a + k_b)/k_{ref}$. k_{ref}: H + NO + M → HNO + M.							
79 OKA/CVE [2])	RN	298	(4.27±0.26)(12)			2	
$k_a + k_b$.							
[2]) Modulated Hg-photosensitization. Chemiluminescence. k might be slightly P-dependent. The products are vibrationally excited. P = 100 torr.							
75 NAM/SHE	EX	1073-1123	(1.6±0.3)(13)	0	0	2	
$k_a + k_b + k_c + k_d$.							
D + CH$_2$=CHCH=CH$_2$ → CH$_2$DCHCH=CH$_2$ (a)							
→ CH$_2$CHDCH=CH$_2$ (b)							
Deuterium atom + 1,3-Butadiene							
71 DAB/NIK	EX	298	(3.17±0.05)(12)			2	
$k_a + k_b$. M = He. P = (1.6-2.6) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
79 ISH/SUG2	EX	298	(4.52±0.36)(12)			2	
$k_a + k_b$. Pulse-radiolysis. Absorption-spectroscopy. P = (500-600) torr. H_2 + (0.02-0.09) torr. Ol.							
$H + CH_3CH_2CH{=}CH_2 \rightarrow CH_3CH_2CHCH_3$ (a)							
$\rightarrow CH_3CH_2CH_2CH_2$ (b)							
$\rightarrow H_2 + CH_3CH_2CH{=}CH$ (c)							
$\rightarrow H + CH_3CH_2C{=}CH_2H$ (d)							
$\rightarrow H_2 + CH_3CHCH{=}CH_2$ (e)							
(or $H_2 + CH_3CH{=}CHCH_2$)							
$\rightarrow H_2 + CH_2CH_2CH{=}CH_2$ (f)							
Hydrogen atom + 1-Butene							
71 COW/KEI	EX	298	(6.81±0.48)(11)			2	
$k_a + k_b$. M = He. Discharge-flow. The products are vibrationally excited. P = 2.86 torr.							
71 COW/KEI 1)	RL	298	(2.96±0.58)(1)			2/2	
$(k_a + k_b)/k_{ref}$. k_{ref}: $H + CH{\equiv}CH \rightarrow CH_2{=}CH^{\dagger}$							
71 COW/KEI 1)	RN	298	(7.83±2.41)(11)			2	
$k_a + k_b$.							
1) M = Na, Ar. Steady-state Photolysis. The products are vibrationally excited. P = (10-15) torr.							
71 DAB/NIK	EX	298	(8.31±0.48)(11)			2	
$k_a + k_b$. M = Ha. P = (0.4-2.8) torr.							
74 SHI/AMA	RL	923	1.5(1)			2/2	
$(k_a + k_b)/(k_c + k_d + k_e + k_f)$.							
78 ISH/YAM	EX	298	(1.20±0.30)(12)			2	
$k_a + k_b$. Pulse-radiolysis. Resonance-absorption. Predominant paths. $P(H_2)$ = (200-1200) torr.							
79 OKA/CVE 2)	RL	298	(4.94±0.13)(-2)			2/3	
$(k_a + k_b)/k_{ref}$. k_{ref}: $H + NO + M \rightarrow HNO + M$.							
79 OKA/CVE 2)	RN	298	(8.36±0.16)(11)			2	
$k_a + k_b$.							
2) Hg-photosensitization. Chemiluminescence. The products are vibrationally excited. P = 50 torr.							
82 HAR/PIT	EX	298-445	(2.27±0.24)(13)	0	942±94	2	
$k_a + k_b$. Flash-photolysis. Resonance-fluorescence. H atoms generated by pulsed vacuum-UV Photolysis of CH_4. P(Total) = 50 torr.							
74 SHI/AMA	RL	923	3.0			2/2	
k_a/k_b.							
72 FAL/SUN	RL	298	1.6(-2)			2/2	
$k_e/(k_a + k_b)$.							

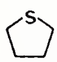
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$D + CH_3CH_2CH{=}CH_2 \rightarrow CH_3CH_2CHDCH_2$ (a)							
$\rightarrow CH_3CH_2CHCH_2D$ (b)							
Deuterium atom + 1-Butene							
71 DAB/NIK	EX	298	(8.25±0.60)(11)			2	
$k_a + k_b$. M = He. P = (0.6-2.6) torr.							
79 ISH/SAT	EX	298	(9.64±0.60)(11)			2	
$k_a + k_b$. Pulse-radiolysis. Resonance-absorption.							
$H + CH_3CH{=}CHCH_3 \rightarrow CH_3CHCH_2CH_3$ (a)							
$\rightarrow H_2 + CH_3CH{=}CHCH_2$ (b)							
$\rightarrow H_2 + CH_3CH{=}CCH_3$ (c)							
Hydrogen atom + 2-Butene (Unspecified form)							
74 SHI/AMA	RL	923	5.0			2/2	
$k_a/(k_b + k_c)$.							
74 LAU/BUE	RL	298	(8.3±0.13)(-1)			2/2	
k_a/k_{ref}. k_{ref}: $H + CH_2{=}CH_2 \rightarrow CH_3CH_2^{\dagger}$							
The product is vibrationally excited.							
$H + cis\text{-}CH_3CH{=}CHCH_3 \rightarrow H_2 + CH_3CH{=}CHCH_2$ (a)							
$\rightarrow H_2 + CH_3CHCH{=}CH_2$ (b)							
$\rightarrow CH_3CH_2CH(\cdot)CH_3$ (c)							
Hydrogen atom + 2-Butene, (Z)-							
72 FAL/SUN	RL	298	1.5(-2)			2/2	
$(k_a + k_b)/k_c$.							
71 COW/KEI	EX	298	(3.85±0.30)(11)			2	
k_c. M = He. P = 3.24 torr. Discharge-flow.							
The product is vibrationally excited.							
71 COW/KEI [1])	RL	298	(9.1±0.9)			2/2	
k_c/k_{ref}.							
k_{ref}: $H + CH{\equiv}CH \rightarrow CH_2{=}CH^{\dagger}$							
71 COW/KEI [1])	RN	298	(2.47±0.60)(11)			2	
k_c.							
[1]) M = He. P = (10-15) torr.							
Steady-state Photolysis.							
The product is vibrationally excited.							
71 DAB/NIK	EX	298	(4.75±0.35)(11)			2	
k_c. M = He. P = (1.1-2.8) torr.							
78 ISH/YAM	EX	298	(6.02±0.60)(11)			2	
k_c. Pulse-radiolysis. Resonance-absorption.							
The product is vibrationally excited.							
Predominant path. $P(H_2)$ = (200-1200) torr.							
79 OKA/CVE [2])	RL	298	(2.29±0.05)(-2)			2/3	
k_{ref}: H + NO + M → HNO + M.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
79 OKA/CVE [2])	RN	298	(3.62±0.06)(11)			2	
[2]) k_c. Hg-photosensitization. Chemiluminescence. The product is vibrationally excited. P = 50 torr.							
82 HAR/PIT	EX	298-445	(1.74±0.18)(13)	0	1083±86	2	
k_c. Flash-photolysis. Resonance-fluorescence. H atoms generated by pulsed vacuum-UV Photolysis of CH_4. Gas-chromatography. P(Total) = 50 torr.							
$D + cis\text{-}CH_3CH{=}CHCH_3 \rightarrow CH_3CHDCHCH_3$							
Deuterium atom + 2-Butene, (Z)-							
71 DAB/NIK	EX	298	(4.07±0.22)(11)			2	
M = He. P = (0.6-2.6) torr.							
79 ISH/SAT	EX	298	(4.82±0.60)(11)			2	
Pulse-radiolysis. Resonance-absorption.							
$H + trans\text{-}CH_3CH{=}CHCH_3 \rightarrow H_2 + CH_3CH{=}CHCH_2$ (a)							
$\rightarrow H_2 + CH_3CHCH{=}CH_2$ (b)							
$\rightarrow CH_3CH_2CHCH_3$ (c)							
Hydrogen atom + 2-Butene, (E)-							
72 FAL/SUN	RL	298	9.0(-3)			2/2	
$(k_a + k_b)/k_c$.							
71 COW/KEI	EX	298	(4.28±0.24)(11)			2	
k_c. M = He. Discharge-flow. The product is vibrationally excited. P = 1.79 torr.							
71 COW/KEI [1])	RL	298	(1.19±0.14)(1)			2/2	
k_c/k_{ref}. k_{ref}: $H + CH{\equiv}CH \rightarrow CH_2{=}CH^{\dagger}$							
71 COW/KEI [1])	RN	298	(3.25±0.84)(11)			2	
k_c.							
[1]) M = Ne,Ar. P = (10-15) torr. Steady-state Photolysis. The product is vibrationally excited.							
71 DAB/NIK	EX	298	(5.38±0.41)(11)			2	
k_c. M = He. P = (0.4-1.9) torr.							
78 ISH/YAM	EX	298	(6.63±1.20)(11)			2	
k_c. Pulse-radiolysis. Resonance-absorption. Predominant path. $P(H_2)$ = (200-1200) T							
78 KOD/NAK	EX	298	(5.1±0.5)(11)			2	
k_c. Fast-flow. $P(Ar + H_2)$ = 0.20 torr.							
79 OKA/CVE [2])	RL	298	(2.65±0.05)(-2)			2/3	
k_{ref}: $H + NO + M \rightarrow HNO + M$.							
79 OKA/CVE [2])	RN	298	(4.55±0.08)(11)			2	
[2]) k_c. Hg-photosensitization. Chemiluminescence. The product is vibrationally excited. P = 50 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 HAR/PIT	EX	298-445	(2.08±0.21)(13)	0	1043±63	2	
k_c. Resonance-fluorescence. H atoms generated by photolysis of CH_4. P(Total) = 50 torr.							
$D + trans\text{-}CH_3CH{=}CHCH_3 \rightarrow CH_3CHDCHCH_3$							
Deuterium atom + 2-Butene, (E)-							
71 DAB/NIK	EX	298	(4.66±0.14)(11)			2	
M = He. P = (0.7-2.2) torr.							
79 ISH/SAT	EX	298	(4.82±0.60)(11)			2	
Pulse-radiolysis. Resonance-absorption. Predominant path.							
$H + (CH_3)_2C{=}CH_2\ (+M) \rightarrow (CH_3)_3C\ (+M)$ (a)							
$\rightarrow (CH_3)_2CHCH_2\ (+M)$ (b)							
$\rightarrow H_2 + CH_2C(CH_3){=}CH_2\ (+M)$ (c)							
$\rightarrow CH_3 + CH_3CH{=}CH_2\ (+M)$ (d)							
Hydrogen atom + 1-Propene, 2-methyl-							
76 BRA/WES1	DE	1030-1300	1.6(13)	0	758	2	1.95
k_a. Computer-fit to a proposed mechanism.							
81 CAN/MAR1	EX	298-563	3.89(13)	0	901±96	2	1.29
k_a. Discharge-flow system. Mass-Spectrometry. P(Total) = (7-8) torr.							
78 GOR/IVA2	EX	305	(2.18±0.04)(12)			2	
$k_a + k_b$. Collision-induced shifts and HF-transition line broadening in H-atoms.							
78 GOR/IVA2	EX	305	(2.17±0.60)(12)			2	
$k_a + k_b$. H-maser relaxation method.							
78 GOR/IVA2	EX	305	≥3.08(18)			3	
$k_a + k_b$. Collision-induced shifts. HF-transition line broadening in H-atoms. Lower-limit k.							
78 HOR/CAL	RL	298	(4.3±0.4)(1)			2/2	
$(k_a + k_b)/k_{ref}$. HCHO Photolysis at 313 nm. P(HCHO) = (1-12) torr. k_{ref}: $H + HCHO \rightarrow H_2 + CHO$.							
78 ISH/YAM	EX	298	(3.13±0.36)(12)			2	
$k_a + k_b$. Pulse-radiolysis. Resonance-absorption. Predominant paths. P(H_2) = (200-1200) torr.							
79 OKA/CVE [1]	RL	298	(1.56±0.04)(-1)			2/3	
$(k_a + k_b)/k_{ref}$. k_{ref}: $H + NO + M \rightarrow HNO + M$.							
79 OKA/CVE [1]	RN	298	(2.43±0.09)(12)			2	
$k_a + k_b$.							
[1] Hg-photosensitiztion. Chemiluminescence. The products vibrationally excited. P = 50 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 HAR/PIT	EX	298-445	(3.68±0.36)(13)	0	849±98	2	
$k_a + k_b$. Flash-photolysis.							
Resonance-fluorescence. Gas-chromatography.							
H atoms generated by photolysis of CH_4.							
P(Total) = 50 torr.							
71 COW/KEI 2)	RL	298	(7.45±1.49)(1)			2/2	1.48
$(k_a + k_d)/k_{ref}$. k_{ref}: H + CH≡CH → CH_2=CH†							
71 COW/KEI 2)	RL	298	(2.05±0.60)(12)			2	
$k_a + k_d$.							
2) M = Ne, Ar. P = (10-15) torr. Steady-state							
Photolysis. Products vibrationally excited.							
76 BRA/WES2	RL	1055-1325	6.76(-2)	0	-2382	2/2	1.48
k_b/k_a. Computer-fit to a proposed mechanism.							
78 MAR/PUR	RL	718	9.4(-1)			2/2	
k_b/k_c. 2,2,3,3-Tetramethylbutane pyrolysis							
in a static system. P = (3-19) torr.							
Rate-ratio determined on the basis of reaction:							
$(CH_3)_3CC(CH_3)_3$ → $(CH_3)_3C$ + $(CH_3)_3C$							
71 LEX/MAR2	RL	290	(1.4±0.3)(-3)			2/2	
k_d/k_a. M = Ar. Discharge flow.							
P(Ar) = (4-12) torr.							
80 MAR/CAN	RL	293-601	2.95	0	1997±313	2/2	
k_d/k_a. M = Ar. Discharge-flow. Products of							
(a) vibrationally excited. P(Ar) = 6.6 torr.							
D + $(CH_3)_2C$=CH_2 → $(CH_3)_2CDCH_2$ (a)							
→ $(CH_3)_2CCH_2D$ (b)							
Deuterium + 1-Propene, 2-methyl-							
71 DAB/NIK	EX	298	(2.02±0.09)(12)			2	
M = He. P = (1.0-2.2) torr.							
79 ISH/SAT	EX	298	(2.29±0.18)(12)			2	
$k_a + k_b$. Pulse-radiolysis. Resonance-absorption.							
H + $(CH_3)_3C$ → $(CH_3)_3CH$ (a)							
→ H_2 + $(CH_3)_2C$=CH_2 (b)							
Hydrogen atom + Ethyl, 1,1-dimethyl-							
71 LEX/MAR2	RL	290	(3.73±0.12)			2/2	
k_b/k_a. M = Ar. Discharge flow.							
Product of step (a) vibrationally excited.							
P(Ar) = (4-12) torr.							
80 MAR/CAN	RL	293-601	(3.55±0.24)	0	0	2/2	
k_b/k_a. M = Ar. Discharge-flow.							
P(Ar) = 6.6 torr. T-independent ratio.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$H + (CH_3)_3C^{\dagger} \rightarrow CH_3 + (CH_3)_2CH$ (a)							
$\rightarrow CH_3CH_2 + CH_3CH_2$ (b)							
Hydrogen atom + Ethyl, 1,1-dimethyl-							
71 LEX/MAR2 [1])	RL	290	(4.58±1.0)			2/2	
k_a/k_{ref}.							
71 LEX/MAR2 [1])	RL	290	(7.68±0.54)(-1)			2/2	
k_b/k_{ref}.							
[1]) M = Ar. Discharge flow. P(Ar) = (4-12) torr.							
k_{ref}: $(CH_3)_3C^{\dagger} + M \rightarrow (CH_3)_3C + M$							
$H + CH_3CH_2CH_2CH_3 \rightarrow H_2 + CH_3CH_2CH_2CH_2$ (a)							
$\rightarrow H_2 + CH_3CH_2CHCH_3$ (b)							
Hydrogen atom + Butane							
79 BAL/WAL1	CO	753-773	1.32(14)	0	4715	2	
k_a. A and B recalculated by an empirical formula.							
76 YAM/NAM	EX	980-1050	(9.64±2.53)(11)	0	0	2	
$k_a + k_b$.							
71 BAK/BAL	CO	298-753	5.5(13)	0	4253	2	
k_b. Rate constant per secondary CH bond.							
79 BAL/WAL1	CO	753-773	1.96(14)	0	4005	2	
k_b. A and B recalculated by an empirical formula.							
$H + (CH_3)_3CH \rightarrow H_2 + (CH_3)_3C$ (a)							
$\rightarrow H_2 + (CH_3)_2CHCH_2$ (b)							
Hydrogen atom + Propane, 2-methyl-							
71 BAK/BAL	CO	298-753	8.7(13)	0	3553	2	
k_a. Rate constant per tertiary CH bond.							
79 BAL/WAL1 [1])	CO	753-773	5.1(13)	0	3030	2	
k_a.							
79 BAL/WAL1 [1])	CO	753-773	1.99(14)	0	4715	2	
k_b.							
[1]) A and B recalculated by an empirical formula.							
82 SHE/GUS [2])	RL	1023-1123	(2.2±0.2)	0	0	2/2	
$(k_a + k_b)/k_{ref}$.							
k_{ref}: $H + CH_3CH_2CH_3 \rightarrow H_2 + (CH_3)_2CH$ (c)							
$\rightarrow H_2 + CH_3CH_2CH_2$ (d)							
82 SHE/GUS [2])	RL	1023-1123	1.17	0	0	2/2	
k_a/k_b. Recalculated from the reported tertiary per primary bond rate constant ratio of 10.5							
[2]) Pyrolysis of Propane/Isobutane mixtures, in a quartz flow-reactor. P = 100 torr.							

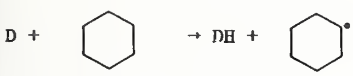
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 SHE/IVA	EX	1023-1073	(8.0±0.9)(12	0	0	2	
$k_a + k_b$.							
Pyrolysis of $(CH_3)_3CH$ in various flow-reactors.							
P = (100-750) torr.							
$H + (CH_3)_3COH \rightarrow H_2O + (CH_3)_3C$							
Hydrogen atom + 2-Propanol, 2-methyl-							
73 ADE	EX	520-770	4.0(13)	0	4126	2	
73 ADE/WAG2	EX	295-700	(4.0±0.4)(13)	0	4127±302	2	
$H + (CH_3CH_2)_2O \rightarrow H_2 + CH_3CH_2OCHCH_3$							
Hydrogen atom + Ethane, 1,1'-oxybis- (Diethyl ether)							
79 FAU/HOY	EX	250-620	(7.4±3.6)(12)	0	1630±100	2	
Isothermal discharge-flow. Mass-spectrometry.							
Electron-Spin-Resonance. Gas-chromatography.							
H +  **$\rightarrow CH_2CH_2CH_2CH_2SH$**							
Hydrogen atom + Thiophene, tetrahydro-							
78 HOR/NIS	DE	295-576	8.5(12)	0	1010	2	
Discharge-flow technique.							
P ~ 5 torr.							
$H + CH_3CH_2CH_2CH_2SH \rightarrow H_2 + CH_3CH_2CH_2CH_2S$ (a)							
$\rightarrow H_2S + CH_3CH_2CH_2CH_2$ (b)							
Hydrogen atom + 1-Butanethiol							
78 HOR/NIS [1])	DE	295-576	1.3(13)	0	1600	2	
k_a.							
78 HOR/NIS [1])	DE	295-576	1.6(12)	0	1119	2	
k_b.							
[1]) Discharge-flow technique.							
P ~ 5 torr.							
$H + (CH_3CH_2)_2S \rightarrow CH_3CH_2SH + CH_3CH_2$							
Hydrogen atom + Ethane, 1,1'-thiobis-							
81 EKW/SAF2	RN	298-461	(4.7±0.9)(13)	0	1911±77	2	
H atoms generated by Hg-photosensitized decomposition of H_2.							
General-vacuum apparatus.							
Gas-chromatography.							
k determined relative to the reaction:							
$H + CH_2{=}CH_2 \rightarrow CH_3CH_2$. $P(H_2) \sim 580$ torr.							
P(Diethylsulfide) = (1-32) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$H + CH_3CH_2SSCH_2CH_3 \rightarrow CH_3CH_2SH + CH_3CH_2S$							
Hydrogen atom + Disulfide, diethyl-							
81 EKW/SAF1	EX	298-418	(4.73±0.64)(13)	0	861±35	2	
H atoms generated by Hg-photosensitized decomposition of H_2. General-vacuum apparatus. Gas-chromatography. P(Diethyldisulfide) = (2-15) torr. $P(H_2)$ ~ 580 torr.							
$H + CH_3CH_2CH_2CH{=}CH_2 \rightarrow CH_3CH_2CH_2CHCH_3$ (a)							
$\rightarrow CH_3CH_2CH_2CH_2CH_2$ (b)							
$\rightarrow H_2 + CH_3CH_2CHCH{=}CH_2$ (c)							
$\rightarrow H_2 + CH_3CHCH_2CH{=}CH_2$ (d)							
$\rightarrow H_2 + CH_2CH_2CH_2CH{=}CH_2$ (e)							
Hydrogen atom + 1-Pentene							
71 COW/KEI	EX	298	(6.38±0.48)(11)			2	
$k_a + k_b$. M = He. Discharge-flow. The products are vibrationally excited. P = 3 torr.							
71 COW/KEI [1])	RL	298	(2.86±0.48)(1)			2/2	
$(k_a + k_b)/k_{ref}$. k_{ref}: $H + CH{\equiv}CH \rightarrow CH_2{=}CH^{\dagger}$							
71 COW/KEI [1])	RN	298	(7.78±2.41)(11)			2	
$k_a + k_b$.							
[1]) M = Ne, Ar. Steady-state Photolysis. The products are vibrationally excited. P = (10-15) torr.							
74 SHI/AMA	RL	923	9.0			2/2	
$(k_a + k_b)/(k_c + k_d + k_e)$.							
74 SHI/AMA	RL	923	3.0			2/2	
k_a/k_b.							
$H + CH_3CH_2CH{=}CHCH_3 \rightarrow CH_3CH_2CHCH_2CH_3$ (a)							
$\rightarrow CH_3CH_2CHCH_2CH_3$ (a)							
$\rightarrow CH_3CH_2CH_2CHCH_3$ (b)							
$\rightarrow H_2 + CH_3CH_2CH{=}CHCH_2$ (c)							
$\rightarrow H_2 + CH_3CHCH{=}CHCH_3$ (d)							
$\rightarrow H_2 + CH_2CH_2CH{=}CHCH_3$ (e)							
Hydrogen atom + 2-Pentene (Unspecified form)							
74 SHI/AMA	RL	923	1.0			2/2	
k_a/k_b.							
74 SHI/AMA	RL	923	3.0			2/2	
$(ka + k_b)/(k_c + k_d + k_e)$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$H + CH_3CH_2C(CH_3){=}CH_2 \rightarrow CH_3CH_2C(CH_3)_2$ (a)							
$\rightarrow CH_3CH_2CH(CH_3)CH_2$ (b)							
$\rightarrow H_2 + CH_3CHC(CH_3){=}CH_2$ (c)							
$\rightarrow H_2 + CH_2CH_2C(CH_3){=}CH_2$ (d)							
$\rightarrow H_2 + CH_3CH_2C({=}CH_2)CH_2$ (e)							
Hydrogen atom + 1-Butene, 2-methyl-							
71 DAB/NIK	EX	298	(9.09±0.96)(11)			2	
$k_a + k_b$. M = He. P = (0.7-1.3) torr.							
74 SHI/AMA	RL	923	4.0			2/2	
k_a/k_b.							
74 SHI/AMA	RL	923	1.3(1)			2/2	
$(k_a + k_b)/(k_c + k_d + k_e)$.							
$D + CH_3CH_2C(CH_3){=}CH_2 \rightarrow CH_3CH_2C(CH_3)CH_2D$ (a)							
$\rightarrow CH_3CH_2CD(CH_3)CH_2$ (b)							
Deuterium atom + 1-Butene, 2-methyl-							
71 DAB/NIK	EX	298	(2.05±0.10)(12)			2	
$k_a + k_b$. M = He. P = (1.2-2.6) torr.							
$H + (CH_3)_2CHCH{=}CH_2 \rightarrow (CH_3)_2CHCHCH_3$ (a)							
$\rightarrow (CH_3)_2CHCH_2CH_2$ (b)							
Hydrogen atom + 1-Butene, 3-methyl-							
71 DAB/NIK	EX	298	(7.35±0.60)(11)			2	
$k_a + k_b$. M = He. P = (0.6-2.7) torr.							
$D + (CH_3)_2CHCH{=}CH_2 \rightarrow (CH_3)_2CHCHCH_2D$ (a)							
$\rightarrow (CH_3)_2CHCHDCH_2$ (b)							
Deuterium atom + 1-Butene, 3-methyl-							
71 DAB/NIK	EX	298	(7.65±0.60)(11)			2	
$k_a + k_b$. M = He. P = (0.6-2.6) torr.							
$H + CH_3CH{=}C(CH_3)_2 \rightarrow CH_3CH_2C(CH_3)_2$ (a)							
$\rightarrow CH_3CHCH(CH_3)_2$ (b)							
$\rightarrow H_2 + CH_3CH{=}C(CH_3)CH_2$ (c)							
$\rightarrow H_2 + CH_2CH{=}C(CH_3)_2$ (d)							
Hydrogen atom + 2-Butene, 2-methyl- (Trimethylethylene)							
71 DAB/NIK	EX	298	(8.19±1.02)(11)			2	
$k_a + k_b$. M = He. P = (0.7-1.3) torr.							
74 LAU/BUE	RL	298	(1.25±0.29)			2/2	
$(k_a + k_b)/k_{ref}$.							
k_{ref}: $CH_2{=}CH_2 + H \rightarrow CH_3CH_2^{\dagger}$							
The products are vibrationally excited.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
74 SHI/AMA	RL	923	4.0			2/2	
k_a/k_b.							
74 SHI/AMA	RL	923	3.0			2/2	
$(k_a + k_b)/(k_c + k_d)$.							
78 ISH/YAM	EX	298	(1.45±0.18)(12)			2	
$k_a + k_b$. Pulse-radiolysis. Resonance-absorption.							
$D + CH_3CH{=}C(CH_3)_2 \rightarrow CH_3CHCD(CH_3)_2$ (a)							
$\rightarrow CH_3CHDC(CH_3)_2$ (b)							
Deuterium atom + 2-Butene, 2-methyl-							
71 DAB/NIK	EX	298	(9.22±0.54)(11)			2	
$k_a + k_b$. M = He.							
P = (0.6-2.6) torr.							
79 ISH/SAT	EX	298	(1.20±0.18)(12)			2	
$k_a + k_b$. Pulse-radiolysis. Resonance-absorption.							
$H + CH_3CH_2CH_2CH_2CH_3 \rightarrow H_2 + CH_3CH_2CH_2CH_2CH_2$ (a)							
$\rightarrow H_2 + CH_3CH_2CH_2CHCH_3$ (b)							
$\rightarrow H_2 + CH_3CH_2CHCH_2CH_3$ (c)							
Hydrogen atom + Pentane							
79 BAL/WAL1 [1])	CO	753-773	1.32(14)	0	4715	2	
k_a.							
79 BAL/WAL1 [1])	CO	753-773	2.94(14)	0	4005	2	
$k_b + k_c$.							
[1]) A and B recalculated by an empirical formula.							
$H + (CH_3)_2CHCH_2CH_3 \rightarrow H_2 + CH_2CH(CH_3)CH_2CH_3$ (a)							
$\rightarrow H_2 + (CH_3)_2CHCH_2CH_2$ (b)							
$\rightarrow H_2 + (CH_3)_2CHCHCH_3$ (c)							
$\rightarrow H_2 + (CH_3)_2CCH_2CH_3$ (d)							
Hydrogen atom + Butane, 2-methyl-							
79 BAL/WAL1 [1])	CO	753-773	1.98(14)	0	4715	2	
$k_a + k_b$.							
79 BAL/WAL1 [1])	CO	753-773	9.8(13)	0	4005	2	
k_c.							
79 BAL/WAL1 [1])	CO	753-773	5.1(13)	0	3030	2	
k_d.							
[1]) A and B recalculated by an empirical formula.							
$H + (CH_3)_4C \rightarrow H_2 + (CH_3)_3CCH_2$							
Hydrogen atom + Propane, 2,2-dimethyl- (Neopentane)							
76 BAK/BAL	RL	753	5.2(1)			2/2	
k_{ref}: $O_2 + H \rightarrow O + OH$. Optimization.							

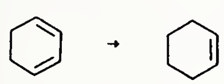
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
76 BAK/BAL	ES	753	2.4(11)			2	
79 BAL/WAL1	CO	753-773	2.64(14)	0	4715	2	
A and B recalculated by an empirical formula.							
$H + (CH_3)_3COCH_3 \rightarrow$ products							
Hydrogen atom + Propane, 2-methoxy-2-methyl-							
79 FAU/HOY	EX	250-620	(1.4±0.8)(14)	0	3750±150	2	
Isothermal discharge-flow.							
Electron-Spin-Resonance.							
Gas-chromatography.							
Mass-spectrometry.							
$H + CH_3CH_2CH_2C(CH_3){=}CH_2 \rightarrow CH_3CH_2CH_2C(CH_3)_2$ (a)							
$\rightarrow CH_3CH_2CH_2CH(CH_3)CH_2$ (b)							
$\rightarrow H_2 + CH_3CH_2CHC(CH_3){=}CH_2$ (c)							
$\rightarrow H_2 + CH_2CH_2CH_2C(CH_3){=}CH_2$ (d)							
$\rightarrow H_2 + CH_3CH_2CH_2C({=}CH_2)CH_2$ (e)							
Hydrogen atom + 1-Pentene, 2-methyl-							
74 SHI/AMA	RL	923	4.0			2/2	
k_a/k_b.							
74 SHI/AMA	RL	923	8.0			2/2	
$(k_a + k_b)/(k_c + k_d + k_e)$.							
$H + CH_3CH_2CH{=}C(CH_3)_2 \rightarrow CH_3CH_2CH_2C(CH_3)_2$ (a)							
$\rightarrow CH_3CH_2CHCH(CH_3)_2$ (b)							
$\rightarrow H_2 + CH_3CH_2CH{=}C(CH_3)CH_2$ (c)							
$\rightarrow H_2 + CH_3CHCH{=}C(CH_3)_2$ (d)							
Hydrogen atom + 2-Pentene, 2-methyl-							
74 SHI/AMA	RL	923	3.0			2/2	
k_a/k_b.							
74 SHI/AMA	RL	923	3.0			2/2	
$(k_a + k_b/(k_c + k_d)$.							
$H + CH_3CH_2C(CH_3){=}CHCH_3 \rightarrow CH_3CH_2C(CH_3)CH_2CH_3$ (a)							
$\rightarrow CH_3CH_2CH(CH_3)CHCH_3$ (b)							
$\rightarrow H_2 + CH_3CH_2C(CH_3){=}CHCH_2$ (c)							
$\rightarrow H_2 + CH_3CHC(CH_3){=}CHCH_3$ (d)							
$\rightarrow H_2 + CH_3CH_2C({=}CH_2CH_3)CH_2$ (e)							
Hydrogen atom + 2-Pentene, 3-methyl-							
74 SHI/AMA	RL	923	3.0			2/2	
k_a/k_b.							
74 SHI/AMA	RL	923	3.0			2/2	
$(k_a + k_b)/(k_c + k_d + k_e)$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$H + (CH_3)_2C{=}C(CH_3)_2 \rightarrow (CH_3)_2CCH(CH_3)_2$							
Hydrogen atom + 2-Butene, 2,3-dimethyl- (Tetramethylethylene)							
71 DAB/NIK	EX	298	(6.99±0.30)(1)			2	
M = He.							
P = (0.7-1.3) torr.							
$D + (CH_3)_2C{=}C(CH_3)_2 \rightarrow (CH_3)_2CCD(CH_3)_2$							
Deuterium atom + 2-Butene, 2,3-dimethyl- (Tetramethylethylene)							
71 DAB/NIK	EX	298	(8.55±0.78)(11)			2	
M = He.							
P = (0.6-2.6) torr.							
							
Deuterium atom + Cyclohexane → Deuterium hydride + Cyclohexyl							
75 KIM/TIM	EX	297-596	(4.1±1.0)(13)	0	2013±151	2	
Reaction of D atom with Cyclohexane in an ESR-flow.							
Mass-spectrometry.							
[Cyclohexane] = $(0.48\text{-}1.32)10^{14}$ molec.cm^{-3}.							
P = (0.33-0.94) torr.							
$H + CH_3(CH_2)_4CH_3 \rightarrow H_2 + CH_3(CH_2)_4CH_2$ (a)							
$\rightarrow H_2 + CH_3CH_2CH_2CH_2CHCH_3$ (b)							
$\rightarrow H_2 + CH_3CH_2CH_2CHCH_2CH_3$ (c)							
$\rightarrow H_2 + CH_3CH_2CHCH_2CH_2CH_3$ (d)							
Hydrogen atom + Hexane							
81 SHE/RUM [1])	EX	973	(8.8±2.7)(12)			2	
81 SHE/RUM [1])	EX	1028	(8.7±2.2)(12)			2	
[1]) $k_a + k_b + k_c + k_d$.							
Flow-reactor with powdered-quartz-fluidized bed.							
P(Hexane) = (10-50) torr.							
P(Total) = 100 torr.							
$H + (CH_3)_2CHCH(CH_3)_2 \rightarrow H_2 + (CH_3)_2CHCH(CH_3)CH_2$ (a)							
$\rightarrow H_2 + (CH_3)_2CCH(CH_3)_2$ (b)							
Hydrogen atom + Butane, 2,2-dimethyl-							
75 BUL/MAR	RL	667-770	1.0(-1)	0	-2526	2/2	
k_b/k_a. Estimated ratio.							
Static System pyrolysis.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$H + (CH_3)_2CHN{=}NCH(CH_3)_2$							
$\rightarrow H_2 + CH_2CH(CH_3)N{=}NCH(CH_3)_2$ (a)							
$\rightarrow (CH_3)_2CHNHNCH(CH_3)_2$ (b)							
Hydrogen atom + Diazene, bis(1-methylethyl)- (Azoisopropane)							
72 ARI/STE	RL	295	(1.0±0.15)(-1)			2/2	
k_a/k_b.							
Azoisopropane Photolysis.							
$H + (CH_3)_3CCH(CH_3)_2 \rightarrow H_2 + (CH_3)_3CC(CH_3)_2$ (a)							
$\rightarrow H_2 + CH_2(CH_3)_2CCH(CH_3)_2$ (b)							
$\rightarrow H_2 + (CH_3)_3CCH(CH_3)CH_2$ (c)							
Hydrogen atom + Butane, 2,2,3-trimethyl-							
81 BAL/WAL2 [1])	RL	753	1.64(2)			2/2	
k_a/k_{ref}.							
k_{ref}: $H + O_2 \rightarrow OH + O$.							
Estimated ratio.							
81 BAL/WAL2 [1])	RL	753	9.3(1)			2/2	
$(k_b + k_c)/k_{ref}$.							
k_{ref}: $H + O_2 \rightarrow OH + O$.							
Estimated ratio.							
81 BAL/WAL2 [1])	RL	753	2.57(2)			2/2	
$(k_a + k_b + k_c)/k_{ref}$.							
k_{ref}: $H + O_2 \rightarrow OH + O$. Optimization.							
81 BAL/WAL2 [1])	SE	753	1.48(12)			2	
$k_a + k_b + k_c$.							
[1]) Oxidation of 2,2,3-Trimethylbutane in H_2/O_2 mixtures, in aged boric acid-coated reaction vessels.							
Gas-chromatography.							
P(2,2,3-Trimethylbutane) = 5 torr.							
P(Total) = 500 torr.							
$H + (CH_3)_3CC(CH_3)_3 \rightarrow H_2 + (CH_3)_3CC[(CH_3)_2]CH_2$							
Hydrogen atom + Butane, 2,2,3,3-tetramethyl							
78 MAR/PUR	RL	699-735	1.0(1)	0	2045±3609	2/2	100.
2,2,3,3-Tetramethylbutane pyrolysis in a static system.							
P = (3-19) torr.							
k_{ref}:							
$H + (CH_3)_2C{=}CH_2 \rightarrow H_2 + CH_2C(CH_3){=}CH_2$							
Rate ratio determined on the basis of reaction:							
$(CH_3)_3CC(CH_3)_3 \rightarrow (CH_3)_3C + (CH_3)_3C$							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
H_2 (+ M) → H + H (+ M)							
Hydrogen molecule							
73 BRE/BIR	EX	3500-8000	2.12(15)	0	43885	2	
M = H.							
73 BRE/BIR	EX	3500-8000	3.30(15)	0	52944	2	
M = H_2.							
73 BRE/BIR	EX	3500-8000	9.35(13)	0	44741	2	
M = Ar.							
73 BRE/BIR	EX	3500-8000	9.35(13)	0	44741	2	
M = Xe.							
D_2 (+ M) → D + D (+ M)							
Deuterium molecule							
75 APP/APP	EX	1800-4000	1.45(14)	0	47006	2	
H_2 + D_2 → HD + HD							
Hydrogen molecule + Deuterium molecule							
77 LIF/FRE	ES	1200-1516	1.26(14)	0	19124±2516	2	6.31
HD + HD → H_2 + D_2							
Deuterium hydride							
72 NIK/MAI	EX	833-1022	1.26(22)	0	28083±1808	2	15.85
Pressure-normalized rate constant.							
H_2 + NO → H + HNO							
Hydrogen molecule + Nitrogen oxide (NO)							
75 KOS/AND	EX	2000-4000	3.98(13)	0	29039	2	
76 AND/ASA	DE	2300-3500	3.16(13)	0	27781	2	1.41
Reevaluation of the experimental data reported in 75 KOS/AND by using a computer simulation method.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$H_2(v>5)$ + NO → H + HNO							
Hydrogen molecule + Nitrogen oxide (NO)							
80 DOD/ZEL	EX	295	(1.20±0.60)(13)			2	
High-frequency discharge.							
Mass-spectrometry.							
H_2 + NO_2 → H + HONO							
Hydrogen molecule + Nitrogen oxide (NO_2)							
78 SLA/GRI2	ES	760-1000	(2.4±1.0)(13)	0	14595±503	2	
Shock-waves.							
Fit to experimental data.							
P = (1-4) atm.							
H_2 + N_2O → H_2O + N_2							
Hydrogen molecule + Nitrogen oxide (N_2O)							
78 ROO/HAN	ES	1700-3000	3.45(12)	0.5	0	2	
Shock-waves.							
Estimated k on the basis							
of a suggested mechanism.							
The preexponential factor expressed							
as: $A(T/298)^{0.5}$.							
$H_2(X^1\Sigma_g^+)$ + $C_2(X^1\Sigma_g^+)$ → $H(^2S)$ + CH≡C($X^{2\Sigma+}$) (a)							
→ CH≡CH (b)							
Hydrogen molecule + Carbon dimer							
79 PAS/MCD	EX	298	(8.31±0.36)(11)			2	
k_a.							
Multiphoton laser photodissociation							
of $CF_3C≡CCF_3$.							
Laser-induced fluorescence.							
82 PIT/PAS	EX	300-600	(1.07±0.66)(14)	0	1470±216	2	
k_b.							
Dye-laser induced fluorescence.							
Carbon dimers produced by multiphoton							
UV-photolysis of $CF_3C≡CCF_3$.							
80 REI/MAN2	EX	300	(8.43±1.20)(11)			2	
$k_{overall}$.							
IR Multiple photon dissociation							
CH_2=CHCN or CHCl=CCl_2.							
Laser-induced Fluorescence.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$H_2(X^1\Sigma_g^+) + C_2(a^3\Pi_u) \rightarrow H(^2S) + CH{\equiv}C(X^2\Sigma^+)$ (a)							
$\rightarrow$ any other products (b)							
Hydrogen molecule + Carbon dimer							
81 PAS/PIT	EX	300-600	(9.34±0.60)(12)	0	3012±31	2	
k_a. Multiple photon laser dissociation of $CF_3C{\equiv}CCF_3$ or C_6H_6. Laser-Induced Fluorescence.							
80 REI/MAN2	EX	300	<1.81(10)			2	
$k_a + k_b$. IR Multiple photon dissociation of of $CH_2{=}CHCN$ or $CHCl{=}CCl_2$. Laser-induced Fluorescence. Upper-limit k.							
$D_2 + C_2(a^3\Pi_u) \rightarrow D + CD{\equiv}C$							
Deuterium molecule + Carbon dimer							
81 PAS/PIT	EX	300-600	(1.08±0.13)(13)	0	3710±72	2	
Multiple photon laser dissociation of $CF_3C{\equiv}CCF_3$ or C_6H_6. Laser-induced Fluorescence.							
$H_2 + C_2O \rightarrow$ products							
Hydrogen molecule + Carbon oxide (C_2O)							
80 DON/PIT	EX	298	<1.20(11)			2	
Laser photodissociation of C_3O_2 at 266 nm. Dye-laser Induced Fluorescence. Upper-limit k.							
$D_2 + CH{\equiv}CH \rightarrow CHD{=}CHD$							
Deuterium molecule + Ethyne							
77 OGU2	EX	1000-1600	(4.9±1.3)(11)	0	17564±302	2	
$H_2 + C_3 \rightarrow$ products							
Hydrogen molecule + Carbon trimer							
80 REI/MAN1	EX	300	≤1.80(10)			2	
IR Multiphoton dissociation of Allene. Time-Resolved Chemiluminescence. Upper-limit k.							
H_2 + 							
Hydrogen molecule + 1,3-Cyclohexadiene → Cyclohexene							
72 DEM/HUY	EX	512-673	1.78(13)	0	18319±554	2	2.51
Pyrolysis in a cylindrical Pyrex reaction vessel. Gas-chromatography. Mass-spectrometry. P = (10-500) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$OH + O_3 \rightarrow HO_2 + O_2$							
Hydroxyl + Ozone							
73 AND/KAU2	EX	220-450	7.83(11)	0	956	2	
73 DEM	EX	300	4.81(10)			2	
73 KUR	EX	298	(3.91±0.60)(10)			2	
74 SIM/HEI1	ES	298	≥9.03(9)			2	
Lower-limit k.							
74 SIM/HEI1	ES	298	(3.01±1.81)(10)			2	
75 DEM	RL	271-333	1.68(1)	0	1233	2/2	
k_{ref}: $CO + OH \rightarrow CO_2 + H$.							
75 DEM	RN	271-333	1.51(12)	0	1233	2	
Estimated k.							
78 CHA/KAU	ES	295	(3.76±0.15)(10)			2	
Laser-induced fluorescence technique.							
79 RAV/WIN1	EX	238-357	(1.10±0.21)(12)	0	930±50	2	
Flash-photolysis. Resonance-fluorescence.							
See RAV/WIN2 for erratum.							
80 ZAH/HOW	RN	300	(3.91±0.60)(9)			2	
Discharge-flow. Laser Magnetic Resonance.							
$OH(v=n) + O_3 \rightarrow HO_2 + O_2$ (a)							
$\rightarrow OH + O + O_2$ (b)							
$\rightarrow H + O_2 + O_2$ (c)							
Hydroxyl + Ozone							
71 COL/WOR [1])	EX	298	(1.14±0.66)(12)			2	
v = 2.							
71 COL/WOR [1])	EX	298	(4.64±0.18)(12)			2	
v = 9.							
[1]) $k_a + k_b + k_c$.							
71 POT/COL	EX	298	(4.64±0.18)(12)			2	
$k_a + k_b + k_c$. v = 9.							
76 STR/JOH [1])	EX	300	(2.23±0.06)(12)			2	
v = 4.							
76 STR/JOH [1])	EX	300	(6.63±2.41)(12)			2	
v = 9.							
[1]) $k_a + k_b + k_c$.							
$OD(v=n) + O_3 \rightarrow DO_2 + O_2$ (a)							
$\rightarrow OD + O + O_2$ (b)							
$\rightarrow D + O_2 + O_2$ (c)							
Hydroxyl-d + Ozone							
74 BAS/ORA	EX	298	(3.31±0.54)(12)			2	
$k_a + k_b + k_c$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$OH + H_2 \rightarrow H_2O + H$							
Hydroxyl + Hydrogen molecule							
71 BRA/BEL1	EX	1100-1600	2.1(13)	0	2567±151	2	2.57
71 EBE/HOY	DE	500-1600	1.0(13)	0	2416	2	
72 DIX [1])	RL	1050	(1.13±0.70)(1)			2/2	
k_{ref}: $OH + CO \rightarrow CO_2 + H$.							
72 DIX [1])	RL	298-1330	(1.20±0.15)(2)	0	2400±50	2/2	
k_{ref}: $OH + CO \rightarrow CO_2 + H$.							
Combination of present and other data.							
72 DIX [1])	ES	1050	(2.7±0.4)(12)			2	
72 DIX [1])	SE	298-1330	3.72(13)	0	2770±100	2	
Combination of present and other data.							
[1]) Fuel-rich $H_2/N_2/O_2$ flames.							
72 STU/NIK1	EX	298	4.28(9)			2	1.15
73 DAY/THO	ES	1050	(2.7±0.4)(12)			2	
73 DAY/THO	RL	298-1330	(1.20±0.15)(2)	0	2400±50	2/2	
Estimated ratio.							
73 GAR/MAL	EX	1200-2500	5.2(13)	0	3271	2	1.20
73 SMI/ZEL2	EX	210-460	1.4(13)	0	2416	2	
73 WES/DEH1	EX	298-745	4.6(9)			2	
Non-linear Arrhenius behavior. Within the given T-range, k increases k increases from $4.6x10^9$ to $4.0x10^{11}$ $cm^3mol^{-1}s^{-1}$.							
74 GAR/MAL	EX	1350-1600	5.2(13)	0	3248	2	
74 GAR/MAL	SE	300-1800	7.57(11)	1.77	1528	2	
Combination of present and other data. The preexponential factor expressed as: $A(T/298)^{1.77}$.							
74 SMI/ZEL	EX	298	(4.28±0.06)(9)			2	
74 SMI/ZEL	EX	210-460	(1.08±0.54)(13)	0	2334±120	2	
75 ATK/HAN1	EX	298	(4.20±0.42)(9)			2	
75 ATK/HAN2	EX	297-434	3.55(12)	0	2008±151	2	
75 ATK/HAN2	EX	298	(4.20±0.42)(9)			2	
75 OVE/PAR	EX	295	(3.49±0.16)(9)			2	
75 TRA/ROS	EX	300	3.91(9)			2	
H_2O is vibrationally excited.							
75 VAN/PEE	EX	600-1300	7.0(12)	0	2214	2	
76 BRA/CAP	RL	1300	5.9(-1)			2	
k_{ref}: $OH + CH_4 \rightarrow H_2O + CH_3$							
77 SHA	ES	250-2000	1.33(12)	0.75	1575	2	
The preexponential factor expressed as: $A(T/298)^{0.75}$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
78 BIE/ZET2	EX	297	(4.3±0.5)(9)			2	
M = He. Pulsed vacuum UV-Photolysis. Resonance-absorption. P(He) = 740 torr.							
78 PRE	EX	293	(2.6±0.7)(9)			2	
Laser Magnetic Resonance Spectrometry.							
79 COH/WES	RE	250-3000	1.81(12)	1.3	1835	2	
Critical review. The preexponential factor expressed as: $A(T/298)^{1.3}$. Δlog k = 0.1 at 300 K, 0.15 for the (250-500) K range, and 0.3 at 2000 K.							
79 ZEL	SE	300-2000	9.09(11)	1.6	1660	2	
Critical evaluation. Best fit of all available experimental data. The preexponential factor expressed as: $A(T/298)^{1.6}$.							
80 SWO/HOC	EX	296	(5.1±1.1)(9)			2	
Flash-photolysis of H_2O vapor. P ~ 760 torr.							
80 TUL/RAV	EX	298-992	2.70(11)	2.44	1281	2	
M = Ar. Flash-photolysis. Resonance-fluorescence. Non-linear, best-fit Arrhenius expression. The preexponential factor expressed as: $A(T/298)^{2.44}$. $P(H_2)$ = (0-1) torr. $P(H_2O)$ = 150 torr. P(Ar) = 50 torr.							
81 RAV/NIC	EX	250-400	(2.95±0.30)(12)	0	1990±340	2	
M = Ar. Flash-photolysis of $H_2/H_2O/Ar$ mixtures. Resonance-fluorescence. Low-T, linear Arrhenius expression. P(Ar) ~ 100 torr.							
$OH(v{=}1) + H_2 \rightarrow H_2O + H$							
Hydroxyl + Hydrogen molecule							
77 SPE/END	EX	295	<6.02(9)			2	
Upper-limit k.							
$OH(v{=}n) + H_2(v{=}1) \rightarrow H_2O + H$							
Hydroxyl + Hydrogen molecule							
78 LIG/MAT	EX	298	≤3.3(12)			2	
n = 0. Flow-tube with tunable dye laser. Upper-limit k.							
81 GLA/CHA	EX	296	(6.0÷1.5)(11)			2	
n = 0. Discharge-flow system. OH produced by reacting H with NO_2. EPR-spectroscopy. $P(H_2)$ = (1-2) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 ZEL/STE	EX	298	(4.5÷1.8)(11)			2	
n = 0. H_2(v=1) generated in a flow system by passing H_2 over a heated W filament. OH enerated by reacting H with NO_2. Resonance-fluorescence. $[H_2(v=1)] = (0.562.70)x10^{14}$ molec.cm^3. $[OH]_o = 4.9x10^{12}$ molec.cm^{-3}. $[H_2] \sim 5.010^{16}$ molec.cm^{-3}.							
78 LIG/MAT	EX	298	≤5.7(12)			2	
n = 1. Flow-tube with tunable dye laser. Upper-limit k.							
OH + HD → HDO + H							
Hydroxyl + Deuterium hydride							
72 DIX [1])	RL	1050	(2.8±0.42)			2/2	
k_{ref}: OH + HD → HOD + H.							
72 DIX [1])	RL	1050	2.4	0	-155	2/2	
k_{ref}: OH + HD → HOD + H. Estimated ratio.							
72 DIX [1])	ES	1050	(9.6±0.5)(11)			2	
[1]) Fuel-rich $H_2/N_2/O_2$ flames.							
73 DAY/THO	ES	1050	(9.6±0.5)(11)			2	
OH + D_2 → HDO + D							
Hydroxyl + Deuterium molecule							
72 STU/NIK1	EX	298	1.153(9)			2	1.15
74 SMI/ZEL	EX	298	(1.33±0.24)(9)			2	
74 SMI/ZEL	EX	210-460	(7.53±0.36)(12)	0	2586±180	2	
80 PAR/NIP	EX	297	(1.27±0.11)(9)			2	
Flash-photolysis. Resonance-absorption.							
81 RAV/NIC [1])	EX	250-1050	2.19(12)	1.18	2332	2	
M = Ar. Non-linear Arrhenius expression over the whole T-range. The preexponential factor expressed as: $A(T/298)^{1.18}$.							
81 RAV/NIC [1])	EX	250-470	(7.29±3.13)(12)	0	2670±150	2	
M = Ar. n = 0 assumed. Low T-range.							
[1]) Flash-photolysis of D_2/H_2O/Ar mixtures. Resonance-fluorescence. P(Ar) ~100 torr.							
OD + H_2 → HDO + H							
Hydroxyl-d + Hydrogen molecule							
80 PAR/NIP	EX	297	(3.70±0.25)(9)			2	
Flash-photolysis. Resonance-absorption.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$OD + D_2 \rightarrow D_2O + D$							
Hydroxyl-d + Deuterium molecule							
75 APP/APP	ES	1700-3100	6.63(13)	0	2592	2	3.02
Data-fit.							
80 PAR/NIP	EX	297	(1.33±0.13)(9)			2	
Flash-photolysis. Resonance-absorption.							
$OH + OH (+ M) \rightarrow H_2O + O (+ M)$ (a)							
$\rightarrow HO_2 + H (+ M)$ (b)							
$\rightarrow H_2O_2 (+ M)$ (c)							
Hydroxyl							
73 GAR/MAL [1])	EX	1200-2500	5.5(13)	0	3523	2	1.25
73 MCK/MUL [1])	EX	298	(1.3±0.3)(12)			2	
73 WES/DEH2 [1])	EX	298	(1.4±0.2)(12)			2	
[1]) k_a.							
74 CLY/DOW [2])	EX	300	(1.02±0.36)(12)			2	
74 CLY/DOW [2])	SE	300	(8.43±1.20)(11)			2	
k based on present and previous data.							
[2]) k_a. Discharge-flow. Resonance-fluorescence.							
74 RAW/GAR2 [3])	RN	1200-2000	5.5(13)	0	3488	2	
n = 0 assumed.							
74 RAW/GAR2 [3])	CO	1200-2000	1.19(12)	1.11	0	2	
Data fit. B = 0 assumed. The preexponential factor expressed as: $A(T/298)^{1.11}$.							
74 RAW/GAR2 [3])	CO	1200-2000	1.77(11)	2.03	-600	2	
Data fit. The preexponential factor expressed as: $A(T/298)^{2.03}$.							
[3]) k_a.							
74 TRA/ROS1	EX	298	(1.26±0.12)(12)			2	
k_a. H_2O is vibrationally excited.							
77 ERN/WAG [4])	EX	1180-1820	3.4(13)	0	2526	2	
77 ERN/WAG [4])	SE	300-2000	9.92(11)	1.14	0	2	
Modified Arrhenius expression based on weighted absolute values of all available data.							
77 ERN/WAG [4])	CO	300-2000	7.29(11)	1.23	0	2	
Modified Arrhenius expression. Transition-State Theory calculation. E_a = 0 at 300 K and ~2400 calmol^{-1} in the (1000-2000) K range.							
[4]) k_a. Shock heating of $HONO_2$/Ar mixtures. The preexponential factor expressed as: $A(T/298)^n$ in the modified Arrhenius expressions.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
77 SHA	ES	250-2000	1.33(12)	0.75	0	2	
k_a. The preexponential factor expressed as: $A(T/298)^{0.75}$.							
79 ZEL	SE	300-2000	5)	5)	5)	2	
k_a.							
5) $k = \exp(27.1 + 1.5\text{x}10^{-3}T)$ $cm^3mol^{-1}s^{-1}$							
Critical evaluation. Non-Arrhenius best-fit of all available experimental data.							
80 FAR/SMI	EX	298	(1.02±0.12)(12)			2	
k_a. Discharge flow. Resonance-fluorescence.							
81 WAG/ZEL	EX	250-580	(1.93±0.48)(12)	0	242	2	
k_a. Alternative non-Arrhenius expression over the extended T-range (250-2000) K: $k = 6.02\text{x}10^{23}\exp(-27.73 + 1.49\text{x}10^{-3}T)$ $cm_3mol^{-1}s^{-1}$.							
Flash-photolysis of H_2O/N_2 mixtures.							
UV-Resonance spectrometry.							
P < 100 torr.							
79 HAC/PRE1	DE	298	1.1(-16)			2	
k_b. Isothermal flow-reactor.							
Laser Magnetic Resonance. $k_1 = k_{-1}K$.							
P(Total) = (130-800) Pa.							
74 TRA/ROS1	EX	298	(9.07±1.09)(16)			3	
k_c. M = N_2.							
$OH + HO_2 \rightarrow H_2O + O_2$							
Hydroxyl + Hydroperoxo							
72 DAY/DIX	RL	300-1800	≤5.5			2/2	
k_{ref}: $H + HO_2 \rightarrow H_2 + O_2$. Upper-limit ratio.							
72 FRI/SUT	ES	2130	1.2(13)			2	
72 HOC/GHO	EX	298	(1.2±0.2)(14)			2	
73 DAY/THO	RL	300-1050	≤5.5			2/2	
k_{ref}: $H + HO_2 \rightarrow H_2 + O_2$. Upper-limit ratio.							
73 PEE/MAH1	ES	1600	≃5.0(13)			2	
74 DEM/TSC	ES	298	9.64(13)			2	3.0
75 GLA/TRO	EX	1350-1700	≤4.0(13)			2	
Upper-limit k.							
75 HAC/HOY	EX	298-670	≤2.0(13)			2	
Upper-limit k.							
77 BUR/HAR	EX	293	(3.07±0.96)(13)			2	
78 CHA/KAU	DE	295	(1.5±0.3)(13)			2	
Discharge-flow. Best fit between experiments and computer calculations.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
78 COX	ES	283	(9.03±0.30)(12)			2	
Photolysis of $Cl_2/H_2/NO_2$ in N_2/O_2. P = 1 atm.							
78 HAC/PRE	EX	293	(1.8±0.6)(13)			2	
Isothermal discharge-flow. P(He) = 1.9 torr.							
78 PRE	EX	293	(1.8±0.6)(13)			2	
Laser Magnetic Resonance Spectrometry.							
79 BUR/CLI	EX	298	(3.07±1.02)(13)			2	
Discharge-flow.							
79 DEM	RN	298	(9.8±2.4)(13)			2	
Photolysis of $H_2/O_2/O_3$(or N_2) mixtures. Average of six reported k values.							
80 HOC/SWO2	EX	296	(7.0±1.5)(13)			2	
H_2O flash-photolysis in presence of O_2 and CO (or He). P = 760 torr.							
80 LII/GOR2	EX	308	(5.96±0.72)(13)			2	
Electron pulse-radiolysis. Kinetic Spectrophotometry. P(Total) = 1200 torr.							
80 TEM/WAG	EX	296	(3.9±1.5)(13)			2	
Discharge-flow. Laser Magnetic Resonance.							
81 BUR/COX	DE	288-348	(3.73±2.41)(13)	0	0	2	
Photolysis $O_3/H_2O/O_2$ mixtures in presence of N_2 or He. Molecular Modulation. T-independent in the given T-range. P(Total) = 760 torr.							
81 COX/BUR	EX	308	(6.0±1.5)(13)			2	
Low-frequency square-wave modulated Photolysis of O_3/H_2O mixtures. P = 760 torr.							
81 KEY	EX	299	(3.9±0.9)(13)			2	
Discharge-flow Resonance-fluorescence. Mass-spectrometry. P(Total) = 1 torr.							
81 SRI/QIU	EX	296	(4.5±0.7)(13)			2	
HO_2 produced by reacting F with H_2O_2. Discharge-flow. Laser-induced Fluorescence. Resonance-fluorescence. P ~3 torr. $[H_2O_2]$ ~(6-26)x10^{12} molec.cm^{-3}. $[HO_2]$ ~(2-19)x10^{11} molec.cm^{-3}. $[OH]_o$ = (4-6)x10^{10} molec.cm^{-3}. $[H_2O]$ ~5x10^{13} molec.cm^{-3}. $[F_2]$ ~6x10^{13} molec.cm^{-3}.							
81 THR/WIL1	EX	298	(3.5±0.5)(13)			2	
Laser magnetic resonance spectrometry.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 BRA/HOF	ES	298	6.6(13)			2	1.3
H_2O flash-photolysis in N_2, with or without O_2.							
$P(H_2O)$ = (0.2-2.1) torr. P(Total) = 750 torr.							
$P(N_2)$ = (728-984) torr. $P(O_2)$ = (0-17) torr.							
82 DEM	EX	298	(7.2±2.4)(13)			2	
H_2O photolysis with O_2 in traces.							
Laser-induced fluorescence.							
P(Total) = (75-730) torr. He, or Ar.							
82 TEM/WAG1	EX	296	(4.0±1.4)(13)			2	
Reaction of OH with HO_2 in several							
isothermal discharge-flow-reactors.							
OH generated by reacting F with H_2O.							
HO_2 generated by reacting OH with H_2O_2.							
$[OH]_o$ = $(1.93-3.79)\times10^{12}$ molec.cm^{-3}.							
$[H_2O_2]$ = $(0.36-4.82)\times10^{13}$ molec.cm^{-3}.							
P = (1.5-10.5) torr.							
k is independent within this P-range.							
OH(v=9) + H_2O → products							
Hydroxyl + Water							
72 WOR/COL	EX	298	≥1.20(11)			2	
Lower-limit k. Unreported T assumed to be 298 K.							
OH + H_2O_2 → HO_2 + H_2O							
Hydroxyl + Hydrogen peroxide							
72 GOR/VOL	EX	298	(7.23±0.18)(11)			2	
72 VOL/GOR	EX	298	(7.23±0.18)(11)			2	
73 GOR	RN	298	(7.47±0.48)(11)			2	
74 HAC/HOY2	EX	298-669	(4.8±1.0)(12)	0	670±70	2	
75 HAC/HOY	EX	298-670	(4.8±1.0)(12)	0	670±70	2	
75 MEA/HEI	RL	298	(4.1±0.6)			2/2	
k_{ref}: OH + CO → H + CO_2							
78 PRE	EX	293	(4.8±1.0)(11)			2	
Laser Magnetic Resonance Spectrometry.							
79 HAR/PIT	EX	298	(4.1±0.8)(11)			2	
Flash-photolysis. Resonance-fluorescence.							
80 KEY	EX	245-423	(1.5±0.4)(12)	0	126±76	2	
Discharge-flow. Resonance-fluorescence.							
P(Total) = (1-4) torr.							
80 SRI/REI	EX	250-459	(1.8±0.3)(12)	0	164±52	2	
Discharge-flow. Laser-induced fluorescence.							
$[H_2O_2]$ = $(0.6-5.0)\times10^{13}$ molec.cm^{-3}.							
P(He) = (2-3) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
80 TEM/WAG	EX	296	(1.05±0.20)(12)			2	
Discharge-flow. Laser Magnetic Resonance.							
81 NEL/MAR	EX	295	(9.46±0.60)(11)			2	
M = Ar. Flash-photolysis combined with: either Resonance-fluorescence [P(Total) = 10-50 torr.], or Laser absorption [P(Total) = 10 torr.]							
81 WIN/SEM [1])	EX	273-410	(2.23±0.36)(12)	0	260±50	2	
81 WIN/SEM [1])	SE	273-410	(1.70±0.18)(12)	0	167±35	2	
Average k of 80 KEY, 80 SRI/REI and 81 WIN/SEM data.							
[1]) Flash-photolysis of H_2O_2 in He ,or SF_6. Resonance-fluorescence. P(Total) = 100 torr. He, or 40 torr. SF_6. $[H_2O_2] = (0.36\text{-}3.60)\times10^{15}$ molec.cm^{-3}.							
82 KUR/MUR	EX	250-370	(1.75±0.18)(12)	0	161±32	2	
Flash-photolysis. Resonance-fluorescence. OH generated by Flash-photolysis of H_2O_2/Ar mixtures. $[H_2O]$ ~ 100 mtorr. [Ar] = (20-30) torr. $[H_2O_2]$ = (0-20) mtorr.							
82 MAR/JOH	EX	298	(1.9±0.14)(12)			2	
Flash-photolysis. Resonance-fluorescence. OH generated by Flash-photolysis of H_2O_2. P(Ar) = 10 torr.							
82 MOL/MOL	EX	294	(1.08±0.18)(12)			2	
Flash-photolysis. Resonance-fluorescence. UV-, and IR-spectrophotometry. P = 760 torr.							
82 TEM/WAG1	EX	296	(1.0±0.2)(12)			2	
Reaction of OH with H_2O_2 in several isothermal discharge-flow reactors. OH generated by reacting F with H_2O. P = (1.5-10.5) torr. k is P-independent within this P-range. $[OH]_o = (0.57\text{-}2.59)\times10^{11}$ molec.cm^{-3}. $[H_2O_2] = (0.36\text{-}6.02)\times10^{13}$ molec.cm^{-3}.							
OH + S → H + SO							
Hydroxyl + Sulfur atom							
79 JOU/LEB2	EX	298	(3.98±0.84)(13)			2	
Discharge-flow reactor. EPR-spectrometer.							
OH + SO → H + SO_2							
Hydroxyl + Sulfur monoxide							
79 JOU/LEB2	EX	298	(5.06±0.90)(13)			2	
Discharge-flow reactor. EPR-spectrometer.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$OH + SO_2 (+ M) \rightarrow HOSO_2 (+ M)$							
Hydroxyl + Sulfur dioxide							
74 COX2	RN	294	(3.61±0.48)(11)			2	
Expressed as k[M], with M = $N_2 + O_2$ at 1 atm.							
75 CAS/DAV	EX	298	3.6(11)			2	
Pseudo-second order k. M = N_2. Limiting high-pressure k. P = 760 torr.							
75 COX	RN	300	(3.61±0.48)(11)			2	
Expressed as k[M], with M = $N_2 + O_2$ at 1 atm.							
75 GOR/MUL1	EX	435	(1.08±0.05)(12)			2	
M = He. In an atmosphere of Water vapor.							
76 ATK/PER3	EX	298	(4.04±0.42)(11)			2	
M = Ar. P = 760 torr.							
76 ATK/PER3	ES	298	≃5.00(11)			2	
M = Ar. Limiting high-pressure k.							
77 CAS/TAN	EX	297	3.61(11)			2	
M = N_2. Limiting high-pressure k. P = 760 torr.							
77 CAS/TAN	EX	297	4.28(11)			2	
The product is vibrationally excited.							
79 DAV/RAV	EX	298	5.42(11)			2	
M = N_2. Flash-photolysis. Resonance-fluorescence. P = 760 torr. High-pressure k.							
80 COX/SHE [1]	RL	297	(9.0±2.0)(-2)			2/2	
k_{ref}: $OH + CH_2{=}CH_2 \rightarrow$ products.							
80 COX/SHE [1]	RN	297	(4.34±0.96)(11)			2	
[1]) Photolysis of HONO and SO_2. Gas-chromatography. P = 760 torr.							
80 HAR/ATK [2]	EX	298-424	6.99(9)	0	-1193±151	2	
M = Ar.							
80 HAR/ATK [2]	EX	298	(3.91±0.51)(11)			2	
M = Ar.							
80 HAR/ATK [2]	EX	298-424	7.65(10)	0	-752±151	2	
M = SF_6.							
80 HAR/ATK [2]	EX	298	(9.70±1.33)(11)			2	
M = SF_6.							
80 HAR/ATK [2]	ES	298-424	2.41(10)	0	-956	2	
M = N_2.							
80 HAR/ATK [2]	ES	298	6.02(11)			2	
M = N_2.							
[2]) Flash-photolysis. Resonance-fluorescence. P(Total) ~ 650 torr. High-pressure k's.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
73 PAY/STI	RN	300	5.44(16)			3	
M = N_2(18 torr.) + H_2O(20 torr.)							
75 CAS/DAV	EX	298	5.80(16)			3	
M = N_2. Low-pressure k. P < 20 torr.							
75 HAR/WAY	EX	298	(2.61±0.94)(17)			3	
M = N_2. M-efficiencies relative to N_2 are: 1.0(N_2), 0.63(Ar).							
76 ATK/PER3	EX	298	(5.95±1.20)(16)			3	
M = Ar. Limiting low-pressure k.							
77 CAS/TAN	EX	297	5.80(16)			3	
M = N_2. Low-pressure k.							
77 CAS/TAN	EX	253-297	5.05(14)	0	-1409	3	
Low-pressure k. Expression based on the experimental values k(297) and E_a. n = 0 assumed.							
77 CAS/TAN	EX	253-297	6.11(16)	-5.1	0	3	
Low-pressure k. The preexponential factor expressed as: $A(T/298)^{-5.1}$.							
82 LEU [3])	EX	261-414	(1.31±0.36)(15)	0	-913±74	3	
M = He. n = 0 assumed.							
82 LEU [3])	EX	261-414	(2.87±0.09)(16)	-2.85	0	3	
M = He. P = (0.9-10.0) torr.							
82 LEU [3])	EX	298	(3.95±0.33)(16)			3	
M = Ar. P = (1.0-3.6) torr.							
82 LEU [3])	EX	298	(9.21±1.20)(16)			3	
M = N_2. P = (0.9-4.0) torr.							
82 LEU [3])	EX	298	(8.92±1.16)(16)			3	
M = O_2. P = (1.7-2.3) torr.							
82 LEU [3])	EX	298	(4.35±1.12)(17)			3	
M = CO_2. P = (0.6-1.7) torr.							
82 LEU [3])	EX	261-414	(1.93±0.98)(16)	0	-908±129	3	
M = SO_2. n = 0 assumed.							
82 LEU [3])	EX	261-414	(4.17±0.33)(17)	-2.78	0	3	
M = SO_2. P = (0.02-0.20) torr.							
[3]) Discharge-flow. Resonance-fluorescence. OH generated by reacting H with NO_2. Low-pressure k's. The preexponential factors expressed as: $A(T/298)^n$. $[OH]_o = (1.0-5.0)x10^{11}$ molec.cm^{-3}.							

$OH(v=9) + SO_2 \rightarrow HOSO_2$

Hydroxyl + Sulfur dioxide

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
72 WOR/COL	EX	298	≥1.45(10)			2	
Lower-limit k. Unreported T assumed to be 298 K.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$OH + H_2S \rightarrow H_2O + SH$							
Hydroxyl + Hydrogen sulfide							
72 NIK/MOR1	ES	300	~5.12(12)			2	
73 WES/DEH3	EX	298-885	1.4(13)	0	443	2	
73 WES/DEH3	EX	298	(3.3±0.2)(12)			2	
74 STU2	EX	298	(1.87±0.30)(12)			2	
76 PER/ATK1	EX	297-427	(3.13±0.30)(12)	0	0	2	
76 PER/ATK1	EX	298	(3.16±0.32)(12)			2	
80 COX/SHE [1])	RL	297	(6.2±0.4)(-1)			2/2	
k_{ref}: $OH + CH_2{=}CH_2 \rightarrow$ products.							
80 COX/SHE [1])	RN	297	(3.01±0.18)(12)			2	
[1]) $HONO/H_2S$ photolysis. P = 760 torr.							
81 WIN/KRE	EX	244-367	(3.85±0.78)(12)	0	55±58	2	
Flash-photolysis of $H_2O/Ar/H_2S$ mixtures. Resonance-fluorescence. P(Ar) = (40-120) torr. $P(H_2O)$ = (0.05-0.19) torr.							
82 LEU/SMI1 [2])	EX	228-518	(3.55±0.36)(12)	0	89	2	
n = 0 assumed.							
82 LEU/SMI1 [2])	EX	228-518	(2.16±0.15)(11)	2.5	-725	2	
The preexponential factor expressed as: $A(T/298)^{2.5}$.							
[2]) Discharge-flow. Resonance-fluorescence. Mass-spectrometry. OH generated by reacting H with NO_2. $[OH]_o = (0.6\text{-}4.0)\times10^{11}$ molec.cm^{-3}.							
82 LIN	EX	239-425	(4.70±1.57)(12)	0	146±105	2	
Flash-photolysis. Resonance-fluorescence. OH generated by UV-photolysis of H_2O near 308 nm.							
82 MIC/NAV [3])	EX	228	(3.08±0.23)(12)			2	
82 MIC/NAV [3])	EX	298	(2.66±0.22)(12)			2	
82 MIC/NAV [3])	EX	437	(3.35±0.29)(12)			2	
82 MIC/NAV [3])	EX	228-437	(3.01±0.33)(12)	0	0	2	
Average value.							
[3]) Reaction of H_2S with OH in Ar. Flash-photolysis. Resonance-fluorescence. OH generated by Flash-photolysis of H_2O. P(Ar) = (20-120) torr. $P(H_2S)$ = (0.8-8.0) mtorr. $P(H_2O)$ = (32-238) mtorr.							
$OH(v{=}9) + H_2S \rightarrow$ products							
Hydroxyl + Hydrogen sulfide							
72 WOR/COL	EX	298	≥1.51(11)			2	
Lower limit k. Unreported T assumed to be 298 K.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$OH + N_2 \rightarrow H + N_2O$							
Hydroxyl + Nitrogen molecule							
75 ALB/HOY	DE	700-1100	3.2(12)	0	40512	2	
k obtained from k_{-1} and thermodynamic data.							
$OH(v=9) + N_2 \rightarrow$ products							
Hydroxyl + Nitrogen molecule							
72 WOR/COL	EX	298	(2.17±0.30)(9)			2	
$OH + NO (+ M) \rightarrow HONO (+ M)$							
Hydroxyl + Nitrogen oxide (NO)							
72 STU/NIK2	EX	300	(1.20±0.60)(12)			2	
M = He. Limiting high-pressure k.							
74 COX2	RN	294	(3.67±0.66)(12)			2	
$M = N_2 + O_2$. P = 1 atm. k expressed as k[M].							
75 ATK/HAN1	EX	298	(3.67±0.60)(12)			2	
$M = N_2$. M-efficiencies relative to N_2 are: $1.00(N_2)$, 0.85(Ar). P = 760 torr.							
75 ATK/HAN1	ES	298	4.81(12)			2	
Extrapolated limiting high-pressure k.							
75 COX	RN	300	(3.67±0.78)(12)			2	
$M = N_2 + O_2$. P = 1 atm. k expressed as k[M].							
75 GOR/MUL1	EX	435	(4.5±0.2)(12)			2	
$M = H_2O$. In an atmosphere of water vapor.							
76 BLA/OVE	EX	295	(1.1±0.1)(13)			2	
$M = H_2O$. M-efficiencies relative to H_2O are: $1.00(H_2O)$, 0.02(He), $0.12(N_2)$, $0.37(SF_6)$, $0.41(CF_4)$. Flash-photolysis. Resonance-absorption. Limiting high-pressure k.							
76 COX/DER1	RL	298	(1.63±0.24)(3)			2/2	
k_{ref}: $OH + H_2 \rightarrow H_2O + H$. $M = N_2 + O_2$. P = 1 atm.							
76 COX/DER1	RN	298	(7.05±1.02)(12)			2	
$M = N_2 + O_2$.							
76 OVE/PAR	EX	295	(1.11±0.10)(12)			2	
$M = H_2O$, CF_4, SF_6, N_2, Ar, or He. Limiting high-pressure k. The product is vibrationally excited.							
76 SIE/SIM2	RL	298	(2.2±0.3)(1)			2/2	
M = 80% H_2, (18-20)% N_2O, (1-2)% CO. k_{ref}: $OH + CO \rightarrow H + CO_2$. P = (408-768) torr.							
76 SIE/SIM2	RL	298	(1.61±0.2)(1)			2/2	
M = 63% H_2, 30% N_2O, 7% CO. P = 96 torr. k_{ref}: $OH + CO \rightarrow H + CO_2$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
76 SIE/SIM2	RN	298	7.23(12)			2	
Limiting high-pressure k.							
76 SIM/HEI	RL	296	(4.83±0.50)(2)			2/2	
k_{ref}: $OH + H_2 \rightarrow H_2O + H$.							
76 SIM/HEI	ES	296	2.23(12)			2	
M = H_2. P ~ 100 torr.							
76 SIM/HEI	ES	296	6.63(12)			2	
M = H_2. P ~ 730 torr.							
78 ANA/SMI1 [1])	EX	233	7.83(12)			2	
78 ANA/SMI1 [1])	EX	296	4.04(12)			2	
78 ANA/SMI1 [1])	EX	298	5.12(12)			2	
78 ANA/SMI1 [1])	EX	405	6.63(12)			2	
78 ANA/SMI1 [1])	EX	505	4.22(12)			2	
[1]) Flash-photolysis. Resonance-absorption. High-pressure k. P = 1 atm.							
79 CAM/PAR	EX	292	(8.2±1.2)(11)			2	
Boric-acid-coated Pyrex reaction vessels. P = 100 torr.							
72 AND/KAU	EX	297	(1.45±0.73)(17)			3	
M = Ar. P = 5 torr.							
72 AND/KAU	EX	297	(9.07±0.36)(16)			3	
M = Ar. P = 8 torr.							
72 MOR/SMI	EX	300	(1.49±0.22)(12)			3	
M = He. Low-pressure k.							
72 MOR/SMI	EX	416	6.89(16)			3	
M = He. Low-pressure k.							
72 MOR/SMI	CO	300-416	1.00(16)	0	-806±241	3	
M = He. Low-pressure k. Based on the given E_a and the experimental k's at 300 K and 416 K.							
72 WES/DEH4	EX	273-395	4.7(17)			3	
M = He. k decreasing within the given T-range from 4.7×10^{17} to 1.3×10^{17} $cm^6 mol^{-1} s^{-1}$.							
72 WES/DEH4	EX	298	1.3(17)			3	
M = Ar. M-efficiencies relative to Ar are: 1.00(Ar), 2.23(He).							
74 AND/MAR	EX	230-450	6.58(15)	0	-856±151	3	1.2
M = He.							
74 AND/MAR	EX	295	(2.10±0.44)(17)			3	
M = N_2. M-efficiencies relative to N_2 are: 1.00(N_2), 0.57(He), 0.59(Ar). P(Ar) = (1-10) torr. P(He) = (1-10)torr. P(N_2) = (2-5) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
74 HOW/EVE	EX	296	2.83(17)			3	
M = N_2. M-efficiencies relative to N_2 are: 1.00(N_2), 0.51(He), 0.56(Ar).							
75 ATK/HAN1	EX	298	(2.21±0.25)(17)			3	
M = N_2. M-efficiencies relative to N_2 are: 1.00(N_2), 0.70(Ar). Low-pressure k.							
75 HAR/WAY	EX	298	(5.44±1.81)(17)			3	
M = N_2. M-efficiencies relative to N_2 are: 1.00(N_2), 0.47(Ar).							
78 ANA/SMI1 [2])	EX	233	4.17(17)			3	
M = N_2. Limiting low-pressure k.							
78 ANA/SMI1 [2])	EX	296	2.97(17)			3	
M = N_2. M-efficiencies relative to N_2 are: 1.00(N_2), 0.37(He), 0.50(Ar). Limiting low-pressure k.							
78 ANA/SMI1 [2])	EX	405	1.05(17)			3	
M = N_2. Limiting low-pressure k.							
78 ANA/SMI1 [2])	EX	505	8.71(17)			3	
M = N_2. Limiting low-pressure k.							
[2]) Flash-photolysis. Resonance-absorption.							
OH(v=9) + NO → HONO							
Hydroxyl + Nitrogen oxide (NO)							
72 WOR/COL	EX	298	(9.03±1.81)(10)			2	
OH + NO_2 (+ M) → HO_2 + NO (+ M) (a)							
→ $HONO_2$ (+ M) (b)							
Hydroxyl + Nitrogen oxide (NO_2)							
75 GLA/TRO	ES	1350	≈7.0(11)			2	
k_a. Increasing to 1.9x10^{12} $cm^3mol^{-1}s^{-1}$ at 1700 K.							
80 HOW	EX	452-1115	(1.82±0.36)(13)	0	3360±135	2	
k_a. Discharge-flow. Laser Magnetic Resonance.							
72 SIM/HEI2	RN	300-423	6.3(12)	0	171	2	
k_b. M = H_2O. Limiting high-pressure k.							
74 GLA/TRO1	DE	295-1200	3.14(12)	-0.85	0	2	1.58
k_b. M = Ar. Limiting high-pressure k. The preexponential factor expressed as: $A(T/298)^{-0.85}$. k_1 k_{-1}K.							
75 GOR/MUL1	EX	435	3.2(12)			2	
k_b. M = H_2O. IN an atmosphere of water vapor.							
76 ANA/SMI	EX	296	9.78(12)			2	
k_b. M = N_2. Limiting high-pressure k.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
76 ATK/PER3	EX	298	(3.85±0.60)(12)			2	
k_b. M = N_2. M-efficiencies relative to N_2 are: 1.00(N_2), 0.92(Ar). P = 760 torr.							
76 ATK/PER3	ES	298	≈5.12(12)			2	
k_b. M = Ar, or N_2. Limiting high-pressure k.							
78 ANA/SMI3 [1])	EX	220	1.20(13)			2	
78 ANA/SMI3 [1])	EX	296	9.64(12)			2	
78 ANA/SMI3 [1])	EX	358	7.83(12)			2	
78 ANA/SMI3 [1])	EX	450	2.29(12)			2	
78 ANA/SMI3 [1])	EX	550	2.65(12)			2	
[1]) k_b. M = N_2. Flash-photolysis. Resonance-absorption. Limiting high-pressure k's.							
79 CAM/PAR [2])	EX	292	(2.5±0.4)(12)			2	
k_b. M = CO. P = 100 torr.							
79 CAM/PAR [2])	EX	292	(1.2±0.3)(12)			2	
k_b. M = N_2. P = 5.49 torr.							
[2]) Boric-acid-coated Pyrex reaction vessels.							
79 O'B/GRE	EX	301	(7.83±1.81)(12)			2	
k_b. Photolysis of an Air/H_2O/NO_x mixture. P(Air) = 780 torr. P(H_2O) = 11 torr.							
79 WIN/KRE [3])	EX	247	(1.10±0.09)(12)			2	
[N_2] = $5.4x10^{17}$ molec.cm^{-3}. M-efficiencies relative to N_2 are: 0.35(He), 0.55(Ar), 1.00(N_2), 1.7(SF_6).							
79 WIN/KRE [3])	EX	297	(6.00±0.46)(11)			2	
[N_2] = $5.4x10^{17}$ molec.cm^{-3}. M-efficiencies relative to N_2 are: 0.45(He), 0.65(Ar), 1.00(N_2), 2.6(SF_6).							
79 WIN/KRE [3])	EX	297	6.63(12)			2	
P(N_2) = 760 torr.							
79 WIN/KRE [3])	EX	352	(4.10±0.30)(11)			2	
[N_2] = $5.4x10^{17}$ molec.cm^{-3}. M-efficiencies relative to N_2 are: 0.45(He), 0.60(Ar), 1.00(N_2), 2.9(SF_6).							
[3]) k_b. M = N_2. Flash-photolysis. Resonance-fluorescence. k values reported for different [M] up to $2.3x10^{19}$ molec.cm^3, in the T-range (247-352) K.							
80 AND	CO	220-1100	7.23(12)	-1.6	0	2	
k_b. Limiting high-pressure k. The preexponential factor expressed as: $A(T/298)^{-1.6}$. Discharge-flow. Resonance-fluorescence.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 ROB/SMI	EX	295	≃1.81(13)			2	
k_b. Pulsed-photolysis of $HONO_2$ in Ar, or CF_4. High-pressure k. P(Ar) = 4 atm. P(CF_4) = 8.6 atm. [N_2] = $3.2x10^{17}$-$4.0x10^{18}$ molec.cm^{-3}.							
72 AND/KAU	EX	297	(3.63±1.09)(17)			3	
k_b. M = Ar. M-efficiencies relative to Ar are: 1.0(Ar), 2.0(N_2).. Low-pressure k. P(Ar) = 3 torr. P(N_2) = 8 torr.							
72 SIM/HEI2	RN	300-423	4.0(18)	0	0	3	
k_b. M = H_2O. Limiting low-pressure k.							
72 WES/DEH4	EX	273-395	7.3(17)			3	
k_b. M = He. k decreasing within the given T-range from $7.3x10^{17}$ to $2.1x10^{17}$ $cm^3mol^{-1}s^{-1}$.							
72 WES/DEH4	EX	298	3.0(17)			3	
k_b. M = Ar. M-efficiencies relative to Ar are: 1.00(Ar), 1.9(He).							
74 AND/MAR	EX	230-450	1.68(16)	0	-906±151	3	1.2
k_b. M = Ar.							
74 AND/MAR	EX	295	(8.34±1.81)(17)			3	
k_b. M = N_2. M-efficiencies relative to N_2 are: 1.00(N_2), 0.43(He), 0.43(Ar). P(He) = (1-10) torr.P(Ar) = (1-10) torr. P(N_2) = (1-8) torr.							
74 GLA/TRO1 [4])	DE	295-1200	5.84(17)	-2.98	0	3	1.58
k_b. M = He. Limiting low-pressure, concentration-dependent expression = k/[He]. $k_1 = k_{-1}K$.							
74 GLA/TRO1 [4])	DE	295-1200	3.75(17)	-2.9	0	3	1.58
k_b. M = Ar. Limiting low-pressure, concentration-dependent expression = k/[Ar]. $k_1 = k_{-1}K$.							
[4]) The preexponential factors expressed as: $A(T/298)^n$.							
74 GLA/TRO1	DE	622	3.0(17)			3	
k_b. M = N_2. Limiting low-pressure, concentration-dependent expression = k/[N_2]. $k_1 = k_{-1}K$.							
74 GLA/TRO1	DE	670	1.7(17)			3	
k_b. M = N_2. Limiting low-pressure, concentration-dependent Arrhenius expression = k/[N_2]. Determined by using $k_1 = Kk_{-1}$.							
74 HOW/EVE	EX	296	1.05(18)			3	
k_b. M = N_2.							
75 HAR/WAY	EX	298	(9.43±3.63)(17)			3	
k_b. M = N_2. M-efficiencies relative to N_2 are: 1.00(N_2), 0.58(Ar).							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
76 ANA/BEM k_b. M = N_2. Resonance absorption. Limiting low-pressure k. k decreases from $2.0x10^{18}$ $cm^6mol^{-2}s^{-1}$ at T = 220K, to $5.9x10^{17}$ $cm^6mol^{-2}s^{-1}$ at T = 358K. $[N_2]$ = $3.2x10^{17}$-$4.0x10^{18}$ $molec.cm^{-3}$.	EX	220	1.96(18)			3	
76 ANA/SMI k_b. M = N_2. Limiting low-pressure k. M-efficiencies relative to N_2 are: 1.00(N_2), 0.34(He), 0.42(Ar), 0.68(O_2), 2.53(SF_6).	EX	296	9.43(17)			3	
76 ANA/SMI k_b. M = N_2. Limiting low-pressure k. n = 0 assumed. A and B recalculated from the reported data.	EX	220-550	(5.26±1.78)(16)	0	-818±79	3	
76 ANA/SMI k_b. M = N_2. Limiting low-pressure k. The A-factor recalculated from the reported experimental data. The preexponential factor expressed as: $A(T/298)^{-2.6}$.	EX	220-550	(9.67±2.18)(17)	-2.6	0	3	
76 ATK/PER3 k_b. M = Ar. Limiting low-pressure k.	EX	298	(3.70±0.36)(17)			3	
77 ERL/FIE k_b. M = He. Low pressure k. The preexponential factor expressed as: $A(T/298)^{-2.9}$.	EX	213-300	(3.60±0.97)(17)	-2.9	0	3	
77 ERL/FIE k_b. M = He. Low-pressure k. M-efficiencies relative to He are: 1.00(He), 4.00(CO_2).	EX	300	(3.63±1.45)(17)			3	
78 ANA/SMI3 [5]) k_b. M = N_2.	EX	220	2.29(18)			3	
78 ANA/SMI3 [5]) k_b. M = N_2.	EX	296	9.61(17)			3	
78 ANA/SMI3 [5]) k_b. M = N_2.	EX	358	6.06(17)			3	
78 ANA/SMI3 [5]) k_b. M = N_2.	EX	450	3.95(17)			3	
78 ANA/SMI3 [5]) k_b. M = N_2.	EX	550	2.21(17)			3	
78 ANA/SMI3 [5]) k_b. M = He.	EX	220	9.07(17)			3	
78 ANA/SMI3 [5]) k_b. M = He.	EX	296	3.30(17)			3	

[5]) Flash-photolysis. Resonance-absorption. Limiting low-pressure k's.

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
78 ANA/SMI3 [6])	EX	220	1.09(18)			3	
k_b. M = He.							
78 ANA/SMI3 [6])	EX	296	3.81(17)			3	
k_b. M = He.							
[6]) Discharge-flow. Resonance-fluorescence.							
Limiting low-pressure k's.							
80 AND [7])	EX	225-389	(5.80±1.45)(16)	0	-785±136	3	
k_b. M = N_2.							
Limiting low-pressure k.							
P(N_2) = (0.8-2.0) torr.							
n = 0 assumed.							
80 AND [7])	EX	225-389	(8.34±2.18)(17)	-2.9	0	3	
k_b. The preexponential factor expressed							
as: $A(T/298)^{-2.9}$.							
P(N_2) = (0.8-2.0) torr.							
80 AND [7])	EX	298	(6.17±0.73)(17)			3	
k_b. M = He. Limiting low-pressure k.							
P(He) = (1.5-2.7) torr.							
[7]) Discharge-flow. Resonance-fluorescence.							
OH + N_2O (+ M) → HO_2 + N_2 (+ M) (a)							
→ products (b)							
Hydroxyl + Nitrogen oxide (N_2O)							
76 BIE/ZET	EX	298	(2.29±0.72)(7)			2	
k_a.							
77 CHA/KAU	EX	480	≤2.41(8)			2	
k_a. Upper-limit k.							
75 GOR/MUL1	EX	440	<1.0(10)			2	
k_b. M = H_2O. Upper-limit k.							
In an atmosphere of Water vapor.							
76 ATK/PER2	EX	298-443	≤1.20(8)			2	
k_b. M = Ar.							
Limiting high-pressure, upper-limit k.							
OH(v=9) + N_2O → products							
Hydroxyl + Nitrogen oxide (N_2O)							
72 WOR/COL	EX	298	(2.89±1.33)(10)			2	
OH + NH_2 → products							
Hydroxyl + Amidogen							
80 FEN	RL	1110-1500	(1.0±0.5)(1)	0	0	2/2	
Lean-burnt gas mixture. Average ratio.							
k_{ref}: NO + NH_2 → N_2 + H_2O.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$OH + NH_3 \rightarrow H_2O + NH_2$							
Hydroxyl + Ammonia							
73 GEH/HOY	EX	298	1.7(11)			2	
73 KUR	EX	298	(2.47±0.36)(10)			2	
73 STU3	EX	298	(9.03±2.41)(10)			2	
74 DOV/NIP	EX	1620-1920	≤3.85(11)	0.68	554	2	
Upper-limit k. Preexponential factor expressed as: $A(T/298)^{0.68}$.							
74 HAC/HOY1	EX	298-669	(3.2±0.5)(12)	0	920	2	
74 HAC/HOY1	EX	298	(1.3±0.3)(13)			2	
74 ZEL/SMI	EX	230-490	1.39(12)	0	805	2	1.07
74 ZEL/SMI	EX	298	9.52(10)			2	
75 COX/DER2	ES	296	(7.23±2.41)(10)			2	
75 GOR/MUL1	EX	418	(2.6±0.3)(11)			2	
M = H_2O. In an atmosphere of Water vapor.							
75 SMI/ZEL	EX	228-472	1.39(12)	0	805	2	1.07
75 ZEL	EX	228-472	1.4(12)	0	800	2	
Flash-photolysis. Resonance-absorption.							
76 PER/ATK1	EX	297-427	1.76(12)	0	861±151	2	
76 PER/ATK1	EX	298	(9.88±0.96)(10)			2	
79 PAG/ERI 1)	EX	300	(1.6±0.2)(11)			2	
79 PAG/ERI 1)	EX	298-365	(6.89±0.86)(11)	0	438±40	2	
Based on the experimental k at 300 K and the reported E_a.							
1) Gaseous NH_3 pulse-radiolysis.							
80 FEN	ES	1235	3.0(11)			2	
Lean-burnt gas mixture. Tentative k.							
80 SIL/KOL	EX	294-1075	(3.26±0.52)(12)	0	1067±72	2	
Discharge-flow. Mass-spectrometry.							
81 FUJ/MIY1 2)	SE	300-2200	3.16(12)	0	1007	2	
Obtained by combining the present data with those reported in 74 HAC/HOY.							
81 FUJ/MIY2 2)	EX	1360-1840	3.09(12)	0	981±75	2	1.1
2) Oxidation of NH_3 behind reflected shock-waves, in $NH_3/H_2/O_2/Ar$ mixtures.							
81 NIE/WAG 3)	EX	300-1400	(2.5±1.0)(12)	0	980	2	
n = 0 assumed.							
81 NIE/WAG 3)	EX	300-1400	3.15(11)	1.05	350	2	
The preexponential factor expressed as: $A(T/298)^{1.05}$.							
3) OH radicals generated by H_2O photolysis at 165-185 nm. Shock-waves. Flash-photolysis.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
OH + NH_2NH_2 → products							
Hydroxyl + Hydrazine							
74 HAC/HOY1	EX	298	1.3(13)			2	1.2
79 HAR/ATK [1])	EX	298-424	2.65(13)	0	-116±176	2	
M = Ar. P(Ar) = (25-50) torr.							
79 HAR/ATK [1])	EX	298-424	(3.67±0.60)(13)	0	0	2	
B = 0 aassumed.							
[1]) Flash-photolysis. Resonance-fluorescence.							
OH + HNO → H_2O + NO							
Hydroxyl + Nitrosyl hydride							
72 SMI	EX	2100	(1.08±0.12)(13)			2	
75 CAM/HAN2	RL	425	≤4.4			2/2	
k_{ref}: O + HNO → H_2 + NO. Upper-limit ratio.							
OH + HONO → H_2O + NO_2							
Hydroxyl + Nitrous acid							
74 COX1	RL	300	(3.7±0.6)(-1)			2/2	
k_{ref}: OH + NO + M. → HONO + M.							
74 COX1	RN	300	1.08(12)			2	
74 COX2	RN	294	(1.33±0.12)(12)			2	
75 COX	RN	300	(1.33±0.12)(12)			2	
75 COX/DER2	ES	296	2.17(12)			2	
76 COX/DER1	RL	298	(9.45±0.48)(2)			2/2	
k_{ref}: OH + H_2 → H_2O + H.							
76 COX/DER1	RN	298	(3.98±0.18)(12)			2	
76 COX/DER2	RL	298	(9.04±0.94)(2)			2/2	
k_{ref}: OH + CH_4 → H_2O + CH_3.							
76 COX/DER3	RL	296	(3.25±0.44)(-1)			2/2	
k_{ref}: OH + CH_3CHO → H_2O + CH_3CO							
76 FIF	RN	1000-1400	(1.55±0.5)(12)	0	0	2	
76 FIF	RN	1000-1400	6.92(12)	0	1761	2	
B = 0 assumed.							
OH + $HONO_2$ → H_2O + NO_3 (a)							
→ H_2O_2 + NO_2 (b)							
→ $[HO.HONO_2]^†$ (c)							
Hydroxyl + Nitric acid							
72 MOR/SMI [1])	EX	300	(7.82±3.01)(10)			2	
74 GLA/TRO1 [1])	EX	1000-1100	(9.5±2.0)(10)	0	0	2	
74 ZEL/SMI [1])	EX	240-405	(5.42±1.20)(10)	0	0	2	
75 MAR/KAU1 [1])	EX	270-470	(5.36±0.78)(10)	0	0	2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
75 SMI/ZEL [1]	EX	240-406	(4.82±1.20)(10)	0	0	2	
[1] k_a.							
75 ZEL	EX	240-300	(4.8±1.2)(10)	0	0	2	
k_a. Flash-photolysis. Resonance-absorption.							
81 NEL/MAR	EX	295	(4.94±1.08)(10)			2	
k_a. M = Ar. Flash-photolysis. Resonance-fluorescence at P(Total) = (10-50) torr. Laser-absorption at P(Total) = 10 torr.							
82 MAR/JOH [2]	EX	218-363	(9.15±2.59)(9)	0	-644±79	2	
n = 0 assumed.							
82 MAR/JOH [2]	EX	218-363	(8.14±0.30)(10)	-2.29	0	2	
The preexponential factor expressed as: $A(T/298)^{-2.29}$.							
[2] k_a. Flash-photolysis. Resonance-fluorescence. OH generated by Flash-photolysis of $HONO_2$. P(Ar) = (10-50) torr. P-independent k.							
82 MAR/WAT [3]	EX	228	1.84(11)			2	
82 MAR/WAT [3]	EX	246	1.26(11)			2	
82 MAR/WAT [3]	EX	298	7.17(10)			2	
82 MAR/WAT [3]	EX	415	4.76(10)			2	
[3] k_a. M = He. Flash-photolysis. Resonance-fluorescence. OH generated by reacting H with NO_2. P = 40 torr. $[HONO_2] = (0.6-8.0)x10^{15}$ molec.cm^{-3}. Other k's, for the same temperatures as above, but at different pressures in the (0-300) torr. range, are also given. The P-dependence is weaker above 298 K, but stronger below 298 K. The addition complex of channel (c) is considered by the authors as the precursor of channel (a).							
81 WIN/RAV	EX	224-366	(9.15±2.29)(9)	0	-649±69	2	
$k_a + k_b$. $HONO_2$/Ar (or SF_6) flash-photolysis. Resonance-fluorescence. P = (13-60) torr.							
82 JOU/POU	EX	251-403	(4.40±1.20)(9)	0	-876±85	2	
$k_a + k_b$. Discharge-flow-EPR. OH produced by reacting H with NO_2 in excess. At 298 K only channel (a) occurs. P = (0.6-2.3) torr. $[OH]_o = (0.1-7.0)x10^{10}$ molec.cm^{-3}.							
82 KUR/COR	EX	225-296	(6.32±2.41)(9)	0	-759±100	2	
$k_a + k_b$. Flash-photolysis of $HONO_2$. $[HONO_2]$ = (10-221) torr.							
82 RAV/EIS [4]	EX	251	(1.17±0.14)(11)			2	
$k_a + k_b$. M = N_2. $P(N_2)$ = 50 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 RAV/EIS [4])	EX	251	(1.26±0.10)(11)			2	
$k_a + k_b$. M = SF_6. P(SF_6) = 60 torr.							
82 RAV/EIS [4])	EX	298	(7.53±0.78)(10)			2	
$k_a + k_b$. M = Ar. P(Ar) = 50 torr.							
82 RAV/EIS [4])	EX	298	(8.37±1.69)(10)			2	
$k_a + k_b$. M = SF_6. P(SF_6) = 60 torr.							
82 RAV/EIS [4])	EX	220-380	(9.15±2.29)(9)	0	-649±69	2	
$k_a + k_b$. M = SF_6.							
[4]) Pulsed Laser-photolysis of $HONO_2$ in Ar, N_2, or SF_6. Channel (a) is the major pathway.							
$OH + HO_2NO_2 \rightarrow H_2O + O_2 + NO_2$ (a)							
$\rightarrow H_2O_2 + NO_3$ (b)							
$\rightarrow HO_2 + HONO_2$ (c)							
Hydroxyl + Peroxynitric acid							
80 LIT	EX	263-283	(1.75±0.60)(12)	0	0	2	
k_a. Infrared Absorption Spectroscopy.							
82 BAR/BAS	EX	295	(2.47±0.60)(12)			2	
k_a. Reaction of OH with HO_2NO_2 in a glass-cylinder. FTIR Spectroscopy. OH produced by the reaction: $HO_2 + NO_2 \rightarrow OH + NO_3$. Supersedes 81 BAR/BAS.							
82 TRE/BLA [1])	EX	246-324	(4.84±3.43)(12)	0	193±194	2	
$k_a + k_b + k_c$.							
82 TRE/BLA [1])	EX	246-324	(2.41±0.96)(12)	0	0	2	
$k_a + k_b + k_c$. B = 0 assumed. (Recommended k.)							
[1]) OH generated by reacting $O(^1D)$ with either H_2, or or H_2O. $O(^1D)$ obtained by Flash-photolysis of O_3.							
$OH + CO \rightarrow H + CO_2$ (a)							
$\rightarrow$ any other products (b)							
Hydroxyl + Carbon monoxide							
71 BRA/BEL1	EX	1300-1900	4.2(11)	0	503±101	2	1.95
k_a. M = Ar.							
71 IZO/KIS	DE	1400-2200	9.03(11)	0	503	2	
k_a. Shock waves. Best data-fit. Total conc. = 5×10^{17} molec.cm^{-3}.							
72 DIX [1])	ES	1050	(2.4±0.12)(11)			2	
72 DIX [1])	SE	298-1330	3.09(11)	0	370±100	2	1.41
Combination of present and other data.							
[1]) k_a. Fuel-rich $H_2/N_2/O_2$ flames.							
72 STU/NIK1	EX	298	8.13(10)			2	1.15
k_a. M = He (20 Torr).							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
73 DAY/THO	ES	1050	(2.4±0.12)(11)			2	
k_a. Fuel-rich $H_2/N_2/O_2$ flame k.							
73 GAR/MAL	EX	1200-2500	4.0(12)	0	4026	2	1.25
k_a. M = Ar. Data-fit to a proposed mechanism.							
73 PEE/MAH1	ES	1750	2.8(11)			2	
k_a. Lean CH_4/O_2 flames.							
73 PEE/MAH1	ES	1600-1900	1.36(12)	0	2768±101	2	
k_a. Lean CH_4/O_2 flames.							
73 SMI/ZEL1	EX	300	8.7(10)			2	
k_a. Within the 210-460 K range, slight positive T-dependence, possibly curved.							
73 WES/DEH1	EX	298	8.0(10)			2	
k_a. Nonlinear Arrhenius behaviour. From 298 to 915 K, k increases from $8x10^{10}$ to $13.1x10^{10}$ $cm^3mol^{-1}s^{-1}$.							
74 DAV/FIS	EX	220-373	(1.29±0.11)(11)	0	81±40	2	
k_a. M = He.							
74 HOW/EVE	EX	296	9.40(10)			2	
k_a. M = He, Ar, or N_2.							
74 TRA/ROS2	EX	300	7.53(10)			2	
k_a. M = Ar. CO_2 is vibrationally excited.							
75 BIO/LAZ	EX	1250-1750	4.7(11)	0	0	2	
k_a. Uninhibited $CH_4/O_2/Ar$ flame.							
75 CAM/HAN1	RL	292	(5.3±1.0)(-2)			2/2	
k_a/k_{ref}. Estimated ratio. k_{ref}: $OH + NO_2 (+ M) \rightarrow HNO_3 (+ M)$.							
75 GOR/MUL1	EX	298	(9.07±0.05)(10)			2	
k_a. M=Ar (710 torr.) + H_2O (10 torr.) + CO (10 torr.)							
75 STE/ZEL	EX	300	9.33(10)			2	1.20
k_a. Nonlinear Arrhenius behaviour. For 300-900 K: $\log k = (10.85±0.08 + 4.0x10^{-4}T$ ($cm^3mol^{-1}s^{-1}$.)							
75 TRA/ROS	EX	300	7.53(10)			2	
k_a. M = Ar. CO_2 is vibrationally excited.							
75 VAN/PEE	EX	400	8.0(10)			2	
k_a. Lean $CO/H_2/O_2$ flame. Non-linear Arrhenius behaviour. k increases slightly from 400 to 800 K.							
75 VAN/PEE	EX	1000-1800	2.32(12)	0	2869	2	
k_a. Lean $CO/OH_2/O_2$ flame. $\log k = (10.85±0.08) + 4.0x10^{-4}T$ $cm^3mol^{-1}s^{-1}$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
75 ZEL	EX	220-900	2)	2)	2)	2	2.0
k_a. Flash -photolysis. Resonance-absorption.							
2) $k = 6.76 \times 10^{10} \exp(8.7 \times 10^{-4} T)\ cm^3 mol^{-1} s^{-1}$.							
(Empirical expression).							
76 ATK/PER2	EX	299	(9.28±0.96)(10)			2	
k_a. M = Ar.							
P = (25-634) torr.							
Limiting high-pressure k.							
76 BRA/CAP	RL	1300	1.8(-1)			2/2	
k_a/k_{ref}. k_{ref}: $OH + CH_4 \rightarrow H_2O + CH_3$							
76 COX/DER1	RL	298	(3.86±0.34)(1)			2/2	
k_a/k_{ref}. k_{ref}: $OH + H_2 \rightarrow H_2O + H$.							
76 COX/DER1	ES	298	(1.63±0.12)(11)			2	
k_a.							
76 SIE/SIM1	RL	217-298	2.0(-1)	0	-1711	2/2	
k_a/k_{ref}.							
k_{ref}: $OH + H_2 \rightarrow H_2O + H$.							
Limiting high-pressure ratio.							
76 SIE/SIM1	RL	298	1.4(1)			2/2	
k_a/k_{ref}. k_{ref}: $OH + H_2 \rightarrow H_2O + H$. Rate ratio increasing from a limiting low-pressure value of 14 to a limiting high-pressure value of 50.							
77 ATR/BAL 3)	RL	773	(2.35±0.20)(-1)			2/2	
k_a/k_{ref}. k_{ref}: $OH + H_2 \rightarrow H_2O + H$.							
77 ATR/BAL 3)	RN	773	9.6(10)			2	
k_a.							
3) Aged boric-acid coated vessel.							
P(Total) = 500 torr.							
77 CHA/USE 4)	RL	298	(5.86±0.84)(-2)			2/2	
k_a/k_{ref}. P = 100 torr.							
77 CHA/USE 4)	RN	298	(8.28±1.18)(10)			2	
k_a. P = 100 torr.							
77 CHA/USE 4)	RL	298	(1.27±0.07)(-1)			2/2	
k_a/k_{ref}. P = 700 torr.							
77 CHA/USE 4)	RN	298	(1.79±0.98)(10)			2	
k_a. P = 700 torr.							
4) k_{ref}: $OH + (CH_3)_3CH \rightarrow H_2O + (CH_3)_3C$ (a)							
$\rightarrow H_2O + (CH_3)_2CHCH_2$ (b)							
77 OVE/PAR1 5)	EX	296	(1.22±0.05)(11)			2	
k_a. M = He. P = 50 torr.							
77 OVE/PAR1 5)	EX	296	(1.95±0.12)(11)			2	
k_a. M = SF_6. P = (200-350) torr.							
5) Limiting high-pressure k.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
78 BIE/ZET2 [6]) k_a. P(He, orN_2) < 50 torr.	EX	297	9.03(10)			2	
78 BIE/ZET2 [6]) k_a. P(He) = 740 torr.	EX	297	(1.20±0.22)(11)			2	
78 BIE/ZET2 [6]) k_a. P(N_2) =740 torr.	EX	297	(1.38±0.20)(11)			2	
78 BIE/ZET2 [6]) k_a. P(N_2) = 745 torr.	EX	297	(1.70±0.17)(11)			2	
78 BIE/ZET2 [6]) k_a. P(N_2) = 750 torr. [6]) k dependent on pressure and purity-degree of M. UV-Photolysis. Resonance-absorption.	EX	297	(8.67±1.26)(10)			2	
78 BUT/SOL k_a. Quartz reactor. H_2O_2 photolysis. Gas-chromatography. P(O_2 + N_2) = (100-600) torr.	EX	305	(1.62±0.24)(11)			2	
79 CLY/HOL k_a. Resonance-fluorescence. Gas-chromatography.	EX	293-430	1.32(11)	0	88±40	2	1.3
79 ZEL k_a. [7]) k = exp(24.98+9.2x10^{-4}T) $cm^3mol^{-1}s^{-1}$. Non-Arrhenius best-fit of all data. Critical evaluation.	EX	300-2000	[7])	[7])	[7])	2	
77 PER/ATK2 [9]) $k_{overall}$. [8]) k dependent on the nature and pressure of the third body. For M = Ar: k = (9.03±0.90)x10^{10} $cm^3mol^{-1}s^{-1}$ at 25.5 torr. increasing to k = (9.76±1.45)x10^{10} $cm^3mol^{-1}s^{-1}$ at 643.3 torr. For M = SF_6: k = (9.22±0.96)x10^{10} $cm^3mol^{-1}s^{-1}$ at 25.3 torr. increasing to k = (2.07±0.21)x10^{11} $cm^3mol^{-1}s^{-1}$ at 603.5 torr. The assumed mechanism (73 SMI/ZEL) is: OH + CO → $HOCO^\dagger$ (a) $HOCO^\dagger$ → OH + CO (-a) $HOCO^\dagger$ → H + CO_2 (b) $HOCO^\dagger$ + M → HOCO + M (c) (with $HOCO^\dagger$ removed by O_2) Steady-state treatment gives: $k = k_a(k_b + k_c[M])/(k_a + k_b + k_c[M])$	EX	299	[8])			2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
From this expression and the experimental data, estimates of individual rate constants and ratios obtained are:							
$k_a = 3.61x10^{11}\ cm^3mol^{-1}s^{-1}$;							
$k_{-a} \sim 8x10^9\ s^{-1}$;							
$k_b \sim 3x10^9\ s^{-1}$;							
$k_c \sim 2.41x10^{14}\ cm^3mol^{-1}s^{-1}$;							
$k_b/(k_{-a} + k_b) = 0.25$;							
$k_c/(k_{-a} + k_b) = 2.41x10^4\ cm^3mol^{-1}$.							
9) Flash-photolysis of H_2O vapor.							
Resonance-Fluorescence.							
P(Total) = (25-643) torr.							
M = Ar, or SF_6.							
$OH + CO^† \rightarrow H + CO_2$							
Hydroxyl + Carbon monoxide							
81 DRE/WOL 1)	EX	298	(9.1±3.4)(10)			2	
$T_t = T_r = T_v$ = 298K.							
81 DRE/WOL 1)	EX	298	(8.2±3.0)(10)			2	
$T_t = T_r$ = 298K. T_v = 1400K.							
81 DRE/WOL 1)	EX	298	(7.8±2.9)(10)			2	
$T_t = T_r$ = 298K. T_v = 1800K.							
1) Discharge-flow.							
IR-resonance radiation.							
$OD + CO \rightarrow$ products 1)							
Hydroxyl-d + Carbon monoxide							
82 PAR/IRW 2)	EX	298	(3.12±0.30)(10)			2	
M = He. P(He) = 20 torr.							
82 PAR/IRW 2)	EX	298	(1.03±0.15)(11)			2	
M = N_2. P(N_2) = 650 torr.							
82 PAR/IRW 2)	EX	298	(1.07±0.07)(11)			2	
M = CF_4, or SF_6. P(CF_4, or SF_6) = 600 torr.							
1) The assumed mechanism (73 SMI/ZEL) is:							
$OD + CO \rightarrow DOCO^†$ (a)							
$DOCO^† \rightarrow OD + CO$ (-a)							
$DOCO^† \rightarrow D + CO_2$ (b)							
$DOCO^† + M \rightarrow DOCO + M$ (c)							
(with $DOCO^†$ removed by O_2, or a radical)							
Steady-state treatment gives:							
$k = k_a(k_b + k_c[M])/(k_{-a} + k_b + k_c[M])$. From this expression and the experimental data, individual rate constants and ratios obtained are:							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
k_a = (1.37±0.16)x10^{11} $cm^3mol^{-1}s^{-1}$. M = CF_4, or N_2. Average k.							
k_{-a} ≈8.4x10^8 s^{-1}. (Estimated k)							
k_b ≈1.9x10^8 s^{-1}. (Estimated k)							
k_{-a}/k_b = (4.4±0.7) M = CF_4, or N_2. Average ratio.							
k_c/k_b = (4.3±1.4)x10^5, for M = CF_4							
= (4.7±1.4)x10^5, for M = N_2							
= (1.4±0.6)x10^5, for M = He.							
2) Flash-photolysis of D_2O vapor in Vacuum-UV.							
Time-resolved Resonance-Absorption.							
[CO] = 3.0x10^{11} molec.cm^{-3}.							
P = (20-650) torr.							
Supersedes 81 PAR/IRW.							
OH(v=1) + CO → H + CO_2							
Hydroxyl + Carbon monoxide							
77 SPE/END	EX	295	≤1.81(11)			2	
77 SPE/GLA	EX	295	<3.01(12)			2	
OH(v=9) + CO_2 → products							
Hydroxyl + Carbon dioxide							
72 WOR/COL	EX	298	(1.45±0.60)(10)			2	
OH + CH_3 → H + H + HCHO (a)							
OH + CH_3 → CH_3OH (b)							
Hydroxyl + Methyl							
80 BHA/FRA	EX	1700-2300	2.0(16)	0	13860	2	
k_a. Shock-tube. Resonance-Absorption.							
81 TSU/KAT 1)	RN	1500-1900	8.32(9)	0	9863	2	
Total conc. = 6.0x10^{18} molec.cm^{-3}.							
81 TSU/KAT 1)	RN	1500-1900	4.90(10)	0	9382	2	
Total conc. = 3.0x10^{19} molec.cm^{-3}.							
81 TSU/KAT 1)	DE	1500-1900	1.20(11)	0	8781	2	
Total conc. = 6.0x10^{19} molec.cm^{-3}.							
1) k_b. M = Ar. CH_3OH/O_2 thermal oxidation behind reflected shock-waves.							
$k_1 = k_{-1}K$.							
Same data given in 81 TSU/HAS.							
80 SWO/HOC	EX	296	(5.6±1.5)(13)			2	
$k_{overall}$.							
Flash-photolysis of H_2O vapor.							
P ~ 760 torr.							
M = N_2, H_2.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$OH + CH_4 \rightarrow H_2O + CH_3$							
Hydroxyl + Methane							
71 BAK/BAL	CO	298-753	6.3(12)	0	2516	2	
Rate constant per CH bond.							
73 PEE/MAH1	EX	1100-1900	3.0(13)	0	3020	2	
74 DAV/FIS	EX	240-373	(1.42±0.13)(12)	0	1711±88	2	
74 MAR/KAU	EX	290-440	(2.31±0.12)(12)	0	1842±20	2	
75 GOR/MUL1 [1])	EX	381	(1.57±0.16)(10)			2	
75 GOR/MUL1 [1])	EX	416	(3.3±0.1)(10)			2	
[1]) In an atmosphere of H_2O vapor.							
75 OVE/PAR	EX	295	(3.92±0.16)(9)			2	
75 STE/ZEL	EX	300-700	2.8(12)	0	1862	2	
76 COX/DER1	RL	298	(1.04±0.12)			2/2	
k_{ref}: $OH + H_2 \rightarrow H_2O + H$.							
76 COX/DER1	ES	298	(4.58±0.12)(9)			2	
76 HOW/EVE1	EX	296	(5.72±0.84)(9)			2	
76 ZEL/STE	EX	300-900	1.45(11)	3.08	1010	2	1.15
Flash-photolysis. Resonance-absorption. The exponential factor expressed as: $A(T/298)^{3.08}$. Same data given in 75 ZEL.							
78 ERN/WAG [2])	EX	1300	(2.5±0.8)(12)			2	
78 ERN/WAG [2])	EX	250-2000	2.89(11)	2.13	1234	2	
Empirical fit. The preexponential factor expressed as: $A(T/298)^{2.13}$.							
[2]) Flash-photolysis-Shock-tube technique.							
78 SHA	CO	300-2500	7.56(11)	2.0	1485	2	
The preexponential factor expressed as: $A(T/298)^2$.							
79 ZEL	SE	300-2000	2.89(11)	2.13	1233	2	
Critical evaluation. The preexponential factor expressed as: $A(T/298)^{2.13}$							
80 SWO/HOC	EX	296	(4.2±0.4)(9)			2	
Flash-photolysis of H_2O vapor. P ~ 760 torr.							
80 TUL/RAV [3])	EX	298-1020	4.48(11)	1.92	1355	2	
Best-fit non-linear Arrhenius expression. The preexponential factor expressed as: $A(T/298)^{1.92}$.							
80 TUL/RAV [3])	EX	298	(4.52±0.36)(9)			2	
[3]) M = Ar. Flash-photolysis. Resonance-fluorescence. $P(H_2O)$ = 150 mtorr. $P(CH_4)$ = 0-1 torr. P(Ar) = 50 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 FAI/SMI [4])	EX	830	(7.53±2.71)(11)			2	
82 FAI/SMI [4])	EX	1030	(7.82±2.41)(11)			2	
82 FAI/SMI [4])	EX	1400	(2.59±0.60)(12)			2	
[4]) Two-laser method for real-time measurement of radical-molecule k's. OH generated by irradiation of a $SF_6/N_2/H_2O_2/H_2O$ mixture at 40 torr., by a pulsed IR CO_2 laser.							
82 JEO/KAU1 [5])	EX	269-473	(3.37±0.90)(12)	0	1973±101	2	
82 JEO/KAU1 [5])	EX	269-473	3.36(11)	2.0	1263	2	
Modified, non-linear Arrhenius expression. Optimized. The preexponential factor expressed as: $A(T/298)^2$.							
[5]) Discharge-flow. Resonance-fluorescence. $[CH_4]$ = $(0.23\text{-}8.85)\times10^{15}$ molec.cm^{-3}.							

$OH(v{=}n) + CH_4 \rightarrow H_2O + CH_3$

Hydroxyl + Methane

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
72 WOR/COL	EX	298	(8.43±1.20)(9)			2	
Unreported T assumed to be 298K.							
77 SPE/END	EX	295	≤1.81(10)			2	
Upper-limit k.							

$OH + CDH_3 \rightarrow H_2O + CDH_2$ (a)
$\rightarrow HDO + CH_3$ (b)

Hydroxyl + Methane-d

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
75 GOR/MUL1	EX	416	(2.2±0.1)(10)			2	
$k_a + k_b$. In an atmosphere o water vapor.							

$OH + CD_2H_2 \rightarrow H_2O + CD_2H$ (a)
$\rightarrow HDO + CDH_2$ (b)

Hydroxyl + Methane-d_2

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
75 GOR/MUL1	EX	416	(1.8±0.1)(10)			2	
$k_a + k_b$. In n atmosphere of water vapor.							

$OH + CD_3H \rightarrow H_2O + CD_3$ (a)
$\rightarrow DHO + CD_2H$ (b)

Hydroxyl + Methane-d_3

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
75 GOR/MUL1	EX	416	(6.7±0.3)(9)			2	
$k_a + k_b$. In an atmosphere of water vapor.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$OH + CD_4 \rightarrow DHO + CD_3$							
Hydroxyl + Methane-d_4							
75 GOR/MUL1	EX	416	(3.0±1.0)(9)			2	
In an atmosphere of H_2O vapor.							
$OH + HCHO \rightarrow H_2O + CHO$ (a)							
$\rightarrow H_2O + CHO^\dagger$ (b)							
$\rightarrow HCOOH + H$ (c)							
Hydroxyl + Formaldehyde							
71 MOR/NIK1	EX	298	8.43(12)			2	1.25
k_a.							
71 MOR/NIK2	EX	300	9.0(-1)			2/2	
k_a.							
k_{ref}: $OH + CH_3CH{=}CH_2 \rightarrow$ products.							
73 PEE/MAH1	ES	1400-1800	≃2.3(13)	0	0	2	
k_a.							
77 VAN/VAN	ES	300-1600	3.9(13)	0	705	2	
k_a.							
78 NIK/MAK [1])	RL	298	(1.5±0.1)			2/2	
k_a/k_{ref}.							
k_{ref}: $OH + CH_2{=}CH_2 \rightarrow$ products.							
78 NIK/MAK [1])	RN	298	9.03(12)			2	
k_a.							
[1]) HCHO + HONO photolysis. FTIR-spectroscopy.							
78 ATK/PIT3	EX	299-426	7.53(12)	0	88±151	2	
k_a. Flash-photolysis. Resonance-fluorescence.							
80 STI/NAV	EX	228-362	(6.32±0.66)(12)	0	0	2	
$k_a + k_c$. Flash-photolysis. Resonance-fluorescence. T-, and P-flash-intensity independent.							
78 HOR/SU	RL	298	≃5.0(-1)			2/2	
k_b/k_c. HCHO photolysis at 313 nm. P(HCHO) = 8 torr. $P(O_2)$ = (0.02-8) torr. $P(CO_2)$ = (0-300) torr.							
80 MOR/HEI	RL	296	(4.9±1.6)(-1)			2/2	
$k_b/(k_a + k_b + k_c)$. NO_2 Photolysis at 366 nm., in presence of HCHO. IR absorption spectroscopy.							
k_{ref}: $OH + HCHO \rightarrow$ products.							
78 SMI	RN	298	(3.91±0.90)(12)			2	
$k_{overall}$. Discharge-flow. Mass-spectrometry. k shows no significant trends when the [HCHO] and [OH] are varied by factors of 8 and 4, respectively, at 298 and 334 K. E_a = 1434±478 $cal.mol^{-1}$ between 268 and 334 K.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$OH + HCOOH \rightarrow$ products							
Hydroxyl + Formic acid							
82 ZET/STU	EX	298	(1.93±0.12)(11)			2	
Pulsed Vacuum UV-photolysis of H_2O, Ar and HCOOH mixtures. Resonance-fluorescence. $P(H_2O)$ = (0.03-0.2) torr. P(Ar) = (25-100) torr.							
$OH + CH_3OH \rightarrow H_2O + CH_2OH$ (a)							
$\rightarrow H_2O + CH_3O$ (b)							
Hydroxyl + Methanol							
75 OSI/SIM	RL	298	(6.3±1.0)(-1)			2/2	
$(k_a + k_b)/k_{ref}$. k_{ref}: $OH + CO \rightarrow H + CO_2$							
75 OSI/SIM	RL	345	(9.8±2.0)(-1)			2/2	
$(k_a + k_b)/k_{ref}$. k_{ref}: $OH + CO \rightarrow H + CO_2$							
76 CAM/MCL	EX	292	(5.7±0.6)(11)			2	
$k_a + k_b$.							
75 BOW2	ES	1545-2180	3.0(13)	0	3000	2	
k_a. M = Ar. Reflected shock waves. Best data-fit. [Ar] = $(5.7\text{-}17.0)\times10^{18}$ molec.cm^{-3}. $[CH_3OH]$ = 1.3×10^{17} molec.cm^{-3}. $[O_2]$ = 2.5×10^{17} molec.cm^{-3}.							
78 OVE/PAR1	EX	296	(6.4±0.6)(11)			2	
k_a. Flash-photolysis. Resonance-aasorption.							
78 RAV/DAV	EX	298	(6.02±0.60)(11)			2	
$k_a + k_b$. Flash-photolysis. Resonance-fluorescence. $P(CH_3OH)$ = 10 torr.							
81 TSU/HAS	ES	1200-1800	2.0(14)	0	3007	2	
k_a. M = Ar,. CH_3OH/O_2 thermal oxidation in Ar,behind reflected shock-waves.							
81 VAN/VAN	DE	1000-2000	4.8(13)	0	2265	2	
k_a. CH_3OH/O_2 burned at 40 torr., with or without added Ar or H_2. Molecular beam-sampling.							
$OH + CS_2 \rightarrow SH + COS$ (a)							
$\rightarrow SOH + CS$ (b)							
Hydroxyl + Carbon disulfide							
80 COX/SHE [1])	RL	297	(6.0±2.0)(-2)			2/2	
k_a/k_{ref}. k_{ref}: $OH + CH_2{=}CH_2 \rightarrow$ products.							
80 COX/SHE [1])	RN	297	(2.59±0.96)(11)			2	
k_a.							

[1]) Photolysis of HONO and CS_2. Gas-chromatography. P = 760 torr.

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
80 IYE/ROW k_a. Photolysis of H_2O_2 + CS_2 mixtures. Gas-chromatography. Upper-limit k.	EX	298	<1.81(9)			2	
82 LEU/SMI2 [2]) k_a.	EX	298	≤4.22(9)			2	
82 LEU/SMI2 [2]) k_a. [2]) Discharge-flow Resonance-fluorescence. OH generated by reacting H with NO_2. Upper-limit k's. P-independent in the (2.2-58) torr. range. $[CS_2]_o$ = $(0.4\text{-}35.1)\times10^{15}$ molec.cm^{-3}. $[OH]_o$ = $(0.7\text{-}3.7)\times10^{11}$ molec.cm^{-3}.	EX	520	≤1.81(9)			2	
78 ATK/PER1 k_a + k_b. Upper-limit k.	EX	300-425	<4.22(10)			2	
78 KUR2 k_a + k_b. Flash-photolysis. Resonance-fluorescence. Channel (a) is more probable than (b).	EX	296	(1.11±0.20)(11)			2	
80 WIN/SHA [3]) k_a + k_b.	EX	251	<5.96(9)			2	
80 WIN/SHA [3]) k_a + k_b.	EX	297	<9.03(8)			2	
80 WIN/SHA [3]) k_a + k_b. [3]) Flash-photolysis. Resonance-fluorescence. M = Ar, or SF_6. Upper-limit k's. $P(H_2O)$ = (230-250) mtorr. P = (35-50) torr.	EX	363	<9.64(8)			2	
82 BIE/HAR k_a + k_b. Discharge-flow. OH generated by reacting H with NO_2. Upper-limit k. $[OH]_o$ = $(0.2\text{-}2.0)\times10^{12}$ molec.cm^{-3}. P (Total) ~ 2 torr.(He)	EX	298	≤3.01(10)			2	
82 JON/BUR k_a/k_b. CS_2/HONO photolysis in N_2 (or N_2/O_2). COS is the principal product. $P(O_2)$ = (40-380) torr.	EX	295	(1.02±0.54)(12)			2	
OH + COS → SH + CO_2 (a) **→ SOH + CO (b)** Hydroxyl + Carbon oxide sulfide							
80 COX/SHE [1]) k_a/k_{ref}. Upper-limit ratio. k_{ref}: OH + CH_2=CH_2 → products.	RL	297	≤5.0(-3)			2/2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
80 COX/SHE [1]	RN	297	≤2.41(10)				2
k_a. Upper-limit k.							
[1] Photolysis of HONO and COS. Gas-chromatography.							
$P(O_2)$ = (40-380) torr.							
P = 760 torr.							
78 ATK/PER1	EX	299-430	<4.22(9)				2
$k_a + k_b$. Upper-limit k.							
78 KUR2	EX	296	(3.41±0.73)(10)				2
$k_a + k_b$. Flash-photolysis.							
Resonance-fluorescence.							
80 RAV/KRE	EX	298	≤5.30(9)				2
$k_a + k_b$. Laser-photolysis of Nitric acid.							
Flas-photolysis. Resonance-fluorescence.							
Upper-limit k.							
81 LEU/SMI	EX	300-520	(7.83±1.81)(11)	0	2300±100		2
$k_a + k_b$. Discharge-flow. Resonance-fluorescence.							
OH(v=9) + COS → products							
Hydroxyl + Carbon oxide sulfide							
72 WOR/COL	EX	298	(1.51±0.90)(10)				2
OH + CH_3SH → products							
Hydroxyl + Methanethiol (Methylmercaptan)							
77 ATK/PER4 [1]	EX	299-426	5.35(12)	0	-398±151		2
77 ATK/PER4 [1]	EX	299-426	(2.04±0.20)(13)	0	0		2
[1] Flash-photolysis. Resonance-fluorescence.							
80 COX/SHE [2]	RL	297	(1.13±0.11)(-1)				2/2
k_{ref}: OH + CH_2=CH_2 → products.							
80 COX/SHE [2]	RN	297	(5.44±0.51)(13)				2
[2] Photolysis of HONO and CH_3SH.							
Gas-chromatography. P = 760 torr.							
81 WIN/KRE	EX	244-367	(6.93±2.35)(12)	0	-338±100		2
$H_2O/Ar/CH_3SH$ flash-photolysis.							
Resonance-fluorescence.							
$P(H_2O)$ = (0.05-0.15) torr.							
P(Ar) = (40-120) torr.							
OH + CN → H + NCO							
Hydroxyl + Cyanogen							
76 MOR	EX	2300-2560	6.03(13)	0	0		2
Premixed flames. T-independent k.							
E_a = 0 assumed.							
77 HAY2	EX	1950-2380	(5.6±0.7)(13)	0	0		2
Fuel-rich flames.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
OH + HCN → H + HOCN (a)							
→ H_2O + CN (b)							
Hydroxyl + Hydrocyanic acid							
77 HAY2	EX	1950-2380	(2.0±0.2)(11)	0	0	2	
k_a. Fuel-rich flames.							
79 PHI2	EX	298-563	(3.23±0.65)(10)	-1.0	1860	2	
k_b. Discharge-flow. Resonance-fluorescence. The preexponential factor expressed as: $A(T/298)^{-1}$. P >10 torr.							
OH + CH_3NH_2 → products							
Hydroxyl + Methanamine							
77 ATK/PER4 [1])	EX	299-426	6.14(12)	0	-229±151	2	
77 ATK/PER4 [1])	EX	298	(1.33±0.13)(12)			2	
[1]) Flash-photolysis. Resonance-fluorescence.							
OH + NH_2NHCH_3 → products							
Hydroxyl + Hydrazine, methyl-							
79 HAR/ATK	EX	298-424	(3.91±0.79)(13)	0	0	2	
M = Ar. Flash-photolysis. Resonance-fluorescence. P(Ar) = (25-50) torr.							
OH + CH_3ONO → products							
Hydroxyl + Nitrous acid methyl ester (Methyl nitrite)							
75 CAM/GOO2	ES	292	(8.0±1.1)(11)			2	
82 AUD/BAU1	EX	295	(7.1±1.2)(11)			2	
Static system. OH generated by the chain rection: $H_2O_2 + NO_2 + CO$. P < 75 torr. $[CO]_o$ ~3.0×10^{18} molec.cm^{-3}. $[CH_3ONO]_o < 3.6\times10^{17}$ molec.cm^{-3}. $[H_2O_2]_o \sim 9.0\times10^{15}$ molec.cm^{-3}. $[NO_2]_o \sim 3.3\times10^{16}$ molec.cm^{-3}.							
OH + CH_3NO_2 → products							
Hydroxyl + Methane, nitro-							
75 CAM/GOO2	ES	292	(5.5±0.6)(11)			2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$OH + CH{\equiv}CH \rightarrow H + CH_2{=}C{=}O$ (a)							
$\rightarrow H_2 + CH{=}C{=}O$ (b)							
$\rightarrow CO + CH_3$ (c)							
$\rightarrow H + CH{\equiv}COH$ (d)							
$\rightarrow [HO.CH{=}CH]^*$ (e)							
Hydroxyl + Ethyne							
77 PER/ATK2	EX	288-422	1.15(12)	0	312±201	2	
k_a (or, more likely, k_d.) M = Ar. P > 200 torr.							
77 VAN/VAN	ES	570-850	3.2(11)	0	101	2	
k_a. M = O_2, or O_2 + Ar.							
80 BAR/DOV	EX	2650	1.81(12)			2	
k_a. Ethyne oxidation by water vapor behind shock-waves. Time-of-flight Mass-spectrometry. It is assumed that step (a) is followed by the fast dissociation of $CH_2{=}C{=}O$ into CH_2 and CO.							
82 BIT/HOW	EX	1700-1900	(1.3±0.3)(12)	0	0	2	
k_a. C_6H_6/O_2/Ar flame. Molecular beam Mass-spectrometry. P = 20 torr.							
71 BRE/GLA	EX	295	(1.14±0.36)(11)			2	
k_b. Channel (b) is preferable to the possible abstraction path: $OH + CH{\equiv}CH \rightarrow H_2O + CH{\equiv}C$							
77 VAN/VAN	ES	650-1110	5.5(13)	0	6895	2	
k_c. M = O_2, or O_2 + Ar.							
81 TSU/KAT	ES	1500-1900	2.0(13)	0	1564	2	
k_c. CH_3OH/O_2 thermal oxidation in Ar, behind reflected shock-waves. UV-absorption. IR-emission. Same data given in 81 TSU/HAS.							
73 SMI/ZEL1	EX	210-460	1.2(12)	0	253	2	
$k_a + k_b + k_c$. M = He.							
74 PAS/CAR1	EX	298	(1.20±0.36)(11)			2	
$k_a + k_b + k_c$. M = He.							
75 DAV/FIS	EX	300	(9.94±0.90)(10)			2	
$k_a + k_b + k_c$. M = He. Channel (a) gives probably the primary products. P-independent k.							
74 PAS/CAR2	EX	298	(1.76±0.16)(11)			2	
$k_a + k_b + k_c$. Discharge-flow. P ~ 1 torr.							
77 DAV	EX	298	(9.94±0.90)(10)			2	
$k_a + k_b + k_c$. Channel (a) is probably predominant. M = He. Flash-photolysis. Resonance-fluorescence. P(He) = (20-500) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
80 MIC/NAV [1]	EX	228-413	≈2.41(11)	0	0	2	
Low-pressure k. (Given with caution).							
80 MIC/NAV [1]	EX	228-413	(4.11±0.72)(12)	0	646±47	2	
High-pressure k.							
[1]) k_e. Channel (e) may be possibly followed by channel (a). Flash-photolysis. Resonance-fluorescence. P = (10-1100) torr.							
82 PER/WIL	EX	297-429	9.34(11)	0	244	2	
k_e. Channel (e) is followed by channel (a), or, possibly, (d). M = Ar. Resonance-fliuorescence. OH generated by Vacuum-UV Photolysis of H_2O. Mass-spectrometry. P = (200-403) torr. (High-pressure k.) P-dependent for P < 200 torr. For the entire P-range of (0-403) torr. the following empirical expression holds: $k(T,P)_{bi} = [7.11\times10^{11}\exp(-165\pm200/T)]/[(30/P)+1]$							
$OH + CH_2{=}CH_2 \rightarrow CH_2CH_2OH \rightarrow$ products (a)							
$\rightarrow H_2O + CH_2{=}CH$ (b)							
Hydroxyl + Ethene							
71 MOR/NIK2	RL	300	1.0(-1)			2/2	
k_a/k_{ref}.							
k_{ref}: $CH_3CH{=}CH_2 + OH \rightarrow$ products.							
71 MOR/STE	EX	300	1.08(12)			2	1.25
k_a.							
73 BRA/HAC	EX	298	(1.0±0.3)(12)			2	
k_a.							
73 SMI/ZEL1	EX	210-460	4.5(12)	0	108	2	
k_a.							
73 STU1	EX	298	(1.81±0.60)(12)			2	
k_a.							
74 STU1	EX	298	(1.81±0.60)(12)			2	
k_a. UV Photolysis and Resonance-fluorescence.							
75 COX	RN	300	(5.66±0.60)(12)			2	
k_a. Rate constant expressed as αk with α ~3.0							
75 DAV/FIS [1]	EX	300	1.35(12)			2	1.3
P = 3 torr.							
75 DAV/FIS [1]	EX	300	3.21(12)			2	1.1
P = 300 torr.							
[1]) k_a. M = He. Pressure-dependent k.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
75 GOR/MUL1	EX	381	(3.75±0.20)(12)			2	
k_a. In an atmosphere of water vapor.							
75 GOR/MUL1	EX	416	(4.4±0.2)(12)			2	
k_a. In an atmosphere of water vapor.							
75 PAS/CAR	EX	300	(1.39±0.08)(12)			2	
Rate constant expressed as nk_a, where n is a stoichiometric factor.							
76 HOW	EX	296	2.41(12)			2	
k_a. M = He. Limiting high-pressure k.							
76 LLO/DAR2	RL	305	2.88			2/2	
k_a/k_{ref}.							
k_{ref}: OH + $CH_3CH_2CH_2CH_3$ → products.							
76 LLO/DAR2	RN	305	(5.2±1.0)(12)			2	
k_a.							
77 ATK/PER2 [2])	EX	299-425	1.3(12)	0	-388±151	2	
77 ATK/PER2 [2])	EX	299	(4.73±0.48)(12)			2	
[2]) k_a. M = Ar. Limiting high-pressure k.							
77 DAV [3])	EX	298	(2.19±0.12)(12)			2	
M = N_2. P(N_2) = 3 torr.							
77 DAV [3])	EX	298	(1.35±0.13)(12)			2	
M = He. P(He) = 3 torr.							
77 DAV [3])	EX	298	(3.21±0.39)(12)			2	
M = He. P(He) = 300 torr.							
[3]) k_a. Flash-photolysis. Resonance-fluorescence.							
77 OVE/PAR2	EX	296	(6.0±1.0)(12)			2	
k_a. M = H_2O, SF_6, CF_4. Limiting high-pressure k.							
78 OVE/PAR2 [4])	EX	298	(5.4±0.5)(12)			2	
k_a. M = He. P(He) = 50 torr.							
78 OVE/PAR2 [4])	EX	298	(6.5±0.5)(12)			2	
k_a. M = SF_6, or CF_4. P(SF_6, or CF_4) = 400 torr.							
[4]) Vacuum UV photolysis of H_2O.							
78 PRE	EX	293	(4.7±1.5)(11)			2	
k_a. Laser Magnetic Resonance Spectrometry.							
80 COX	SE	300	4.82(12)			2	
k_a. HONO photosensitized oxidation in synthetic air. Gas-chromatography. [HONO] = (3-20) ppm. [NO] = NO_2] = (0.3-3.0) ppm.							
80 FAR/SMI	EX	298	(1.12±0.18)(19)			3	
k_a. M = He. Discharge flow. Resonance-fluorescence. Mass-spectrometry.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 ATK/ASC2 [5])	RL	299	(1.12±0.05)			2/2	
$k_a k_{ref}$. k_{ref}: OH +  → products.							
82 ATK/ASC2 [5])	RN	299	(5.11±0.23)(12)			2	
k_a.							
[5]) $CH_3ONO/NO/CH_2{=}CH_2$ and Cyclohexane photolysis.							
$[CH_3ONO]_o$ = (9.5-3.5)x10^{14} molec.cm^{-3}.							
$[CH_2{=}CH_2]$ = (1.2-2.4)x10^{13} molec.cm^{-3}.							
$[NO]_o$ ~ 1.19x10^{14} molec.cm^{-3}.							
P(Total) = 735 torr.							
76 BRA/CAP	RL	1300	2.33			2/2	
k_b/k_{ref}.							
k_{ref}: CH_4 + OH → CH_3 + H_2O							
76 MEA/HEI	RL	298	2.6(-1)			2/2	
$k_b/(k_a + k_b)$.							
OH + $CD_2{=}CD_2$ → products							
Hydroxyl + Ethene-d_4							
78 NIK/MAK	RL	298	(1.03±0.06)			2	
k_{ref}: OH + $CH_2{=}CH_2$ → products.							
$CD_2{=}CD_2$/HONO Photolysis.							
FTIR-Spectroscopy.							
P(air) = 700 torr.							
OH + CH_3CH_3 → H_2O + CH_3CH_2							
Hydroxyl + Ethane							
71 BAK/BAL	CO	298-753	1.45(13)	0	1772	2	
Rate constant per CH bond.							
71 BAK/BAL [1])	RL	753	(1.05±0.11)(1)			2/2	
79 BAL/WAL1 [1])	RL	753-773	1.28	0	-1070	2/2	
A and B recalculated from an empirical formula.							
[1]) k_{ref}: OH + H_2 → H_2O + H.							
75 GOR/MUL1 [2])	EX	381	(4.0±0.2)(11)			2	
75 GOR/MUL1 [2])	EX	416	(4.8±0.3)(11)			2	
[2]) In an atmosphere of water vapor.							
75 HUC/BOO [3])	RL	653	(9.6±1.1)			2/2	
75 OVE/PAR	EX	295	(1.59±0.10)(11)			2	
76 BRA/CAP [3])	RL	1300	2.88			2/2	
[3]) k_{ref}: OH + CH_4 → H_2O + CH_3							
76 HOW/EVE2	EX	296	(1.75±0.36)(11)			2	
79 LEU	EX	298	(1.57±0.24)(11)			2	
Discharge-flow. Resonance-fluorescence.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 LEE/TAN	EX	295	(1.39±0.24)(11)			2	
Discharge-flow. Resonance-fluorescence. OH generated by reacting H with NO_2.							
$OH + CH_2{=}C{=}O \rightarrow CHO + HCHO$							
Hydroxyl + Ethenone (Ketene)							
77 VAN/VAN	ES	480-1000	2.8(13)	0	0	2	
$OH + CH_3CHO \rightarrow H_2O + CH_3CO$ (a)							
$\rightarrow H_2O + CH_2CHO$ (b)							
Hydroxyl + Acetaldehyde							
71 MOR/NIK2	RL	300	9.0(-1)			2/2	
$k_a + k_b$. k_{ref}: $CH_3CH{=}CH_2 + OH \rightarrow$ products.							
71 MOR/STE	EX	300	9.03(12)			2	1.25
$k_a + k_b$. Channel (a) is predominant.							
76 COX/DER3	EX	296	≤1.2(13)			2	
k_a. Upper-limit k.							
78 ATK/PIT3	EX	299-426	4.14(12)	0	257±151	2	
$k_a + k_b$. Flash-photolysis. Resonance-fluorescence.							
78 NIK/MAK [1])	RL	298	(1.9±0.2)			2/2	
k_{ref}: $OH + CH_2{=}CH_2 \rightarrow$ products.							
78 NIK/MAK [1])	RN	298	9.64(12)			2	
[1]) $k_a + k_b$. $CH_2{=}CH_2$/HONO photolysis. FTIR-spectroscopy. P(air) = 700 torr.							
81 KER/SHE [1])	RL	298	(1.50±0.50)			2/2	
$(k_a + k_b)/k_{ref}$. k_{ref}: $OH + CH_2{=}CH_2 \rightarrow$ products.							
81 KER/SHE [1])	RN	298	(7.23±2.41)(12)			2	
$k_a + k_b$.							
[1]) HONO/Synthetic air/Ethene/aldehyde photolysis.							
$OH + CH_3COOH \rightarrow$ products							
Hydroxyl + Acetic acid							
82 ZET/STU	EX	298	(3.61±0.72)(11)			2	
$H_2O/Ar/CH_3COOH$ photolysis. Resonance-fluorescence. P(Ar) = (20-500) torr. P(H_2O) = 0.1 torr.							
$OH + CH_3CH_2OH \rightarrow H_2O + CH_3CHOH$ (a)							
$\rightarrow$ any other products (b)							
Hydroxyl + Ethanol							
82 NAT/BHA	ES	1300-1700	3.00(13)	0	3000	2	
k_a. M = O_2 + Ar. Ethanol/O_2/Ar ignition behind reflected shock-waves. Data-fit. P = (1-2) atm.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
76 CAM/MCL	EX	292	(1.8±0.2)(12)			2	
$k_{overall}$.							
78 OVE/PAR1	EX	296	(2.25±0.22)(12)			2	
$k_{overall}$. Flash-photolysis. Resonance-fluorescence.							
78 RAV/DAV	EX	298	(1.58±0.22)(12)			2	
$k_{overall}$. Flash-photolysis. Resonance-fluorescence.							
P(Ethanol) < 2.5 torr.							
$OH + (CH_3)_2O \rightarrow H_2O + CH_2OCH_3$							
Hydroxyl + Methane, oxybis-							
77 PER/ATK1	EX	299-427	7.77(12)	0	388±151	2	
77 PER/ATK1	EX	299	(2.11±0.21)(12)			2	
$OH + (CH_3)_2S \rightarrow$ products							
Hydroxyl + Methane, thiobis-							
78 ATK/PER1	EX	300-427	(3.29±0.72)(12)	0	-179±151	2	
Flash-photolysis. Resonance-fluorescence.							
78 KUR1	EX	273-426	(3.66±1.53)(12)	0	134±135	2	
Flash-photolysis. Resonance-fluorescence.							
Recommended k.							
80 COX/SHE [1])	RL	297	(1.14±0.18)			2/2	
k_{ref}: $OH + CH_2{=}CH_2 \rightarrow$ products.							
80 COX/SHE [1])	RN	297	(5.48±0.84)(12)			2	
[1]) Photolysis of HONO and $(CH_3)_2S$.							
P = 760 torr.							
81 WIN/KRE	EX	244-367	(4.10±0.66)(12)	0	138±46	2	
Flash-photolysis of $H_2O/Ar/(CH_3)_2S$ mixtures.							
$P(H_2O)$ = (0.05-0.15) torr.							
P(Ar) = (50-200) torr.							
$OH + CH_3SSCH_3 \rightarrow$ products							
Hydroxyl + Disulfide, dimethyl-							
80 COX/SHE [1])	RL	297	(2.8±1.0)(1)			2/2	
k_{ref}: $OH + CH_2{=}CH_2 \rightarrow$ products.							
80 COX/SHE [1])	RN	297	(1.34±0.48)(14)			2	
[1]) Photolysis of HONO and CH_3SSCH_3.							
P = 760 torr.							
81 WIN/KRE	EX	244-367	(3.55±1.99)(13)	0	-380±160	2	
Flash-photolysis of $H_2O/Ar/CH_3SSCH_3$ mixtures.							
P(Ar) = (50-200) torr.							
$P(H_2O)$ = 0.06 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
OH + NCCN → $[C_2N_2OH]^†$ (a)							
→ HOCN + CN (b)							
Hydroxyl + Ethanedinitrile							
79 PHI1	EX	300-550	(1.87±0.28)(11)	0	1448	2	
k_a. Discharge-flow. Resonance-fluorescence. P = (1-16) torr.							
78 ATK/PER2 [1])	EX	298	≤1.81(10)			2	
78 ATK/PER2 [1])	EX	424	≤3.01(10)			2	
[1]) k_b. Flash-photolysis. Resonance-fluorescence. Upper-limit k's.							
OH + CH_3CN → products							
Hydroxyl + Acetonitrile							
81 HAR/KLE	EX	298-424	3.53(11)	0	755±126	2	
OH produced by pulsed vacuum-UV photolysis of H_2O in a reaction vessel. Resonance-fluorescence.							
OH + $CH_3N{=}NCH_3$ → products							
Hydroxyl + Diazene, dimethyl- (Azomethane)							
79 KLA/AND	EX	368	(4.94±1.33)(11)			2	
Flash-photolysis. Resonance-fluorescence.							
OH + $CH_3CH_2NH_2$ → products							
Hydroxyl + Ethanamine							
78 ATK/PER3	EX	298-426	8.85(12)	0	-189±151	2	
Flash-photolysis. Resonance-fluorescence.							
OH + $(CH_3)_2NH$ → H_2O + $(CH_3)_2N$ (a)							
→ H_2O + CH_2NHCH_3 (b)							
Hydroxyl + Methanamine, N-methyl-							
79 LIN/CAL	RL	298	(3.7±0.5)(-1)			2/2	
$k_a/(k_a + k_b)$. Long-path FTIR-Spectroscopy.							
78 ATK/PER3	EX	298-426	1.7(13)	0	-247±150	2	
$k_a + k_b$. Flash-photolysis. Resonance-fluorescence.							
OH + $CH_3C(O)O_2NO_2$ → products							
Hydroxyl + Peroxide, acetyl nitro-							
77 WIN/LLO	EX	299	≤1.0(11)			2	
Upper-limit k.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
OH + CH_3CH_2ONO → products							
Hydroxyl + Nitrous acid ethyl ester (Ethyl nitrite)							
82 AUD/BAU1	EX	295	(1.15±0.23)(12)			2	
Static system. OH generated by the reaction: $H_2O_2 + NO_2 + CO$. P < 75 torr. $[CO]_o$ ~3.0x10^{18} molec.cm^{-3}. $[CH_3CH_2ONO]_o$ < 3.6x10^{17} molec.cm^{-3}. $[H_2O_2]_o$ ~ 9.0x10^{15} molec.cm^{-3}. $[NO_2]_o$ ~ 3.3x10^{16} molec.cm^{-3}.							
OH + O=C=C=C=O → CO_2 + CH=C=O							
Hydroxyl + 1,2-Propadiene-1,3-dione							
77 FAU/WAG2	EX	295-480	(7.0±3.0)(12)	0	620±160	2	
OH + $CH_3C{\equiv}CH$ → products							
Hydroxyl + 1-Propyne							
73 BRA/HAC	EX	298	(5.7±1.0)(11)			2	
OH + CH_2=C=CH_2 → products							
Hydroxyl + 1,2-Propadiene							
73 BRA/HAC	EX	298	(2.7±1.5)(12)			2	
77 ATK/PER3	EX	299-424	3.37(12)	0	-154±151	2	
77 ATK/PER3	EX	299	(5.60±0.56)(12)			2	
OH + CH_3CH=CH_2 → [CH_3CH=CH_2.OH] → products (a)							
→ H_2O + CH_2CH=CH_2 (b)							
→ H + CH_3CH_2CHO (c)							
→ HCHO + CH_3CH_2 (d)							
→ H + $(CH_3)_2CO$ (e)							
→ CH_3CHO + CH_3 (f)							
Hydroxyl + 1-Propene							
71 MOR/NIK2	RL	300	1.0			2/2	
k_a/k_{ref}. k_{ref}: OH + CH_2=CH_2 → products.							
73 SIM/HEI2	RL	373-473	1.93(1)	0	-503	2/2	
k_a/k_{ref}. k_{ref}: OH + CO → H + CO_2. Rate-ratio expression based on only two values: 75.0 at 373 K and 55.0 at 473 K. The ratio of A-factors, 19.3, is correction for an apparent misprint.							
74 GOR/VOL	RL	298	8.93(1)			2/2	
k_a/k_{ref}. k_{ref}: OH + CO → CO_2 + H.							
76 LLO/DAR2	RL	305	9.7			2/2	
k_a/k_{ref}. k_{ref}: OH + $CH_3CH_2CH_2CH_2$ → products.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
76 WIN/LLO	RL	305	4.9(-1)			2/2	
k_a/k_{ref}.							
k_{ref}: OH + $(CH_3)_2C{=}CH_2$ → products.							
76 WU/JAP	RL	303	4.0(-1)			2/2	
k_a/k_{ref}. Cylindrical Pyrex Reactor.							
k_{ref}: OH + cis-$CH_3CH{=}CHCH_3$ → products.							
P = 760 torr.							
71 MOR/STE [1])	EX	300	1.02(13)			2	1.25
73 SIM/HEI2 [1])	RN	373-473	8.19(12)	0	50	2	
73 SIM/HEI2 [1])	ES	298	6.63(12)			2	
Extrapolated k.							
73 STU1 [1])	EX	298	(8.73±1.33)(12)			2	
74 GOR/VOL [1])	RN	298	(8.07±2.05)(12)			2	
75 ATK/PIT [1])	EX	297-425	2.47(12)	0	-544±151	2	
75 ATK/PIT [1])	EX	298	(1.5±0.15)(13)			2	
75 COX [1])	RN	300	(2.17±0.24)(13)			2	
Expressed as αk with α ~2.4							
75 GOR/MUL1 [1])	EX	381	(8.6±0.4)(12)			2	
In an atmosphere of water vapor.							
75 GOR/MUL1 [1])	EX	416	(1.2±0.06)(13)			2	
In an atmosphere of water vapor.							
75 PAS/CAR [1])	EX	300	(3.01±0.60)(12)			2	
Expressed as nk (n = stoichiometric factor.)							
76 LLO/DAR2 [1])	RN	305	(1.75±0.35)(13)			2	
76 WIN/LLO [1])	RN	305	(1.49±3.0)			2	
[1]) k_a.							
78 NIP/PAR	EX	298	(1.47±0.08)(13)			2	
k_a. Flash-photolysis. Resonance-absorption.							
74 STU1	EX	298	(8.73±1.32)(12)			2	
k_a. Pulsed vacuum UV Photolysis. Resonance-fluorescence.							
77 DAV [2])	EX	298	(1.54±0.07)(13)			2	
k_a. M = He. P(He) = 20 torr.							
77 DAV [2])	EX	298	(1.58±0.07)(13)			2	
k_a. M = He. P(He) = 200 torr.							
[2]) Flash-photolyhsis. Resonance-fluorescence.							
78 OVE/PAR2	EX	298	(2.5±0.5)(13)			2	
k_a. M = He, or SF_6. P-independent k. Vacuum-UV Photolysis of H_2O.							
78 PIT/ATK	RN	298	(1.75±0.36)(13)			2	
k_a. Irradiation of Propene-air mixtures in an all-glass chamber.							
P(Total) = 760 torr.							

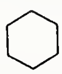
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
78 PIT/ATK	EX	298	(1.51±0.15)(13)			2	
k_a. Flash-photolysis. Resonance-fluorescence.							
P ~(15-650) torr.							
78 RAV/WAG [3])	EX	298	(1.54±0.07)(13)			2	
k_a. M = He. P(He) = 20 torr.							
78 RAV/WAG [3])	EX	298	(1.58±0.07)(13)			2	
k_a. M = He. P(He) = 200 torr.							
[3]) Flash-photolysis. Resonance-fluorescence.							
79 NIP/PAR	EX	297	(1.48±0.17)(13)			2	
k_a. Flash-photolysis. Resonance-fluorescence.							
82 ATK/ASC2	SE	299	1.52(13)			2	
k_a. Mean of three previously reported k's.							
73 BRA/HAC	EX	298	(3.0±1.0)(12)			2	
k_b.							
73 GOR	EX	298	≥8.25(12)			2	
k_b. Lower-limit k.							
80 COX/DER1	RN	298	1.45(13)			2	
k_b. Photolysis of HONO + $CH_3CH{=}CH_2$ at 760 torr.							
Gas-chromatography.							
Same data given in 80 COX.							
82 BIE/HAR	RL	298	<2.0(-2)			2/2	
k_b/k_a.							
79 HOY/SIE2	RL	298	(4.0±1.5)			2/2	
k_d/k_c. Low pressure nozzle reactor. Mass-spectrometry.							
P ~ (0.2-1.8) torr.							
79 HOY/SIE2	RL	298	(3.5±1.5)			2/2	
k_f/k_e. Low pressure nozzle.							
P ~ (0.2-1.8) torr.							
$OH + CD_3CH{=}CH_2 \rightarrow$ products							
Hydroxyl + 1-Propene-3,3,3-d_3							
73 STU1	EX	298	(8.73±1.33)(12)			2	
$OH + CH_3CD{=}CD_2 \rightarrow$ products							
Hydroxyl + 1-Propene-1,1,2-d_3							
73 STU1	EX	298	(8.73±1.33)(12)			2	
$OH + CD_3CD{=}CD_2 \rightarrow$ products							
Hydroxyl + 1-Propene-d_6							
71 MOR/NIK2	RL	300	1.1			2/2	
k_{ref}: $OH + CH_3CH{=}CH_2 \rightarrow$ products.							
73 STU1	EX	298	(1.01±0.15)(13)			2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$OH + CH_3CH_2CH_3 \rightarrow H_2O + (CH_3)_2CH$ (a)							
$\rightarrow H_2O + CH_3CH_2CH_2$ (b)							
Hydroxyl + Propane							
71 BAK/BAL	CO	298-753	2.2(13)	0	1283	2	
k_a. Rate constant per secondary CH bond.							
71 BAK/BAL [1])	RL	753	5.25			2/2	
k_a/k_{ref}. Estimated ratio per primary CH bond.							
78 DAR/ATK	CO	300	6.99(11)			2	
k_a. Irradiation technique. k computed from an empirical formula.							
79 BAL/WAL1 [1])	RL	753-773	3.46(-1)	0	-1820	2/2	
k_a/k_{ref}. A and B recalculated from an empirical formula.							
82 ATK/ASC3	RN	299	5.06(11)			2	
k_a. Calculated from an empirical formula.							
71 BAK/BAL [1])	RL	753	1.1(1)			2/2	
k_b/k_{ref}. Estimated ratio per secondary CH bond.							
78 DAR/ATK	CO	300	2.35(11)			2	
k_b. Irradiation technique. k computed from an empirical formula.							
79 BAL/WAL1 [1])	RL	753-773	1.28	0	-1070	2/2	
k_b/k_{ref}. Calculated from an empirical formula.							
[1]) k_{ref}: $OH + H_2 \rightarrow H_2O + H$.							
82 ATK/ASC3	ES	299	1.14(11)			2	
k_b.							
73 BRA/HAC [2])	EX	298	(5.0±1.0)(11)			2	
73 GOR [2])	EX	298	(1.17±0.18)(12)			2	
74 GOR/VOL [2])	RN	298	(1.33±0.36)(12)			2	
75 GOR/MUL1 [2])	EX	381	(1.3±0.06)(12)			2	
In an atmosphere of water vapor.							
75 GOR/MUL1 [2])	EX	416	(1.15±0.05)(12)			2	
In an atmosphere of water vapor.							
75 HAR/BUR [2])	EX	329	(1.19±0.05)(12)			2	
75 OVE/PAR [2])	EX	295	(1.22±0.06)(12)			2	
78 DAR/ATK [2])	EX	300	(9.58±1.33)(11)			2	
Irradiation technique.							
80 COX/DER1 [2])	RN	300	1.14(12)			2	
HONO photosensitized oxidation in syntrhetic air. [HONO] = (3-20) ppm. [NO] = NO_2] = (0.3-3.0) Same data given in 80 COX.							
[2]) $k_a + k_b$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 ATK/ASC3 [3]	RN	299	(7.35±0.30)(11)			2	
$k_a + k_b$.							
71 BAK/BAL	RL	753	(2.15±0.22)(1)			2/2	
$(k_a + k_b)/k_{ref}$. k_{ref}: $OH + H_2 \rightarrow H_2O + H$.							
74 GOR/VOL	RL	298	1.43(1)			2/2	
$(k_a + k_b)/k_{ref}$. k_{ref}: $OH + CO \rightarrow CO_2 + H$.							
75 HUC/BOO	RL	653	(2.18±0.28)			2/2	
$(k_a + k_b)/k_{ref}$. k_{ref}: $OH + CH_3CH_3 \rightarrow H_2O + CH_3CH_2$							
82 ATK/ASC3 [3]	RL	299	(4.73±0.16)(-1)			2	
$(k_a + k_b)/k_{ref}$. k_{ref}: $OH + CH_3CH_2CH_2CH_3 \rightarrow$ products.							
[3]) Photolysis of CH_3ONO/NO/Propane mixtures. P(Total) = 735 torr. $[NO]_o = 1.2\times10^{14}$ molec.cm^{-3}. [Propane] = $(1.2\text{-}2.4)\times10^{13}$ molec.cm^{-3}. $[CH_3ONO]_o = (2.1\text{-}4.0)\times10^{14}$ molec.cm^{-3}.							
$OH + CH_2{=}CHCHO \rightarrow H_2O + CH_2{=}CHCO$ (a)							
$\rightarrow$ any other products (b)							
Hydroxyl + 2-Propenal (Acrolein)							
80 MAL/CHI	RN	298	(1.6±0.2)(13)			2	
k_a. Photooxidation of 2-Propenal/Butane/Nitric oxide/Air mixtures in a smog chamber. k determined relative to the reaction: $OH + CH_3CH_2CH_2CH_3 \rightarrow$ products.							
81 KER/SHE [1]	RL	298	(2.38±0.28)			2/2	
$k_{overall}/k_{ref}$. k_{ref}: $OH + CH_2{=}CH_2 \rightarrow$ products.							
81 KER/SHE [1]	RN	298	(1.14±0.12)(13)			2	
$k_{overall}$.							
[1]) HONO/Synthetic air/Ethene/aldehyde photolysis.							
$OH + CH_3C(O)CHO \rightarrow$ products							
Hydroxyl + Propanal, 2-oxo- (Methylglyoxal)							
82 KLE/HAR	EX	297	(4.28±0.96)(12)			2	
OH generated by H_2O photolysis in Ar. Resonance-fluorescence. P(Total) = 50 torr.							
$OH + CH_2{=}CHCH_2OH \rightarrow$ products							
Hydroxyl + 2-Propen-1-ol (Allyl alcohol)							
75 GOR/MUL1	EX	440	(1.56±0.2)(13)			2	
In an atmosphere of water vapor.							

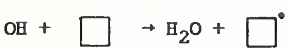
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$OH + CH_2{=}CHOCH_3 \rightarrow$ products							
Hydroxyl + Ethene, methoxy-							
77 PER/ATK1	EX	299-427	3.67(12)	0	-511±151	2	
77 PER/ATK1	EX	299	(2.02±0.20)(13)			2	
$OH + CH_3CH_2CHO \rightarrow H_2O + CH_3CH_2CO$ (a)							
$\rightarrow H_2O + CH_3CHCHO$ (b)							
$\rightarrow H_2O + CH_2CH_2CHO$ (c)							
Hydroxyl + Propanal							
71 MOR/NIK2	RL	300	1.8			2/2	
$(k_a + k_b + k_c)/k_{ref}$.							
k_{ref}: $OH + CH_3CH{=}CH_2 \rightarrow$ products.							
72 VOL/GOR	EX	298	(2.29±0.90)(12)			2	
$k_a + k_b + k_c$.							
78 NIK/MAK [1])	RL	298	(2.6±0.1)			2	
k_{ref}: $OH + CH_2{=}CH_2 \rightarrow$ products.							
78 NIK/MAK [1])	RN	298	1.26(13)			2	
[1]) $k_a + k_b + k_c$. CH_3CH_2CHO/HONO Photolysis.							
FTIR-Spectroscopy.							
P(air) = 700 torr.							
81 AUD/BAU [2])	RL	298	(1.14±0.13)			2/2	
$(k_a + k_b + k_c)/k_{ref}$.							
k_{ref}: $OH + CH_3CHO \rightarrow$ products.							
81 AUD/BAU [2])	RN	298	(1.08±0.14)(13)			2	
$k_a + k_b + k_c$.							
[2]) Linear, boric-acid-coated flow tube. Gas-chromatography.							
Channel (a) is predominant.							
P(Total) = 299 torr.							
81 KER/SHE [3])	RL	298	(2.28±0.17)			2/2	
$(k_a + k_b + k_c)/k_{ref}$.							
k_{ref}: $OH + CH_2{=}CH_2 \rightarrow$ products.							
81 KER/SHE [3])	RN	298	(1.08±0.06)(13)			2	
$k_a + k_b + k_c$.							
[3]) HONO/Synthetic air/Ethene/aldehyde photolysis.							
$OH + (CH_3)_2CO \rightarrow H_2O + CH_2C(O)CH_3$							
Hydroxyl + 2-Propanone							
80 COX/DER1	RN	300	3.01(11)			2	
HONO photosensitized oxidation in synthetic air.							
Gas-chromatography. Same data given in 80 COX.							
[NO] = NO_2] = (0.3-3.0) ppm.							
[HONO] = (3-20) ppm.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$OH + CH_3CH_2COOH \rightarrow$ products							
Hydroxyl + Propanoic acid							
82 ZET/STU	EX	298	(9.64±0.72)(11)			2	
H_2O/Ar/Propanoic acid photolysis. Resonance-fluorescence.							
$P(H_2O)$ = (0.02-0.22) torr.							
P(Ar) = 100 torr.							
$OH + CH_3C(O)OCH_3 \rightarrow H_2O + CH_3C(O)OCH_2$ (a)							
$\rightarrow H_2O + CH_2C(O)OCH_3$ (b)							
Hydroxyl + Acetic acid methyl ester (Methyl acetate)							
78 CAM/PAR	EX	292	(1.1±0.3)(11)			2	
$k_a + k_b$. Reaction in a Pyrex vessel. Vacuum system. OH generated by reaction of a H_2O_2/NO_2/CO mixture. Channel (a) preferred.							
$P(NO_2)$ = 2.1 torr. P(Total) = 100 torr.							
$OH + CH_3CH_2CH_2OH \rightarrow$ products							
Hydroxyl + 1-Propanol							
76 CAM/MCL	EX	292	(2.3±0.2)(12)			2	
78 OVE/PAR1	EX	296	(3.21±0.32)(12)			2	
Flash-photolysis. Resonance-absorption.							
$OH + (CH_3)_2CHOH \rightarrow$ products							
Hydroxyl + 2-Propanol							
76 LLO/DAR1	RL	305	1.4(-1)			2/2	
k_{ref}: $OH + (CH_3)_2C{=}CH_2 \rightarrow$ products.							
76 LLO/DAR1	RN	305	(4.3±1.3)(12)			2	
78 OVE/PAR1	EX	296	(3.30±0.33)(12)			2	
Flash-photolysis. Resonance-absorption.							
$OH + CH_2{=}CHCN \rightarrow$ products							
Hydroxyl + 2-Propenenitrile (Acrylonitrile)							
81 HAR/KLE	EX	298-424	(2.43±0.03)(12	0	0	2	
OH produced by UV photolysis of H_2O under flow conditions. Resonance-fluorescence.							
$OH + CH_3CH_2CN \rightarrow$ products							
Hydroxyl + Propanenitrile							
81 HAR/KLE	EX	298-424	1.62(11)	0	800±176	2	
OH produced by UV photolysis of H_2O under flow conditions. Resonance-fluorescence.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$OH + (CH_3)_3N \rightarrow$ products							
Hydroxyl + Methanamine, N,N-dimethyl-							
78 ATK/PER3	EX	298-426	1.58(13)	0	-252±151	2	
Flash-photolysis.							
Resonance-fluorescence.							
$OH + CH_3CH_2CH_2ONO \rightarrow$ products							
Hydroxyl + Nitrous acid propyl ester							
82 AUD/BAU1	EX	295	(1.56±0.32)(12)			2	
Static system. OH generated by the chain reaction:							
$H_2O_2 + NO_2 + CO$.							
$[CH_3CH_2CH_2ONO]_o < 3.6\times10^{17}$ molec.cm^{-3}.							
$[H_2O_2]_o \sim 9.0\times10^{15}$ molec.cm^{-3}.							
$[NO_2]_o \sim 3.3\times10^{16}$ molec.cm^{-3}.							
$[CO]_o \sim 3.0\times10^{18}$ molec.cm^{-3}.							
P < 75 torr.							
$OH + (CH_3)_2CHONO_2 \rightarrow$ products							
Hydroxyl + Nitric acid 1-methylethyl ester (Isopropyl nitrate)							
82 ATK/ASC5 [1])	RL	299	(2.4±0.6)(-2)			2/2	
k_{ref}: OH +  → products.							
82 ATK/ASC5 [1])	RN	299	(1.08±0.30)(11)			2	
[1]) Photolysis of CH_3ONO/NO/Isopropyl nitrate.							
$[CH_3ONO]_o = (0.9\text{-}7.1)\times10^{14}$ molec.cm^{-3}.							
[Alkyl nitrate] = 2.4×10^{13} molec.cm^{-3}.							
$OH + CH{\equiv}CC{\equiv}CH \rightarrow CH{\equiv}CCH{=}C{=}O + H$							
Hydroxyl + 1,3-Butadiyne							
82 BIT/HOW	ES	1700-1900	(5.0±2.0)(12)	0	0	2	
$C_6H_6/O_2/Ar$ flame. P = 20 torr.							
$OH + CH_2{=}CHCH{=}CH_2 \rightarrow$ products							
Hydroxyl + 1,3-Butadiene							
76 LLO/DAR2	RL	305	2.58(1)			2/2	
k_{ref}: $OH + CH_3CH_2CH_2CH_3 \rightarrow$ products.							
76 LLO/DAR2	RN	305	(4.64±0.93)(13)			2	
77 ATK/PER3	EX	299-424	8.73(12)	0	-468±151	2	
77 ATK/PER3	EX	299	(4.13±0.42)(13)			2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$OH + CH_3CH_2CH{=}CH_2 \rightarrow H_2O + CH_3CHCH{=}CH_2$ (a)							
$\rightarrow CH_3CH_2CH(OH)CH_2$ (b)							
$\rightarrow CH_3CH_2CHCH_2OH$ (c)							
$\rightarrow$ any other products (d)							
Hydroxyl + 1-Butene							
82 BIE/HAR 1)	RL	298	(2.0±0.6)(-1)			2/2	
$k_a/(k_a + k_b + k_c)$.							
82 BIE/HAR 1)	EX	298	(1.81±0.24)(13)			2	
$k_a + k_b + k_c$.							
1) Discharge-flow. OH generated by reacting H with NO_2. $[OH]_o = (0.2-2.0)x10^{12}$ molec.cm^{-3}. P(Total) ~ 2 torr.							
71 MOR/NIK2	RL	300	2.4			2/2	
$k_{overall}$. k_{ref}: $OH + CH_3CH{=}CH_2 \rightarrow$ products.							
75 ATK/PIT 2)	EX	297-425	4.58(12)	0	-468±151	2	
75 ATK/PIT 2)	EX	298	(2.13±0.22)(13)			2	
2) $k_{overall}$.							
75 PAS/CAR	EX	300	(9.03±0.60)(12)			2	
$k_{overall}$. Expressed as nk. (n = stoichiometric factor.)							
76 WU/JAP	RL	303	5.2(-1)			2/2	
$k_{overall}$. Cylindrical Pyrex Reactor. k_{ref}: $OH + cis\text{-}CH_3CH{=}CHCH_3 \rightarrow$ products. P = 760 torr.							
77 DAV 3)	EX	298	(1.78±0.11)(13)			2	
$k_{overall}$. M = He. P(He) = 3 torr.							
77 DAV 3)	EX	298	(1.77±0.08)(13)			2	
$k_{overall}$. M = He. P(He) = 200 torr.							
78 PIT/ATK 3)	EX	298	(2.13±0.22)(13)			2	
$k_{overall}$. P ~ (15-650) torr.							
78 RAV/WAG 3)	EX	298	(1.78±0.11)(13)			2	
$k_{overall}$. M = He. P(He) = 3 torr.							
78 RAV/WAG 3)	EX	298	(1.77±0.08)(13)			2	
$k_{overall}$. M = He. P(He) = 20 torr.							
79 NIP/PAR 3)	EX	297	(2.01±0.15)(13)			2	
$k_{overall}$.							
3) Flash-photolysis. Resonance-fluorescence.							
$OH + cis\text{-}CH_3CH{=}CHCH_3 \rightarrow$ products							
Hydroxyl + 2-Butene, (Z)-							
71 MOR/NIK2	RL	300	3.6			2/2	
k_{ref}: $OH + CH_3CH{=}CH_2 \rightarrow$ products.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
75 ATK/PIT	EX	297-425	6.26(12)	0	-488±151	2	
75 ATK/PIT	EX	298	(3.23±0.32)(13)			2	
76 LLO/DAR2	RL	305	2.18(1)			2/2	
k_{ref}: OH + $CH_3CH_2CH_2CH_3$ → products.							
76 LLO/DAR2	RN	305	(3.92±0.80)(13)			2	
76 WIN/LLO	RL	305	1.22			2/2	
k_{ref}: OH + $(CH_3)_2C{=}CH_2$ → products.							
76 WIN/LLO	RN	305	(3.72±0.56)(13)			2	
77 DAV [1])	EX	298	(2.60±0.24)(13)			2	
M = He. P(He) = 3 torr.							
77 DAV [1])	EX	298	(2.57±0.15)(13)			2	
M = He. P(He) = 20 torr.							
[1]) Flash-photolysis. Resonance-fluorescence.							
78 PIT/ATK	RN	298	(3.91±0.78)(13)			2	
Propene/Air irradiation.							
P(Total) = 1 atm.							
78 PIT/ATK	EX	298	(3.23±0.33)(13)			2	
Flash-photolysis. Resonance-fluorescence.							
P ~ (15-650) torr.							
78 RAV/WAG [2])	EX	298	(2.60±0.24)(13)			2	
M = He. P(He) = 3 torr.							
78 RAV/WAG [2])	EX	298	(2.57±0.15)(13)			2	
M = He. P(He) = 20 torr.							
[2]) Flash-photolysis. Resonance-fluorescence.							
OH + trans-$CH_3CH{=}CHCH_3$ → products							
Hydroxyl + 2-Butene, (E)-							
71 MOR/NIK2	RL	300	4.2			2/2	
k_{ref}: OH + $CH_3CH_3CH_2$ → products.							
75 ATK/PIT	EX	297-425	6.74(12)	0	-549±151	2	
75 ATK/PIT	EX	298	(4.21±0.42)(13)			2	
75 COX	RN	300	(6.38±1.63)(13)			2	
k expressed as αk							
with α ~ 1.7							
75 PAS/CAR	EX	300	(7.23±6.02)(12)			2	
k expressed as nk.							
(n = stoichiometric factor.)							
76 WU/JAP	RL	303	1.3			2/2	
k_{ref}: OH + cis-$CH_3CH{=}CHCH_3$ → products.							
P = 760 torr.							
78 PIT/ATK	EX	298	(4.21±0.42)(13)			2	
Propene/air irradiation.							
P(Total) = 760 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$OH + (CH_3)_2C{=}CH_2 \rightarrow H_2O + CH_2{=}C(CH_3)CH_2$ (a)							
$\rightarrow (CH_3)_2C(OH)CH_2$ (b)							
$\rightarrow (CH_3)_2CCH_2OH$ (c)							
Hydroxyl + 1-Propene, 2-methyl-							
78 BAK/BAL 1)	ES	753	2.9(13)			2	
k_a. Possibly an upper-limit.							
78 BAK/BAL 1)	RL	753	3.7			2/2	
$(k_b + k_c)/k_a$.							
78 BAK/BAL 1)	ES	753	7.8(12)			2	2.0
$k_b + k_c$.							
1) Oxidation in aged boric-acid-coated vessels. P(Total) = (490-505) torr.							
71 MOR/NIK2	RL	300	3.8			2/2	
$k_{overall}/k_{ref}$. k_{ref}: $OH + CH_3CH{=}CH_2 \rightarrow$ products.							
75 ATK/PIT 2)	EX	297-425	5.54(12)	0	-503±151	2	
75 ATK/PIT 2)	EX	298	(3.05±0.31)(13)			2	
2) $k_{overall}$.							
76 WU/JAP	RL	303	9.2(-1)			2/2	
$k_{overall}/k_{ref}$. P = 760 torr. k_{ref}: OH + cis-$CH_3CH{=}CHCH_3 \rightarrow$ products.							
78 PIT/ATK	EX	298	(3.05±0.31)(13)			2	
$k_{overall}$. Flash-photolysis. Resonance-fluorescence. P ~ (15-650) torr.							
							
Hydroxyl + Cyclobutane							
74 GOR/VOL 1)	RL	298	8.47			2/2	
74 GOR/VOL 1)	RN	298	7.83(11)			2	
1) Uncorrected for n-Butane impurity.							
74 GOR/VOL	RN	298	(7.23±1.81)(11			2	
Corrected for n-Butane impurity.							
$OH + CH_3CH_2CH_2CH_3 \rightarrow H_2O + CH_3CH_2CH_2CH_2$ (a)							
$\rightarrow H_2O + CH_3CH_2CHCH_3$ (b)							
Hydroxyl + Butane							
71 BAK/BAL	RL	753	5.25			2/2	
k_a/k_{ref}. k_{ref}: $OH + H_2 \rightarrow H_2O + H$. Estimated ratio per primary CH bond.							
79 BAL/WAL1	RL	753-773	1.28	0	-1070	2/2	
k_a/k_{ref}. k_{ref}: $OH + H_2 \rightarrow H_2O + H$. A and B recalculated from a given empirical formula.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
71 BAK/BAL	RL	753	1.175(1)			2/2	
k_b/k_{ref}. k_{ref}: $OH + H_2 \rightarrow H_2O + H$. Estimated ratio per secondary CH bond.							
79 BAL/WAL1	RL	753-773	6.92(-1)	0	-1820	2/2	
k_b/k_{ref}. k_{ref}: $OH + H_2 \rightarrow H_2O + H$. A and B recalculated from given empirical formula.							
71 BAK/BAL	RL	753	(3.40±0.34)(1)			2/2	
$(k_a + k_b)/k_{ref}$. k_{ref}: $OH + H_2 \rightarrow H_2O + H$.							
71 MOR/NIK2	RL	300	2.4(-1)			2/2	
$(k_a + k_b)/k_{ref}$. k_{ref}: $OH + CH_3CH{=}CH_2 \rightarrow$ products.							
74 GOR/VOL	RL	298	1.94(1)			2/2	
$(k_a + k_b)/k_{ref}$. k_{ref}: $OH + CO \rightarrow H + CO_2$.							
75 CAM/HAN1	RL	292	(1.48±0.09)(1)			2/2	
$(k_a + k_b/k_{ref}$. k_{ref}: $OH + CO \rightarrow H + CO_2$							
75 HUC/BOO	RL	653	(1.54±0.13)			2/2	
$(k_a + k_b)/k_{ref}$. k_{ref}: $OH + CH_3CH_2CH_3 \rightarrow H_2O + CH_3CH_2CH_2$ (C) $\rightarrow H_2O + (CH_3)_2CH$ (d)							
82 ATK/ASC2 [1])	RL	299	(4.53±0.07)(-1)			2/2	
$(k_a + k_b)/k_{ref}$. k_{ref}: $OH + CH_3(CH_2)_4CH_3 \rightarrow$ products.							
82 ATK/ASC2 [1])	RL	299	(3.41±0.02)(-1)			2/2	
$(k_a + k_b)/k_{ref}$. k_{ref}: OH +  → products.							
73 GOR [2])	EX	298	(1.97±0.05)(12)			2	
73 STU2 [2])	EX	298	(1.42±0.21)(12)			2	
74 GOR/VOL [2])	RN	298	(1.75±0.42)(12)			2	
75 GOR/MUL1 [2])	EX	298	(2.54±0.1)(12)			2	
M = Ar (710 torr.) + H_2O (10 torr.) + C_4H_{10} (0.54-2.46 torr.)							
75 GOR/MUL1 [2])	EX	381	(2.5±0.1)(12)			2	
P = (0.5-198) torr. In an atmosphere of water vapor.							
75 GOR/MUL1 [2])	EX	416	(3.0±0.1)(12)			2	
P = (0.5-198) torr. In an atmosphere of water vapor.							
76 PER/ATK2 [2])	EX	297-420	1.06(13)	0	559±151	2	
76 PER/ATK2 [2])	EX	297	(1.64±0.16)(12)			2	
80 PAR/NIP [2])	EX	297	(1.61±0.13)(12)			2	
Flash-photolysis. Resonance-absorption.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 ATK/ASC2 [1]) [2])	SE	299	1.55(12)			2	
Mean of four previously reported k's.							
[1]) $CH_3ONO/NO/CH_3CH_2CH_2CH_3$/Cyclohexane (or Hexane) photolysis.							
$[CH_3ONO]_o$ = (9.5-3.5)x10^{14} molec.cm^{-3}.							
[Butane] = (1.2-2.4)x10^{13} molec.cm^{-3}.							
P(Total) = 735 torr.							
82 AUD/BAU1 [2])	EX	295	(1.63±0.16)(12)			2	
Static system.							
OH generated by the chain reaction: $H_2O_2 + NO_2 + CO$.							
P < 75 torr.$[CO]_o$ ~ 3.0x10^{18} molec.cm^{-3}.							
$[Butane]_o$ < 3.6x10^{17} molec.cm^{-3}.							
$[H_2O_2]_o$ ~ 9.0x10^{15} molec.cm^{-3}.							
$[NO_2]_o$ ~ 3.3x10^{16} molec.cm^{-3}.							
[2]) $k_a + k_b$.							
$OH + CD_3CD_2CD_2CD_3 \rightarrow HDO + CD_3CD_2CD_2CD_2$ (a)							
$\rightarrow HDO + CD_3CD_2CDCD_3$ (b)							
Hydroxyl + Butane-d_{10}							
80 PAR/NIP	EX	297	(4.20±0.41)(11)			2	
$k_a + k_b$.							
Flash-photolysis. Resonance-absorption.							
$OD + CH_3CH_2CH_2CH_3 \rightarrow HDO + CH_3CH_2CH_2CH_2$ (a)							
$\rightarrow HDO + CH_3CH_2CHCH_3$ (b)							
Hydroxyl-d + Butane							
80 PAR/NIP	EX	297	(1.66±0.13)(12)			2	
$k_a + k_b$.							
Flash-photolysis. Resonance-absorption.							
$OD + CD_3CD_2CD_2CD_3 \rightarrow D_2O + CD_3CD_2CD_2CD_2$ (a)							
$\rightarrow D_2O + CD_3CD_2CDCD_3$ (b)							
Hydroxyl-d + Butene-d_{10}							
80 PAR/NIP	EX	297	(4.84±0.38)(11)			2	
$k_a + k_b$.							
Flash-photolysis. Resonance-absorption.							
$OH + (CH_3)_3CH \rightarrow H_2O + (CH_3)_3C$ (a)							
$\rightarrow H_2O + (CH_3)_2CHCH_2$ (b)							
Hydroxyl + Propane, 2-methyl-							
71 BAK/BAL	CO	298-753	5.3(13)	0	1203	2	
k_a. Rate constant per tertiary CH bond.							

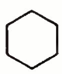
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
71 BAK/BAL	RL	753	1.525(1)			2/2	
k_a/k_{ref}. k_{ref}: $OH + H_2 \rightarrow H_2O + H$. Estimated ratio per tertiary CH bond.							
72 GOR/VOL	RL	298	(2.33±0.07)(1)			2/2	
k_a/k_{ref}. k_{ref}: $OH + CO \rightarrow H + CO_2$							
72 GOR/VOL	RN	298	(2.11±0.48)(12)			2	
k_a. Similar data in 72 VOL/GOR and 73 GOR.							
78 DAR/ATK	CO	300	1.26(12)			2	
k_a. Irradiation technique. Computed from an empirical formula.							
79 BAL/WAL1 [1])	RL	753-773	2.73(-1)	0	-2060	2/2	
k_a/k_{ref}. A and B recalculated from a given empirical formula. k_{ref}: $OH + H_2 \rightarrow H_2O + H$.							
81 BAL/WAL2 [1])	ES	300-1500	2.57(12)	0	271±96	2	1.2
k_a.							
[1]) Oxidation of 2,2,3-Trimethylbutane in H_2/O_2 mixtures in aged boric-acid-coated vessels. Gas-chromatography. P(Total) = 500 torr. P(2,2,3-Trimethylbutane) = 5 torr.							
71 BAK/BAL	RL	753	5.25			2/2	
k_b/k_{ref}. k_{ref}: $OH + H_2 \rightarrow H_2O + H$. Estimated ratio per primary CH bond.							
78 DAR/ATK	CO	300	3.5(11)			2	
k_b. Irradiaton technique. Computed from an empirical formula.							
79 BAL/WAL1	RL	753-773	1.93	0	-1070	2/2	
k_b/k_{ref}. A and B recalculated from an empirical formula. k_{ref}: $OH + H_2 \rightarrow H_2O + H$.							
71 BAK/BAL	RL	753	(3.10±0.31)(1)			2/2	
$(k_a + k_b)/k_{ref}$. k_{ref}: $OH + H_2 \rightarrow H_2O + H$.							
75 HUC/BOO	RL	653	(1.28±0.07)			2/2	
$(k_a + k_b)/k_{ref}$. k_{ref}: $OH + CH_3CH_2CH_3 \rightarrow H_2O + (CH_3)_2CH$ (c) $\rightarrow H_2O + CH_3CH_2CH_2$ (d)							
76 WU/JAP	RL	303	4.0(-2)			2/2	
$(k_a + k_b)/k_{ref}$. Pyrex Reactor. P = 760 torr. k_{ref}: $OH + cis\text{-}CH_3CH{=}CHCH_3 \rightarrow$ products.							
78 BUT/SOL	RN	305	(9.58±1.08)(11)			2	
$k_a + k_b$. Quartz reactor. H_2O_2 photolysis. Gas-chromatography. $P(O_2 + N_2)$ >100 torr.							
78 DAR/ATK	EX	300	(1.53±0.03)(12)			2	
$k_a + k_b$. Irradiation technique.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
OH +  **→ products**							
Hydroxyl + Furan							
82 LEE/TAN	EX	295	(6.32±0.48)(13)			2	
Discharge-flow. Resonance-fluorescence.							
OH generated by reacting H with NO_2.							
OH + CH_3CH=$CHCHO$ → products							
Hydroxyl + 2-Butenal (Crotonaldehyde)							
81 KER/SHE [1])	RL	298	(4.12±0.80)			2/2	
k_{ref}: OH + CH_2=CH_2 → products.							
81 KER/SHE [1])	RN	298	(1.99±0.36)(13)			2	
[1]) Photolysis of HONO/Synthetic air mixtures containing low concentrations of Ethene and aldehyde.							
OH + $CH_3C(O)CH$=CH_2 → products							
Hydroxyl + 3-Buten-2-one							
80 COX/DER1	RN	300	8.43(12)			2	
HONO photosensitized oxidation in synthetic air.							
Gas-chromatography. Same data given in 80 COX.							
[NO] = NO_2] = (0.3-3.0) ppm.							
[HONO] = (3-20) ppm.							
82 KLE/HAR	EX	297-424	2.32(12)	0	-456±73	2	
M = Ar. OH generated by photolysis of water vapor. Flash-photolysis. Resonance-fluorescence.							
P(Total) = 50 torr.							
OH + CH_2=$C(CH_3)CHO$ → products							
Hydroxyl + 2-Propenal, 2-methyl- (Methacrolein)							
82 KLE/HAR	EX	297-424	1.07(13)	0	-175±52	2	
M = Ar. OH generated by Photolysis of Water vapor. Flash-photolysis. Resonance-fluorescence.							
P(Total) = 50 torr.							
OH + $CH_3CH_2CH_2CHO$ → H_2O + $CH_3CH_2CH_2CO$ (a)							
→ H_2O + CH_3CH_2CHCHO (b)							
→ H_2O + CH_3CHCH_2CHO (c)							
→ H_2O + $CH_2CH_2CH_2CHO$ (d)							
Hydroxyl+ Butanal							
81 AUD/BAU [1])	RL	298	(1.62±0.20)			2/2	
$(k_a + k_b + k_c + k_d)/k_{ref}$.							
k_{ref}: OH + CH_3CHO → products.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 AUD/BAU [1]	RN	298	(1.52±0.19)(13)				2
$k_a + k_b + k_c + k_d$.							
[1]) Linear, boric-acid-coated flow tube. Gas-chromatography. Channel (a) is predominant. P(Total) = 299 torr.							
81 KER/SHE [2]	RL	298	(2.96±0.07)				2/2
k_{ref}: OH + CH_2=CH_2 → products.							
81 KER/SHE [2]	EX	298	(1.45±0.06)(13)				2
[2]) Photolysis of HONO/Synthetic air mixtures containing low concentrations of Ethene and aldehyde.							
OH + $(CH_3)_2CHCHO$ → H_2O + $(CH_3)_2CHCO$ (a)							
→ H_2O + $(CH_3)_2CHCHO$ (b)							
→ H_2O + $CH_2CH(CH_3)CHCHO$ (c)							
Hydroxyl + Propanal, 2-methyl-							
79 BAL/CLE	RL	713	(7.0±1.0)(-1)				2
k_b/k_a. Oxidation in an aged boric-acid-coated vessel. P(Total) = 60 torr.							
81 AUD/BAU [1]	RL	298	(1.12±0.13)				2/2
$(k_a + k_b + k_c)/k_{ref}$.							
k_{ref}: OH + CH_3CHO → products.							
81 AUD/BAU [1]	RN	298	(1.05±0.12)(13)				2
$k_a + k_b + k_c$.							
[1]) Linear, boric-acid-coated flow tube. Gas-chromatography. Channel (a) is predominant. P(Total) = 299 torr.							
81 KER/SHE [2]	RL	298	(3.40±0.66)				2/2
$(k_a + k_b + k_c)/k_{ref}$.							
k_{ref}: OH + CH_2=CH_2 → products.							
81 KER/SHE [2]	RN	298	(1.63±0.06)(13)				2
$k_a + k_b + k_c$.							
[2]) HONO/Synthetic air/Ethene/aldehyde photolysis.							
OH + $CH_3C(O)CH_2CH_3$ → products							
Hydroxyl + 2-Butanone							
76 WIN/LLO	RL	305	7.0(-2)				2/2
k_{ref}: OH + $(CH_3)_2C$=CH_2 → products.							
76 WIN/LLO	RN	305	(2.0±0.6)(12)				2
80 COX/DER1	RN	300	1.57(12)				2
HONO photosensitized oxidation in synthetic air. Gas chromatography. Same data given in 80 COX. [NO] = NO_2] = (0.3-3.0) ppm. [HONO] = (3-20) ppm.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 COX/PAT [1])	RL	296	(0.11±0.01)			2/2	
k_{ref}: OH + CH_2=CH_2 → products.							
81 COX/PAT [1])	RN	296	(5.30±0.54)(11)			2	
[1]) Photolysis of HONO diluted N_2/O_2 mixtures, in presence of Butane. P = 760 torr.							
OH + $CH_3CH_2CH_2COOH$ → products							
Hydroxyl + Butanoic acid							
82 ZET/STU	EX	298	(1.08±0.10)(12)			2	
Pulsed vacuum UV-Photolysis of H_2O, Ar and Butanoic acid mixtures. Resonance-fluorescence. P(Ar) = (30-300) torr. P(H_2O) = (0.04-0.1) torr.							
OH + $CH_3C(O)OCH_2CH_3$ → products							
Hydroxyl + Acetic acid ethyl ester (Ethyl acetate)							
78 CAM/PAR	EX	292	(1.16±0.13)(12)			2	
Reaction of ester vapor with OH. Vacuum system. OH generated by reaction of a H_2O_2/NO_2/CO mixture. P(Total) = 100 torr. P(NO_2) = 2.1 torr.							
OH + $CH_3CH_2C(O)OCH_3$ → products							
Hydroxyl + Propanoic acid methyl ester							
78 CAM/PAR	EX	292	(1.7±0.6)(11)			2	
Reaction of ester vapor with OH. Vacuum system. OH generated by reaction of a H_2O_2/NO_2/CO mixture. P(Total) = 100 torr. P(NO_2) = 2.1 torr.							
OH +  **→ products**							
Hydroxyl + Furan, tetrahydro-							
77 WIN/LLO	RL	305	2.9(-1)			2/2	
k_{ref}: OH + $(CH_3)_2C$=CH_2 → products.							
77 WIN/LLO	RN	305	(8.8±1.8)(12)			2	
78 RAV/DAV [1])	EX	298	(9.82±0.96)(12)			2	
M = He. P(He) = 20 torr.							
78 RAV/DAV [1])	EX	298	(9.58±2.35)(12)			2	
M = He. P(He) = 200 torr.							
[1]) Flash-photolysis. Resonance-fluorescence.							
OH + $CH_3CH_2CH_2CH_2OH$ → products							
Hydroxyl + 1-Butanol							
76 CAM/MCL	EX	292	(4.1±0.6)(12)			2	

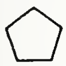
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
OH + $(CH_3CH_2)_2O$ → products							
Hydroxyl + Ethane, 1,1'-oxybis-							
76 LLO/DAR1	RL	305	1.85(-1)			2/2	
k_{ref}: OH + $(CH_3)_2C{=}CH_2$ → products.							
76 LLO/DAR1	RN	305	(5.6±1.1)(12)			2	
OH + $(CH_3)_3COOH$ → products							
Hydroxyl + Hydroperoxide, 1,1-dimethylethyl-							
78 ANA/SMI2	EX	298	(1.81±0.48)(12)			2	
Flash-photolysis of $(CH_3)_3COOH/H_2O$ mixtures.							
$[(CH_3)_3COOH]$ = $(0.8\text{-}2.0)\times10^{15}$ molec.cm^3.							
$[H_2O]$ = ~1.5×10^{16} molec.cm^3.							
OH +  **→ products**							
Hydroxyl + Thiophene							
82 LEE/TAN	EX	295	(2.87±0.38)(13)			2	
Discharge-flow. Resonance-fluorescence.							
OH generated by reacting H with NO_2.							
OH + $CH_3CH_2CH_2CH_2ONO$ → products							
Hydroxyl + Nitrous acid butyl ester (n-Butyl nitrite)							
82 AUD/BAU1	EX	295	(3.41±1.48)(12)			2	
Static system. OH generated by the chain reaction:							
$H_2O_2 + NO_2 + CO$.							
P < 75 torr. $[CO]_o$ ~ 3.0×10^{18} molec.cm^{-3}.							
$[CH_3(CH_2)_3ONO]_o$ < 3.6×10^{17} molec.cm^{-3}.							
$[H_2O_2]_o$ ~ 9.0×10^{15} molec.cm^{-3}.							
$[NO_2]_o$ ~ 3.3×10^{16} molec.cm^{-3}.							
OH + $CH_3CH_2CH(CH_3)ONO$ → products							
Hydroxyl + Nitrous acid 1-methylpropyl ester (s-Butyl nitrite)							
82 AUD/BAU1	EX	295	(3.89±0.58)(12)			2	
Static system. OH generated by the chain reaction:							
$H_2O_2 + NO_2 + CO$.							
$[CH_3CH_2CH(CH_3)ONO]_o$ <3.6×10^{17} molec.cm^{-3}.							
P <75 torr. $[CO]_o$ ~3.0×10^{18} molec.cm^{-3}.							
$[H_2O_2]_o$ ~9.0×10^{15} molec.cm^{-3}.							
$[NO_2]_o$ ~ 3.3×10^{16} molec.cm^{-3}.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$OH + (CH_3)_2CHCH_2ONO \rightarrow$ products							
Hydroxyl + Nitrous acid 2-methylpropyl ester (iso-Butyl nitrite)							
82 AUD/BAU1	EX	295	(3.47±0.52)(12)			2	
Static system. OH generated by the chain reaction: $H_2O_2 + NO_2 + CO$. P < 75 torr. $[CO]_o \sim 3.0x10^{18}$ molec.cm^{-3}. $[(CH_3)_2CHCH_2ONO]_o < 3.6x10^{17}$ molec.cm^{-3}. $[H_2O_2]_o \sim 9.0x10^{15}$ molec.cm^{-3}. $[NO_2]_o \sim 3.3x10^{16}$ molec.cm^{-3}.							
$OH + (CH_3)_3CONO \rightarrow$ products							
Hydroxyl + Nitrous acid 1,1-dimethylethyl ester (t-Butyl nitrite)							
82 AUD/BAU1	EX	295	(9.1±1.5)(11)			2	
Static system. OH generated by the chain reaction: $H_2O_2 + NO_2 + CO$. P < 75 torr. $[CO]_o \sim 3.0x10^{18}$ molec.cm^{-3}. $[(CH_3)_3CONO]_o < 3.6x10^{17}$ molec.cm^{-3}. $[H_2O_2]_o \sim 9.0x10^{15}$ molec.cm^{-3}. $[NO_2]_o \sim 3.3x10^{16}$ molec.cm^{-3}.							
$OH + CH_3CH_2CH_2CH_2ONO_2 \rightarrow$ products							
Hydroxyl + Nitric acid butyl ester (n-Butyl nitrate)							
82 ATK/ASC5 [1])	RL	299	(1.87±0.14)(-1)			2/2	
k_{ref}: OH +  → products.							
82 ATK/ASC5 [1])	RN	299	(8.55±0.66)(11)			2	
[1]) CH_3ONO/NO/n-Butyl nitrate photolysis. $[CH_3ONO]_o$ = (0.9-7.1)x10^{14} molec.cm^{-3}. [n-Butyl nitrate] = 2.4x10^{13} molec.cm^{-3}.							
$OH + CH_3CH_2CH(CH_3)ONO_2 \rightarrow$ products							
Hydroxyl + Nitric acid 1-methylpropyl ester (s-Butyl nitrate)							
82 ATK/ASC5 [1])	RL	299	(9.1±1.3)(-2)			2/2	
k_{ref}: OH +  → products.							
82 ATK/ASC5 [1])	RN	299	(4.15±0.60)(11)			2	
[1]) CH_3ONO/NO/s-Butyl nitrate photolysis. $[CH_3ONO]_o$ = (0.9-7.1)x10^{14} molec.cm^{-3}. [s-Butyl nitrate] = 2.4x10^{13} molec.cm^{-3}.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$OH + (CH_3CH_2)_2NOH \rightarrow H_2O + [C_4H_{10}NO]$							
Hydroxyl + Ethanamine, N-ethyl-N-hydroxy-							
77 GOR/LII	EX	308	6.1(13)			2	
Electron pulse. P(Total) = 760 torr.							
$OH + CH_2{=}C(CH_3)CH{=}CH_2 \rightarrow$ products							
Hydroxyl + 1,3-Butadiene-, 2-methyl- (Isoprene)							
80 COX/DER1	RN	300	4.46(13)			2	
HONO photosensitized oxidation in synthetic air. Gas-chromatography. Same data given on 80 COX. [NO] = NO_2] = (0.3-3.0) ppm. [HONO] = (3-20) ppm.							
82 ATK/ASC2 [1])	RL	299	(3.81±0.17)			2/2	
k_{ref}: $OH + CH_3CH{=}CH_2 \rightarrow$ products.							
82 ATK/ASC2 [1])	RN	299	(5.78±0.20)(13)			2	
[1]) CH_3ONO/NO/Isoprene/Propene photolysis. $[CH_3ONO]_o$ = (9.5-3.5)x10^{14} molec.cm^{-3}. [Isoprene] = (1.2-2.4)x10^{13} molec.cm^{-3}. P(Total) = 735 torr.							
82 KLE/HAR	EX	297-424	1.42(13)	0	-409±27	2	
OH generated by flash-photolysis of H_2O in Ar. Resonance-fluorescence. P(Total) = 50 torr.							
$OH + CH_3CH_2CH_2CH{=}CH_2 \rightarrow H_2O + CH_3CH_2CHCH{=}CH_2$ (a)							
$\rightarrow CH_3CH_2CH_2CH(OH)CH_2$ (b)							
$\rightarrow CH_3CH_2CH_2CHCH_2OH$ (c)							
Hydroxyl + 1-Pentene							
82 BIE/HAR [1])	RL	298	(1.3±0.5)(-1)			2/2	
$k_a/(k_a + k_b + k_c)$.							
82 BIE/HAR [1])	EX	298	(1.75±0.24)(13)			2	
$k_a/(k_a + k_b + k_c)$. P(Total) ~ 2 torr.(Ar)							
82 BIE/HAR [1])	EX	298	(1.73±0.08)(13)			2	
$k_a/(k_a + k_b + k_c)$. P(Total) = 50 torr.(Ar)							
[1]) Discharge-flow. OH generated by reacting H with NO_2. $[OH]_o$ = (0.2-2.0)x10^{12} molec.cm^{-3}.							
71 MOR/NIK2	RL	300	2.5			2/2	
$k_{overall}$. k_{ref}: $CH_3CH{=}CH_2 + OH \rightarrow$ products.							
76 WU/JAP	RL	303	5.6(-1)			2/2	
$k_{overall}$. Pyrex Reactor. P = 760 torr. k_{ref}: OH + cis-$CH_3CH{=}CHCH_3 \rightarrow$ products.							
79 NIP/PAR	EX	297	(2.39±0.23)(13)			2	
$k_{overall}$. Flash-photolysis. Resonance-fluorescence.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
OH + $CH_3CH_2CH{=}CHCH_3$ → products							
Hydroxyl + 2-Pentene (Unspecified form)							
71 MOR/NIK2	RL	300	5.3			2/2	
k_{ref}: OH + $CH_3CH{=}CH_2$ → products.							
OH + cis-$CH_3CH_2CH{=}CHCH_3$ → products							
Hydroxyl + 2-Pentene, (Z)-							
76 WU/JAP	RL	303	1.2			2/2	
Cylindrical Pyrex Reactor. P = 760 torr.							
k_{ref}: OH + cis-$CH_3CH{=}CHCH_3$ → products.							
OH + $CH_3CH_2C(CH_3){=}CH_2$ → products							
Hydroxyl + 1-Butene, 2-methyl-							
71 MOR/NIK2	RL	300	5.3			2/2	
k_{ref}: OH + $CH_3CH{=}CH_2$ → products.							
76 WU/JAP	RL	303	1.1			2/2	
Cylindrical Pyrex Reactor. P = 760 torr.							
k_{ref}: OH + cis-$CH_3CH{=}CHCH_3$ → products.							
OH + $(CH_3)_2CHCH{=}CH_2$ → products							
Hydroxyl + 1-Butene, 3-methyl-							
77 ATK/PER3	EX	299-424	3.15(12)	0	-533±151	2	
77 ATK/PER3	EX	299	(1.87±0.19)(13)			2	
OH + $(CH_3)_2C{=}CHCH_3$ → products							
Hydroxyl + 2-Butene, 2-methyl-							
71 MOR/NIK2	RL	300	7.0			2/2	
k_{ref}: OH + $CH_3CH{=}CH_2$ → products.							
76 ATK/PER1	EX	297-425	2.217(13)	0	-226±201	2	
76 ATK/PER1	EX	298	(4.70±0.48)(13)			2	
78 ATK/PIT2	EX	299-441	1.15(13)	0	-450±15 1	2	
Flash-photolysis. NO_2 chemiluminescence.							
78 PIT/ATK	EX	298	(4.70±0.54)(13)			2	
Flash-photolysis. Resonance-fluorescence.							
P ~ (15-650) torr.							
82 ATK/ASC2 [1]	RL	299	(3.43±0.13)			2/2	
k_{ref}: OH + $CH_3CH{=}CH_2$ → products.							
82 ATK/ASC2 [1]	RN	299	(5.20±0.20)(13)			2	

[1]) CH_3ONO/NO/2-Methyl-2-butene/Propane photolysis.
[2-Methyl-2-butene] = (1.2-2.4)x10^{13} molec.cm^{-3}.
$[CH_3ONO]_o$ = (9.5-3.5)x10^{14} molec.cm^{-3}.
P(Total) = 735 torr.

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
OH +  → **products**							
Hydroxyl + Cyclopentane							
82 ATK/ASC2 [1])	RL	299	(7.04±0.07)(-1)			2/2	
k_{ref}: OH + $CH_3(CH_2)_4CH_3$ → products.							
82 ATK/ASC2 [1])	RN	299	(3.21±0.04)(12)			2	
[1]) CH_3ONO/NO/Cyclohexane/Cyclopentane photolysis. [Cyclopentane] = (1.2-2.4)x10^{13} molec.cm^{-3}. $[CH_3ONO]_o$ = (9.5-3.5)x10^{14} molec.cm^{-3}. P(Total) = 735 torr.							
OH + $CH_3CH_2CH_2CH_2CH_3$ → H_2O + $CH_3CH_2CH_2CH_2CH_2$ (a)							
→ H_2O + $CH_3CH_2CH_2CHCH_3$ (b)							
→ H_2O + $CH_3CH_2CHCH_2CH_3$ (c)							
Hydroxyl + Pentane							
78 DAR/ATK	CO	300	2.35(11)			2	
k_a. Irradiation technique. Computed from an empirical formula.							
79 BAL/WAL1	RL	753-773	1.28	0	-1070	2/2	
k_a/k_{ref}. A and B recalculated from a given empirical formula. k_{ref}: OH + H_2 → H_2O + H.							
78 DAR/ATK	CO	300	1.40(12)			2	
k_b. Irradiation technique. Computed from an empirical formula.							
79 BAL/WAL1	RL	753-773	6.92(-1)	0	-1820	2/2	
k_b/k_{ref}. A and B recalculated from a given empirical formula. k_{ref}: OH + H_2 → H_2O + H.							
78 DAR/ATK	CO	300	6.99(11)			2	
k_c. Irradiation technique. Computed from an empirical formula.							
79 BAL/WAL1	RL	753-773	3.46(-1)	0	-1820	2/2	
k_c/k_{ref}. A and B recalculated from a given empirical formula. k_{ref}: OH + H_2 → H_2O + H.							
76 WU/JAP	RL	303	1.2(-1)			2/2	
$k_a + k_b + k_c$. Cylindrical Pyrex Reactor. k_{ref}: OH + cis-$CH_3CH{=}CHCH_3$ → products. P = 760 torr.							
78 DAR/ATK	EX	300	(2.25±0.08)(12)			2	
$k_a + k_b + k_c$. Irradiation technique.							
80 COX/DER1	RN	300	3.01(12)			2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$k_a + k_b + k_c$. HONO photosensitized oxidation in synthetic air. [NO] = NO_2] = (0.3-3.0) ppm. [HONO] = (3-20) ppm. Same data given in 80 COX.							
82 ATK/ASC3 [1])	RL	299	(4.53±0.07)(-1)			2/2	
$(k_a + k_b + k_c)/k_{ref}$. k_{ref}: OH + $CH_3(CH_2)_4CH_3$ → products.							
82 ATK/ASC3 [1])	RN	299	(2.49±0.05)(12)			2	
$k_a + k_b + k_c$.							
[1]) Photolysis of CH_3ONO/NO/Pentane mixtures. $[CH_3ONO]_o$ = (2.1-4.0)x10^{14} molec.cm^{-3}. [Pentane] = (1.2-2.4)x10^{13} molec.cm^{-3}. P(Total) = 735 torr.							

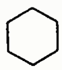
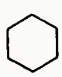
OH + $(CH_3)_2CHCH_2CH_3$ → H_2O + $CH_2CH(CH_3)CH_2CH_3$ (a)
→ H_2O + $(CH_3)_2CHCH_2CH_2$ (b)
→ H_2O + $(CH_3)_2CHCHCH_3$ (c)
→ H_2O + $(CH_3)_2CCH_2CH_3$ (d)

Hydroxyl + Butane, 2-methyl- (Isopentane)

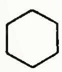
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
78 DAR/ATK [1])	CO	300	2.35(11)			2	
k_a.							
78 DAR/ATK [1])	CO	300	1.17(11)			2	
k_b.							
78 DAR/ATK [1])	CO	300	6.99(11)			2	
k_c.							
78 DAR/ATK [1])	CO	300	1.26(12)			2	
k_d.							
[1]) Irradiation. k computed from an empirical formula.							
79 BAL/WAL1 [2])	RL	753-773	1.28	0	-1070	2/2	
k_a/k_{ref}.							
79 BAL/WAL1 [2])	RL	753-773	6.42(-1)	0	-1070	2/2	
k_b/k_{ref}.							
79 BAL/WAL1 [2])	RL	753-773	3.46(-1)	0	-1820	2/2	
k_c/k_{ref}.							
79 BAL/WAL1 [2])	RL	753-773	2.73(-1)	0	-2060	2/2	
k_d/k_{ref}.							
[2]) A and B recalculated from a empirical formula. k_{ref}: OH + H_2 → H_2O + H.							
76 LLO/DAR2	RL	305	1.10			2/2	
$(k_a + k_b + k_c + k_d)/k_{ref}$. k_{ref}: OH + $CH_3CH_2CH_2CH_3$ → products.							
76 LLO/DAR2	RN	305	(2.0±0.4)(12)			2	
$k_a + k_b + k_c + k_d$							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
78 DAR/ATK	EX	300	(2.28±0.04)(12)			2	
$k_a + k_b + k_c + k_d$. Irradiation technique.							
80 COX/DER1	RN	300	2.11(12)			2	
$k_a + k_b + k_c + k_d$. HONO photosensitized oxidation in synthetic air. [NO] = $[NO_2]$ = (0.3-3.0) ppm. [HONO] = (3-20) ppm. Same data given in 80 COX.							
$OH + (CH_3)_4C \rightarrow H_2O + (CH_3)_3CCH_2$							
Hydroxyl + Propane, 2,2-dimethyl- (Neopentane)							
71 BAK/BAL [1])	RL	753	(1.60±0.16)(1)			2/2	
76 BAK/BAL [1])	RL	753	(1.0±0.1)(1)			2/2	
[1]) k_{ref}: $OH + H_2 \rightarrow H_2O + H$.							
76 BAK/BAL	ES	753	(3.9±0.4)(12)			2	
78 DAR/ATK [1])	EX	300	(6.3±1.0)(11)			2	
78 DAR/ATK [1])	CO	300	4.70(11)			2	
Calculation using an empirical formula.							
[1]) Irradiation technique.							
79 BAL/WAL1	RL	753-773	2.57	0	-1070	2/2	
A and B recalculated from a empirical formula.							
k_{ref}: $OH + H_2 \rightarrow H_2O + H$.							
80 PAR/NIP	EX	297	(5.48±0.59)(11)			2	
Flash-photolysis. Resonance-absorption.							
82 ATK/ASC2 [1])	RL	299	(1.35±0.07)(-1)			2/2	
k_{ref}: $OH + CH_3(CH_2)_4CH_3 \rightarrow$ products.							
82 ATK/ASC2 [1])	RN	299	(4.64±0.30)(11)			2	
[1]) CH_3ONO/NO/Neopentane photolysis. [Neopentane] = $(1.2\text{-}2.4)\times10^{13}$ molec.cm^{-3}. $[CH_3ONO]_o$ = $(9.5\text{-}3.5)\times10^{14}$ molec.cm^{-3}. P(Total) = 735 torr.							
$OH + CH_3CH_2CH_2CH_2CHO \rightarrow H_2O + CH_3CH_2CH_2CH_2CO$ (a)							
$\rightarrow H_2O + CH_3CH_2CH_2CHCHO$ (b)							
$\rightarrow H_2O + CH_3CH_2CHCH_2CHO$ (c)							
$\rightarrow H_2O + CH_3CHCH_2CH_2CHO$ (d)							
$\rightarrow H_2O + CH_2CH_2CH_2CH_2CHO$ (e)							
Hydroxyl + Pentanal							
81 AUD/BAU [1])	RL	298	(8.8±1.1)(-1)			2/2	
$(k_a + k_b + k_c + k_d + k_e)/k_{ref}$.							
k_{ref}: $OH + CH_3CHO \rightarrow$ products.							
81 AUD/BAU [1])	RN	298	(8.3±1.0)(12)			2	
$k_a + k_b + k_c + k_d + k_e$.							
[1]) Linear, boric-acid-coated flow tube. Channel (a) is predominant. P(Total) = 299 torr.							

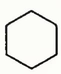
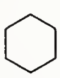
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 KER/SHE 2)	RL	298	(3.24±0.49)			2/2	
$(k_a + k_b + k_c + k_d + k_e)/k_{ref}$.							
k_{ref}: $OH + CH_2{=}CH_2 \rightarrow$ products.							
81 KER/SHE 2)	RN	298	(1.57±0.24)(13)			2	
$k_a + k_b + k_c + k_d + k_e$.							
2) HONO/Synthetic air/Ethene/aldehyde photolysis.							
$OH + (CH_3)_2CHCH_2CHO \rightarrow H_2O + (CH_3)_2CHCH_2CO$ (a)							
$\rightarrow H_2O + (CH_3)_2CHCHCHO$ (b)							
$\rightarrow H_2O + (CH_3)_2CCH_2CHO$ (c)							
$\rightarrow H_2O + CH_2CH(CH_3)CH_2CHO$ (d)							
Hydroxyl + Butanal, 3-methyl-							
81 AUD/BAU 1)	RL	298	(1.18±0.13)			2/2	
$(k_a + k_b + k_c + k_d)/k_{ref}$.							
k_{ref}: $OH + CH_3CHO \rightarrow$ products.							
81 AUD/BAU 1)	RN	298	(1.11±0.12)(13)			2	
$k_a + k_b + k_c + k_d$.							
1) Boric-acid-coated flow tube.							
Channel (a) is predominant.							
P(Total) = 299 torr.							
81 KER/SHE 2)	RL	298	(3.39±0.10)			2/2	
$(k_a + k_b + k_c + k_d)/k_{ref}$.							
k_{ref}: $OH + CH_2{=}CH_2 \rightarrow$ products.							
81 KER/SHE 2)	RN	298	(1.63±0.06)(13)			2	
$k_a + k_b + k_c + k_d$.							
2) HONO/Synthetic air/Ethene/aldehyde photolysis.							
$OH + (CH_3)_3CCHO \rightarrow H_2O + (CH_3)_3CCO$ (a)							
$\rightarrow H_2O + CH_2C(CH_3)_2CHO$ (b)							
Hydroxyl + Propanal, 2,2-dimethyl-							
81 AUD/BAU 1)	RL	298	(5.4±0.6)(-1)			2/2	
$(k_a + k_b)/k_{ref}$.							
k_{ref}: $OH + CH_3CHO \rightarrow$ products.							
81 AUD/BAU 1)	RN	298	(5.1±0.5)(12)			2	
$k_a + k_b$.							
1) Boric-acid-coated flow tube.							
Channel (a) is predominant.							
P(Total) = 299 torr.							
81 KER/SHE 2)	RL	298	(2.63±0.73)			2/2	
$(k_a + k_b)/k_{ref}$. k_{ref}: $OH + CH_2{=}CH_2 \rightarrow$ products.							
81 KER/SHE 2)	RN	298	(1.26±0.36)(13)			2	
$k_a + k_b$.							
2) HONO/Synthetic air/Ethene/aldehyde photolysis.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$OH + CH_3C(O)CH_2CH_2CH_3 \rightarrow$ products							
Hydroxyl + 2-Pentanone							
82 ATK/ASC4 [1])	RL	299	(6.26±0.18)(-1)			2/2	
k_{ref}: OH +  → products.							
82 ATK/ASC4 [1])	RN	299	(2.85±0.08)(12)			2	
[1]) $CH_3ONO/NO/2$-Pentanone photolysis. [2-Pentanone] = $(1.2\text{-}2.4)\times10^{14}$ molec.cm^{-3}. $[CH_3ONO]_o$ = $(0.9\text{-}4.0)\times10^{14}$ molec.cm^{-3}. P(Total) = 735 torr.							
$OH + (CH_3CH_2)_2CO \rightarrow$ products							
Hydroxyl + 3-Pentanone							
82 ATK/ASC4 [1])	RL	299	(2.45±0.44)(-1)			2/2	
k_{ref}: OH +  → products.							
82 ATK/ASC4 [1])	RN	299	(1.11±0.20)(12)			2	
[1]) $CH_3ONO/NO/2$-Pentanone photolysis. [3-Pentanone] = $(1.2\text{-}2.4)\times10^{14}$ molec.cm^{-3}. $[CH_3ONO]_o$ = $(0.9\text{-}4.0)\times10^{14}$ molec.cm^{-3}. P(Total) = 735 torr.							
$OH + CH_3C(O)OCH_2CH_2CH_3 \rightarrow$ products							
Hydroxyl + Acetic acid propyl ester (n-Propyl nitrate)							
77 WIN/LLO	RL	305	8.5(-2)			2/2	
k_{ref}: $OH + (CH_3)_2C{=}CH_2 \rightarrow$ products.							
77 WIN/LLO	RN	305	(2.6±0.5)(12)			2	
$OH + CH_3CH_2C(O)OCH_2CH_3 \rightarrow$ products							
Hydroxyl + Propanoic acid ethyl ester							
78 CAM/PAR	EX	292	(1.06±0.15)(12)			2	
Reaction of ester vapor with OH in Pyrex vessel with vacuum system. OH generated by the reaction of a $H_2O_2/NO_2/CO$ mixture. P(Total) = 100 torr.							
$OH + CH_3CH_2CH_2CH(CH_3)ONO_2 \rightarrow$ products							
Hydroxyl + 2-Pentanol nitrate							
82 ATK/ASC5 [1])	RL	299	(2.47±0.16)(-1)			2/2	
k_{ref}: OH +  → products.							

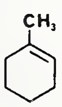
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 ATK/ASC5 [1])	RN	299	(1.13±0.07)(12)			2	
[1]) CH_3ONO/NO/2-Pentanol nitrate photolysis.							
$[CH_3ONO]_o$ = (0.9-7.1)x10^{14} molec.cm^{-3}.							
[Alkyl nitrate] = 2.4x10^{13} molec.cm^{-3}.							
OH + $(CH_3CH_2)_2CHONO_2$ → products							
Hydroxyl + 3-Pentanol nitrate							
82 ATK/ASC5 [1])	RL	299	(1.49±0.26)(-1)			2/2	
k_{ref}: OH +  → products.							
82 ATK/ASC5 [1])	RN	299	(6.81±1.20)(11)			2	
[1]) CH_3ONO/NO/3-Pentanol nitrate photolysis.							
$[CH_3ONO]_o$ = (0.9-7.1)x10^{14} molec.cm^{-3}.							
[Alkyl nitrate] = 2.4x10^{13} molec.cm^{-3}.							
OH +  → products							
Hydroxyl + Cyclohexene							
76 DAR/WIN	RL	305	1.53			2/2	
k_{ref}: OH + $(CH_3)_2C{=}CH_2$ → products.							
76 DAR/WIN	RN	305	(4.7±0.9)(13)			2	
76 WU/JAP	RL	303	1.2			2/2	
Cylindrical Pyrex Reactor.							
k_{ref}: OH + cis-$CH_3CH{=}CHCH_3$ → products.							
P = 760 torr.							
80 COX/DER1	RN	298	3.73(13)			2	
HONO photosensitized oxidation in synthetic air.							
Gas-chromatography. Same data given in 80 COX.							
[NO] = NO_2] = (0.3-3.0) ppm.							
[HONO] = (3-20) ppm.							
OH + $CH_3CH_2CH_2CH_2CH{=}CH_2$ → products							
Hydroxyl + 1-Hexene							
76 WU/JAP	RL	303	6.0(-1)			2/2	
Cylindrical Pyrex Reactor.							
k_{ref}: OH + cis-$CH_3CH{=}CHCH_3$ → products.							
P = 760 torr.							
OH + $(CH_3)_3CCH{=}CH_2$ → products							
Hydroxyl + 1-Butene, 3,3-dimethyl-							
76 WU/JAP	RL	303	5.2(-1)			2/2	
Cylindrical Pyrex Reactor.							
k_{ref}: OH + cis-$CH_3CH{=}CHCH_3$ → products.							
P = 760 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
OH + $(CH_3)_2C{=}C(CH_3)_2$ → products							
Hydroxyl + 2-Butene, 2,3-dimethyl-							
71 MOR/NIK2	RL	300	9.0			2/2	
k_{ref}: OH + $CH_3CH{=}CH_2$ → products.							
77 DAV [1])	EX	298	(3.42±0.07)(13)			2	
78 RAV/WAG [1])	EX	298	(3.43±0.08)(13)			2	
[1]) M = He. Flash-photolysis. Resonance-fluorescence. P(He) = 20 torr.							
82 ATK/ASC2 [2])	RL	299	(4.28±0.21)			2/2	
k_{ref}: OH + $CH_3CH{=}CH_2$ → products.							
82 ATK/ASC2 [2])	RN	299	(6.50±0.36)(13)			2	
[2]) CH_3ONO/NO/2,3-Dimethyl-2-butene/Propene photolysis. $[(CH_3)_2C{=}C(CH_3)_2] = (1.2\text{-}2.4)\times10^{13}$ molec.cm^{-3}. $[CH_3ONO]_o = (9.5\text{-}3.5)\times10^{14}$ molec.cm^{-3}. P(Total) = 735 torr.							
OH +  → products							
Hydroxyl + Cyclohexane							
74 GOR/VOL	RL	298	4.48(1)			2/2	
74 GOR/VOL	RN	298	(4.04±0.90)(12)			2	
76 WU/JAP	RL	303	1.2(-1)			2/2	
Cylindrical Pyrex Reactor. k_{ref}: OH + cis-$CH_3CH{=}CHCH_3$ → products. P = 760 torr.							
82 ATK/ASC2 [1])	RL	299	(1.32±0.04)			2/2	
k_{ref}: OH + $CH_3(CH_2)CH_3)$ → products.							
82 ATK/ASC2 [1])	RN	299	(4.53±0.16)			2	
[1]) CH_3ONO/NO/Cyclohexane/Hexane photolysis. [Cyclohexane] = $(1.2\text{-}2.4)\times10^{13}$ molec.cm^{-3}. $[CH_3ONO]_o = (9.5\text{-}3.5)\times10^{14}$ molec.cm^{-3}. P(Total) = 735 torr.							
OH + $CH_3(CH_2)_4CH_3$ → H_2O + $CH_3(CH_2)_4CH_2$ (a)							
→ H_2O + $CH_3(CH_2)_3CHCH_3$ (b)							
→ H_2O + $CH_3(CH_2)_2CH(CH_2)_2CH_3$ (c)							
Hydroxyl + Hexane							
76 LLO/DAR2	RL	305	2.09			2/2	
$(k_a + k_b + k_c)/k_{ref}$.							
k_{ref}: OH + $CH_3CH_2CH_2CH_3$ → products.							
76 CAM/MCL [1])	EX	292	(3.3±0.2)(12)			2	
76 LLO/DAR2 [1])	RN	305	(3.8±0.8)(12)			2	

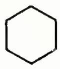
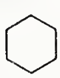
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
76 WU/JAP [1])	RL	303	1.1(-1)			2/2	
Cylindrical Pyrex Reactor.							
k_{ref}: OH + cis-$CH_3CH{=}CHCH_3$ → products.							
P = 760 torr.							
82 ATK/ASC2 [1])	EX	299	(3.43±0.05)(12)			2	
CH_3ONO/NO/Hexane photolysis.							
$[CH_3ONO]_o$ = (9.5-3.5)x10^{14} molec.cm^{-3}.							
[Hexane] = (1.2-2.4)x10^{13} molec.cm^{-3}.							
P(Total) = 735 torr.							
[1]) $k_a + k_b + k_c$.							
OH + $(CH_3)_2CHCH_2CH_2CH_3$ → H_2O + $(CH_3)_2CHCH_2CH_2CH_2$ (a)							
→ H_2O + $(CH_3)_2CHCH_2CHCH_3$ (b)							
→ H_2O + $(CH_3)_2CHCHCH_2CH_3$ (c)							
→ H_2O + $(CH_3)_2CCH_2CH_2CH_3$ (d)							
→ H_2O + $CH_2CH(CH_3)CH_2CH_2CH_3$ (e)							
Hydroxyl + Pentane, 2-methyl-							
76 LLO/DAR2	RL	305	1.77			2/2	
$(k_a + k_b + k_c + k_d + k_e)/k_{ref}$.							
k_{ref}: OH + $CH_3CH_2CH_2CH_3$ → products.							
76 LLO/DAR2 [1])	RN	305	(3.2±0.6)(12)			2	
80 COX/DER1 [1])	RN	298	3.01(12)			2	
HONO photosensitized oxidation							
in synthetic air.							
Gas-chromatography.							
[NO] = NO_2] = (0.3-3.0) ppm.							
[HONO] = (3-20) ppm.							
Same data given in 80 COX.							
[1]) $k_a + k_b + k_c + k_d + k_e$.							
OH + $CH_3CH_2CH(CH_3)CH_2CH_3$							
→ H_2O + $CH_3CH_2CH(CH_3)CH_2CH_2$ (a)							
→ H_2O + $CH_3CH_2CH(CH_3)CHCH_3$ (b)							
→ H_2O + $CH_3CH_2C(CH_3)CH_2CH_3$ (c)							
→ H_2O + $CH_3CH_2CH(CH_2)CH_2CH_3$ (d)							
→ H_2O + $CH_3CHCH(CH_3)CH_2CH_3$ (e)							
→ H_2O + $CH_2CH_2CH(CH_3)CH_2CH_3$ (f)							
Hydroxyl + Pentane, 3-methyl-							
76 LLO/DAR2	RL	305	2.40			2/2	
$(k_a + k_b + k_c + k_d + k_e + k_f)/k_{ref}$.							
k_{ref}: OH + $CH_3CH_2CH_2CH_3$ → products.							
76 LLO/DAR2	RN	305	(4.3±0.9)(12)			2	
$k_a + k_b + k_c + k_d + k_e + k_f$.							

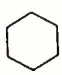
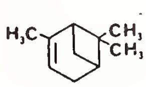
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$OH + (CH_3)_2CHCH(CH_3)_2 \rightarrow H_2O + CH_2CH(CH_3)CH(CH_3)_2$ (a)							
$\rightarrow H_2O + (CH_3)_2CCH(CH_3)_2$ (b)							
Hydroxyl + Butane, 2,3-dimethyl-							
78 DAR/ATK [1])	CO	300	4.70(11)			2	
k_a. Computed from an empirical formula.							
78 DAR/ATK [1])	CO	300	2.53(12)			2	
k_b. Computed from an empirical formula.							
[1]) Irradiation technique.							
76 DAR/WIN	RL	305	1.0(-1)			2/2	
$(k_a + k_b)/k_{ref}$.							
k_{ref}: $OH + (CH_3)_2C{=}CH_2 \rightarrow$ products.							
76 DAR/WIN	RN	305	(3.1±0.6)(12)			2	
$k_a + k_b$.							
78 DAR/ATK	EX	300	(3.42±0.17)(12)			2	
$k_a + k_b$. Irradiation technique.							
80 COX/DER1	RN	298	2.29(12)			2	
$k_a + k_b$. HONO photosensitized oxidation in synthetic air.							
[NO] = $[NO_2]$ = (0.3-3.0) ppm.							
[HONO] = (3-20) ppm.							
Same data given in 80 COX.							
82 ATK/ASC2 [2])	RL	299	(8.27±0.04)(-1)			2/2	
$(k_a + k_b)/k_{ref}$.							
k_{ref}: OH +  → products.							
82 ATK/ASC2 [2])	RN	299	(3.77±0.04)(12)			2	
$k_a + k_b$.							
[2]) CH_3ONO/NO/2,3-Dimethylbutane/Cyclohexane photolysis.							
$[CH_3ONO]_o$ = (9.5-3.5)x10^{14} molec.cm^{-3}.							
[2,3-Dimethylbutane] = (1.2-2.4)x10^{13} molec.cm^{-3}.							
P(Total) = 735 torr.							
$OH + CH_3C(O)CH_2CH_2CH_2CH_3 \rightarrow$ products							
Hydroxyl + 2-Hexanone							
82 ATK/ASC4 [1])	RL	299	(1.21±0.08)			2/2	
k_{ref}: OH +  → products.							
82 ATK/ASC4 [1])	RN	299	(5.52±0.37)(12)			2	
[1]) CH_3ONO/NO/2-Hexanone photolysis.							
[2-Hexanone] = (1.2-2.4)x10^{14} molec.cm^{-3}.							
$[CH_3ONO]_o$ = (0.9-4.0)x10^{14} molec.cm^{-3}.							
P(Total) = 735 torr.							

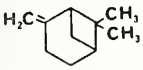
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
OH + $CH_3CH_2C(O)CH_2CH_2CH_3$ → products							
Hydroxyl + 3-Hexanone							
82 ATK/ASC4 [1])	RL	299	(9.19±0.38)(-1)			2/2	
k_{ref}: OH +  → products.							
82 ATK/ASC4 [1])	RN	299	(4.19±0.17)(12)			2	
[1]) CH_3ONO/NO/3-Hexanone photolysis.							
torr. [3-Hexanone] = $(1.3-2.4)x10^{14}$ molec.cm^{-3}.							
$[CH_3ONO]_o$ = $(0.9-4.0)x10^{14}$ molec.cm^{-3}.							
P(Total) = 735 torr.							
OH + $CH_3C(O)CH_2CH(CH_3)_2$ → products							
Hydroxyl + 2-Pentanone, 4-methyl-							
76 WIN/LLO	RL	305	3.0(-1)			2/2	
k_{ref}: OH + $(CH_3)_2C{=}CH_2$ → products.							
76 WIN/LLO	RN	305	(9.0±3.0)(12)			2	
80 COX/DER1	RN	300	7.47(12)			2	
HONO photosensitized oxidation in synthetic air. Gas-chromatography.							
[NO] = NO_2] = (0.3-3.0) ppm.							
[HONO] = (3-20) ppm.							
Same data given on 80 COX.							
81 COX/PAT	EX	296	(7.83±0.18)(12)			2	
$HONO/N_2/O_2$/4-Methyl-2-pentanone photolysis.							
P = 760 torr.							
82 ATK/ASC4 [1])	RL	299	(1.91±0.09)			2/2	
k_{ref}: OH +  → products.							
82 ATK/ASC4 [1])	RN	299	(8.73±0.42)(12)			2	
[1]) CH_3ONO/NO/4-Methyl-2-Pentanone photolysis.							
$[CH_3ONO]_o$ = $(0.9-4.0)x10^{14}$ molec.cm^{-3}.							
[4-Methyl-2-Pentanone] = $(1.3-2.4)x10^{14}$ molec.cm^{-3}.							
P(Total) = 735 torr.							
OH + $CH_3C(O)OCH(CH_3)CH_2CH_3$ → products							
Hydroxyl + Acetic acid 1-methylpropyl ester (s-Butyl acetate)							
77 WIN/LLO	RL	305	1.1(-1)			2/2	
k_{ref}: OH + $(CH_3)_2C{=}CH_2$ → products.							
77 WIN/LLO	RN	305	(3.4±0.7)(12)			2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$OH + CH_3CH_2CH_2OCH_2CH_2CH_3 \rightarrow$ products							
Hydroxyl + Propane, 1,1'-oxybis- (di-n-Propyl ether)							
76 LLO/DAR1	RL	305	3.4(-1)			2/2	
k_{ref}: $OH + (CH_3)_2C{=}CH_2 \rightarrow$ products.							
76 LLO/DAR1	RN	305	(1.04±0.21)(13)			2	
$OH + CH_3CH_2CH_2CH_2CH(CH_3)ONO_2 \rightarrow$ products							
Hydroxyl + 2-Hexanol nitrate							
82 ATK/ASC5 [1])	RL	299	(4.22±0.20)(-1)			2/2	
k_{ref}: OH +  → products.							
82 ATK/ASC5 [1])	RN	299	(1.92±0.09)(12)			2	
[1]) CH_3ONO/NO/2-Hexanol nitrate photolysis. [Alkyl nitrate] = $2.4x10^{13}$ molec.cm^{-3}. $[CH_3ONO]_o$ = $(0.9-7.1)x10^{14}$ molec.cm^{-3}.							
$OH + CH_3CH_2CH_2CH(CH_2CH_3)ONO_2 \rightarrow$ products							
Hydroxyl + 3-Hexanol nitrate							
82 ATK/ASC5 [1])	RL	299	(3.59±0.28)(-1)			2/2	
k_{ref}: OH +  → products.							
82 ATK/ASC5 [1])	RN	299	(1.64±0.13)(12)			2	
[1]) CH_3ONO/NO/3-Hexanol nitrate photolysis. [Alkyl nitrate] = $2.4x10^{13}$ molec.cm^{-3}. $[CH_3ONO]_o$ = $(0.9-7.1)x10^{14}$ molec.cm^{-3}.							
OH +  → products							
Hydroxyl + Cyclohexene, 1-methyl-							
76 DAR/WIN	RL	305	1.91			2/2	
k_{ref}: $OH + (CH_3)_2C{=}CH_2 \rightarrow$ products.							
76 DAR/WIN	RN	305	(5.8±1.2)(13)			2	
$OH + CH_3CH_2CH_2CH_2CH_2CH{=}CH_2 \rightarrow$ products							
Hydroxyl + 1-Heptene							
76 DAR/WIN	RL	305	7.3(-1)			2/2	
k_{ref}: $OH + (CH_3)_2C{=}CH_2 \rightarrow$ products.							
76 DAR/WIN	RN	305	(2.2±0.5)(13)			2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$OH + CH_3(CH_2)_5CH_3 \rightarrow H_2O + CH_3(CH_2)_5CH_2$ (a)							
$\rightarrow H_2O + CH_3(CH_2)_4CHCH_3$ (b)							
$\rightarrow H_2O + CH_3(CH_2)_3CHCH_2CH_3$ (c)							
$\rightarrow H_2O + CH_3(CH_2)_2CH(CH_2)_2CH_3$ (d)							
Hydroxyl + Heptane							
82 ATK/ASC3 [1])	RL	299	(1.28±0.02)			2/2	
$(k_a + k_b + k_c + k_d)/k_{ref}$.							
k_{ref}: $OH + CH_3(CH_2)_4CH_3 \rightarrow$ products.							
82 ATK/ASC3 [1])	RN	299	(4.40±0.10)(12)			2	
$k_a + k_b + k_c + k_d$.							
[1]) CH_3ONO/NO/Heptane photolysis.							
[Heptane] = $(1.2\text{-}2.4)\times10^{13}$ molec.cm^{-3}.							
$[CH_3ONO]_o$ = $(2.1\text{-}4.0)\times10^{14}$ molec.cm^{-3}.							
P(Total) = 735 torr.							
$OH + (CH_3)_3CCH(CH_3)_2 \rightarrow H_2O + CH_2C(CH_3)_2CH(CH_3)_2$ (a)							
$\rightarrow H_2O + (CH_3)_3CCH(CH_3)CH_2$ (b)							
$\rightarrow H_2O + (CH_3)_3CC(CH_3)_2$ (c)							
Hydroxyl + Butane, 2,2,3-trimethyl-							
81 BAL/WAL2	RL	753	6.7			2/2	
$(k_a + k_b)/k_{ref}$. k_{ref}: $OH + H_2 \rightarrow H_2O + H$. Estimamated ratio. Oxidation of 2,2,3-Trimethylbutane in H_2/O_2, in aged boric-acid-coated reaction vessels. P(2,2,3-Trimethylbutane) = 5 torr. P(Total) = 500 torr.							
76 DAR/WIN	RL	305	7.4(-2)			2/2	
$(k_a + k_b + k_c)/k_{ref}$.							
k_{ref}: $OH + (CH_3)_2C{=}CH_2 \rightarrow$ products.							
76 DAR/WIN	RN	305	(2.3±0.5)(12)			2	
$k_a + k_b + k_c$.							
81 BAL/WAL2 [1])	RL	300-500	(1.22±0.15)(1)	0	0	2/2	
$(k_a + k_b + k_c)/k_{ref}$. Optimization.							
k_{ref}: $OH + H_2 \rightarrow H_2O + H$.							
81 BAL/WAL2 [1])	SE	300-500	(5.92±0.50)(12)	0	217±42	2	
$k_a + k_b + k_c$.							
81 BAL/WAL2 [1])	RL	753	5.5			2/2	
k_c/k_{ref}. k_{ref}: $OH + H_2 \rightarrow H_2O + H$. Estimated ratio.							
81 BAL/WAL2 [1])	ES	300-1500	1.70(12)	0	-115±96	2	1.23
k_c.							
[1]) Oxidation of 2,2,3-Trimethylbutane in H_2O_2 mixtures, in aged boric-acid-coated reaction vessels. Gas-chromatography. P(Total) = 500 torr. P(2,2,3-Trimethylbutane) = 5 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$OH + (CH_3)_2CHC(O)CH(CH_3)_2 \rightarrow$ products							
Hydroxyl + 3-Pentanone, 2,4-dimethyl-							
82 ATK/ASC4 [1]	RL	299	(7.17±0.54)(-1)			2/2	
k_{ref}: OH +  → products.							
82 ATK/ASC4 [1]	RN	299	(3.27±0.24)(12)			2	
[1]) CH_3ONO/NO/2,4-Dimethyl-3-Pentanone photolysis. [2,4-Dimethyl-3-Pentanone] = $(1.3-2.4)\times10^{14}$ molec.cm^{-3}. P(Total) = 735 torr. $[CH_3ONO]_o = (0.9-4.0)\times10^{14}$ molec.cm^{-3}.							
$OH + CH_3CH_2CH_2CH_2CH(CH_2CH_3)ONO_2 \rightarrow$ products							
Hydroxyl + 3-Heptanol nitrate							
82 ATK/ASC5 [1]	RL	299	(4.91±0.57)(-1)			2/2	
k_{ref}: OH +  → products.							
82 ATK/ASC5 [1]	RN	299	(2.24±0.26)(12)			2	
[1]) CH_3ONO/NO/3-Heptanol nitrate photolysis. [Alkyl nitrate] = 2.4×10^{13} molec.cm^{-3}. $[CH_3ONO]_o = (0.9-7.1)\times10^{14}$ molec.cm^{-3}.							
$OH + CH_3(CH_2)_6CH_3 \rightarrow H_2O + CH_3(CH_2)_6CH_2$ (a)							
$\rightarrow H_2O + CH_3(CH_2)_5CHCH_3$ (b)							
$\rightarrow H_2O + CH_3(CH_2)_4CHCH_2CH_3$ (c)							
$\rightarrow H_2O + CH_3(CH_2)_3CH(CH_2)_2CH_3$ (d)							
Hydroxyl + Octane							
82 ATK/ASC3 [1]	RL	299	(1.58±0.02)			2/2	
$(k_a + k_b + k_c + k_d)/k_{ref}$.							
k_{ref}: $OH + CH_3(CH_2)_4CH_3 \rightarrow$ products.							
82 ATK/ASC3 [1]	RN	299	(5.43±0.11)(12)			2	
$k_a + k_b + k_c + k_d$.							
[1]) CH_3ONO/NO/Octane photolysis. [Octane] = $(1.2-2.4)\times10^{13}$ molec.cm^{-3}. $[CH_3ONO]_o = (2.1-4.0)\times10^{14}$ molec.cm^{-3}. P(Total) = 735 torr.							
$OH + CH_3(CH_2)_4CH(CH_2CH_3)ONO_2 \rightarrow$ products							
Hydroxyl + 3-Octanol nitrate							
82 ATK/ASC5 [1]	RL	299	(5.16±1.05)(-1)			2/2	
k_{ref}: OH +  → products.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 ATK/ASC5 [1])	RN	299	(2.35±0.48)(12)			2	
[1]) CH_3ONO/NO/3-Octanol nitrate photolysis.							
[Alkyl nitrate] = $2.4x10^{13}$ molec.cm^{-3}.							
$[CH_3ONO]_o$ = $(0.9-7.1)x10^{14}$ molec.cm^{-3}.							
$OH + CH_3(CH_2)_7CH_3 \rightarrow H_2O + CH_3(CH_2)_7CH_2$ (a)							
$\rightarrow H_2O + CH_3(CH_2)_6CHCH_3$ (b)							
$\rightarrow H_2O + CH_3(CH_2)_5CHCH_2CH_3$ (c)							
$\rightarrow H_2O + CH_3(CH_2)_4CH(CH_2)_2CH_3$ (d)							
$\rightarrow H_2O + CH_3(CH_2)_3CH(CH_2)_3CH_3$ (e)							
Hydroxyl + Nonane							
82 ATK/ASC3 [1])	RL	299	(1.87±0.05)			2/2	
$(k_a + k_b + k_c + k_d + k_e)/k_{ref}$.							
k_{ref}: $OH + CH_3(CH_2)_4CH_3 \rightarrow$ products.							
82 ATK/ASC3 [1])	RN	299	(6.44±0.24)(12)			2	
$k_a + k_b + k_c + k_d + k_e$.							
[1]) CH_3ONO/NO/Nonane photolysis.							
[Nonane] = $(1.2-2.4)x10^{13}$ molec.cm^{-3}.							
$[CH_3ONO]_o$ = $(2.1-4.0)x10^{14}$ molec.cm^{-3}.							
P(Total) = 735 torr.							
$OH + (CH_3)_2CHCH_2COCHCH_2(CH_3)_2 \rightarrow$ products							
Hydroxyl + 4-Heptanone, 2,6-dimethyl-							
76 WIN/LLO	RL	305	5.0(-1)			2/2	
k_{ref}: $OH + (CH_3)_2C{=}CH_2 \rightarrow$ products.							
76 WIN/LLO	RN	305	(1.5±0.5)(13)			2	
82 ATK/ASC4 [1])	RL	299	(3.66±0.19)			2/2	
k_{ref}: OH +  $\rightarrow$ products.							
82 ATK/ASC4 [1])	RN	299	(1.67±0.09)(12)			2	
[1]) CH_3ONO/NO/2,6-Dimethyl-4-Heptanone photolysis.							
[2,6-Dimethyl-4-Hexanone] = $(1.3-2.4)x10^{14}$							
molec.cm^{-3}. P(Total) = 735 torr.							
$[CH_3ONO]_o$ = $(0.9-4.0)x10^{14}$ molec.cm^{-3}.							
OH +  $\rightarrow$ products							
Hydroxyl + Bicyclo[3.1.1]hept-2-ene, 2,6,6-trimethyl- (α-Pinene)							
82 KLE/HAR	EX	297-424	8.25(12)	0	-446±75	2	
OH generated by H_2O flash-photolysis. Resonance-fluorescence. P(Total) = 50 torr. (Ar)							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
OH +  → products							
Hydroxyl + Bicyclo[3.1.1]heptane, 6,6-dimethyl-2-methylene- (β-Pinene)							
82 KLE/HAR	EX	297-424	1.42(13)	0	-358±58	2	
OH generated by the H_2O flash-photolysis. Resonance-fluorescence. P(Total) = 50 torr. (Ar)							
$OH + CH_3(CH_2)_8CH_3 \rightarrow H_2O + CH_3(CH_2)_8CH_2$ (a)							
$\rightarrow H_2O + CH_3(CH_2)_7CHCH_3$ (b)							
$\rightarrow H_2O + CH_3(CH_2)_6CHCH_2CH_3$ (c)							
$\rightarrow H_2O + CH_3(CH_2)_5CH(CH_2)_2CH_3$ (d)							
$\rightarrow H_2O + CH_3(CH_2)_4CH(CH_2)_3CH_3$ (e)							
Hydroxyl + Decane							
82 ATK/ASC3 [1])	RL	299	(2.00±0.09)			2/2	
$(k_a + k_b + k_c + k_d + k_e)/k_{ref}$.							
k_{ref}: $OH + CH_3(CH_2)_4CH_3 \rightarrow$ products.							
82 ATK/ASC3 [1])	RN	299	(6.87±0.36)(12)			2	
$k_a + k_b + k_c + k_d + k_e$.							
[1]) CH_3ONO/NO/Decane photolysis. P(Total) = 735 torr. $[CH_3ONO]_o = (2.1\text{-}4.0)\times10^{14}$ molec.cm^{-3}. [Decane] = $(1.2\text{-}2.4)\times10^{13}$ molec.cm^{-3}.							
$HO_2 + O_3 \rightarrow OH + O_2 + O_2$							
Hydroperoxo + Ozone							
73 AND/KAU2	EX	220-450	≤3.01(9)			2	
Upper-limit k.							
73 DEM	EX	300	1.81(9)			2	
73 SIM/HEI3	RN	225-298	1.98(10)	0	1007	2	
74 DEM/TSC	ES	273-342	1.20(11)	0	1560±252	2	2.0
79 SU/CAL1	ES	298	≤(1.33±0.66)(9)			2	
$Cl_2/O_3/H_2$ photolysis in O_2/N_2. FTIR-, and IR-Spectroscopy. Upper-limit k. P(Total) = 700 torr.							
80 ZAH/HOW	EX	245-365	(8.43±2.41)(9)	0	580±100	2	
Discharge-flow. Laser magnetic resonance.							
$HO_2 + HO_2 (+ M) \rightarrow H_2O_2 + O_2 (+ M)$							
Hydroperoxo							
72 HOC/GHO	EX	298	(5.7±0.5)(12)			2	
72 PAU/JOH	EX	295	(2.17±0.30)(12)			2	
75 HAM	EX	298	1.90(12)			2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
77 HAM/LII [1]	EX	298	1.51(12)			2	1.20
77 HAM/LII [1]	RL	298	2.83			2/2	
k_{ref}: $DO_2 + DO_2 \rightarrow H_2O_2 + O_2$.							
77 HAM/LII [1]	EX	298	1.51(12)			2	
[1]) Electron pulse radiolysis and Kinetic Spectrometry.							
$P(H_2)$ = 2 atm. $P(O_2)$ = 5 torr.							
78 COX [2]	EX	273	2.05(12)			2	
78 COX [2]	EX	298	(1.39±0.18)(12)			2	
78 COX [2]	EX	338	9.03(11)			2	
[2]) $Cl_2/H_2/NO_2$ photolysis in N_2/O_2. P = 1 atm.							
79 BUR/CLI	EX	298	≤7.23(11)			2	
Discharge-flow. Upper-limit k.							
79 COX/BUR	EX	273-339	(2.29±0.84)(10)	0	-1250±200	2	
UV-Absorption spectrometry. P = (3-760) torr. k dependent on $P(H_2O)$ and increasing with T. Negative values of E_a and pressure effects discussed in terms of a complex forming mechanism.							
79 GRA/WIN	EX	300	2.29(12)			2	2.0
Thermolysis of HO_2NO_2. P(Total) = 760 torr.							
79 LII/GOR	EX	276-400	(6.87±0.96)(10)	0	-1057±45	2	
Pulse-radiolysis. Kinetic Spctrophotometry.							
79 THR/WIL [3]	EX	298	(1.75±0.72)(11)			2	
P(He) = 2 torr.							
79 THR/WIL [3]	EX	298	(2.59±1.08)(11)			2	
P(He) = 3 torr.							
79 THR/WIL [3]	EX	298	(3.31±0.84)(11)			2	
P(He) = 4 torr.							
79 THR/WIL [3]	EX	298	(4.46±1.99)(11)			2	
P(Ar) = 2.2 torr.							
[3]) Laser magnetic-resonance spectroscopy in a flow-reactor.							
80 HOC/SWO2	EX	296	(4.0±0.7)(12)			2	
H_2O flash-photolysis in presence of O_2 and CO (or He). P = 760 torr.							
80 LII/GOR1 [4]	ES	290-400	(5.36±0.18)(10)	0	-1057	2	
80 LII/GOR1 [4]	ES	298	1.87(12)			2	
[4]) Electron pulse-radiolysis. Kinetic spectrophotometry. P(Total) = 1200 torr.							
81 BUR/COX [5]	EX	308	(1.25±0.12)(12)			2	
$P(H_2O)$ = 0							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 BUR/COX [5]	EX	308	(1.33±0.12)(12)			2	
$P(H_2O)$ = 3.0 torr.							
81 BUR/COX [5]	EX	348	(8.07±0.90)(11)			2	
$P(H_2O)$ = 0							
81 BUR/COX [5]	EX	348	(9.52±0.90)(11)			2	
$P(H_2O)$ = 10.5 torr.							
[5] $O_3/H_2O/O_2/N_2$ (or He) photolysis. Molecular Modulation. P(Total) = 760 torr.							
81 LII/SAU	ES	298-373	(5.54±0.12)(10)	0	-1057	2	
Pulse-radiolysis. k estimated in terms of a complex-forming mechanism.							
82 PAT/PIL	EX	298-510	(2.49±0.69)(11)	0	-630±115	2	
HO_2 generated by the $CH_3OH/O_2/Cl_2$ flash-photolysis in N_2.							
$P(CH_3OH)$ ~ $P(Cl_2)$ ~ 1.5 torr.							
P(Total) = 700 torr.							
$P(O_2)$ ~ 5 torr.							
82 SAN/PET [6]	EX	298	(9.64±1.20)(11)			2	
HO_2 generated by the $Cl_2/CH_3OH/O_2$ photolysis.							
82 SAN/PET [6]	EX	298	(1.54±0.11)(12)			2	
HO_2 generated by the $Cl_2/H_2/O_2$ photolysis.							
$P(H_2)$ = 130 torr. $P(O_2)$ = 560 torr.							
[6] Flash-photolysis. UV-absorption spectrometry.							
82 SIM/HEI [7]	EX	296	(8.43±1.20)(11)			2	
Limiting low-pressure k.							
82 SIM/HEI [7]	EX	296	(1.51±0.06)(12)			2	
$P(N_2)$ = 760 torr.							
[7] Flash-photolysis. UV-absorption spectrometry. HO_2 generated by the $Cl_2/CH_3OH/O_2$ photolysis. M = He, or N_2. P-dependent from 5 to 770 torr. $[HO_2]$ = $(1.3\text{-}3.3)\times10^{14}$ molec.cm^{-3}.							
82 THR/TYN2	EX	298-358	1.44(11)	0	-560	2	
Flash-photolysis combined with tunable-diode Laser-spectroscopy. HO_2 generated the $Cl_2/CH_3OH/O_2$ photolysis. k is P-independent within the given range. $[HO_2]_o$ = $(0.58\text{-}1.20)\times10^{15}$ molec.cm^{-3}. P(Total) = (7-20) torr.							
82 SAN/PET	EX	298	8.34(15)			3	
M = He. M-efficiencies relative to He are: 1.0(He), 1.61(Ar), 1.67(O_2), 1.33(N_2), 2.75(SF_6). Flash-photolysis. UV-Absorption-spectroscopy. HO_2 generated by photolysing $Cl_2/CH_3OH/O_2$. Limiting low-pressure k's within the (100-700) torr. range.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$DO_2 + DO_2 \rightarrow D_2O_2 + O_2$							
Hydroperoxo-d_2							
77 HAM/LII	EX	298	5.32(11)			2	1.20
77 HAM/LII	EX	298	5.32(12)			2	
Electro-n pulse radiolysis. Kinetic spectro-							
photometry. $P(H_2)$ = 2 atm. $P(O_2)$ = 5 torr.							
82 SAN/PET	EX	298	(4.22±0.24)(11)			2	
HO_2 generated by the $Cl_2/D_2/O_2$ flash-photolysis.							
UV-absorption spectrometry. P = 700 torr.							
$HO_2 + SO_2$ (+ M) $\rightarrow$ $OH + SO_3$ (+ M) (a)							
$\rightarrow$ HO_2SO_2 (+ M) (b)							
Hydroperoxo + Sulfur dioxide							
73 PAY/STI [1])	RN	300	(5.24±0.18)(8)			2	
79 BUR/CLI [1])	EX	298	≤1.20(7)			2	
Discharge-flow. Upper-limit k.							
79 GRA/WIN [1])	EX	300	≤6.02(5)			2	
HO_2NO_2 thermolysis. Upper-limit k.							
P(Total) = 760 torr.							
[1]) k_a.							
79 BUR/CLI	EX	298	≤1.45(14)			3	
k_b. M = He. Discharge-flow. Upper-limit k.							
HO_2 + NO (+ M) $\rightarrow$ O_2 + HNO (+ M) (a)							
$\rightarrow$ OH + NO_2 (+ M) (b)							
$\rightarrow$ $HONO_2$ (+ M) (c)							
Hydroperoxo + Nitrogen oxide (NO)							
79 HOW [1])	EX	271	<1.81(10)			2	
79 HOW [1])	EX	303	<6.02(9)			2	
[1]) k_a. Upper-limit k's. Discharge-flow.							
Laser-Magnetic Resonance.							
74 SIM/HEI2	RL	298	(7.0±1.0)			2/2	
k_b/k_{ref}.							
k_{ref}: $HO_2 + NO_2 \rightarrow HONO + O_2$							
73 PAY/STI [2])	ES	300	1.8(11)			2	3.0
73 SIM/HEI1 [2])	ES	298	>9.03(10)			2	
Lower-limit k.							
74 HAC/HOY2 [2])	EX	298-669	(2.0±1.0)(13)	0	1430	2	
75 COX [2])	ES	300	(7.23±1.81)(11)			2	
75 COX/DER1 [2])	ES	296	(7.23±1.81)(11)			2	
75 GLA/TRO [2])	ES	1350-1700	(4.5±1.0)(12)			2	
75 HAC/HOY [2])	EX	298-670	(1.2±0.3)(13)	0	1200±150	2	
76 SIM/HEI [2])	RN	296	(6.02±1.20)(11)			2	1.2

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
77 HOW/EVE [3])	EX	296	(4.88±0.90)(12)			2	
77 SIM/HEI [3])	ES	245-328	7.23(12)	0	705±252	2	
78 COX [3])	ES	283	2.47(12)			2	
$Cl_2/H_2/NO_2$ photolysis in molar N_2/O_2. P = 1 atm.							
78 MAR/AND [3])	EX	298	(4.22±1.81)(12)			2	
Discharge-flow. Resonance-fluorescence. Unreported T assumed to be 298 K.							
78 PRE [3])	EX	293	(2.4±0.7)(12)			2	
Laser Magnetic Resonance Spectrometry.							
78 SIM/HEI [3])	RN	245-328	7.23(12)	0	705±252	2	
Determined relative to the reaction: $HO_2 + HO_2 \rightarrow H_2O_2 + O_2$. $N_2O/H_2/O_2/NO$ Photolysis.							
79 BUR/CLI [3])	EX	298	(4.94±1.45)(12)			2	
Conventional discharge-flow system.							
79 HOW [3])	EX	232-403	(1.99±0.42)(12)	0	-254±50	2	
n = 0 assumed. Discharge-flow. Magnetic-Resonance.							
79 HOW [3])	EX	232-403	(4.79±0.61)(12)	-0.83	0	2	
Discharge-flow. Magnetic-Resonance. The preexponential factor expressed as: $A(T/298)^{-0.83}$.							
79 LEU [3])	EX	270-425	(3.43±3.37)(12)	0	-130±270	2	
Discharge-flow. Resonance-fluorescence.							
80 GLA/LEI [3])	EX	297	(6.63±1.81)(12)			2	
Discharge-flow. Same data given in 79 GLA/LEI.							
80 HAC/PRE [3])	EX	293	(4.6±1.0)(12)			2	
Isothermal discharge-flow. ESR-LMR Spectrometry.							
80 HOW [3])	EX	232-1271	(2.11±0.21)(12)	0	-240±30	2	
Discharge-flow. Laser Magnetic Resonance.							
80 LOR/AZA [3])	EX	873	9.64(11)			2	
H_2/O_2 combustion in presence of Propane and NO.							
81 THR/WIL1 [3])	EX	298	(4.16±0.36)(12)			2	
Laser magnetic resonance spectrometry.							
[3]) k_b.							
76 SIM/HEI	RL	295	(9.5±1.5)			2/2	
$(k_b + k_c)/k_{ref}$. Estimated ratio. k_{ref}: $HO_2 + NO_2 \rightarrow [HO_2NO_2]$.							
78 SIM/HEI	RL	245-328	(1.7±0.4)	0	0	2/2	
$(k_b + k_c)/k_{ref}$. k_{ref}: $HO_2 + NO_2 \rightarrow HONO + O_2$ (d) $\rightarrow HO_2NO_2$ (e) T-independent rate ratio assumed. $N_2O/H_2/O_2/NO$ Photolysis.							

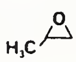
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
75 COX/DER1 [4])	ES	296	(8.43±2.11)(10)			2	
76 SIM/HEI [4])	RN	296	<1.20(9)			2	
Upper-limit k.							
78 SIM/HEI [4])	ES	245	≃(1.2±0.6)(10)			2	
$N_2O/H_2/O_2/NO$ photolysis.							
[4]) k_c.							
78 SIM/HEI	RL	245	(3.0±1.0)(-1)			2/2	
$N_2O/H_2/O_2/NO$ photolysis.							
$k_c/(k_b + k_c)$.							
79 HOW [5])	EX	271	<1.45(17)			3	
79 HOW [5])	EX	303	<4.72(16)			3	
[5]) k_c. M = He + O_2. Upper-limit k's.							
Discharge-flow.							
$DO_2 + NO \rightarrow OD + NO_2$							
Hydroperoxo-d + Nitrogen oxide (NO)							
80 GLA/LEI	EX	297	(6.63±2.11)(12)			2	
Discharge-flow. Same data given in 79 GLA/LEI.							
$HO_2 + NO_2 (+ M) \rightarrow HONO + O_2 (+ M)$ (a)							
$\rightarrow HO_2NO_2 (+ M)$ (b)							
Hydroperoxo + Nitrogen oxide (NO_2)							
75 GLA/TRO [1])	RL	1350-1700	(2.2±0.8)(-1)			2/2	
Estimated ratio. k_{ref}: $HO_2 + NO \rightarrow HO + NO_2$.							
77 LEV/USE [1])	RL	297	(4.3±2.0)(-2)			2/2	
Estimated ratio. k_{ref}: $HO_2 + NO \rightarrow OH + NO_2$.							
78 SIM/HEI [1])	RL	245	<8.7(-3)			2/2	
Upper-limit ratio. $N_2O/H_2/O_2/NO$ photolysis.							
k_{ref}: $HO_2 + NO \rightarrow OH + NO_2$ (a)							
$\rightarrow HONO_2$ (b)							
[1]) k_a/k_{ref}.							
77 LEV/USE	RL	297	(7.0±0.4)(-1)			2/2	
k_a/k_b. Estimated ratio.							
74 SIM/HEI2 [2])	ES	298	>1.81(11)			2	
Lower-limit k.							
75 COX [2])	RN	300	(7.23±1.81)(10)			2	
75 COX/DER1 [2])	ES	296	(7.23±1.81)(10)			2	
77 HOW [2])	EX	300	<1.81(9)			2	
Upper-limit k.							
80 LIT [2])	EX	263	<3.01(10)			2	
Conventional IR Absorption Spectroscopy.							
P = 30 torr. Upper-limit k.							
[2]) k_a.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
76 SIM/HEI	ES	296	(1.18±0.42)(11)			2	
$k_a + k_b$.							
77 COX/DER [3])	RL	273-328	(2.2±0.3)			2/2	
HONO Photolysis in presence of CO.							
k_{ref}: $HO_2 + NO \rightarrow OH + NO_2$							
77 LEV/USE [3])	RL	297	(5.8±2.0)(-2)			2/2	
k_{ref}: $HO_2 + NO \rightarrow OH + NO_2$.							
Estimated ratio.							
77 SIM/HEI [3])	RL	245	(6.1±1.5)(-1)			2/2	
k_{ref}: $HO_2 + NO \rightarrow OH + NO_2$.							
78 SIM/HEI [3])	RL	245	(6.1±1.5)(-1)			2/2	
$N_2O/H_2/O_2/NO$ photolysis.							
Estimated ratio.							
k_{ref}: $HO_2 + NO \rightarrow OH + NO_2$ (a)							
$\rightarrow HONO_2$ (b)							
[3]) k_b/k_{ref}.							
76 SIM/HEI [4])	ES	296	(5.90±2.10)(10)			2	
77 SIM/HEI [4])	ES	245-328	2.53(11)	0	0	2	
78 COX [4])	ES	283	5.42(11)			2	
High-pressure k, estimated by extrapolation experimental data. $Cl_2/H_2/NO_2$ photolysis in equimolar N_2/O_2 at P = 1 atm.							
78 SIM/HEI [4])	EX	245-328	2.53(11)	0	0	2	
$N_2O/H_2/O_2/NO$ photolysis. T-independent k.							
79 COX/PAT [4])	EX	283	(9.03±3.01)(11)			2	
Limiting high-pressure k. Molecular modulation-UV Absorption spectrometry.							
81 MOR/HEI [4])	EX	296	4.22(11)			2	2.0
Photolysis of NO_2 in presence of HCHO and O_2, at 360 nm.							
M = O_2(54 torr.) + HCHO(2 torr.)							
77 HOW [4])	EX	300	(7.58±1.89)(16)			3	
M = N_2. M-efficiencies relative to N_2 are: 1.00(N_2), 0.47(He), 0.72(O_2), 3.16(NO_2).							
78 COX [4])	EX	338	(9.07±1.09)(16)			3	
M = $N_2 + O_2$. Low-pressure k, determined on the basis of a simple Lindemann-Hinshelwood model. $Cl_2/H_2/NO_2$ photolysis in equimolar N_2/O_2. P = 1 atm.							
79 COX/PAT [4])	EX	283	(9.07±1.81)(16)			3	
Limiting low-pressure k. M = $N_2 + O_2$. Molecular modulation-UV Absorption Spectrometry.							
[4]) k_b.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$HO_2 + N_2O \rightarrow OH + N_2 + O_2$ (a)							
$\rightarrow$ any other products (b)							
Hydroperoxo + Nitrogen oxide (N_2O)							
79 HOW	EX	300-394	<3.01(6)				2
k_a. Discharge-flow system.							
Laser Magnetic Resonance. Upper-limit k.							
79 GRA/WIN	EX	300	≤1.20(4)				2
$k_{overall}$. Thermolysis of HO_2NO_2.							
Upper-limit k.							
P(Total) = 760 torr.							
79 HOW	EX	300-394	≤3.0(7)				2
$k_{overall}$. Discharge-flow system.							
Laser Magnetic Resonance. Upper-limit k.							
$HO_2 + NH_2 \rightarrow NH_3 + O_2$ (a)							
$\rightarrow H_2O + HNO$ (b)							
Hydroperoxo + Amidogen							
79 CHE/SAR	EX	298	(1.51±0.30)(13)				2
$k_a + k_b$. NH_3 flash-photolysis.							
Laser Spectroscopy.							
P = (100-570) torr.							
79 LOZ/NAD	RN	298	(3.67±1.51)(13)				2
$k_a + k_b$. Intraresonator Laser Spectroscopy.							
Flash-photolysis.							
P = (10-760) torr.							
79 NAD/SAR1	RL	298	≥3.0(-1)				2/2
$k_b/(k_a + k_b)$.							
NH_3/O_2 Pulse-photolysis.							
Intraresonator Laser Spectroscopy.							
Lower-limit ratio.							
$HO_2 + CO (+ M) \rightarrow OH + CO_2 (+ M)$							
Hydroperoxo + Carbon monoxide							
72 VAR/DAN	EX	878-952	1.33(14)	0	11575±1510		2
72 WES/DEH1	RL	298	(6.0±2.0)(-2)				2/2
k_{ref}: $HO_2 + H \rightarrow OH + OH$.							
Estimated ratio.							
73 GOR	EX	298	<9.6(7)				2
Upper-limit k.							
73 DAV/PAY	ES	300	≤6.02(3)				2
Estimated, upper-limit k.							
73 SIM/HEI1	ES	373-473	<3.01(6)				2
Estimated, upper-limit k.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
74 WYR/WEN	EX	310	≤1.6(10)			2	
Upper limit k derived from spectroscopic observations.							
74 WYR/WEN	EX	310	≤2.0(6)			2	
Upper limit k derived from CO_2 yield measurements.							
75 VAR/SAC	EX	878-952	(1.07±0.30)(14)	0	11575±1510	2	
77 ATR/BAL	RN	~773	5.8(13)	0	11547	2	
P(Total) = 500 torr.							
Determined relative to the reaction:							
$HO_2 + HO_2 \rightarrow H_2O_2 + O_2$.							
77 COL/NAE	ES	1110	5.6(9)			2	4.0
79 BUR/CLI	EX	298	≤1.20(7)			2	
Discharge-flow. Upper-limit k.							
79 GRA/WIN	EX	300	≤1.20(5)			2	
Thermolysis of HO_2NO_2.							
Upper-limit k.							
P(Total) = 760 torr.							
79 HOW [1])	EX	304	<2.41(7)			2	
79 HOW [1])	EX	394	<3.61(9)			2	
[1]) Discharge-flow. Upper-limit k's.							
79 BUR/CLI	EX	298	≤1.45(14)			3	
M = He. Discharge-flow. Upper-limit k.							
$HO_2 + CH_4 \rightarrow H_2O_2 + CH_3$							
Hydroperoxo + Methane							
72 SKI/LIF	ES	1000-2500	2.0(13)	0	9059	2	
$HO_2 + HCHO \rightarrow O_2 + CH_2OH$ (a)							
$\rightarrow H_2O_2 + CHO$ (b)							
$\rightarrow HO_2CH_2O \rightarrow HOCH_2O_2$ (c)							
Hydroperoxo + Formaldehyde							
81 TSU/HAS	DE	1200-1800	3.39(12)	0	9623	2	
k_a. M = Ar.							
Thermal oxidation of CH_3OH/O_2 in Ar behind reflected shock-waves.							
$k_1 = k_{-1}K$.							
71 BAL/LAN [1])	ES	713	1.36(9)			2	
71 BAL/LAN [1])	ES	673-773	1.0(12)	0	5033±1007	2	
72 BAL/FUL [1])	DE	673-773	9.6(8)			2	
71 VAR/SAC [1])	EX	773-973	1.14(13)	0	5234±1510	2	
Oxidation in quartz reactor.							
[1]) k_b.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
79 SU/CAL3	ES	298	~6.02(9)			2	
k_c.							
Photolysis of Cl_2/HCHO mixtures							
diluted in synthetic air.							
FTIR Spectroscopy.							
P(Total) ~ 700 torr.							
82 VEY/RAY	DE	298	(4.52±2.11)(10)			2	
k_c.							
HCHO/O_2/NO flash-photolysis.							
Data-fit by computer simulation							
on the basis of a proposed mechanism.							
$[NO]_o$ = (15-200) torr.							
$[O_2]_o$ = (2.5-45) torr.							
$[HCHO]_o$ = (2-30) torr.							
$HO_2 + CH_3O_2 \rightarrow O_2 + CH_3OOH$							
Hydroperoxo + Methyldioxy							
79 COX/TYN [1]	EX	274	(5.12±0.72)(12)			2	
79 COX/TYN [1]	EX	298	(3.61±0.54)(12)			2	
79 COX/TYN [1]	EX	338	(2.11±0.30)(12)			2	
80 COX/TYN [1]	EX	275-338	4.63(10)	0	-1296±364	2	3.4
P = 760 torr.							
[1]) Molecular Modulation UV-Absorption Spectrometry.							
$HO_2 + CH_3OH \rightarrow H_2O_2 + CH_2OH$							
Hydroperoxo + Methanol							
81 TSU/HAS	ES	1200-1800	1.0(12)	0	5052	2	
M = Ar.							
Thermal oxidation of CH_3OH/O_2 mixtures							
mixtures diluted in Ar, behind							
relfected shock-waves.							
$HO_2 + CH_2{=}CH_2 \rightarrow OH +$ 							
Hydroperoxo + Ethene							
73 WAL2	RL	773	(1.6±0.2)(-2)			2/2	
k_{ref}:							
$HO_2 + HCHO \rightarrow H_2O_2 + CHO$							
73 WAL2	ES	773	1.5(7)			2	
81 BAL/WAL1	ES	773	(5.0±1.0)(7)			2	
Oxidation of Ethene in H_2/O_2 mixtures							
in aged boric-acid-coated vessels.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$HO_2 + CH_3CH_3 \rightarrow H_2O_2 + CH_3CH_2$							
Hydroperoxo + Ethane							
71 BAL/LAN	RL	713	2.8(-2)			2/2	
k_{ref}: $CH_3CH_3 + HCHO \rightarrow$ products.							
Estimated ratio.							
73 BAL/FUL	RL	773	3.0(-2)			2/2	
k_{ref}: $HO_2 + HCHO \rightarrow H_2O_2 + CHO$.							
Rate ratio per primary C-H bond:							
$k_{prim}/k_{ref} = 0.005$							
73 BAL/FUL	RN	773	3.06(7)			2	
Rate constant per primary C-H bond:							
$k_{prim} = 5.1x10^6\ cm^3mol^{-1}s^{-1}$							
$HO_2 + CH_3CHO \rightarrow H_2O_2 + CH_3CO$							
Hydroperoxo + Acetaldehyde							
77 COL/NAE	ES	1030-1115	1.70(12)	0	5350	2	4.0
$HO_2 + CH_2CH_2OH \rightarrow O_2 + CH_3CH_2OH$ (a)							
$\rightarrow H_2O + HCHO + HCHO$ (b)							
Hydroperoxo + Ethyl, 2-hydroxy-							
76 MEA/HEI	RL	298	1.2			2/2	
k_a/k_b.							
$HO_2 + CH_3CH{=}CH_2 \rightarrow OH +$ 							
Hydroperoxo + 1-Propene							
77 SAR/VAR	ES	823	≤1.08(8)			2	
Oxidation of Formaldehyde							
in presence of Propane.							
Upper-limit k.							
81 BAL/WAL1	ES	773	1.5(8)			2	
Oxidation of 1-Propene in H_2/O_2							
mixtures, in aged boric-acid-							
coated vessels.							
$HO_2 + CH_3CH_2CH_3 \rightarrow H_2O_2 + (CH_3)_2CH$ (a)							
$\rightarrow H_2O_2 + CH_3CH_2CH_2$ (b)							
Hydroperoxo + Propane							
71 BAL/LAN	RL	713	7.8(-2)			2/2	
$(k_a + k_b)/k_{ref}$.							
k_{ref}: $HCHO + CH_3CH_2CH_3 \rightarrow$ products.							
71 BAL/LAN	RL	713	7.86(7)			2	
$k_a + k_b$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
73 BAL/FUL	RL	773	4.8(-2)			2/2	
k_a/k_{ref}. k_{ref}: HO_2 + HCHO → H_2O_2 + CHO.							
Rate ratio per secondary C-H bond:							
$k_{sec}/k_{ref} = 0.024$							
73 BAL/FUL	RN	773	4.8(7)			2	
k_a. Rate constant per secondary C-H bond:							
$k_{sec} = 2.4x10^7\ cm^3mol^{-1}s^{-1}$							
73 BAL/FUL	RL	773	3.0(-2)			2/2	
k_b/k_{ref}. k_{ref}: HO_2 + HCHO → H_2O_2 + CHO.							
Rate ratio per primary C-H bond:							
$k_{prim}/k_{ref} = 0.005$							
73 BAL/FUL	RN	773	3.06(7)			2	
k_b. Rate constant per primary C-H bond:							
$k_{prim} = 5.1x10^6\ cm^3mol^{-1}s^{-1}$							
HO_2 + CH_3CH_2CHO → H_2O_2 + CH_3CH_2CO							
Hydroperoxo + Propanal							
71 BAL/LAN	ES	713	1.82(9)			2	
79 BAL/LEW1	RN	713	(1.52±0.15)(9)			2	
Oxidation in an aged boric-acid-coated-vessel.							
HO_2 + trans-CH_3CH=$CHCH_3$ → products							
Hydroperoxo + 2-Butene, (E)-							
79 GRA/WIN	EX	300	≤2.41(6)			2	
Thermolysis of HO_2NO_2. Upper-limit k.							
P(Total) = 760 torr.							
HO_2 + $(CH_3)_3CH$ → H_2O_2 + $(CH_3)_3C$ (a)							
→ H_2O_2 + $(CH_3)_2CHCH_2$ (b)							
Hydroperoxo + Propane, 2-methyl-							
73 BAL/FUL	RL	773	1.33(-1)			2/2	
k_a/k_{ref}. k_{ref}: HO_2 + HCHO → H_2O_2 + CHO.							
Rate ratio per tertiary C-H bond:							
$k_{tert}/k_{ref} = 0.133$							
73 BAL/FUL	RN	773	1.35(8)			2	
k_a. Rate constant per tertiary C-H bond:							
$k_{tert} = 1.4x10^8\ cm^3mol^{-1}s^{-1}$							
73 BAL/FUL	RL	773	4.5(-2)			2/2	
k_b/k_{ref}. k_{ref}: HO_2 + HCHO → H_2O_2 + CHO.							
Rate ratio per primary C-H bond:							
$k_{prim}/k_{ref} = 0.005$							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
73 BAL/FUL	RN	773	4.59(7)			2	
k_b. Rate constant per primary C-H bond: $k_{prim} = 5.1x10^6\ cm^3mol^{-1}s^{-1}$							
71 BAL/LAN	RL	713	1.55(-1)			2/2	
$(k_a + k_b)/k_{ref}$. k_{ref}: HCHO + $(CH_3)_3CH$ → products.							
73 BAL/FUL	RL	773	1.78(-1)			2/2	
$(k_a + k_b)/k_{ref}$.							
73 BAL/FUL	RN	773	1.81(8)			2	
$k_a + k_b$.							
$HO_2 + CH_3CH_2CH_2CHO \rightarrow H_2O_2 + CH_3CH_2CH_2CO$							
Hydroperoxo + Butanal							
71 BAL/LAN	ES	713	2.41(9)			2	
$HO_2 + (CH_3)_2CHCHO \rightarrow H_2O_2 + (CH_3)_2CHCO$ (a)							
$\rightarrow H_2O_2 + (CH_3)_2CCHO$ (b)							
$\rightarrow H_2O_2 + CH_2CH(CH_3)CHO$ (c)							
Hydroperoxo + Propanal, 2-methyl-							
79 BAL/CLE [1])	EX	713	(1.83±0.10)(9)			2	
k_a.							
79 BAL/CLE [1])	EX	713	(1.4±0.2)(8)			2	
k_b.							
[1]) Oxidation in an aged boric-acid-coated vessel. P(Total) = 60 Atm.							
$HO_2 + (CH_3)_2C{=}C(CH_3)_2 \rightarrow$ products							
Hydroperoxo + 2-Butene, 2,3-dimethyl-							
79 GRA/WIN	EX	300	≤2.41(7)			2	
Thermolysis of HO_2NO_2. Upper-limit k. P(Total) = 760 torr.							
$HO_2 + (CH_3)_2CHCH(CH_3)_2 \rightarrow H_2O_2 + (CH_3)_2CHC(CH_3)_2$							
Hydroperoxo + Butane, 2,3-dimethyl-							
75 ALC/MIL	ES	373	2.5(5)			2	
Optimization.							
77 ALC/MIL	ES	373	2.5(5)			2	
Azomethane photolysis. Optimization.							
H_2O (+ M) → H + OH (+ M)							
Water							
78 BOP/KER	EX	3600-4800	1.26(14)	0	50327±1510	2	1.6
Shock-tube system. M = Ar/Kr mixture.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
D_2O (+ M) → D + OD (+ M)							
Water-d_2							
78 BOP/KER	EX	3600-4800	1.26(14)	0	50327±1510	2	1.6
Shock-tube system. M = Ar/Kr mixture.							
$H_2O + SO_3 \rightarrow H_2SO_4$							
Water + Sulfur trioxide							
75 CAS/DAV	EX	298	(5.48±1.20)(11)			2	
$H_2O + NO_2 \rightarrow OH + HONO$							
Water + Nitrogen oxide (NO_2)							
76 FIF	DE	1000-1380	8.3(12)	0	21138	2	
$k_1 = k_{-1}K$.							
$H_2O + NO_2 + NO_2 \rightarrow HONO + HONO_2$							
Water + Nitrogen oxide (NO_2)							
74 ENG/COR	EX	298	(5.50±0.29)(10)			3	
74 ENG/COR	EX	298-323	(7.79±1.09)(9)	0	-580±43	3	1.1
A and B recalculated from the reported data.							
79 STR/WEL	DE	296	2.90(9)			3	
Tunable diode-laser. Static reactor. Based on $k_1 = k_{-1}K$ and thermochemical data.							
$H_2O + N_2O_3 \rightarrow HNO_2 + HNO_2$							
Water + Nitrogen oxide (N_2O_3)							
75 ENG/COR	RN	298	1.2(7)			2	
75 ENG/COR	RN	313-323	(5.88±2.24)(13)	0	4605±120	2	
A and B recalculated from the reported data.							
$H_2O + N_2O_4 \rightarrow HONO + HONO_2$							
Water + Nitrogen oxide (N_2O_4)							
74 ENG/COR	EX	298	8.12(5)			2	
74 ENG/COR	EX	298-323	(3.74±0.76)(14)	0	5954±64	2	
A and B recalculated from the reported data.							

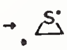
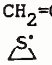
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$H_2O + N_2O_5 \rightarrow HONO_2 + HONO_2$							
Water + Nitrogen oxide (N_2O_5)							
73 MOR/NIK2	EX	298	≤7.83(3)			2	
Upper-limit k.							
H_2O_2 (+ M) → OH + OH (+ M) (a)							
→ any other products (b)							
Hydrogen peroxide							
71 KIJ/TRO	EX	870-1400	1.58(16)	0	21641	2	
k_a. M = Ar. Shock waves.							
79 BAS/KOG	EX	1095-1253	4.07(16)	0	21137±1761	2	4.5
k_a. M = Ar. Flow-reactor.							
71 TES/FOR	EX	717-754	3.16(18)	0	23553±654	2	2.51
$H_2O_2 + NO \rightarrow OH + HONO$							
Hydrogen peroxide + Nitrogen oxide (NO)							
72 GRA/LIS	EX	298	≤3.10(14)			2	
Upper-limit k. The reaction is assumed to occur entirely in gas phase.							
80 LIT	EX	263-283	≤6.02(4)			2	
IR-Absorption Spectroscopy. Upper-limit k. The reaction might be heterogeneous.							
$H_2O_2 + NO_2 \rightarrow HONO_2 + 1/2H_2O + 1/4O_2$ (overall)							
Hydrogen peroxide + Nitrogen oxide (NO_2)							
72 GRA/LIS	ES	298	≤6.0(5)			2	
Upper-limit k.							
$H_2O_2 + N_2O_5 \rightarrow HOONO_2 + HONO_2$							
Hydrogen peroxide + Nitrogen oxide (N_2O_5)							
80 LIT	EX	253-283	<6.02(5)			2	
IR-Absorption Spectroscopy. Upper limit k. P = (10-80) torr.							
$H_2O_2 + HONO_2 \rightarrow$ products							
Hydrogen peroxide + Nitric acid							
80 LIT	EX	263-283	<6.02(4)			2	
IR-Absorption Spectroscopy. Upper-limit k.							

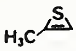
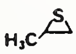
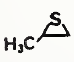
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$S + O_2 \rightarrow SO + O$							
Sulfur atom + Oxygen molecule							
71 FAI/VAN	EX	298	(1.7±0.2)(12)			2	
Flash photolysis. Vacuum-UV Kinetic Spectroscopy.							
72 DAV/KLE1	EX	252-423	(1.35±0.16)(12)	0	0±50	2	
72 DON/LIT	EX	295	(1.0±0.2)(12)			2	
75 CLY/TOW	EX	298	(9.03±1.87)(11)			2	
79 CLY/WHI	EX	296-410	(1.02±0.30)(12)	0	-153±108	2	
Resonance-fluorescence. Microwave-discharge.							
$S + O_3 \rightarrow SO + O_2$							
Sulfur atom + Ozone							
75 CLY/TOW	EX	298	(7.23±1.87)(12)			2	
$S(^1D) + H_2 \rightarrow$ products							
Sulfur atom + Hydrogen molecule							
72 LIT/DAL	RL	300	2.2(-1)			2	
k_{ref}: $S(^1D) + CH_2{=}CH_2 \rightarrow$ products.							
$S + S (+ M) \rightarrow S_2 (+ M)$							
Sulfur atom							
79 NIC/AMO	DE	295	(4.3±0.6)(18)			3	
Radio-frequency pulse. Kinetic Spectroscopy. High-vacuum. Computer simulation. P = (0.1-2) torr.							
$S + SH \rightarrow S_2 + H$							
Sulfur atom + Mercapto							
79 NIC/AMO	DE	295	<3.0(12)			2	
Radio-frequency pulse. Kinetic Spectroscopy. High-vacuum. Computer simulation. P = (0.1-2) torr. Upper-limit k.							
$S(^1D) + N_2 \rightarrow$ products							
Sulfur atom + Nitrogen molecule							
72 LIT/DAL	RL	300	6.2(-2)			2/2	
k_{ref}: $S(^1D) + CH_2{=}CH_2 \rightarrow$ products.							
$S(^1D) + NO \rightarrow$ products							
Sulfur atom + Nitrogen oxide (NO)							
72 LIT/DAL	RL	300	6.8(-1)			2/2	
k_{ref}: $S(^1D) + CH_2{=}CH_2 \rightarrow$ products.							

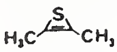
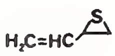
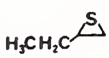
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
S + NO (+ M) → SNO (+ M)							
Sulfur atom + Nitrogen oxide (NO)							
78 VAN/OBI [1])	EX	298	(1.9±0.1)(17)			3	
M = CO_2. Low-pressure k.							
P(CO_2) <100 torr.							
78 VAN/OBI [1])	EX	298	(9.3±2.1)(12)			2	
M = CO_2.							
Limiting high-pressure k.							
[1]) Flash-photolysis.							
Vacuum-UV Absorption Spectroscopy.							
S + NO_2 → SO + NO							
Sulfur atom + Nitrogen oxide (NO_2)							
75 CLY/TOW	EX	298	(3.73±0.85)(13)			2	
79 CLY/WHI	EX	296-410	(2.95±0.60)(13)	0	-84±60	2	
Resonance-fluorescence. Microwave-discharge.							
S(^{1}D) + N_2O → NS + NO							
Sulfur atom + Nitrogen oxide (N_2O)							
72 LIT/DAL	RL	300	≃1.0(-1)			2/2	
k_{ref}:							
S(^{1}D) + CH_2=CH_2 → products.							
S(^{1}D) + CO → products							
Sulfur atom + Carbon monoxide							
72 LIT/DAL	RL	300	1.9(-1)			2/2	
k_{ref}:							
S(^{1}D) + CH_2=CH_2 → products.							
S(^{1}D) + CO_2 → products							
Sulfur atom + Carbon dioxide							
72 LIT/DAL	RL	300	2.4(-1)			2/2	
k_{ref}:							
S(^{1}D) + CH_2=CH_2 → products.							
S(^{1}D) + CH_4 → CH_3SH							
Sulfur atom + Methane							
72 LIT/DAL	RL	300	7.6(-2)			2/2	
k_{ref}:							
S(^{1}D) + CH_2=CH_2 → products.							
80 ADD/DON	EX	295	(1.08±0.18)(14)			2	
CS_2 photolysis.							
Time-Resolved Resonance-fluorescence.							

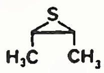
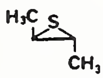
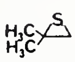
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$S + COS \rightarrow S_2 + CO$							
Sulfur atom + Carbon oxide sulfide							
72 JAK/AHM	RL	298	8.3(1)			2/2	
k_{ref}: $S + CH_2{=}CH_2 \rightarrow$ 							
72 JAK/AHM	RN	298	1.1(10)			2	
74 KLE/DAV	EX	233-445	(9.15±1.20)(11)	0	1827±60	2	
$S(^1D) + COS \rightarrow S_2 + CO$							
Sulfur atom + Carbon oxide sulfide							
72 LIT/DAL	RL	300	(1.5±0.5)			2/2	
k_{ref}: $S(^1D) + CH_2{=}CH_2 \rightarrow$ products.							
79 ADD/BYR	EX	290	(7.23±1.81)(13)			2	
COS UV-photolysis.							
Time-Resolved Atomic Absorption Spectroscopy.							
79 SHE/SAF [1]	RL	298	2.4			2/2	
k_{ref}: $S(^1D) + COS \rightarrow S + COS$.							
79 SHE/SAF [1]	RL	298	5.7(-1)			2/2	
k_{ref}: $S(^1D) + CH_2{=}CH_2 \rightarrow CH_2{=}CHSH$ (a)							
$\rightarrow$  (b)							
($k_{ref} = k_a + k_b$.)							
[1] UV-photolysis of COS in a high-vacuum system. Optimization.							
80 ADD/DON	EX	295	(1.81±0.60)(14)			2	
CS_2 photolysis.							
Time-Resolved Resonance-Fluorescence.							
$S + CH{\equiv}CH \rightarrow$  (a)							
$\rightarrow$:CHCHS† (b)							
Sulfur atom + Ethyne							
71 STR/O'C	RL	298-450	6.2	0	1007	2/2	
k_a/k_{ref}.							
Conventional photolysis method.							
k_{ref}: $S + CH_2{=}CH_2 \rightarrow$ 							

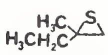
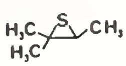
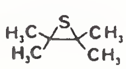
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
73 LIT/DON	EX	295	(3.01±0.30)(11)			2	
k_a. Flash-photolysis of COS in Ar.							
P(COS) = 0.1 torr.							
P(Ar) = 150 torr.							
78 VAN/SAF [1])	EX	298	(2.3±0.4)(11)			2	
78 VAN/SAF [1])	EX	298-484	(3.4±1.9)(13)	0	1510±201	2	
[1]) k_b. Flash-photolysis. Vacuum-UV Absorption Spectroscopy. A spin-allowed, least motion primary path is assumed.							
$S(^1D) + CH{\equiv}CH \rightarrow$ 							
Sulfur atom + Ethyne							
73 LIT/DON	RL	295	(2.5±0.4)			2/2	
COS Flash-photolysis in Ar.							
k_{ref}: $S(^1D) + CO_2 \rightarrow S(^3P) + CO_2$.							
P(Ar) = 150 torr.							
$S + CD{\equiv}CD \rightarrow :CDCDS^{\dagger}$							
Sulfur atom + Ethyne-d_2							
78 VAN/SAF	EX	298	(2.3±0.4)(11)			2	
Flash-photolysis. Vacuum-UV Absorption Spectroscopy. A spin-allowed, least motion primary path is assumed.							
$S + CH_2{=}CH_2 \rightarrow$ 							
Sulfur atom + Ethene							
71 CON/VAN	EX	298	(9.0±1.0)(11)			2	
Flash-photolysis method.							
71 STR/O'C	ES	298-450	≤1.0(13)	0	755	2	
Conventional photolysis method.							
72 DAV/KLE2	ES	218-442	(4.29±0.45)(12)	0	795±40	2	
$S + CH_2{=}CD_2 \rightarrow$ 							
Sulfur atom + Ethene-1,1-d_2							
71 STR/O'C	RL	298-450	1.07	0	0	2/2	
Conventional photolysis method.							
k_{ref}: $S + CH_2{=}CH_2 \rightarrow$ 							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
S + cis-CHD=CHD → 							
Sulfur atom + Ethene-1,2-d_2, (Z)-							
71 STR/O'C	RL	298-450	1.04	0	0	2/2	
Conventional photolysis method.							
k_{ref}: S + CH_2=CH_2 → 							
S + CD_2=CD_2 → 							
Sulfur atom + Ethene-d_4							
71 STR/O'C	RL	298-450	1.14	0	0	2/2	
Conventional photolysis method.							
k_{ref}: S + CH_2=CH_2 → 							
S(^{1}D) + CH_2=CH_2 → CH_2=CHSH (a)							
→  **(b)**							
Sulfur atom + Ethene							
79 SHE/SAF [1])	RN	298	4.2(13)			2	
k_a.							
79 SHE/SAF [1])	DE	298	3.8(13)			2	
k_b.							
[1]) UV-photolysis of COS.							
Optimization.							
S(^{1}D) + CH_3CH_3 → products							
Sulfur atom + Ethane							
72 LIT/DAL	RL	300	1.7(-1)			2/2	
k_{ref}: S(^{1}D) + CH_2=CH_2 → CH_2=CHSH (a)							
→  (b)							
S +  **→ S_2 + CH_2=CH_2**							
Sulfur atom + Thiirane (Ethylene episulfide)							
71 STR/O'C	RL	298-450	8.3	0	-906	2/2	
Conventional photolysis method.							
k_{ref}: S + CH_2=CH_2 → 							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
S + $CH_3C{\equiv}CH$ →  (a)							
→ $:C(CH_3)CHS^{\dagger}$ (b)							
Sulfur atom + 1-Propyne							
71 STR/O'C	RL	298-450	6.2	0	453	2/2	
k_a/k_{ref}. Conventional photolysis.							
k_{ref}: S + $CH_2{=}CH_2$ → 							
78 VAN/SAF [1]	EX	298	(4.8±0.2)(12)			2	
78 VAN/SAF [1]	EX	298-449	(2.0±1.2)(13)	0	453±101	2	
[1] k_b. Flash-photolysis. Absorption spectroscopy. A spin-allowed, least motion primary path assumed.							
S + $CH_3CH{=}CH_2$ → 							
Sulfur atom + 1-Propene							
71 CON/VAN [1]	RL	298	(7.5±1.3)			2/2	
k_{ref}: S + $CH_2{=}CH_2$ → 							
71 CON/VAN [1]	RN	298	(6.0±1.0)(11)			2	
[1] Flash-photolysis.							
71 STR/O'C	RL	298-450	1.0	0	-574	2/2	
Conventional photolysis.							
k_{ref}: S + $CH_2{=}CH_2$ → 							
73 KLE/DAV2	EX	214-500	(3.63±0.43)(12)	0	191±45	2	
S +  → S_2 + $CH_3CH{=}CH_2$							
Sulfur atom + Thiirane, methyl-							
71 STR/O'C	RL	298-450	8.4	0	-1057	2/2	
Conventional photolysis.							
k_{ref}: S + $CH_2{=}CH_2$ → 							
S + $CH_3CH_2C{\equiv}CH$ → $:C(CH_2CH_3)CHS^{\dagger}$							
Sulfur atom + 1-Butyne							
78 VAN/SAF	EX	298	(3.3±0.2)(12)			2	
Flash-photolysis. Absorption Spectroscopy. A spin allowed, least motion primary path assumed.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
S + $CH_3C{\equiv}CCH_3$ →  (a)							
→ $:C(CH_3)C(S)CH_3$† (b)							
Sulfur atom + 2-Butyne							
71 STR/O'C	RL	298-450	2.7	0	-654	2/2	
k_a/k_{ref}.							
Conventional photolysis.							
k_{ref}:							
S + $CH_2{=}CH_2$ → 							
78 VAN/SAF	EX	298	(1.6±0.2)(13)			2	
k_b. Flash-photolysis.							
Absorption-spectroscopy. A spin-allowed,							
least motion primary path assumed.							
S + $CH_2{=}CHCH{=}CH_2$ → 							
Sulfur atom + 1,3-Butadiene							
71 STR/O'C	RL	298-450	2.4	0	-1027	2/2	
Conventional photolysis.							
k_{ref}:							
S + $CH_2{=}CH_2$ → 							
S + $CH_3CH_2CH{=}CH_2$ → 							
Sulfur atom + 1-Butene							
71 CON/VAN [1])	RL	298	(1.1±0.2)(1)			2/2	
k_{ref}:							
S + $CH_2{=}CH_2$ → 							
71 CON/VAN [1])	RN	298	(9.1±1.0)(12)			2	
[1]) Flash-photolysis method.							
71 STR/O'C	RL	298-450	7.5(-1)	0	-866	2/2	
Conventional photolysis.							
k_{ref}:							
S + $CH_2{=}CH_2$ → 							
73 KLE/DAV2	EX	216-475	(4.46±0.69)(12)	0	181±45	2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
S + cis-CH_3CH=$CHCH_3$ → 							
Sulfur atom + 2-Butene, (Z)-							
71 STR/O'C	RL	298-450	5.3(-1)	0	-1052	2/2	
Conventional photolysis.							
k_{ref}:							
S + CH_2=CH_2 → 							
73 DAV/KLE	EX	219-500	(2.82±0.42)(12)	0	-116±45	2	
S + trans-CH_3CH=$CHCH_3$ → 							
Sulfur atom + 2-Butene, (E)-							
71 CON/VAN [1])	RL	298	(1.5±0.3)(1)			2/2	
k_{ref}:							
S + CH_2=CH_2 → 							
71 CON/VAN [1])	RN	298	(1.2±0.2)(13)			2	
[1]) Flash-photolysis method.							
71 STR/O'C	RL	298-450	6.5(-1)	0	-1012	2/2	
Conventional photolysis.							
k_{ref}:							
S + CH_2=CH_2 → 							
S + $(CH_3)_2C$=CH_2 → 							
Sulfur atom + 1-Propene, 2-methyl-							
71 CON/VAN [1])	RL	298	(4.5±0.6)(1)			2/2	
k_{ref}:							
S + CH_2=CH_2 → 							
71 CON/VAN [1])	RN	298	(3.6±0.5)(13)			2	
[1]) Flash-photolysis.							
71 STR/O'C	RL	298-450	9.7(-1)	0	-1188	2/2	
Conventional photolysis.							
k_{ref}:							
S + CH_2=CH_2 → 							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$S + CH_3CH_2C{\equiv}CCH_3 \rightarrow :C(CH_3)C(S)CH_2CH_3^{\dagger}$ (a)							
$\rightarrow :C(CH_2CH_3)C(S)CH_3^{\dagger}$ (b)							
Sulfur atom + 2-Pentyne							
78 VAN/SAF	EX	298	(1.8±0.2)(13)			2	
$k_a + k_b$.							
Flash-photolysis.							
Absorption Spectroscopy. A spin-allowed, least motion primary path assumed.							
S + 							
Sulfur atom + Cyclopentene							
71 STR/O'C	RL	298-450	6.7(-1)	0	-1082	2/2	
Conventional photolysis.							
k_{ref}: $S + CH_2{=}CH_2 \rightarrow$ 							
$S + CH_3CH_2C(CH_3){=}CH_2 \rightarrow$ 							
Sulfur atom + 1-Butene, 2-methyl-							
71 STR/O'C	RL	298-450	7.8(-1)	0	-1424	2/2	
Conventional photolysis.							
k_{ref}: $S + CH_2{=}CH_2 \rightarrow$ 							
$S + (CH_3)_2C{=}CHCH_3 \rightarrow$ 							
Sulfur atom + 2-Butene, 2-methyl-							
71 STR/O'C	RL	298-450	5.1(-1)	0	-1515	2/2	
Conventional photolysis.							
k_{ref}: $S + CH_2{=}CH_2 \rightarrow$ 							
$S + (CH_3)_2C{=}C(CH_3)_2 \rightarrow$ 							
Sulfur atom + 2-Butene, 2,3-dimethyl-							
71 CON/VAN [1])	RL	298	(7.7±1.0)(1)			2/2	
k_{ref}: $S + CH_2{=}CH_2 \rightarrow$ 							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
71 CON/VAN [1]	RN	298	≥(6.2±0.8)(13)			2	
Lower-limit k.							
[1]) Flash-photolysis.							
71 STR/O'C	RL	298-450	5.0(-1)	0	-1691	2/2	
Conventional photolysis.							
k_{ref}: S + CH_2=CH_2 → 							
73 DAV/KLE	EX	252-500	(2.82±1.02)(12)	0	-649±116	2	
S_2 (+ M) → S + S (+ M)							
Sulfur dimer							
80 HIG/SAI	EX	4500-6000	4.79(13)	0	38752	2	
M = Ar.							
COS pyrolysis behind incident shock-waves.							
Possibly an upper-limit k.							
P = (240-380) torr.							
S_2 + S_2 (+ M) → S_4 (+ M)							
Sulfur dimer							
72 LAN/OLD	ES	293	9.07(17)			3	10.0
M = CO_2.							
73 LAN/OLD	ES	293	3.6(18)			3	5.0
M = CO_2.							
79 NIC/AMO	DE	295	(8.0±1.0)(18)			3	
Radio-frequency pulse.							
Kinetic Spectroscopy. High-vacuum.							
k determined by computer simulation.							
P = (0.1-2) torr.							
SO (+ M) → S + O (+ M)							
Sulfur monoxide							
78 AST/GLA	EX	5700-7200	1.58(14)	0	55331±3608	2	4.0
M = Ar.							
Incident or reflected shock-waves.							
Rate constant expressed as k[Ar].							
SO + O_2 → SO_2 + O							
Sulfur monoxide + Oxygen molecule							
72 BRE/MIL	EX	297	<5.0(7)			2	
Fast-flow. EPR detection.							
Upper-limit k.							
P(Total) = 0.45 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 BLA/SHA1 [1])	EX	298	(6.44±0.96)(7)			2	
82 BLA/SHA2 [1])	EX	230-420	1.44(11)	0	2370±250	2	2.1
[1]) ArF Laser-photodissociation of SO_2 at 193 nm. in He. P(He) < 400 torr. $P(SO_2)$ ~ 30 mtorr. $P(O_2)$ < 500 torr.							
SO + SO (+ M) → SO_2 + S (+ M)							
Sulfur monoxide							
72 BRE/MIL	EX	297	<3.0(10)			2	
Fast-flow technique with EPR detection. P(Total) = 0.45 torr. Upper-limit k.							
75 CHU/CAL	ES	298	(5.0±4.0)(8)			2	
Best fit.							
80 HER/HUI	EX	298	1.6(17)			3	
M = N_2. Tubular flow-reactor. Mass-spectrometry.							
SO + SO_3 → SO_2 + SO_2							
Sulfur monoxide + Sulfur trioxide							
75 CHU/CAL	ES	298	(1.2±0.7)(9)			2	
Best fit.							
SO + $(SO)_2$ → SO_2 + S_2O							
Sulfur monoxide + Sulfur monoxide dimer							
80 HER/HUI	EX	298	2.0(10)			2	
Tubular flow-reactor. Mass-spectrometry.							
SO + NO_2 → SO_2 + NO							
Sulfur monoxide + Nitrogen oxide (NO_2)							
71 MIY/TAK2	EX	298	(1.23±0.15)(12)			2	
80 CLY/MAC	EX	295	(8.19±0.60)(12)			2	
Discharge-flow. Mass-spectrometry.							
82 BLA/SHA1	EX	298	(8.91±1.20)(12)			2	
ArF Laser-photodissociation of SO_2 at 193 nm. in presence of diluent gas. P(He) = (100-500) torr. $P(SO_2)$ ~ 30 mtorr.							
SO_2 (+ M) → SO + O (+ M)							
Sulfur dioxide							
75 KIE	EX	2900-5200	1.70(16)	0	56366±2013	2	
M = Kr. Incident shock-waves. (3-30)% SO_2 and (70-97)% Kr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
78 AST/GLA	EX	3700-7500	3.98(14)	0	53888±2165	2	2.0
M = Ar. Incident or reflected shock-waves.							
[Ar] = $(0.3-4.0)\times10^{19}$ molec.cm^{-3}							
Rate constant expressed as k[Ar].							
78 JUS/RIM	EX	2500-3400	2.9(16)	0	58590±2270	2	2.2
M.= Ar. Reflected shock-waves.							
79 GRI/REE [1])	EX	2800-3880	(8.0±2.0)(15)	0	54353	2	
Total dens.: $(0.5-2.0)\times10^{19}$ molec.cm^{-3}.							
79 GRI/REE [1])	SE	2500-5200	1.5(16)	0	56366	2	
Extended T-range, for M = Ar, or Kr.							
About a factor of 20 above literature values.							
[1]) M = Ar. Reflected shock-waves.							
80 RAJ/BAB [2])	EX	4000-6000	3.34(15)	0	54152	2	
M = Ar.							
80 RAJ/BAB [2])	EX	4000-6000	5.02(14)	0	33518	2	
M = SO_2.							
[2]) Thermolysis of SO_2 behind incident shock-waves.							
P = (1.0-2.5) torr.							
80 SAI/YOK2	EX	4300-6200	3.55(14)	0	52805	2	
M = Ar. Thermolysis of SO_2 behind reflected shock-waves.							
Total dens. = $(0.5-1.4)\times10^{18}$ molec.cm^{-3}.							
82 RAJ/BAB [3])	EX	4000-6000	3.34(15)	0	54152	2	
M = Ar.							
82 RAJ/BAB [3])	EX	4000-6000	5.02(14)	0	33518	2	
M = SO_2.							
[3]) Dissociation of SO_2 behind incident shock-waves, in Ar. Gas-chromatography.							
P_o = (1.0-2.5) torr.							
$SO_2 + SO_2(^1B_1) \rightarrow SO(^1\Delta_g, ^3\Sigma^-) + SO_3$							
Sulfur dioxide							
75 CHU/CAL	ES	298	(2.2±0.5)(12)			2	
$SO_2 + SO_2(^3B_1) \rightarrow SO(^3\Sigma^-) + SO_3$							
Sulfur dioxide							
75 CHU/CAL	ES	298	(4.2±0.4)(10)			2	
$SO_2 + NO_2 \rightarrow SO_3 + NO$							
Sulfur dioxide + Nitrogen oxide (NO_2)							
71 ARM/CUL	EX	703-1193	6.31(12)	0	13588	2	
77 FRE/PAL	EX	703-1850	6.31(12)	0	13588	2	
Extended validity of k reported in 71 ARM/CUL.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$SO_2 + NO_3 \rightarrow SO_3 + NO_2$							
Sulfur dioxide + Nitrogen dioxide (NO_2)							
75 DAU/CAL	ES	300	≤4.2(3)			2	
Upper-limit k.							
$SO_2 + N_2O_5 \rightarrow SO_3 + N_2O_4$							
Sulfur dioxide + Nitrogen oxide (N_2O_5)							
75 DAU/CAL	ES	300	≤2.5(1)			2	
Upper-limit k.							
$SO_2 + CO \rightarrow$ products							
Sulfur dioxide + Carbon monoxide							
71 BAU/JEF	EX	1770-2453	2.69(12)	0	24303±604	2	1.32
M = Ar.							
P = (27-170) torr.							
$SO_2^* + CO \rightarrow SO + CO_2$							
Sulfur dioxide + Carbon monoxide							
73 CEH/HEI [1])	RL	300	5.0(-4)			2/2	
At 2537 A_o.							
73 CEH/HEI [1])	RL	300	1.5(-3)			2/2	
At 3130 A_o.							
73 CEH/HEI [1])	RL	300	4.12(2)			2/1	
At 3130-3261 A_o. The rate ratio to be multiplied by a facto α, dependent on the experimental conditions.							
[1]) k_{ref}: $SO_2^* \rightarrow$ products. SO2* is a vibrationally excited singlet.							
$SO_2^{**} + CO \rightarrow SO + CO_2$							
Sulfur dioxide + Carbon monoxide							
73 CEH/HEI [1])	RL	300	2.24(2)			2/1	1.4
At 2536 A_o.							
73 CEH/HEI [1])	RL	300	3.37(2)			2/1	1.4
At 3130 A_o.							
73 CEH/HEI [1])	RL	300	4.68(2)			2/1	1.4
At 3261 A_o.							
[1]) k_{ref}: $SO_2^{**} \rightarrow SO_2$. SO_2^{**} is a chemically active triplet. The rate ratio to be multiplied by a factor β, depending on the experimental conditionas.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
SO_2 + CH≡CH → CO + other products							
Sulfur dioxide + Ethyne							
71 FIF/MOR	ES	1500-2150	5.46(11)	0.5	20533	2	
The preexponential factor expressed as: $A(T/298)^{0.5}$.							
$SO_2(^3B_1)$ + CH≡CH → CO + other products							
Sulfur dioxide + Ethyne							
77 SU/CAL	EX	298	1.56(12)			2	
Photolysis of SO_2/CH≡CH mixtures.							
$SO_2(^3B_1)$ + cis-CH_3CH=$CHCH_3$ → [cis-CH_3CH=$CHCH_3.SO_2]^*$							
Sulfur dioxide + 2-Butene, (Z)-							
74 DEM/CAL	ES	294	(1.29±0.18)(14)			2	
$SO_2(^3B_1)$ + trans-CH_3CH=$CHCH_3$ → [trans-CH_3CH=$CHCH_3.SO_2]^*$							
Sulfur dioxide + 2-Butene, (E)-							
74 DEM/CAL	ES	294	(1.22±0.15)(14)			2	
$SO_2(^1B_1)$ + $(CH_3)_3CH$ → products							
Sulfur dioxide + Propane, 2-methyl-							
78 SU/CAL	EX	298	8.4(12)			2	
SO_2 photolysis. P < 10 torr.							
$SO_2(^3B_1)$ + $(CH_3)_3CH$ → products							
Sulfur dioxide + Propane, 2-methyl-							
78 SU/CAL	EX	298	8.7(11)			2	
SO_2 photolysis. P < 10 torr.							
$SO_2(^3B_1)$ + cis-CH_3CH_2CH=$CHCH_3$ → [CH_3CH_2CH=$CHCH_3.SO_2]^*$ → SO_2 + trans-CH_3CH_2CH=$CHCH_3$							
Sulfur dioxide + 2-Pentene, (Z)-							
76 WAM	ES	295	(6.33±1.25)(13)			2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$SO_2(^3B_1)$ + trans-$CH_3CH_2CH{=}CHCH_3$ → $[CH_3CH_2CH{=}CHCH_3.SO_2]^*$ → SO_2 + cis-$CH_3CH_2CH{=}CHCH_3$							
Sulfur dioxide + 2-Pentene, (E)-							
76 WAM	ES	295	(1.0±0.27)(14)			2	
SO_3 (+ M) → SO_2 + O (+ M)							
Sulfur trioxide							
79 AST/GLA	EX	1700-2500	3.16(15)	0	31875±1323	2	1.6
M = Ar. Incident or reflected shock-waves.							
k expressed as k[Ar]. Supersedes 78 AST/GLA.							
[Ar] = $(0.5-4.2)x10^{19}$ $molec.cm^{-3}$.							
SH + D_2 → HDS + D							
Mercapto + Deuterium molecule							
77 PRA/ROG	EX	808-937	1.35(13)	0	3530±220	2	1.8
Static system.							
SH + SH → H_2S + S							
Mercapto							
72 LAN/OLD	ES	293	≤1.81(13)			2	
Upper-limit k.							
73 BRA/TRU	EX	298	7.8(12)			2	
79 NIC/AMO	DE	295	(1.9±0.2)(13)			2	
Radio-frequency pulse. Kinetic Spectroscopy.							
High-vacuum.							
P = (0.1-2) torr.							
SH + NO → products							
Mercapto + Nitrogen oxide (NO)							
73 BRA/TRU	RN	298	6.3(11)			2	
H_2S (+ M) → SH + H (+ M)							
Hydrogen sulfide							
76 HIG/SAI [1])	ES	2380-3010	1.26(16)	0	46301	2	
77 BOW/DOD [1])	EX	2700-3800	2.00(14)	0	37288±962	2	1.51
82 ROT/LOE1 [1])	EX	1965-2560	4.64(14)	0	41500	2	
Thermolysis behind reflected shock-waves.							
Atomic Resonance Absorption-Spectroscopy.							
$[H_2S] = (0.6-4.9)x10^{15}$ $molec.cm^{-3}$.							
[Ar] = $(5.0-8.0)x10^{18}$ $molec.cm^{-3}$.							
P(Total) = (1350-1500) torr.							
[1]) M = Ar.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$N(^4S) + O_2 \rightarrow NO(v=n) + O$							
Nitrogen atom + Oxygen molecule							
81 RAH/GIB [1]	EX	298	(3.31±0.84)(6)			2	
n = 2.							
81 RAH/GIB [1]	EX	298	(3.43±0.54)(6)			2	
n = 3.							
81 RAH/GIB [1]	EX	298	(1.99±0.18)(6)			2	
n = 4.							
81 RAH/GIB [1]	EX	298	(1.45±0.24)(6)			2	
n = 5.							
81 RAH/GIB [1]	EX	298	(4.22±1.20)(5)			2	
n = 6.							
81 RAH/GIB [1]	EX	298	(3.01±1.20)(5)			2	
n = 7.							
[1] Fourier Transform IR Spectrometry.							
$P(N_2)$ = 250 mtorr.							
$P(O_2)$ = 500 mtorr.							
$N(^2D) + O_2 \rightarrow NO + O$							
Nitrogen atom + Oxygen molecule							
71 LIN/KAU	EX	300	(3.61±1.20)(12)			2	
71 SLA/WOO	EX	237	4.94(12)			2	
71 SLA/WOO	EX	295	4.46(12)			2	
71 SLA/WOO	EX	365	5.18(12)			2	
71 SLA/WOO	EX	1000	8.43(12)			2	
Extrapolated rate constant.							
71 SLA/WOO	EX	237-365	4.68(12)	0.5	0	2	
The A-factor recalculated from the given $T^{0.5}$ term and the above experimental rate constants. The preexponential factor expressed as: $A(T/298)^{0.5}$.							
72 HUS/KIR2	EX	300	(5.60±1.33)(12)			2	
$N(^2P) + O_2 \rightarrow NO + O$							
Nitrogen atom + Oxygen molecule							
72 HUS/KIR2	EX	300	(2.77±1.51)(12)			2	
$N + O_2(^1\Delta_g) \rightarrow NO + O$							
Nitrogen atom + Oxygen molecule							
73 SCH/SCH2	EX	300	(1.35±0.52)(9)			2	
73 SCH/SCH2	SE	300	1.63(9)			2	
Average of present and literature data.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$N + O_3 \rightarrow NO + O_2$							
Nitrogen atom + Ozone							
79 STI/PAY	EX	298	<3.01(8)			2	
Discharge-flow. Flash-photolysis. Resonance-fluorescence. Upper-limit k.							
$N(^2D) + O_3 \rightarrow NO + O_2$							
Nitrogen atom + Ozone							
80 HUS/SLA2	EX	300	>2.41(12)			2	
UV-photolysis of N_2O. Time-resolved Resonance-Fluorescence. Lower-limit k.							
$N(^2D) + H_2 \rightarrow NH + H$							
Nitrogen atom + Hydrogen molecule							
72 HUS/KIR2	EX	300	(1.02±0.30)(12)			2	
$N + H_2 (+ M) \rightarrow NH_2 (+ M)$							
Nitrogen atom + Hydrogen molecule							
81 PET/SAP	EX	298	≤3.63(11)			3	
Discharge-flow. N atoms produced by dissociation of N_2 in a glow-discharge. Unreported T assumed to be 298 K. Upper-limit k. $[H_2]$ ~$1.3x10^{17}$ molec.cm^{-3}. [M] = $3.6x10^{17}$ molec.cm^{-3}. $P(H_2)$ = (0.2-0.4) torr.							
$N + OH \rightarrow NO + H$							
Nitrogen atom + Hydroxyl							
77 HAY1	RL	1950-2380	(1.0±0.2)			2/2	
Fuel-rich, Ethylene-, and Acetylene-air flames. k_{ref}: $N + NO \rightarrow N_2 + O$.							
80 HOW/SMI	EX	298	(3.01±0.72)(13)			2	
Discharge-flow. H_2O Flash-photolysis. Resonance-fluorescence. P(Total) = 3.75 torr.							
81 HOW/SMI	EX	250-515	(3.20±0.27)(13)	-0.25	0	2	
Discharge-flow. OH radicals formed by H_2O Flash-photolysis. N atoms formed by dissociation of ~1% N_2 in Ar. Resonance-fluorescence. The pre-exponential factor expressed as: $A(T/298)^{-0.25}$. [N] = $(0.5-5.1)x10^{13}$ molec.cm^{-3}.							
81 MOR2	RL	1790-2200	(1.0±0.3)			2/2	
Premixed $H_2/O_2/Ar$ flames. Laser-fluorescence. P = 760 torr. k_{ref}: $N + NO \rightarrow N_2 + O$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$N(^2D) + H_2O \rightarrow$ products							
Nitrogen atom + Water							
76 SLA/BLA3	EX	198-372	(1.51±0.30)(14)			2	
Vacuum UV-Photolysis. P(He) = 7 torr.							
$P(N_2O + Ar)$ = 7 torr.(1% N_2O in Ar).							
$N + SO_3 \rightarrow NO + SO_2$							
Nitrogen atom + Sulfur trioxide							
72 JAC/WIN	EX	300	3.07(8)			2	
75 WES/DEH1	EX	298	≤6.0(6)			2	
Upper-limit k.							
$N + N (+ M) \rightarrow N_2 (+ M)$							
Nitrogen atom							
75 BED/TCH	EX	298	(7.58±1.96)(15)			3	
M = N_2. Electron Paramagnetic Resonance.							
P = (2.2-3.2) torr.							
78 EME/MAR [1])	EX	300	(8.34±1.81)(15)			3	
M = Ar.							
78 EME/MAR [1])	EX	300	(7.98±0.73)(15)			3	
M = He.							
78 EME/MAR [1])	EX	300	(3.99±1.45)(15)			2	
M = N_2.							
[1]) ESR-jet-flow technique.							
P(Total) = (1.5-8.0) torr.							
79 YAM	EX	298	(2.61±0.07)(15)			3	
M = N_2. Recombination of N atoms in							
Lewis-Rayleigh Nitrogen afterglow.							
$P(N_2)$ < 4.2 torr.							
$N + NO \rightarrow N_2 + O$							
Nitrogen atom + Nitrogen oxide (NO)							
75 CLY/MCD	EX	298-670	(4.94±0.84)(13)	0	410±120	2	
75 CLY/MCD	EX	298	(1.33±0.84)(13)			2	
78 LEE/MIC3	EX	196-400	(2.41±0.12)(13)	0	0	2	
Discharge-flow, or Flash-photolysis.							
Resonance-Fluorescence. T-independent k.							
79 ISH/SUG1	EX	298	(1.39±0.24)(13)			2	
Pulse-radiolysis. Absorption-spectroscopy.							
P(Total) = (200-800) torr.							
80 CHE/CLY	EX	298	(2.04±0.18)(13)			2	
Discharge-flow. Resonance-fluorescence.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
80 SUG/ISH2	EX	298	(1.14±0.12)(13)			2	
Pulse-radiolysis. Resonance-absorption.							
P(Total) = (200-1000) torr.							
$N(^2D) + NO \rightarrow N_2 + O$							
Nitrogen atom + Nitrogen oxide (NO)							
71 LIN/KAU	EX	300	(4.22±1.51)(13)			2	
72 HUS/KIR2	EX	300	(3.67±2.23)(13)			2	
80 SUG/ISH2	EX	298	(2.11±0.18)(13)			2	
Pulse-radiolysis. Resonance-absorption.							
P(Total) = (200-1000) torr.							
$N(^2P) + NO \rightarrow N_2 + O$							
Nitrogen atom + Nitrogen oxide (NO)							
72 HUS/KIR2	EX	300	(2.05±0.66)(13)			2	
80 SUG/ISH2	EX	298	(1.63±0.12)(13)			2	
Pulse-radiolysis. Resonance-absorption.							
P(Total) = (200-1000) torr.							
$N + NO_2 \rightarrow N_2O + O$ (a)							
$\rightarrow NO + NO$ (b)							
$\rightarrow N_2 + O_2$ (c)							
$\rightarrow N_2 + O + O$ (d)							
Nitrogen atom + Nitrogen oxide (NO_2)							
75 CLY/MCD	EX	298	(8.43±0.12)(11)			2	
k_a.							
82 CLY/ONO	EX	293	(1.81±0.19)(12)			2	
$k_a + k_b + k_c + k_d$. NO_2 in excess.							
Discharge-flow. Resonance-fluorescence.							
$[NO_2]/[N]_o > 80$.							
$N(^2D) + N_2O \rightarrow N_2 + NO$ (a)							
$\rightarrow N(^4S) + N_2 + O$ (b)							
Nitrogen atom + Nitrogen oxide (N_2O)							
71 SLA/WOO 1)	EX	237-365	3.75(12)	0.5	403±101	2	
Preexponential factor expressed as: $A(T/298)^{0.5}$.							
71 SLA/WOO 1)	EX	300	1.02(12)			2	
72 HUS/KIR2 1)	EX	300	(2.89±0.54)(12)			2	
76 SLA/BLA3 1)	EX	198-372	(6.93±1.81)(12)	0	569±70	2	
Vacuum-UV Photolysis.							
1) k_a.							
71 LIN/KAU	EX	300	(2.11±0.72)(12)			2	
$k_a + k_b$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$N(^2P) + N_2O \rightarrow N_2 + NO$							
Nitrogen atom + Nitrogen oxide (N_2O)							
72 HUS/KIR2	EX	300	(2.05±0.90)(12)			2	
$N + HN_3 \rightarrow N_2 + N_2H$							
Nitrogen atom + Hydrazoic acid							
73 LEB/COM	EX	298	2.95(9)			2	
$N + NH_2NH_2 \rightarrow NH + NH_2NH$ (a)							
$\rightarrow$ products (overall) (b)							
Nitrogen atom + Hydrazine							
75 YO	EX	298	2.7(10)			2	
k_a.							
75 YO [1])	EX	298-652	3.1(12)	0	1158	2	
75 YO [1])	EX	298	6.7(10)			2	
[1]) k_b.							
$N + C (+ M) \rightarrow CN(B^2\Sigma^+) (+ M)$							
Nitrogen atom + Carbon atom							
75 WAS/KLE	EX	298	(3.41±0.91)(15)			3	
M = Ar. Unreported T assumed to be 298 K.							
74 KLE/WAS	EX	298	3.41(15)			3	
M = Ar. Resonance absorption.							
P(Total) = 1torr.							
$N(^2D) + CO_2 \rightarrow NO + CO$ (a)							
$\rightarrow N + O + CO$ (b)							
Nitrogen atom + Carbon dioxide							
71 LIN/KAU	EX	300	(3.01±1.20)(11)			2	
$k_a + k_b$.							
$N + HCHO \rightarrow$ products							
Nitrogen atom + Formaldehyde							
71 WHI	EX	323-643	2.59(12)	0	1812±302	2	
$N + CH_3OH \rightarrow HNO + CH_3$							
Nitrogen atom + Methanol							
73 ROS/ROS	EX	309-409	2.40(11)	0	4330±481	2	1.20
P = (1.07-1.56) torr.							
73 ROS/ROS	RL	299-306	(3.6±0.4)	0	0	2/2	
k_{ref}: $N + CH_3OD \rightarrow$ products.							
73 ROS/ROS	RL	340-346	(8.0±1.0)	0	0	2/2	
k_{ref}: $N + CD_3OD \rightarrow$ products.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$N + CH_3OD \rightarrow DNO + CH_3$							
Nitrogen atom + Methanol-d							
73 ROS/ROS [1])	EX	299-306	(5.3±1.2)(7)	0	0	2	
Average of 4 k's. P = (1.08-1.92) torr.							
73 ROS/ROS [1])	EX	340-346	(1.25±0.15)(8)	0	0	2	
Average of 3 k's. P = (1.08-1.12) torr.							
[1]) $[CH_3OD]$ = $(1.50\text{-}4.54)\times10^{18}$ molec.cm^{-3}.							
$N + CN \rightarrow C + N_2$							
Nitrogen atom + Cyanogen							
76 SLA	ES	5000-8000	(4.4±2.0)(14)	0	4529	2	
$N + CH{\equiv}CH \rightarrow$ products							
Nitrogen atom + Ethyne							
77 MIC/LEE	EX	298	<3.01(8)			2	
Discharge-flow. Resonance-fluorescence.							
Upper-limit k. P = (1.5-2.5) torr.							
79 SAT/SUG	EX	300	(1.02±0.12)(10)			2	
Pulse-radiolysis. Resonance-absorption.							
$P(N_2)$ = (200-600) torr.							
$N + CH_2{=}CH_2$ (+ M) $\rightarrow$ products							
Nitrogen atom + Ethene							
77 MIC/LEE	EX	298	<3.01(8)			2	
Discharge-flow. Resonance-fluorescence.							
Upper-limit k. P = (1.5-2.5) torr.							
$[N]_o \sim 1.0\times10^{12}$ molec.cm^{-3}.							
79 ISH/SUG1	EX	298	≤3.98(10)			2	
Pulse-radiolysis. Absorption-spectroscopy.							
Upper=limit k. P(Total) = (200-800) torr.							
79 SAT/SUG	EX	300	(3.91±0.78)(10)			2	
Pulse-radiolysis. Resonance-absorption.							
$P(N_2)$ = (200-600) torr.							
80 HUS/SLA2	EX	300	(3.41±0.22)(17)			3	
$M = N_2$. N_2O photolysis.							
Resonance-fluorescence.							
$N(^2D) + CH_2{=}CH_2 \rightarrow$ products							
Nitrogen atom + Ethene							
80 SUG/ISH2	EX	298	(2.23±0.18)(13)			2	
Pulse-radiolysis.							
Resonance-absorption.							
P(Total)= (200-800) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$N(^2P) + CH_2{=}CH_2 \rightarrow$ products							
Nitrogen atom + Ethene							
80 SUG/ISH2	EX	298	(1.69±0.12)(13)			2	
Pulse-radiolysis. Resonance-absorption.							
P(Total) = (200-700) torr.							
$N + CH_3CH_2OH \rightarrow HNO + CH_3CH_2$							
Nitrogen atom + Ethanol							
73 ROS/ROS	EX	312-425	2.00(11)	0	4210±241	2	1.10
$[CH_3CH_2OH] = (1.45-4.76)x10^{18}$ molec.cm^{-3}.							
P = (1.12-1.63) torr.							
$N + CH_3C{\equiv}CH \rightarrow$ products							
Nitrogen atom + 1-Propyne							
77 MIC/LEE	EX	298	<3.01(8)			2	
Discharge-flow. Resonance-fluorescence.							
Upper-limit k.							
P = (1.5-2.5) torr.							
$[N]_o \sim 1.0x10^{12}$ molec.cm^{-3}.							
$N + CH_3CH{=}CH_2 \rightarrow$ products							
Nitrogen atom + 1-Propene							
77 MIC/LEE	EX	298	<3.01(8)			2	
Discharge-flow. Resonance-fluorescence.							
Upper-limit k.							
P = (1.5-2.5) torr.							
$[N]_o \sim 1.0x10^{12}$ molec.cm^{-3}.							
79 SAT/SUG	EX	300	(6.63±1.20)(10)			2	
Pulse-radiolysis. Resonance-absorption.							
$P(N_2)$ = (200-600) torr.							
$N + CH_3CH_2CH_2OH \rightarrow HNO + CH_3CH_2CH_2$							
Nitrogen atom + 1-Propanol							
73 ROS/ROS	EX	354-494	2.75(11)	0	3609±241	2	1.10
$[CH_3CH_2OH] = (0.93-3.80)x10^{18}$ molec.cm^{-3}.							
P = (1.29-1.48) torr.							
$N + (CH_3)_2CHOH \rightarrow HNO + (CH_3)_2CH$							
Nitrogen atom + 2-Propanol							
73 ROS/ROS	EX	304-449	8.51(11)	0	4691±241	2	1.12
$[CH_3CH_2OH] = (0.38-1.22)x10^{18}$ molec.cm^{-3}.							
P = (0.865-1.73) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
N + CH_2=CHCH=CH_2 → products							
Nitrogen atom + 1,3-Butadiene							
79 SAT/SUG	EX	300	(6.63±0.60)(10)			2	
Pulse-radiolysis. Resonance-absorption.							
P(N_2) = (200-600) torr.							
N + CH_3CH_2CH=CH_2 → products							
Nitrogen atom + 1-Butene							
79 SAT/SUG	EX	300	(6.63±0.60)(10)			2	
Pulse-radiolysis. Resonance-absorption.							
P(N_2) = (200-600) torr.							
N + cis-CH_3CH=$CHCH_3$ → products							
Nitrogen atom + 2-Butene, (Z)-							
79 SAT/SUG	EX	300	(3.91±0.48)(10)			2	
Pulse-radiolysis. Resonance-absorption.							
P(N_2) = (200-600) torr.							
N + trans-CH_3CH=$CHCH_3$ → products							
Nitrogen atom + 2-Butene, (E)-							
79 SAT/SUG	EX	300	(4.04±0.54)(10)			2	
Pulse-radiolysis. Resonance-absorption.							
P(N_2) = (200-600) torr.							
N + $(CH_3)_2C$=CH_2 → products							
Nitrogen atom + 1-Propene, 2-methyl-							
79 ISH/SUG1	EX	298	≤8.43(10)			2	
Pulse-radiolysis. Absorption-spectroscopy.							
Upper-limit k.							
P(Total) = (200-600) torr.							
79 SAT/SUG	EX	300	(1.08±0.12)(11)			2	
Pulse-radiolysis. Resonance-absorption.							
P(N_2) = (200-600) torr.							
N + NCC≡CCN → [N.C_4N_2†]							
Nitrogen atom + 2-Butynedinitrile (Dicyanoacetylene)							
72 HAN/OBE2	ES	300	(3.19±2.59)(9)			2	
N + $(CH_3)_2C$=$CHCH_3$ → products							
Nitrogen atom + 2-Butene, 2-methyl-							
79 SAT/SUG	EX	300	(4.94±0.48)(10)			2	
Pulse-radiolysis. Resonance-absorption.							
P(N_2) = (200-600) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
N_2 (+ M) → N + N (+ M)							
Nitrogen molecule							
74 KEW/HOR [1])	EX	6000-14000	5.54(19)	-2.5	113200	2	1.58
M = N.							
74 KEW/HOR [1])	EX	6000-14000	5.03(20)	-3.5	113200	2	1.58
M = N_2.							
[1]) The preexponential factor expressed as: $A(T/298)^n$.							
$N_2(A^3\Sigma_u^+) + O_2 \rightarrow N_2(X^1\Sigma) + O_2^*$ (a)							
$\rightarrow N_2(X^1\Sigma) + O(^1P) + O(^1P)$ (b)							
$\rightarrow N_2O(X^2\Pi) + O(^3P)$ (c)							
$\rightarrow N_2O(X^2\Pi) + O(^1D)$ (d)							
Nitrogen molecule + Oxygen molecule							
82 IAN/JEF [1])	ES	298	≈6.02(11)			2	
k_a.							
82 IAN/JEF [1])	ES	298	≈1.20(12)			2	
k_b.							
82 IAN/JEF [1])	ES	298	≈3.61(10)			2	
$k_c + k_d$.							
82 IAN/JEF [1])	EX	298	1.81(12)			2	
$k_a + k_b + k_c + k_d$.							
[1]) M = Ar. Discharge-flow. Laser-induced fluorescence. Weighted average k's. P(Total) ~ 2 torr.							
$N_2(A^3\Sigma_u^+, v=n) + O_2$ → products							
Nitrogen molecule + Oxygen molecule							
81 IAN/KAU [1])	EX	298	(1.51±0.24)(12)			2	
n = 0.							
81 IAN/KAU [1])	EX	298	(2.35±0.36)(12)			2	
n = 1.							
81 IAN/KAU [1])	EX	298	(2.59±0.42)(12)			2	
n = 2.							
[1]) Discharge-flow. Laser-induced fluorescence.							
$N_3 + N_3 \rightarrow N_2 + N_2 + N_2$							
Azide							
79 JOU/LEB1	DE	298	(3.91±0.90)(13)			2	
Calculation based on computer simulation.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
NO (+ M) → N + O (+ M)							
Nitrogen oxide (NO)							
73 MYE	EX	2600-6300	1.37(14)	0	74685	2	
M = Ar.							
73 MYE	ES	2600-6300	≤3.0(14)	0	76497	2	
M = NO. Upper-limit estimate.							
$NO + O_2(^1\Delta_g) \rightarrow NO_2 + O$							
Nitrogen oxide (NO) + Oxygen molecule							
76 DUM	EX	298	2.94(6)			2	
$NO + NO \rightarrow N_2 + O_2$ (a)							
$\rightarrow N_2O + O$ (b)							
Nitrogen oxide (NO)							
75 TRU/MAC	EX	2700-4700	3.07(12)	0.5	30458	2	
k_a. M = Ne. The preexponential factor expressed as: $A(T/298)^{0.5}$.							
73 MYE	EX	2595-6300	2.35(10)	0	14595	2	
k_b.							
76 MCC/KRU	EX	1750-2100	1.80(12)	0	32109	2	2.04
k_b. Best fit to the experimental data.							
77 MCC/KRU	EX	1750-2100	1.80(12)	0	32109	2	2.0
k_b. Flow reactor.							
79 KOS/ASA	DE	2700-3500	4.9(12)	0	33770	2	
k_b. Incident shock-waves. Computer simulation. $[NO] = (2.4-4.2)x10^{18}$ molec.cm^{-3}. P_o = 30 torr.							
$NO + NO + NO \rightarrow NO_2 + N_2O$							
Nitrogen oxide (NO)							
79 GVO/NES1 [1])	EX	753-813	1.26(10)	0	13589±1007	3	2.88
P = (6.0- 10.5) torr.							
79 GVO/NES2 [1])	EX	713-923	1.07(10)	0	13488±151	3	1.15
P = (22.5-112.5) torr.							
[1]) NO oxidation in a stainless-steel vessel.							
$NO + NO + O_2 \rightarrow NO_2 + NO_2$							
Nitrogen oxide (NO) + Oxygen molecule							
73 STE/NIK1	EX	298	(1.45±0.07)(10)			3	
75 ENG/COR	EX	298	(1.46±0.03)(10)			3	
75 ENG/COR	EX	298-323	(1.99±0.28)(9)	0	-591±43	3	
A and B recalculated from the reported data.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$NO + NO_2 + H_2O \rightarrow HONO + HONO$							
Nitrogen oxide (NO) + Nitrogen oxide (NO_2) + Water							
75 ENG/COR	ES	298-323	(1.5±0.5)(11)	0	0	3	
Best data-fit by optimization.							
76 CHA/NOR	DE	296	(2.19±0.70)(10)			3	
$k_1 = Kk_{-1}$.							
$NO + NO_3 \rightarrow NO_2 + NO_2$							
Nitrogen oxide (NO) + Nitrogen oxide (NO_2)							
73 HAR/JOH	RN	296	5.24(12)			2	
74 GLA/TRO1	ES	1000-1100	(8.0±4.0)(12)			2	
Best fit to the experimental data.							
75 GRA	DE	297	(1.13±0.25)(13)			2	
$k_1 = Kk_{-1}$.							
78 GRA/JOH	DE	297	(1.14±0.24)(13)			2	
Modulated photolysis technique. $k_1 = k_{-1}K$.							
$NO + N_2O \rightarrow NO_2 + N_2$							
Nitrogen oxide (NO) + Nitrogen oxide (N_2O)							
73 BOR/SKA	ES	1050-2510	2.75(14)	0	25164±1510	2	1.58
79 GVO/NES3	EX	713-923	1.51(11)	0	24811±302	2	2.51
N_2O decomposition in a stainless-steel vessel under static conditions. Gas-chromatography. P = (22.5-112.5) torr.							
$NO + NH_2 \rightarrow N_2 + H_2O$							
Nitrogen oxide (NO) + Amidogen							
71 GOR/MUL	EX	298	1.6(13)			2	
Unreported T assumed to be 298 K.							
72 BED/THO	RL	615-660	5.01(-3)	0	-3221±503	2/2	
k_{ref}: $NH_2 + NO_2 \rightarrow NH + HONO$.							
73 GEH/HOY	EX	298	(5.0±1.0)(12)			2	
The water molecule formed as product is vibrationally excited.							
$NO + NH_3 \rightarrow HNO + NH_2$							
Nitrogen oxide (NO) + Ammonia							
78 ROO/HAN	ES	1700-3000	5.0(14)	0	25164	2	
Shock-waves.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$NO + HNO \rightarrow$ products							
Nitrogen oxide (NO) + Nitrosyl hydride							
81 CHE/NAD	EX	298	(3.01±0.90)(5)			2	
CH_3CHO/NO flash-photolysis. P(HCHO) = 7 torr. $P(CH_3CHO)$ = 12.2 torr. P(NO) = (20-380) torr.							
$NO + HONO_2 \rightarrow NO_2 + HONO$							
Nitrogen oxide (NO) + Nitric acid							
77 KAI/WU	EX	300	9.03(3)			2	
79 MCK/MAT	EX	298	8.4(3)			2	
Flow-reactor. Spectrophotometry. P = 760 torr.							
79 STR/WEL	EX	296	(2.05±1.20)(2)			2	
Tunable diode-laser. Static reactor.							
$NO + C_2O \rightarrow NCO + CO$ (a) $\rightarrow CNO + CO$ (b)							
Nitrogen oxide (NO) + Carbon oxide (C_2O)							
80 DON/PIT	EX	298	(2.61±0.07)(13)			2	
$k_a + k_b$. Laser photodissociation of C_3O_2 nm. Dye-laser induced fluorescence.							
NO_2 (+ M) $\rightarrow$ NO + O (+ M)							
Nitrogen oxide (NO_2)							
79 END/GLA	EX	1800	2.45(8)			2	
M = N_2. M-efficiencies relative to N_2 are: 1.00(N_2), 0.61(Ar), 0.61(Kr), 0.69(Xe), 0.82(Ne), 2.04(CO_2), 2.04(CF_4), 2.14(He). Thermolysis in shock-waves. Rate constants expressed as k[M].							
$NO_2 + NO_2 \rightarrow NO + NO_3$ (a) $\rightarrow$ NO + anti-NO_3 (b)							
Nitrogen oxide (NO_2)							
73 BUT/LEV	ES	1700-2400	(3.2±1.0)(12)	0	12870	2	
k_a.							
77 FRE/PAL	ES	1471-1855	3.16(13)	0	17111	2	
k_b.							
$NO_2 + NO_2 + CH_3OH \rightarrow HONO_2 + CH_3ONO$							
Nitrogen oxide (NO_2) + Methanol							
82 NIK/MAK1	EX	298	(2.07±0.22)(11)			3	
FTIR-spectroscopy. $P(CH_3OH)$ = (0-1.0) torr. $P(NO_2)$ = (0-1.0) torr. $P(N_2)$ = 700 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$NO_2 + NO_2 +$  → products							
Nitrogen oxide (NO_2) + Oxirane							
71 JAF	EX	298-373	1.3(12)	0	1862	3	
Preliminary results.							
$NO_2 + NO_2 + CH_3CH_2OH \rightarrow HONO_2 + CH_3CH_2ONO$							
Nitrogen oxide (NO_2) + Ethanol							
82 NIK/MAK1	EX	298	(2.07±0.29)(11)			3	
FTIR-spectrometry. $P(CH_3CH_2OH)$ = (0.1-1.0) torr. $P(NO_2)$ = (0-1.0) torr. $P(N_2)$ = 700 torr.							
$NO_2 + NO_3$ (+ M) → $NO + NO_2 + O_2$ (+ M) (a)							
→ N_2O_5 (+ M) (b)							
Nitrogen oxide (NO_2) + Nitrogen oxide (NO_3)							
75 GRA	DE	298-329	(1.51±0.30)(10)	0	1228±101	2	
k_a. $k_a = k_{-a}K$.							
78 GRA/JOH	DE	298-329	(1.51±0.30)(10)	0	1230±100	2	
k_a. Modulated photolysis. $k_a = k_{-a}K$.							
80 CON	EX	262-272	1.28(14)	0	1360	2	
k_b. M = N_2. Limiting high-pressure k. N_2O_5/NO thermolysis. $[N_2]$ <$2x10^{18}$ molec.cm^{-3}.							
82 FOW/MIT	EX	298	(1.20±0.48)(12)			2	
k_b. Closed system. NO_3 generated by injecting NO_2 in a O_3 flow. k expressed as k[M]. $[NO_2]_o$ = (0.1-1.0)x10^{13} molec.cm^{-3}. $[O_3]$ = (5.5-7.4)x10^{17} molec.cm^{-3}.							
82 MAL/TRO	RE	200-300	9.62(11)	0.2	0	2	
k_b. Limiting high-pressure k. Recommended k, in terms of unimolecular rate theory. The pre-exponential factor expressed as: $A(T/298)^{0.2}$.							
80 CON	EX	268-307	3.48(15)	0	-1550	3	
k_b. M = N_2. Limiting low-pressure k. N_2O_5/NO Thermolysis. 10^{18} molec.cm^{-3}.							
78 WAY/MIT	ES	298	1.31(16)			3	
k_b. Flow-reactor. M = NO_2, O_2. Preliminary k.							
82 MAL/TRO	RE	200-300	1.38(18)	-4.1	0	3	
k_b. Rate constant expressed as k/[M]. Limiting low-pressure k. Recommended k, evaluated in terms of unimolecular rate theory. The pre-exponential factor expressed as $A(T/298)^{-4.1}$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$NO_2 + NH_3 \rightarrow HONO + NH_2$							
Nitrogen oxide (NO_2) + Ammonia							
72 BED/THO	EX	615-660	3.98(12)	0	13916±51	2	2.0
Cylindrical Pyrex reaction vessel.							
Photomultiplier. Logarithmic amplifier.							
$NO_2 + HONO \rightarrow NO + HONO_2$							
Nitrogen oxide (NO_2) + Nitrous acid							
79 STR/WEL	DE	296	≤6.02(1)			2	
Tunable diode-laser. Static reactor.							
$k_1 = k_{-1}K$.							
$NO_2 + CH_4 \rightarrow HONO + CH_3$							
Nitrogen oxide (NO_2) + Methane							
78 SLA/GRI3	ES	1300-1900	7.0(11)	0	15098	2	
Shock-waves. P = (2-4) Atm.							
81 SLA/GRI	ES	1310-1790	1.2(13)	0	15098	2	
$CH_4/O_2/Ar$ ignition sensitized by NO_2 behind reflected shock-waves.							
P = (1.8-3.6) atm.							
$NO_2 + HCN \rightarrow HONO + CN$ (a)							
$\rightarrow HNO + NCO$ (b)							
Nitrogen oxide (NO_2) + Hydrocyanic acid							
82 FIF/HOL [1])	EX	1300	≤1.0(7)			2	
82 FIF/HOL [1])	EX	1800	≤1.0(10)			2	
[1]) $k_a = k_b$. Reaction behind shock-waves in Ar.							
Upper-limit k's. P = (1.7-12.6) atm.							
$NO_2 + CH_2{=}CH_2 \rightarrow$ products							
Nitrogen oxide (NO_2) + Ethene							
71 JAF	EX	298-373	2.00(6)	0	4145	2	
71 JAF	EX	298	1.82			2	
$NO_2 + CH_3CHO \rightarrow HONO + CH_3CO$							
Nitrogen oxide (NO_2) + Acetaldehyde							
71 JAF	EX	298-373	1.58(5)	0	3473	2	
71 JAF	EX	298	1.50			2	
72 DAV/COR	EX	295	(8.596±0.189)			2	
72 DAV/COR	EX	295-395	3.10(10)	0	6492±302	2	
The A-factor recalculated from the reported experimental data.							
74 JAF/WAN	EX	295-390	2.51(10)	0	6241	2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
NO_2 + $CH_3C{\equiv}CH$ → products							
Nitrogen oxide (NO_2) + 1-Propyne							
73 ASH/THO	EX	443-493	4.68(8)	0	6427±81	2	1.20
NO_2 + $CH_3CH{=}CH_2$ → products							
Nitrogen oxide (NO_2) + 1-Propene							
71 JAF	EX	298-373	3.2(6)	0	3914	2	
71 JAF	EX	298	6.24			2	
76 GRY/ROZ	EX	293-373	2.4(5)	0	2818	2	
NO_2 + $CH_3CH_2CH_3$ → HONO + $(CH_3)_2CH$							
Nitrogen oxide (NO_2) + Propane							
76 TIT/BAL	EX	423-498	2.40(11)	0	11374±60	2	1.12
NO_2 + CH_3CH_2CHO → HONO + CH_3CH_2CO							
Nitrogen oxide (NO_2) + Propanal							
74 JAF/WAN	EX	295-390	2.51(10)	0	6241	2	
NO_2 + $(CH_3)_2CO$ → HONO + CH_3COCH_2							
Nitrogen oxide (NO_2) + 2-Propanone							
71 JAF	EX	298-373	3.8(5)	0	3588	2	
71 JAF	EX	298	2.4			2	
NO_2 + $CH_2{=}CHC{\equiv}CH$ → products							
Nitrogen oxide (NO_2) + 1-Buten-3-yne							
75 GRY/ROZ	EX	273-333	8.8(5)	0	1711	2	
NO_2 + $CH_3C{\equiv}CCH_3$ → products							
Nitrogen oxide (NO_2) + 2-Butyne							
73 ASH/THO	EX	443-493	3.63(8)	0	6029±96	2	1.23
NO_2 + $CH_3CH_2CH{=}CH_2$ → products							
Nitrogen oxide (NO_2) + 1-Butene							
71 JAF	EX	298-373	2.51(6)	0	3684	2	
71 JAF	EX	298	1.07(1)			2	
NO_2 + cis-$CH_3CH{=}CHCH_3$ → products							
Nitrogen oxide (NO_2) + 2-Butene, (Z)-							
71 JAF	EX	298-373	2.51(5)	0	2763	2	
71 JAF	EX	298	2.36(1)			2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
NO_2 + trans-$CH_3CH=CHCH_3$ → products							
Nitrogen oxide (NO_2) + 2-Butene, (E)-							
71 JAF	EX	298-373	1.58(6)	0	3224	2	
71 JAF	EX	298	3.17(1)			2	
NO_2 + $(CH_3)_2C=CH_2$ → products							
Nitrogen oxide (NO_2) + 1-Propene, 2-methyl-							
71 JAF	EX	298-373	3.98(4)	0	1980	2	
71 JAF	EX	298	5.17(1)			2	
NO_2 + $CH_3CH_2CH_2CHO$ → HONO + $CH_3CH_2CH_2CO$							
Nitrogen oxide (NO_2) + Butanal							
74 JAF/WAN	EX	295-390	2.51(10)	0	6241	2	
NO_2 + $CH_3CH_2N(\uparrow O)=CHCH_3$ → NO + CH_3CH_2NO + CH_3CHO							
Nitrogen oxide (NO_2) + Ethanamine, N-ethylidene- N-oxide							
82 GLE/HEI [1])	EX	298	>6.02(7)			2	
Lower-limit k.							
82 GLE/HEI [1])	RL	298	3.0(-1)			2/2	
k_{ref}: $(CH_3CH_2)_2NO$ + $CH_3CH_2N(\uparrow O)=CHCH_3$ → adduct							
[1]) Diethylhydroxylamine oxidation by NO_2 in a IR gas-cell. $[NO_2]$ (15-236) mtorr. [HONO] = (11-15) mtorr. $[(CH_3CH_2)_2NOH]$ = (25-45) mtorr.							
NO_2 + $(CH_3CH_2)_2NOH$ → HONO + $(CH_3CH_2)_2NO$ (a)							
→ any other products (b)							
Nitrogen oxide (NO_2) + Ethanamine, N-ethyl-N-hydroxy-							
82 GLE/HEI	ES	298	(3.31±0.60)(6)			2	
k_a. Diethylhydroxylamine oxidation by NO_2 in a IR gas-cell. $[NO_2]$ (15-236) mtorr. [HONO] = (11-15) mtorr. $[(CH_3CH_2)_2NOH]$ = (25-45) mtorr.							
74 JAY/SIM	EX	298	2.71(6)			2	
$k_{overall}$. Dark reaction of $(CH_3CH_2)_2NOH$ (diluted in CO_2) with NO_2 (diluted in O_2). High-vacuum. P(Diethylhydroxylamine) = 2.2 mtorr. P(NO_2) = 19.3 mtorr.							
NO_2 + $CH_2=CHC(CH_3)=CH_2$ → products							
Nitrogen oxide (NO_2) + 1,3-Butadiene, 2-methyl-							
75 GRY/ROZ	EX	273-433	1.7(7)	0	1056	2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
NO_2 + $CH_3CH_2CH_2CH{=}CH_2$ → products							
Nitrogen oxide (NO_2) + 1-Pentene							
71 JAF	EX	298-373	1.58(6)	0	3684	2	
71 JAF	EX	298	6.76			2	
NO_3 + NO_3 → NO_2 + NO_2 + O_2							
Nitrogen oxide (NO_3)							
75 GRA	EX	298-329	(5.12±1.69)(11)	0	2451±101	2	
78 GRA/JOH	EX	298-329	(5.12±1.69)(11)	0	2450±100	2	
Modulated photolysis.							
80 AFA/DOR	CO	300-350	(1.69±0.24)(12)	0	3400±600	2	
Given with caution. Indirect measurement based on the literature data for the reaction: $NO_2 + O_3 \rightarrow NO_3 + O_2$ and K for reaction: $N_2O_5 = NO_2 + NO_3$.							
NO_3 + $CH_2{=}CH_2$ → products							
Nitrogen oxide (NO_3) + Ethene							
75 JAP/NIK	EX	300	(5.60±0.60)(8)			2	
Data fit to a proposed mechanism.							
NO_3 + CH_3CHO → $HONO_2$ + CH_3CO							
Nitrogen oxide (NO_3) + Acetaldehyde							
74 MOR/NIK	EX	300	7.23(8)			2	1.25
Best fit of experimental data.							
NO_3 + $CH_3CH{=}CH_2$ → products							
Nitrogen oxide (NO_3) + 1-Propene							
75 JAP/NIK	EX	300	(3.19±0.18)(9)			2	
Data fit to a proposed mechanism.							
NO_3 + $CD_3CD{=}CD_2$ → products							
Nitrogen oxide (NO_3) + 1-Propene-d_6							
75 JAP/NIK	EX	300	(3.55±0.24)(9)			2	
Data fit to a proposed mechanism.							

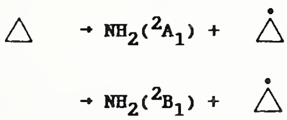
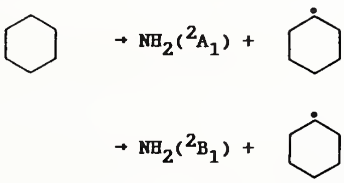
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
NO_3 + $CH_3CH_2CH{=}CH_2$ → products							
Nitrogen oxide (NO_3) +1-Butene							
75 JAP/NIK	EX	300	(4.69±0.48)(9)			2	
Data fit to a proposed mechanism.							
NO_3 + cis-$CH_3CH{=}CHCH_3$ → products							
Nitrogen oxide (NO_3) + 2-Butene, (Z)-							
75 JAP/NIK	EX	300	(1.08±0.12)(11)			2	
Data fit to a proposed mechanism.							
NO_3 + trans-$CH_3CH{=}CHCH_3$ → products							
Nitrogen oxide (NO_3) + 2-Butene, (E)-							
75 JAP/NIK	EX	300	(8.43±0.60)(10)			2	
Data fit to a proposed mechanism.							
NO_3 + $(CH_3)_2C{=}CH_2$ → products							
Nitrogen oxide (NO_3) + 1-Propene, 2-methyl-							
75 JAP/NIK	EX	300	(6.63±0.60)(10)			2	
Data fit to a proposed mechanism.							
NO_3 + $CH_3CH{=}C(CH_3)_2$ → products							
Nitrogen oxide (NO_3) + 2-Butene, 2-methyl-							
75 JAP/NIK	EX	300	(3.31±0.30)(12)			2	
Data fit to a proposed mechanism.							
NO_3 + $(CH_3)_2C{=}C(CH_3)_2$ → products							
Nitrogen oxide (NO_3) + 2-Butene, 2,3-dimethyl-							
75 JAP/NIK	EX	300	(2.23±0.30)(13)			2	
Data fit to a proposed mechanism.							
N_2O (+ M) → N_2 + O (+ M) (a)							
→ any other products (b)							
Nitrogen oxide (N_2O)							
71 D'A	EX	1600-2500	2.88(1)	0	27680	2	
k_a. M = Ar.							
Rate constant expressed as: k/[M].							
71 LIP	EX	1400-2000	1.35(13)	0	24555±2235	2	3.98
k_a. M = Kr.							
72 BOR/SKA	EX	1000-2000	5.01(14)	0	28686±755	2	2.0
k_a. M = Ar + N_2.							
Reflected shock-waves.							
72 SOL	SE	1000-3000	4.7(14)	0	29190	2	
k_a. M = N_2O.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
72 VER/KIS	EX	1250-1800	1.4(11)	0	26573	1	
k_a. M = N_2. Limiting high-pressure k.							
73 LIP/MIL	EX	1300-1950	1.26(13)	0	22194	2	
k_a. M = Kr.							
75 BAB/DEA	EX	1850-2535	7.83(14)	0	28628	2	
k_a. M = Ar.							
75 DOV/NIP	EX	2160-2500	5.01(13)	0	29190	2	
k_a. M = Ar.							
76 DEA	ES	1950-3075	1.96(14)	0	25861	2	
k_a. Data fit to a proposed mechanism.							
77 BAL/VAN	EX	1670-1980	(1.3±0.4)(15)	0	28435	2	
k_a. M = H_2. Supersonic molecular beam. Mass-spectrometry. P = 40 torr.							
77 DEA/STE1	EX	2100-3200	2.71(14)	0	27184	2	
k_a. M = Ar. Shock-waves. N_2O/CO/Ar mixtures at a total concentration of $(2.5-7.7)x10^{18}$ molec.cm^{-3}.							
77 MON/HAN1	ES	1815-3365	1.42(14)	0	25808	2	1.5
k_a. M = Ar, Kr, N_2, or O_2. Best data-fit.							
79 END/GLA	EX	2000	2.7(8)			2	
k_a. M = N_2. M-efficiencies relative to N_2 are: 1.00(N_2), 0.52(Xe), 0.61(Kr), 0.78(Ar), 1.48(Ne), 4.26(He), 4.81(CF_4). Thermolysis in shock-waves. Rate constants expressed as k[M].							
80 SUL/KLI	EX	1685-2560	(3.71±2.74)(14)	0	13920±727	2	
k_a. M = Ar. Thermolysis behind shock-waves. P = (1300-3500) torr.							
80 ZAS/LOS	EX	1700-2500	4.4(14)	0	28183	2	
k_a. M = Ar. M-efficiencies relative to Ar are: 1.00(Ar), 2.0(N_2), 3.0(CO), 4.0(He). [Ar] = $(0.6-1.4)x10^{19}$ molec.cm^{-3}. Thermolysis of N_2 in Ar, He, N_2, or CO, behind shock-waves.							
71 LIP	EX	1400-2000	3.09(12)	0	20493±1550	2	3.98
$k_{overall}$. M = Kr.							
73 VOM2	EX	1800-2400	3.16(13)	0	21641±2013	2	2.51
$k_{overall}$. M = Ne. Low-pressure k.							
74 TRA	EX	1)	3.63(14)	0	26724	2	
1) $k_{overall}$. Shock-tube. Unspecified high-T range.							
75 BAB/DEA	EX	1850-2525	2.95(14)	0	26355±625	2	1.32
$k_{overall}$.							
76 DEA 2)	EX	1950-3075	1.15(14)	0	24478±433	2	1.20
Without added H_2.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
76 DEA [2]	EX	1950-3075	5.25(13)	0	22072±433	2	1.20
With 0.01% H_2 added.							
[2] $k_{overall}$.							
N_2O_5 (+ M) → NO_2 + NO_3 (+ M) (a)							
→ any other products (b)							
Nitrogen oxide (N_2O_5)							
79 CON/JOH [1]	EX	262-345	1.78(17)	0	12540±130	1	
k_a. M = N_2. Limiting high-pressure k.							
80 CON [2]	EX	268-307	1.78(17)	0	12540±200	1	
k_a. M = N_2. Limiting high-pressure k.							
81 VIG/DAV [2]	RE	285-384	1.21(17)	0	12662±322	1	
k_a. Troe fit. Limiting high-pressure k.							
81 VIG/DAV [3]	EX	285-384	1.8(17)	0	12788±242	1	
k_a. Johnston fit. Limiting high-pressure k.							
82 FOW/MIT	EX	298	(1.0±0.6)(-1)			1	
k_a. M = O_2. NO_3 generated by injecting NO_2 in a O_3 flow. k expressed as k[M]. $[O_2] = (2.7\text{-}5.1)x10^{18}$ molec.cm^{-3}. $[NO_2]_o > 1.0x10^{14}$ molec.cm^{-3}.							
82 MAL/TRO [4]	TH	220-300	9.69(14)	0.1	11080	1	
k_a. M = N_2. Limiting high-pressure k.							
79 CON/JOH [1]	EX	262-345	3.67(18)	0	9570±200	2	
k_a. M = N_2. Limiting low-pressure k.							
[1] quartz reactor. IR-Spctrometry.							
80 CON [2]	EX	268-307	4.85(18)	0	9630±200	2	
k_a. M = N_2. Limiting low-pressure k.							
[2] N_2O_5 Thermolysis in presence of NO. $[N_2] < 2x10^{18}$ molec.cm^{-3}.							
81 VIG/DAV [3]	RE	285-384	6.93(18)	0	9914±453	2	
k_a. Troe fit. Limiting low-pressure k.							
81 VIG/DAV [3]	EX	285-384	3.28(18)	0	9653±292	2	
k_a. Johnston fit. Limiting low-pressure k.							
[3] Flowing-afterglow. Mass-spectrometry. Data-fit to theoretical models. P = (10-800) torr.							
82 MAL/TRO [4]	TH	220-300	1.36(21)	-4.4	11080	2	
k_a. M = N_2. Rate constant expressed as k/[M]. Limiting-low-pressure k.							
[4] Critical evaluations. The preexponential factor expressed as: $A(T/298)^n$.							
72 DUT/BUN	EX	308	(1.11±0.21)(-4)			1	
$k_{overall}$. Preliminary rate constant.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$NH + O_2 \rightarrow NO + OH$ (a)							
$\rightarrow NO_2 + H$ (b)							
$\rightarrow HNO + O$ (c)							
Imidogen + Oxygen molecule							
79 PAG/ERI	ES	300	≤2.0(10)			2	
k_a. Gaseous NH_3 pulse-radiolysis. Upper-limit k.							
78 ZET/HAN	EX	296	(5.12±0.54)(9)			2	
$k_a + k_b + k_c$. Resonance-fluorescence. UV-photolysis. Channel (c) is the most probable path.							
$NH + H_2 \rightarrow NH_2 + H$							
Imidogen + Hydrogen molecule							
79 DOV/NIP [1])	EX	2601	1.8(12)			2	
79 DOV/NIP [1])	EX	2788	2.2(12)			2	
[1]) Pyrolysis behind reflected shock-waves.							
$NH + N_2 (+ M) \rightarrow HN_3 (+ M)$ (a)							
$\rightarrow$ any other products (b)							
Imidogen + Nitrogen molecule							
81 ZET'STU	EX	298	<3.63(9)			3	
k_a. $M = N_2$. Pulsed vacuum-UV photolysis of NH_3 at 105 nm. Resonance-fluorescence. Upper-limit k. $P(NH_3)$ = (0.005-0.9) torr. $P(N_2)$ < 900 torr.							
81 ZET/STU	EX	298	<1.81(5)			2	
$k_{overall}$. Pulsed vacuum-UV photolysis of NH_2 at 105 nm. Resonance-fluorescence. Upper-limit k. $P(NH_3)$ = (0.005-0.9) torr.							
$NH + NO \rightarrow H + N_2O$ (a)							
$\rightarrow$ any other products (b)							
Imidogen + Nitrogen oxide (NO)							
78 ROO/HAN [1])	ES	1700-3000	6.46(11)	0.75	0	2	
k_a. Shock-waves. The preexponential factor expressed as: $A(T/298)^{0.75}$.							
81 ROO/HAN [1])	EX	1760-2850	8.0(13)	0	14800	2	3.0
k_a. Best data-fit.							
[1]) NH_3/NO, or N_2O in Ar behind incident shock-waves. Emission and IR-laser Absorption.							
71 GOR/MUL	EX	298	2.3(13)			2	
$k_{overall}$. Unreportéd T assumed to totale 298 K.							
76 HAN/HOE	EX	298	(2.83±0.72)(13)			2	
$k_{overall}$. Unreported T assumed to be 298 K.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 MOR2	EX	1790	<4.22(12)			2	
$k_{overall}$. Premixed $H_2/O_2/Ar$ Flames.							
Laser-Fluorescence.							
Upper-limit k.							
P = 760 torr.							
$NH + NH_2 \rightarrow NH_2NH$							
Imidogen + Amidogen							
79 PAG/ERI	EX	349	7.0(13)			2	
Gaseous NH_3 pulse-radiolysis.							
$NH + NH_3\ (+ M) \rightarrow NH_2NH_2\ (+ M)$ (a)							
$\rightarrow$ any other products (b)							
Imidogen + Ammonia							
81 ZET/STU [1])	EX	298	<1.8(13)			3	
k_a. M = N_2.							
M-efficiencies relative to N_2 are:							
1.00(N_2), 0.06(He) 1.00(Ar), 60.22(NH_3).							
P(M) <900 torr.							
81 ZET/STU [1])	EX	298	<4.82(7)			2	
$k_{overall}$.							
[1]) Pulsed vacuum-UV Photolysis of NH_3 at 105 nm.							
Resonance-fluorescence.							
P(NH_3) = (0.05-0.9) torr.							
$NH(a^1\Delta) + HN_3(^1A') \rightarrow NH_2(^2A_1) + N_3(^2\Pi_g)$ (a)							
$\rightarrow NH(X^3\Sigma^-) + NH(X^3\Sigma^-) + N_2(X^1\Sigma)$ (b)							
Imidogen + Hydrazoic acid							
73 PAU/BAI	EX	298	(1.51±0.60)(13)			2	
$k_a + k_b$.							
Unreported T assumed to be 298 K.							
76 PAU/BAI	EX	298	(5.60±0.60)(13)			2	
k_a. Upward revised k.							
78 MCD/MIL	EX	298	(5.60±0.54)(13)			2	
k_a. HN_3 photolysis. Gas-chromatography.							
80 PIP/KRE	EX	298	1.08(14)			2	
k_a. UV-photolysis of HN_3 at 290 nm.							
Laser-induced fluorescence.							
P(Total) = (5-50) torr.							
$NH(b^1\Sigma^+) + NH_3 \rightarrow$ products							
Imidogen + Ammonia							
75 ZET/STU	EX	298	2.46(11)			2	1.25

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$NH(a^1\Delta) + CH_4 \rightarrow NH_2(^2A_1) + CH_3$ (a)							
$\rightarrow NH_2(^2B_1) + CH_3$ (b)							
$\rightarrow NH_2CH_3$ (c)							
Imidogen + Methane							
78 MCD/MIL	EX	298	(7.23±0.60)(12)			2	
$k_a + k_b + k_c$. HN_3 photolysis. Gas-chromatography. Channel (c) is favored.							
$NH(a^1\Delta) + CH_2{=}CH_2 \rightarrow NH_2(^2A_1) + CH_2{=}CH$ (a)							
$\rightarrow NH_2(^2B_1) + CH_2{=}CH$ (b)							
$\rightarrow$  (c)							
Imidogen + Ethene							
78 MCD/MIL	EX	298	(2.29±0.24)(13)			2	
$k_a + k_b + k_c$. HN_3 photolysis. Gas-chromatography. Channel (c) is favored.							
$NH(a^1\Delta)$ +  (a), (b)							
Imidogen + Cyclopropane							
78 MCD/MIL	EX	298	(2.17±0.54)(13)			2	
$k_a + k_b$. HN_3 photolysis. Gas-chromatography.							
$NH(a^1\Delta)$ +  (a), (b)							
Imidogen + Cyclohexane							
78 MCD/MIL	EX	298	(4.03±0.42)(13)			2	
$k_a + k_b$. HN_3 photolysis. Gas-chromatography.							
$NH_2 + O_2 (+ M) \rightarrow NH_2O_2 (+ M)$ (a)							
$\rightarrow HNO + OH (+ M)$ (b)							
$\rightarrow NO + H_2O (+ M)$ (c)							
Amidogen + Oxygen molecule							
79 PAG/ERI	ES	300	≤5.0(9)			2	
$k_a = k_b = k_c$. Gaseous NH_3 pulse-radiolysis. Upper-limit k's.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 FUJ/MIY1	DE	300-1200	3.16(12)	0	7549±252	2	
k_a. Oxidation of NH_3 behind reflected shock-waves. The product is vibrationally excited.							
79 FUJ/MIY	DE	1492-2319	1.26(13)	0	14092	2	
k_b. Shock-wave induced high-T oxidation of NH_3. Computer simulation based on a reaction scheme including 13 steps, under the following conditions: $[NH_3] = [O_2] = 5\%$. $[Ar] = 90\%$, and P = (3.7-7.7) atm.							
77 LES/DEM	EX	298-500	≤1.81(6)			2	
$k_a + k_b + k_c$. NH_3 flash-photolysis. $P(NH_3)$ =3 torr. Upper-limit k.							
79 CHE/SAR	EX	298	<9.03(6)			2	
$k_a + k_b + k_c$. NH_3 Flash-photolysis. Laser-Spectroscopy. Upper-limit k. P < 570 torr.							
79 NAD/SAR4	EX	298	<4.82(7)			2	
$k_a + k_b + k_c$. Laser spectroscopy. Upper-limit k.							
82 HAC/HOR	EX	295-353	(1.27±0.50)(15)	-2.0	0	3	
k_a. M = He. Discharge flow. Laser-induced fluoresscence. P = (1.5-16) torr. Limiting low-pressure k. The preexponential factor expressed as: $A(T/298)^{-2.0}$.							
$NH_2 + O_3 \rightarrow HONO + OH$ (a)							
$\rightarrow HNO + HO_2$ (b)							
$\rightarrow NH_2O + O_2$ (c)							
Amidogen + Ozone							
80 HAC/HOR	EX	250-360	1.28(12)	0	638	2	
$k_a + k_b + k_c$. Discharge-flow. $NH_3 + F \rightarrow NH_2 + HF$.							
80 KUR/LES [1])	EX	298-380	2.52(12)	0	1258±252	2	
80 KUR/LES [1])	EX	298	(3.79±0.60)(10)			2	
[1]) $k_a + k_b + k_c$. Flash-photolysis. Laser Resonance-fluorescence.							
81 HAC/HOR	EX	248-358	(1.21±0.07)(12)	0	710±48	2	
$k_a + k_b + k_c$. Discharge-flow. $NH_3 + F \rightarrow NH_2 + HF$.							
80 BUL/BUL	EX	298	(7.23±1.81)(10)			2	
k_b. Flash-photolysis of NH_3/O_3 mixtures. Intra-cavity laser spectroscopy. $P(NH_3)$ = 5 torr.							
$NH_2 + H_2 \rightarrow NH_3 + H$							
Amidogen + Hydrogen molecule							
80 DEM/LES	EX	300-520	1.26(12)	0	4278±201	2	
Flash-photolysis. Resonance-absorption.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$NH_2 + NO \rightarrow [NH_2NO] \rightarrow N_2 + H_2O$ (a)							
$\rightarrow N_2O + H_2$ (b)							
$\rightarrow N_2 + H + OH$ (c)							
$\rightarrow N_2OH + H$ (d)							
$\rightarrow N_2H + OH$ (e)							
Amidogen + Nitrogen oxide (NO)							
72 BED/THO	RL	615-660	5.01(-3)	0	-3221±503	2/2	
k_a. Reaction of NH_3 with NO_2 in a Pyrex vessel. Photo-multiplier. k_{ref}: $NH_2 + NO_2 \rightarrow NH + HONO$.							
78 SAR/CHE	EX	293	(1.02±0.24)(13)			2	
k_a. Pulse photolysis. Laser Spectroscopy.							
78 ROO/HAN	ES	1700-3000	8.63(9)	0.5	0	2	
k_a. Shock-waves. NH_2 produced by applying incident shock-waves to a NH_3/NO (or NH_3/N_2O) mixture in Ar. Emission and IR-Laser-absorption. The pre-exponential factor expressed as: $A(T/298)^{0.5}$.							
79 HAC/SCH2	EX	210-503	7.15(12)	-1.85	0	2	
k_a. Discharge-flow. Resonance-fluorescence. The preexponential factor expressed as: $A(T/298)^{-1.85}$. P = (0.6-4.0) torr.							
79 NAD/SAR4	EX	298	1.02(13)			2	
k_a. Intracavity laser spectroscopy.							
81 ROO/HAN [1])	RL	1680-2850	≃2.3	0	6100	2/2	
$k_a/(k_a + k_b + k_c + k_d + k_e)$. Estimated ratio.							
81 ROO/HAN [1])	EX	1680-2850	7.0(13)	0	14000	2	2.0
k_a. Best data fit.							
[1]) NH_2 is produced by applying incident shock-waves to a NH_3/NO (or NH_3/N_2O) mixture in Ar.							
81 MOR2	EX	1790	<4.82(12)			2	
$k_a + k_b + k_c + k_d + k_e$. Premixed H_2/O_2/Ar flames. Laser-fluorescence. Upper-limit k. P = 760 torr.							
81 ROO/HAN	EX	1680-2850	3.0(13)	0	7900	2	2.0
$k_a + k_b + k_c + k_d + k_e$. M = Ar. NH_2 produced by applying incident shock-waves to a NH_3/NO (or NH_3/N_2O) mixture in Ar.							
81 SCH	EX	210-503	(7.15±2.12)(12)	-1.85	0	2	
$k_a + k_b + k_c + k_d + k_e$. Only the initial adduct, and channel (a), detected. Discharge-flow. Resonance-fluorescence. Mass-spectrometry. The preexponential factor expressed as: $A(T/298)^{-1.85}$. [NO] = $(0.07-1.51)\times10^{14}$ $molec.cm^{-3}$. P = 1 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 AND/JAC	EX	295	(1.0±0.3)(13)			2	
$k_a + k_b + k_c + k_d + k_e$. Isothermal-flow. NH_2 generated by NH_3 Laser-photolysis. Laser-induced Fluorescence. The most important channel is (e).							
82 SIL/KOL [1])	EX	294-1215	(5.38±0.86)(13)	-2.30	684±60	2	
The preexponential factor expressed as: $A(T/298)^{-2.30}$.							
82 SIL/KOL [1])	EX	298	5.42(12)			2	
[1]) $k_a + k_b + k_c + k_d + k_e$. Channels (a), (c) and (e) are most important. Reaction of NH_2 with NO in a high-T fast-flow reactor. NH_2 generated by reacting F with NH_3. [NO] = 4,2x10^{13} molec.cm^{-3}. P = (1.0-2.8) torr.							
82 STI/BRO [2])	EX	216-480	(1.23±0.40)(13)	-1.23	0	2	
The preexponential factor expressed as: $A(T/298)^{-1.23}$.							
82 STI/BRO [2])	EX	298	(1.26±0.18)(13)			2	
[2]) $k_a + k_b + k_c + k_d + k_e$. Channels (a), (c) and (e) are the most prominent. Flash-photolysis. Laser-induced fluorescence. NH_2 generated by Photolysis of NH_3 in Ar. P(NH_3) = (50-250) torr. P(Ar) = (5-20) torr. P(NO) < 2.6 mtorr.							
$NH_2 + NO_2 \rightarrow N_2O + H_2O$ (a)							
$\rightarrow N_2 + H_2O_2$ (b)							
$\rightarrow$ NH + HONO (c)							
Amidogen + Nitrogen oxide (NO_2)							
79 HAC/SCH2	EX	250-503	7.18(12)	-3.0	0	2	
$k_a + k_b$. Discharge-flow. Resonance-fluorescence. Channel (a) predominant. Channel (b) probably less than 5%. P = 1 torr. The preexponential factor expressed as: $A(T/298)^{-3.0}$.							
79 KUR/LES [1])	EX	298-505	1.39(13)	-1.3	0	2	
The preexponential factor expressed as: $A(T/298)^{-1.3}$.							
79 KUR/LES [1])	EX	298	(1.39±0.12)(13)			2	
[1]) $k_a + k_b$. Flash-photolysis. Resonance-fluorescence. P(Total) = (3.0-10.5) torr.							
81 SCH	EX	250-500	(7.18±1.89)(12)	-3.0	0	2	
$k_a + k_b$. Discharge-flow. Resonance-fluorescence. Mass-spectrometry. P = (1-16) torr. [NO_2] = (0.28-8.43)x10^{13} molec.cm^{-3}.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 SCH	RN	615-660	1.3(14)	0	2470	2	
k_c. Rate constant put on an absolute basis relative to the reaction: NO + NH_2 → N_2 + H_2O. by using the rate ratio reported in 72 BED/THO. Channel (c) occurs probably at temperatures over 600 K, but not at room temperature.							
NH_2 + NH_2 (+ M) → NH_2NH_2 (+ M)							
Amidogen							
71 GOR/MUL	EX	298	6.2(13)			2	
Gaseous NH_3 pulse-radioly							
73 BAC/YOK	ES	573	(4.7±2.0)(13)			2	
77 KHE/SOU [1]	EX	300-500	(1.50±0.75)(13)	0	0	2	
Limiting high-pressure k. No significant T-effect found. $P(N_2)$ = 1000 torr.							
77 KHE/SOU [1]	EX	300-500	(8.50±4.25)(14)	0	0	2	
$P(N_2)$ = 0. (extrapolation to zero-pressure.) E_a = 0 or ±500 cal./mol.							
79 LOZ/NAD [2]	EX	298	(3.61±1.51)(13)			2	
M = Ar, N_2. Limiting high-pressure k.							
79 PAG/ERI	EX	349	1.6(13)			2	
Gaseous NH_3 pulse-radiolysis.							
71 GEH/HOY	RL	213-473	4.7(6)			3/2	
M = He. k_{ref}: NH_2 + NH_2 → NH + NH_3							
77 KHE/SOU [1]	EX	300-500	(2.55±1.28)(18)	0	0	3	
M = N_2. M-efficiencies relative to N_2 are: 1.0(N_2), 0.4(Ar), 4.0(NH_3). No significant T-effect found. At 20 torr. a small negative T-coefficient is observed: $-1 < E_a < -0.5$ kcal/mol. P < 20 torr.							
79 LOZ/NAD [2]	EX	298	(2.50±0.83)(18)			3	
M = N_2. Limiting low-pressure k. M-efficiencies relative to N_2 are: 1.00(N_2), 0.42(Ar).							
[1]) Flash-photolysis of NH_3.							
[2]) Intraresonator laser spectroscopy. Flash-photolysis. P = (10-760) torr.							
NH_2 + NH_2NH_2 → NH_3 + NH_2NH							
Amidogen + Hydrazine							
71 GEH/HOY	EX	300	(3.1±0.4)(11)			2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$NH_2(^2A_1) + HN_3(^1A') \rightarrow NH_3(^1A_1) + N_3(^2\Pi_g)$ (a)							
$\rightarrow NH_2(^2B_1) + HN_3(^1A')$ (b)							
Amidogen + Hydrazoic acid							
80 PIP/KRE	EX	298	5.60(13)			2	
k_a. UV photolysis of HN_3 at 290 nm.							
Laser-induced fluorescence.							
P(Tot) = (5-50) torr.							
78 MCD/MIL	EX	298	(1.93±0.18)(14)			2	
$k_a + k_b$. HN_3 photolysis. Gas-chromatography.							
Channel (b) is predominant.							
$NH_2(^2A_1) + CH_4 \rightarrow NH_3(^1A_1) + CH_3$ (a)							
$\rightarrow NH_2(^2B_1) + CH_3$ (b)							
Amidogen + Methane							
80 DEM/LES	ES	300-520	(5.0±2.0)(11)	0	5284±252	2	
k_a. Flash-photolysis. Resonance-absorption.							
Tentative k.							
78 MCD/MIL	EX	298	(1.81±0.18)(14)			2	
$k_a + k_b$. HN_3 photolysis. Gas-chromatography.							
Channel (b) is predominant.							
$NH_2 + HCONH_2 \rightarrow NH_3 + CONH_2$							
Amidogen + Formamide							
73 BAC/YOK	ES	573	8.4(9)			2	
$NH_2 + CH{\equiv}CH \rightarrow$ products (overall)							
Amidogen + Ethyne							
81 SCH	EX	210-505	(2.92±0.84)(9)	-2.7	0	2	
Discharge-flow. Mass-spectrometry. Same data given in 70 HAC/SCH_2. The preeexponetial factor expressed as: $A(T/298)^{-2.7}$. P = (0.4-15) torr. [CH≡CH] = $(0.15-4.16)\times10^{16}$ molec.cm^{-3}. $[NH_2]_o = (0.05-1.20)\times10^{13}$ molec.cm^{-3}.							
82 BOS	EX	241-263	(6.69±2.17)(10)	0	1852±100	2	
NH_3 flash-photolysis. Laser-induced fluorescence.							
Limiting high-pressure k. P(Tot) = (5-100) torr.							
$NH_2 + CH_2{=}CH_2 \rightarrow$ products (overall)							
Amidogen + Ethene							
79 KHE/LES [1])	EX	300-500	1.2(11)	0	1988±101	2	
79 KHE/LES [1])	EX	300	(1.65±0.25)(8)			2	
[1]) Flash-photolysis. Laser Resonance-absorption. Supersedes 78 LES/KHE.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 SCH	EX	295-505	(1.3±0.7)(9)	0	0	2	
Discharge-flow. Mass-spectrometry.							
Same data given in 79 HAC/SCH2.							
$[CH_2{=}CH_2]$ = $(0.04\text{-}3.07)\times10^{16}$ molec.cm^{-3}.							
$[NH_2]_o$ = $(0.08\text{-}1.59)\times10^{13}$ molec.cm^{-3}.							
P = (0.4-10.5) torr.							
82 BOS	EX	250-365	(2.05±0.07)(10)	0	1318±23	2	
Ammonia Flash-photolysis.							
Laser-induced fluorescence.							
P(Tot) = (5-100) torr.							
$NH_2(^2A_1)$ + $CH_2{=}CH_2$ → $NH_3(^1A_1)$ + $CH_2{=}CH$ (a)							
→ $NH_2(^2B_1)$ + $CH_2{=}CH_2$ (b)							
Amidogen + Ethene							
78 MCD/MIL	EX	298	(1.87±0.18)(14)			2	
k_a + k_b. HN_3 photolysis.							
Channel (b) predominant.							
NH_2 + CH_3CH_2 → $CH_3CH_2NH_2$ (a)							
→ NH_3 + $CH_2{=}CH_2$ (b)							
Amidogen + Ethyl							
82 DEM/LES	DE	298	(2.5±0.5)(13)			2	
k_a + k_b. Flash-photolysis. Resonance-Absorption.							
NH_2 and CH_3CH_2 generated by flashing NH_3 in							
presence of $CH_2{=}CH_2$. Best-fit by simulation.							
Supersedes 78 LES/DEM.							
NH_2 + CH_3CH_3 → NH_3 + CH_3CH_2							
Amidogen + Ethane							
80 DEM/LES	EX	300-520	3.7(11)	0	3598±141	2	
Flash-photolysis. Resonance-absorption.							
NH_2 + $CH_2{=}C{=}CH_2$ → products (overall)							
Amidogen + 1,2-Propadiene							
81 SCH	EX	298	≤5.0(8)			2	
Discharge-flow. Mass-spectrometry. Upper-limit k.							
$[CH_2{=}C{=}CH_2]$ = $(0.4\text{-}1.39)\times10^{16}$ molec.cm^{-3}.							
P = 1 torr. Same data given in 79 HAC/SCH2.							
NH_2 + $CH_3CH{=}CH_2$ → products (overall)							
Amidogen + 1-Propene							
76 LES/SOU	EX	300-500	2.9(11)	0	2164±101	2	
76 LES/SOU	EX	300	(2.2±0.3)(8)			2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
79 KHE/LES [1])	EX	300-500	2.8(11)	0	2164±101	2	
79 KHE/LES [1])	EX	300	(2.15±0.35)(8)			2	
[1]) Flash-photolysis. Resonance-absorption.							
Supersedes 78 LES/KHE.							
81 SCH	EX	298	≤6.0(8)			2	
Discharge-flow. Resonance-fluorescence.							
Mass-spectrometry. Upper-limit k.							
$[CH_3CH{=}CH_2]$ = $(2.10\text{-}2.77)\times10^{16}$ molec.cm^{-3}.							
P = 1 torr.							
Same data given in 79 HAC/SCH2.							
NH_2 + △ → products (overall)							
Amidogen + Cyclopropane							
81 SCH	EX	250-300	(1.9±0.6)(8)	0	0	2	
Discharge-flow. Mass-spectrometry.							
[Cyclopropane] = $(0.49\text{-}7.83)\times10^{16}$ molec.cm^{-3}.							
$[NH_2]_o$ = $(0.36\text{-}2.41)\times10^{13}$ molec.cm^{-3}.							
P = (7.5-15) torr.							
$NH_2(^2A_1)$ + △ → NH_3 + △• (a)							
→ $NH_2(^1B_1)$ + △ (b)							
Amidogen + Cyclopropane							
78 MCD/MIL	EX	298	(1.87±0.18)(14)			2	
$k_a + k_b$. HN_3 photolysis. Channel (b) predominant.							
$NH_2 + (CH_3)_2CH \rightarrow (CH_3)_2CHNH_2$ (a)							
$\rightarrow NH_3 + CH_3CH{=}CH_2$ (b)							
Amidogen + Ethyl, 1-methyl-							
82 DEM/LES	DE	298	(2.0±0.4)(13)			2	
$k_a + k_b$. Flash-photolysis. Resonance-absorption.							
NH_2 and $(CH_3)_2CH$ generated by flashing NH_3 in							
presence of 1-Propene. Best-fit by simulation.							
Supersedes 78 LES/DEM.							
$NH_2 + CH_3CH_2CH_3 \rightarrow NH_3 + CH_3CH_2CH_2$ (a)							
$\rightarrow NH_3 + (CH_3)_2CH$ (b)							
Amidogen + Propane							
80 DEM/LES	EX	300-520	4.5(11)	0	3095±126	2	
$k_a + k_b$. Flash-photolysis. Resonance-absorption.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$NH_2 + CH_2{=}CHCH{=}CH_2 \rightarrow$ products							
Amidogen + 1,3-Butadiene							
81 SCH [1])	EX	230-360	(3.8±1.3)(11)	0	1140	2	
81 SCH [1])	EX	298	(6.7±2.3)(9)			2	
[1]) Discharge-flow. Mass-spectrometry. $[CH_2{=}CHCH{=}CH_2]$ = $(0.03\text{-}1.20)\times10^{16}$ molec.cm^{-3}. $[NH_2]_o$ = $(0.22\text{-}1.33)\times10^{13}$ molec.cm^{-3}.							
82 HAC/SCH	EX	230-360	3.8(11)	0	1140	2	
Discharge-flow. $NH_3 + F \rightarrow NH_2 + HF$. [1,3-Butadiene]$_o$ < $1{,}0\times10^{16}$ molec.cm^{-3}. $[NH_2]_o$ = $(0.2\text{-}1.2)\times10^{13}$ mole.cm^{-3}. P = (1.5-7.5)							
$NH_2 + CH_3CH_2CH{=}CH_2 \rightarrow$ products							
Amidogen + 1-Butene							
79 KHE/LES [1])	EX	300-500	2.8(11)	0	2063±101	2	
79 KHE/LES [1])	EX	300	(3.00±0.45)(8)			2	
[1]) Flash-photolysis. Resonance-absorption.							
NH_2 + cis-$CH_3CH{=}CHCH_3 \rightarrow$ products							
Amidogen + 2-Butene, (Z)-							
79 KHE/LES [1])	EX	300-500	3.3(11)	0	2164±101	2	
79 KHE/LES [1])	EX	300	(2.55±0.40)(8)			2	
[1]) Flash-photolysis. Resonance-absorption.							
NH_2 + trans-$CH_3CH{=}CHCH_3 \rightarrow$ products							
Amidogen + 2-Butene, (E)-							
79 KHE/LES [1])	EX	300-500	3.5(11)	0	2139±101	2	
79 KHE/LES [1])	EX	300	(2.95±0.45)(8)			2	
[1]) Flash-photolysis. Resonance-absorption.							
$NH_2 + (CH_3)C{=}CH_2 \rightarrow$ products							
Amidogen + 1-Propene, 2-methyl-							
79 KHE/LES [1])	EX	300-500	4.6(11)	0	2265±101	2	
79 KHE/LES [1])	EX	300	(2.55±0.40)(8)			2	
[1]) Flash-photolysis. Resonance-absorption.							
$NH_2 + (CH_3)_3C \rightarrow (CH_3)_3CNH_2$ (a)							
$\rightarrow NH_3 + (CH_3)_2C{=}CH_2$ (b)							
Amidogen + Ethyl, 1,1-dimethyl-							
82 DEM/LES	ES	298	(2.5±0.5)(13)			2	
$k_a + k_b$. Flash-photolysis. Resonance-absorption. Best-fit by simulation. Supersedes 78 LES/DEM.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$NH_2 + CH_3CH_2CH_2CH_3 \rightarrow NH_3 + CH_3CH_2CH_2CH_2$ (a)							
$\rightarrow NH_3 + CH_3CH_2CHCH_3$ (b)							
Amidogen + Butane							
80 DEM/LES	EX	300-520	7.0(11)	0	3070±126	2	
$k_a + k_b$. Flash-photolysis. Resonance-absorption.							
$NH_2 + (CH_3)_3CH \rightarrow NH_3 + (CH_3)_3C$ (a)							
$\rightarrow NH_3 + (CH_3)_2CHCH_2$ (b)							
Amidogen + Propane, 2-methyl-							
79 KHE/LES [1])	EX	300-500	2.4(11)	0	2516±101	2	
79 KHE/LES [1])	EX	300	(6.2±0.9)(7)			2	
[1]) Flash-photolysis. Resonance-absorption.							
80 DEM/LES	EX	300-520	2.3(11)	0	2466±111	2	
$k_a + k_b$. Flash-photolysis. Resonance-absorption.							
$NH_2 + CH_3CH_2CH_2CH_2CH_3 \rightarrow NH_3 + CH_3CH_2CH_2CH_2CH_2$ (a)							
$\rightarrow NH_3 + CH_3CH_2CH_2CHCH_3$ (b)							
$\rightarrow NH_3 + (CH_3CH_2)_2CH$ (c)							
Amidogen + Pentane							
80 HAC/HOR	EX	250-360	3.7(10)	0	1227	2	
$k_a + k_b + k_c$. Discharge-flow.							
$NH_3 + F \rightarrow NH_2 + HF$.							
$NH_3 (+ M) \rightarrow NH_2 + H (+ M)$ (a)							
$\rightarrow NH + H_2 (+ M)$ (b)							
Ammonia							
73 GEN/ZHI	EX	2200-2600	6.61(12)	0	49321±2516	1	3.47
k_a. M = Ar. Limiting high-pressure k.							
72 HAL	EX	1989-2693	1.0(14)	0	42386	2	
k_a. M = Ar.							
73 GEN/ZHI	EX	2300-3100	5.76(15)	0	38752±2516	2	6.31
k_a. M = Ar. Limiting low-pressure k.							
77 FIS	ES	1950-2100	2.7(16)	0	42406	2	
k_a. M = H_2O.							
Rich $NH_3/O_2/N_2$ flames.							
80 ROO/HAN [1])	DE	2200-3450	2.52(16)	0	47200	2	
80 ROO/HAN [1])	DE	2798	1.19(9)			2	
[1]) k_a. M = Ar. NH_3 decomposition behind incident shock-waves. Data-fit.							
P = (0.14-0.6) atm.							
80 YUM/ASA [2])	EX	2050-3070	1.38(16)	0	45596	2	
$[NH_3]_o = (0.03-4.8)\times10^{15}$ molec.cm^{-3}.							
$[Ar] = (0.3-5.4)\times10^{18}$ molec.cm^{-3}.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 YUM/ASA [2])	EX	1740-3050	1.78(16)	0	46351±1711	2	2.14
$[NH_3]_o$ = (0.6-4.8)x10^{14} molec.cm^{-3}.							
[Ar] = (0.02-1.2)x10^{19} molec.cm^{-3}.							
[2]) k_a. M = Ar.							
Thermolysis of NH_3 behind incident shock-waves.							
Vacuum-UV Absorption-spectroscopy.							
80 ROO/HAN [3])	DE	2798	3.4(6)			2	
k_b.							
80 ROO/HAN [3])	RL	2798	≤1.0(-2)			2/2	
k_b/k_a.							
[3]) NH_3 decomposition behind incident shock-waves.							
Rate constant and rate ratio determined by							
computer simulation.							
P = (0.14-0.6) atm.							
73 VOM1	EX	2300-3200	2.51(14)	0	33216±2013	2	2.0
$k_a + k_b$. M = Ne.							
72 HAL	EX	1989-2693	4.12(12)	0	41983	2	
$k_a + k_b$. M = Ar.							
Overall decomposition.							
79 DOV/NIP	EX	2500-3000	1.2(16)	0	45798	2	2.0
$k_a + k_b$.							
Pyrolysis behind reflected shock-waves.							
M = (88.9-99.7)% Kr + (0.16-5.0)% Ar.							
Data-fit.							
81 HOL/WAG [4])	EX	200-330	4.0(16)	0	47272	2	
$k_a + k_b$. M = Ar.							
Limiting low-pressure k.							
81 HOL/WAG [4])	EX	2200-3300	5.5(15)	0	54250	1	
$k_a + k_b$. M = Ar.							
Extrapolated limiting high-pressure k.							
[4]) Thermolysis of NH_3 behind shock-waves.							
Total density = 5.4x10^{17}-1.2x10^{20} molec.cm^{-3}.							

NH_3 + HONO → products

Ammonia + Nitrous acid

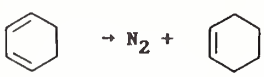
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
78 KAI/JAP2	EX	300	≤9.03(6)			2	
Discharge-flow. Upper-limit k.							

NH_3 + CH_2=CHCN → $NH_2CH_2CH_2CN$

Ammonia + 2-Propenenitrile (Acrylonitrile)

→ Propanenitrile, 3-amino- (β-Aminopropionitrile)

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 SAI/MIC	EX	303-408	6.55(13)	0	9109	2	
Reaction in an Autoclave.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
NH=NH → products							
Diazene							
73 WIL/BAC	EX	295	(3.8±0.5)(-3)			1	
Decomposition in gas phase at 295 K. The only products observed: N_2, H_2, and NH_2NH_2. Ammonia not observed, but cannot be ruled out.							
cis-NH=NH + CH_2=CHCH=CH_2 → N_2 + CH_3CH_2CH=CH_2							
Diazene, (Z)- + 1,3-Butadiene							
74 VID/WIL	RL	373	(6.5±0.7)(-2)			2/2	
k_{ref}: cis-NH=NH + CH_2=CH_2 → N_2 + CH_3CH_3							
Estimated ratio.							
cis-NH=NH + cis-CH_3CH=$CHCH_3$ → N_2 + $CH_3CH_2CH_2CH_3$							
Diazene, (Z)- + 2-Butene, (Z)-							
74 VID/WIL	RL	373	(1.1±0.1)(-1)			2/2	
k_{ref}: cis-NH=NH + CH_2=CH_2 → N_2 + CH_3CH_3							
Estimated ratio.							
cis-NH=NH + trans-CH_3CH=$CHCH_3$ → N_2 + $CH_3CH_2CH_2CH_3$							
Diazene, (Z)- + 2-Butene, (E)-							
74 VID/WIL	RL	373	(3.3±0.3)(-1)			2/2	
k_{ref}: cis-NH=NH + CH_2=CH_2 → N_2 + CH_3CH_3							
Estimated ratio.							
cis-NH=NH +  **→ N_2 +**							
Diazene, (Z)- + 1,3-Cyclohexadiene							
74 VID/WIL	RL	373	(5.0±0.2)(-2)			2/2	
k_{ref}: cis-NH=NH + CH_2=CH_2 → N_2 + CH_3CH_3							
Estimated ratio.							
cis-NH=NH + $(CH_3)_2C$=$C(CH_3)_2$ → N_2 + $(CH_3)_2CHCH(CH_3)_2$							
Diazene, (Z)- + 2-Butene, 2,3-dimethyl-							
74 VID/WIL	RL	373	(2.0±0.1)(-2)			2/2	
k_{ref}: cis-NH=NH + CH_2=CH_2 → N_2 + CH_3CH_3							
Estimated ratio.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
trans-NH=NH → cis-NH=NH (a)							
trans-NH=NH + cis-NH=NH → NH_2NH_2 + N_2 (b)							
→ trans-NH=NH + N_2 + H_2 (c)							
Diazene, (E)-							
77 WIL/BAC	EX	296-433	3.0	0	2114	1	
$k_a + k_b + k_c$.							
74 VID/WIL	ES	373	~1.0(-2)			1	
k_a.							
77 WIL/BAC	ES	296-433	1.8	0	2114	1	
k_a. Determined from the above mechanism.							
74 VID/WIL	RL	373	(6.0±2.0)			2/2	
k_b/k_{ref}. Estimated ratio.							
k_{ref}:							
cis-NH=NH + CH_2=CH_2 → N_2 + CH_3CH_3							
77 WIL/BAC	RL	296-433	2.33			2/2	
k_b/k_c. Determined from the above mechanism.							
trans-ND=ND → cis-ND=ND (a)							
trans-ND=ND + cis-ND=ND → ND_2ND_2 + N_2 (b)							
→ trans-ND=ND + N_2 + D_2 (c)							
Diazene-d_2, (E)-							
77 WIL/BAC	EX	296-433	2.0	0	2214	1	
$k_a + k_b + k_c$.							
77 WIL/BAC	ES	296-433	1.0	0	2214	1	
k_a. Determined from the above mechanism.							
77 WIL/BAC	RL	296-433	4.9(1)			2/2	
k_b/k_c. Determined from the above mechanism.							
NH_2NH + NH_2NH → NH_3 + NH_3 + N_2							
Hydrazyl							
79 PAG/ERI	EX	349	1.0(14)			2	
Gaseous NH_3 pulse-radiolysis.							
NH_2NH_2 (+ M) → NH_2 + NH_2 (+ M)							
Hydrazine							
74 GEN/ZHI	EX	1100-1400	3.98(13)	0	26673±1007	1	2.51
M = Ar. Limiting high-pressure k.							
HN_3 (+ M) → $NH(a^1\Delta)$ + $N_2(^1\Sigma_g^+)$ (+ M) (a)							
→ $NH(^3\Sigma^-)$ + $N_2(^1\Sigma_g^+)$ (+ M) (b)							
Hydrazoic acid							
72 ZAS/KOG	EX	1045-1450	1.78(11)	0	20131	1	
$k_a + k_b$. M = Ar. Channel (a) is predominant.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
79 KAJ/YAM	EX	1200-1350	7.59(14)	0	18218±805	2	1.9
$k_a + k_b$. M = Ar. HN_3 Thermolysis.							
Channel (b) is predominant in this T-range.							
P(Ar) = (600-2200) torr.							
82 DUP/PAI [1])	EX	1250-1400	5.5(13)	0	14000	2	
82 DUP/PAI [1])	EX	1450-2000	2.2(12)	0	9750	2	
[1]) $k_a + k_b$. M = Ar. Thermolysis of HN_3							
in Ar behind incident shock-waves.							
0.5% HN_3. (98-99.5)% Ar.							
Channel (a) is predominant.							
79 KAJ/YAM	EX	1200-1350	7.59(13)	0	15702±1007	2	2.24
k_b. NH_3 pyrolysis. P(Ar) = (600-2200) torr.							
HNO + HNO → H_2O + N_2O (a)							
→ H_2O_2 + N_2 (b)							
Nitrosyl hydride							
73 WIE/HEI	RL	298-423	5.1(1)	0	0		2/2
k_a/k_b. T-independent k.							
75 CAL/CAR	EX	295	(3.22±1.08)(9)			2	
k_a. Flash Photolysis of H_2/NO mixtures.							
HNO absorption at 207.3 nm.							
81 CHE/NAD	EX	298	(9.03±4.82)(8)			2	
k_a. CH_3CHO/HCHO/NO flash-photolysis.							
Intracavity Laser-spectroscopy.							
P(NO) = (6-20) torr. P(HCHO) = 7 torr.							
P(CH_3CHO) = 12.2 torr.							
DNO + DNO → D_2O + N_2O							
Nitrosyl hydride-d							
75 CAL/CAR	EX	295	(1.31±0.48)(9)			2	
D_2/NO flash-photolysis.							
206.4 nm. DNO absorption.							
HONO (+ M) → OH + NO (+ M)							
Nitrous acid							
76 FIF	EX	1000-1400	≥5.5(12)	0	24157	1	
M = Ar. Limiting high-pressure k.							
$HONO^†$ → OH + NO							
Nitrous acid							
76 OVE/PAR	EX	295	(1.18±0.186)(9)			1	
M = H_2O, CF_2, SF_6, N_2, Ar, or He.							
$HONO^†$ formed by OH + NO.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$HONO + O_3 \rightarrow HONO_2 + O_2$							
Nitrous acid + Ozone							
77 KAI/JAP [1])	EX	226	≤3.01(5)			2	
77 KAI/JAP [1])	EX	300	≤6.02(4)			2	
[1]) Upper limit k's.							
P(Tot) = (20-30) torr.							
79 STR/WEL	EX	296	≤(2.71±1.81)(5)			2	
Upper-limit k.							
$HONO + HONO \rightarrow NO + HO_2 + H_2O$							
Nitrous acid							
75 ENG/COR	RN	298	5.6(6)			2	
75 ENG/COR	DE	298-323	(1.10±0.21)(13)	0	4320±62	2	
A and B recalculated from the reported data.							
Optimization. $k_1 = k_{-1}K$.							
76 CHA/NOR	EX	296	(5.71±1.63)(5)			2	
$HONO + HONO_2 \rightarrow NO_2 + NO_2 + H_2O$							
Nitrous acid + Nitric acid							
74 ENG/COR	EX	298	(5.85±0.31)(6)			2	
74 ENG/COR	EX	298-323	(3.71±0.48)(12)	0	3987±41	2	
A and B recalculated from the reported data.							
77 KAI/WU	EX	300	(9.34±1.81)(6)			2	
79 STR/WEL	EX	296	6.63(6)			2	
$HONO_2$ (+ M) $\rightarrow OH + NO_2$ (+ M)							
Nitric acid							
74 GLA/TRO1 [1])	EX	900-1200	≃2.0	0	24660	1	
Extrapolated limiting high-pressure k.							
74 GLA/TRO1 [1])	RN	295-1200	1.26(15)	0	24006	1	1.58
Limiting high-pressure k over extended T-range.							
73 GER/DEM	EX	1013-1170	1.39(15)	0	16105±906	2	2.00
M = He.							
74 GLA/TRO1 [1])	EX	900-1200	≃2.2(17)	0	20130	2	
Extrapolated, Limiting low-presssure k.							
Concentration-dependent Arrhenius							
expression = k/[Ar].							
74 GLA/TRO1 [1])	RN	295-1200	1.10(20)	-1.98	24006	2	1.58
Extended T-range, limiting low-pressure k.							
Concentration-dependent Arrhenius							
expression = k/[Ar]. The preexponential							
factor expressed as: $A(T/298)^{-1.98}$.							
[1]) M = Ar.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
78 BAS/KOG	EX	863-1173	6.0(14)	0	15148±1596	2	4.68
79 GER/DEM	EX	1050-1200	1.69(15)	0	16105±906	2	2.0
M = He.							
M-efficiencies relative to He are:							
1.0(He), 0.77(Ar), 1.1(N_2). P = (2-5) torr.							
HO_2NO_2 (+ M) → HO_2 + NO_2 (+ M) (a)							
→ HONO + O_2 (+ M) (b)							
Peroxynitric acid							
77 GRA/WIN [1])	EX	254-283	1.4(14)	0	10418±252	1	1.1
77 COX/DER [1])	EX	300-328	1.26(16)	0	11700±110	1	39.8
78 GRA/WIN [1])	EX	278	~1.8(-2)			1	
M = N_2. Limiting high-pressure k.							
77 SIM/HEI [1])	RN	245-328	6.0(17)	0	13085	1	
78 SIM/HEI [1]) [2])	RN	245-328	6.31(17)	0	13085±2516	1	
Δlogk = 3.5.							
[1]) k_a.							
78 SIM/HEI [2])	RL	245-328	3.0(9)	0	5788	1/1	
k_a/k_b.							
78 SIM/HEI [2])	EX	245-328	1.0(8)	0	7046±755	1	10.0
k_b.							
[2]) $N_2O/H_2/O_2$/NO photolysis.							
78 GRA/WIN	EX	261-295	3.13(18)	0	10015±252	2	
k_a. M = N_2.							
M-efficiencies relative to N_2 are:							
1.00(N_2), 0.83(O_2). Limiting low-pressure k.							
NH_2O → NHOH							
Nitroxide							
80 BUL/BUL	EX	298	(1.3±0.1)(3)			1	
NH_2O + O_3 → NH_2 + O_2 + O_2							
Nitroxide + Ozone							
80 BUL/BUL	EX	298	(1.2±0.9)(10)			2	
$NH_2O_2^{\dagger}$ → NH_2 + O_2 (a)							
→ HNO + OH (b)							
Aminodioxy							
81 FUJ/MIY1 [1])	DE	300-2200	(1.0±0.3)(10)	0	0	1	
k_a.							
81 FUJ/MIY1 [1])	DE	300-2200	(1.3±0.3)(10)	0	0	1	
k_b.							
[1]) Oxidation of NH_3 behind reflected shock-waves.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$C + O_2 \rightarrow CO + O$							
Carbon atom + Oxygen molecule							
71 HUS/KIR3	EX	300	(1.99±0.90)(13)			2	
Vacuum-UV Time-Resolved Resonance Radiation.							
75 HUS/YOU	EX	300	(1.57±0.18)(13)			2	
$C(2^1D_2)$ (+ M) → products							
Carbon atom							
71 HUS/KIR2	EX	300	(9.64±3.61)(12)			2	
M = CO.							
M-efficiencies relative to CO are:							
1.00(CO), 2.31(CO_2), 2.94(NO), 8.75(N_2O),							
8.75(N_2O), 13.13(CH_4), ~1.63(O_2), ~1.06(H_2O),							
~23.13(CH_2=CH_2).							
$C(2^1D_2) + H_2 \rightarrow CH + H$							
Carbon atom + Hydrogen molecule							
71 HUS/KIR1	EX	300	(1.57±0.18)(14)			2	
$C + H_2$ (+ M) → CH_2 (+ M)							
Carbon atom + Hydrogen molecule							
71 HUS/KIR3	EX	300	(2.58±0.91)(16)			3	
M = He.							
Vacuum-UV Time-Resolved Resonance Radiation.							
75 HUS/YOU	EX	300	(2.5±0.44)(16)			3	
M = He.							
$C + H_2O \rightarrow CO + N_2$ (a)							
→ HCHO (b)							
Carbon atom + Water							
71 HUS/KIR3	EX	300	≤2.17(11)			2	
$k_a + k_b$.							
Vacuum-UV Time-Resolved Resonance Radiation.							
Upper-limit k.							
75 HUS/YOU	EX	300	<6.02(11)			2	
$k_a + k_b$.							
Upper-limit k.							
$C + N_2$ (+ M) → CN_2 (+ M)							
Carbon atom + Nitrogen molecule							
71 HUS/KIR3	EX	300	(1.12±0.54)(15)			3	
M = Ar.							
Vacuum-UV Time-Resolved Resonance Radiation.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$C + NO \rightarrow CN + O$							
Carbon atom + Nitrogen oxide (NO)							
71 HUS/KIR3	EX	300	(4.40±1.33)(13)				2
Time-Resolved Resonance Radiation.							
75 HUS/YOU	EX	300	(2.89±0.49)(13)				2
$C + N_2O \rightarrow CO + N_2$ (a)							
$\rightarrow CN + NO$ (b)							
Carbon atom + Nitrogen oxide (N_2O)							
71 HUS/KIR3	EX	300	(1.51±0.96)(13)				2
$k_a + k_b$. Time-Resolved Resonance Radiation.							
75 HUS/YOU	EX	300	(7.83±1.81)(12)				2
$k_a + k_b$.							
$C + C (+ M) \rightarrow C_2 (+ M)$							
Carbon atom							
76 SLA	ES	5000-6000	(1.98±1.10)(17)	-1.6	0		3
M = Ar. Based on reverse reaction measurements. The preexponential factor expressed as: $A(T/298)^{-1.6}$.							
$C + CO (+ M) \rightarrow C_2O (+ M)$							
Carbon atom + Carbon monoxide							
71 HUS/KIR3	EX	300	(2.29±0.98)(16)				3
M = He. Vacuum UV Time-Resolved Resonance Radiation.							
$C + CO_2 \rightarrow CO + CO$							
Carbon atom + Carbon dioxide							
71 HUS/KIR3	EX	300	<6.02(9)				2
Time-Resolved Resonance-Radiation. Upper-limit k.							
75 HUS/YOU	EX	300	<6.02(8)				2
Upper-limit k.							
$C + CH_2 \rightarrow H_2 + C_2(d^3\Pi_g)$							
Carbon atom + Methylene							
82 GRE/HOM2	EX	298	≃7.0(13)				2
Reaction of the CH≡CH/CH/O/H system, diluted in N_2/He carrier gas. Discharge-flow. Resonance-fluorescence. O atoms generated by reacting N with NO. P = 2 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$C + CH_4 \rightarrow CH_2{=}CH_2$							
Carbon atom + Methane							
71 HUS/KIR3	EX	300	<1.20(9)			2	
Time-Resolved Resonance-Radiation.							
Upper-limit k.							
$C + CN \rightarrow C_2 + N$							
Carbon atom + Cyanogen							
76 SLA	ES	5000-8000	(3.0±1.5)(14)	0	18118	2	
$C + O{=}C{=}C{=}C{=}O \rightarrow$ products							
Carbon atom + 1,2-Propadiene-1,3-dione							
75 HUS/YOU	EX	300	(1.08±0.12)(14)			2	
$C(^1S_0) + O{=}C{=}C{=}C{=}O \rightarrow$ products							
Carbon atom + 1,2-Propadiene-1,3-dione							
74 HUS/KIR	EX	300	6.02(13)			2	
$CO + O_2 \rightarrow CO_2 + O$							
Carbon monoxide + Oxygen molecule							
71 BRA/BEL1	ES	1300-1900	1.6(13)	0	20634	2	3.47
71 DEA/KIS	DE	1750-2575	1.20(13)	0	30196	2	
Shock-waves. Best-fit to experimental data.							
74 RAW/GAR1	EX	1500-2500	1.2(11)	0	17614	2	
Shock-waves.							
76 WEI	EX	2500-2900	2.5(13)	0	24157	2	
$CO + O_3 \rightarrow$ products							
Carbon monoxide + Ozone							
72 ARI/WAR	EX	296	≤2.41(-1)			3	
Upper-limit k. Possible products: $CO_2 + O_2$.							
73 STE/NIK2	EX	298	≤6.02(2)			2	
Upper-limit k.							
$CO + SO_2(^3B_1) \rightarrow CO_2 + SO$							
Carbon monoxide + Sulfur dioxide							
77 SU/CAL	EX	298	2.60(9)			2	
Photolysis of SO_2/CO mixtures.							
$CO + NO_2 \rightarrow CO_2 + NO$							
Carbon monoxide + Nitrogen oxide (NO_2)							
76 MIL	EX	950-1500	3.24(13)	0	16105±654	2	1.78
77 FRE/PAL	EX	1309-1946	2.19(13)	0	14696±805	2	1.66

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
77 FRE/PAL	SE	298-2000	8.9(13)	0	17011	2	2.0
Best fit. Preferred k.							
79 MIL/ADA	EX	950-1500	3.24(13)	0	16105±654	2	1.78
Single-pulse shock-tube.							
80 PAL/FRE	EX	950-1950	8.91(13)	0	17011	2	
Incident shock-waves.							
P = (10-70) torr.							
$CO + NO_2(^2B_2) \rightarrow CO_2 + NO$							
Carbon monoxide + Nitrogen oxide (NO_2)e							
76 HER/MAR	EX	298	7.23(8)			2	
At (506±1) nm.							
76 HER/MAR	EX	298	1.33(8)			2	
At 750 nm.							
78 HER/MAR	EX	298	(1.93±0.72)(9)			2	
Laser-induced fluorescence. At 488 nm.							
$CO + N_2O \rightarrow CO_2 + N_2$							
Carbon monoxide + Nitrogen oxide (N_2O)							
73 MIL/MAT	EX	1169-1655	2.09(11)	0	8707±1158	2	2.29
76 MIL	EX	1169-1655	7.08(11)	0	10569±1057	2	2.19
79 ZAS/LOS [1])	EX	1700-2500	2.75(15)	0	25164±604	2	5.75
In 76% Ar.							
79 ZAS/LOS [1])	EX	1500-1900	7.08(14)	0	26673±2013	2	2.0
In 97% Ar.							
[1]) Exchange reaction behind reflected shock-waves.							
CO_2 (+ M) → CO + O (+ M)							
Carbon dioxide							
74 WAG/ZAB	EX	2740-3700	9.0(12)	0	65274	1	
M = Ar. Limiting high-pressure k.							
73 DEA	EX	3700-5600	6.31(13)	0	42637±926	2	1.23
M = Ar.							
74 HAR/VAS	EX	3400-4400	2.7(14)	0	53347	2	
M = Ar. In Aluminum shock-tubes. Low P.							
74 HAR/VAS	EX	2700-4300	4.7(14)	0	52843	2	
M = Ar. In Brass shock-tubes. Low P.							
74 KIE	EX	3600-6503	3.89(14)	0	53951±503	2	
M = Kr. Shock waves.							
74 WAG/ZAB	EX	3000-4561	5.1(14)	0	55561	2	
M = Ar. Concentration-dependent Arrhenius expression = k[Ar]. Limiting low-pressure k.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
76 EBR/SAN	EX	2500-7000	1.29(14)	0.5	52340±1258	2	
The preexponential factor expressed as: $A(T/298)^{0.5}$.							
CO_2 + C_2O → products							
Carbon dioxide + Carbon oxide (C_2O)							
80 DON/PIT	EX	298	<6.02(9)			2	
Laser photodissociation of C_3O_2 at 266 nm. Dye-laser induced fluorescence. Upper-limit k.							
CH + O_2 → CO + OH($A^2\Sigma^+$) (a)							
→ CO_2 + H (b)							
→ CHO + O (c)							
→ CO + O + H (d)							
Methylidyne + Oxygen molecule							
79 MES/SAD	EX	298	(1.99±0.24)(13)			2	
k_a. Laser-induced fluorescence.							
82 GRE/HOM1	EX	298	4.8(10)			2	
Ethyne/O/H reaction in He/N_2. Discharge-flow. Resonance-fluorescence. Best-fit. O atoms generated reacting N with NO. H atoms produced by a discharge of a H_2/He mixture. P = 2 torr.							
71 BOS/PER	EX	298	≤2.4(13)			2	
$k_a + k_b + k_c + k_c$. Upper-limit k.							
81 BUT/FLE	EX	298	(3.55±0.48)(13)			2	
$k_a + k_b + k_c + k_d$. Multiphoton dissociation of $CHBr_3$ at 193 nm. Laser-induced fluorescence. Same data in 80 BUT/FLE. P(Total) = 100 torr.							
82 BER/FLE2	EX	297-676	(3.25±0.60)(13)	0	0	2	
$k_a + k_b + k_c + k_d$. M = Ar. Laser-photolysis/LIF. CH generated by $CHBr_3$ Multiphoton dissociation at 266 nm. and monitored by LiF at 430 nm.							
CH + H_2 → products							
Methylidyne + Hydrogen molecule							
71 BOS/PER	EX	298	(1.05±0.12)(13)			2	
79 BUT/GOS	EX	298	(1.39±0.30)(13)			2	
Multiphoton photodissociation of $CHBr_3$. Laser-Induced Multiphoton Fluorescence. P ~ 2mtorr.							
81 BUT/FLE	EX	298	(1.57±0.30)(13)			2	
Multiphoton dissociation of $CHBr_3$ at 193 nm. Laser-Induced Fluorescence. Same data in 80 BUT/FLE. P(Total) = 100 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH + H_2O \rightarrow$ products							
Methylidyne + Water							
71 BOS/PER	EX	298	(2.7±0.5)(13)			2	
$CH + N_2$ (+ M) $\rightarrow CHN_2$ (+ M) (a)							
$\rightarrow [HCN_2] \rightarrow HCN + N$ (+ M) (b)							
Methylidyne + Nitrogen molecule							
71 BOS/PER	EX	298	(6.1±1.0)(11)			2	
k_a.							
79 BUT/GOS	EX	298	(4.64±1.20)(11)			2	
k_a. $CHBr_3$ Multiphoton dissociation. Laser-induced Fluorescence. P = 2 morr.							
81 BUT/FLE	EX	298	(5.60±0.60)(11)			2	
k_a. $CHBr_3$ Multiphoton dissociation at 193 nm. Laser-induced fluorescence. $P(CHBr_3)$ = (5-50) mtorr. P(Total) = 100 torr. Same data given in 80 BUT/FLE.							
82 WAG/CAR [1])	ES	298	(3.79±0.78)(11)			2	
k_b. Limiting high-pressure k.							
82 WAG/CAR [1])	ES	298	(9.43±0.11)(16)			3	
k_b. Limiting low-pressure k.							
[1]) Laser-induced fluorescence. CH generated by Multiphoton dissociation of CH_3CN, or CH_3NH_2 in Ar.							
CH + NO $\rightarrow$ CO + NH (a)							
$\rightarrow$ CN + OH (b)							
$\rightarrow$ HCN + O (c)							
$\rightarrow$ HCO + N (d)							
$\rightarrow$ CNO + H (e)							
Methylidyne + Nitrogen oxide (NO)							
82 LE	ES	2700	6.0(14)			2	
k_a. Premixed fuel-rich Ethyne/NO flames, at 250-600 nm. P = 80 torr.							
81 BUT/FLE	EX	298	(1.75±0.42)(14)			2	
$k_a + k_b + k_c + k_d + k_e$. $CHBr_3$ Multiphoton dissociation at 193 nm. Laser-induced-fluorescence. $P(CHBr_3)$ = (5-50) mtorr. P(Total) = 100 torr. Same data given in 80 BUT/FLE.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 BER/FLE2	EX	297-676	(1.14±0.18)(14)	0	0	2	
$k_a + k_b + k_c + k_d + k_e$. M = Ar. Laser-photolysis/LIF. CH generated by $CHBr_3$ Multiphoton dissociation at 266 nm. P(Total) 100 torr.(Ar).							
82 WAG/CAR	EX	298	(1.20±0.18)(13)			2	
$k_a + k_b + k_c + k_d + k_e$. Laser-induced Fluorescence. CH generated by IR-Multiphoton dissociation of CH_3NH_2, or Cyclopropane in Ar. P(Ar) = 5 torr.							
$CH + NO_2 \rightarrow NH + CO_2$ (a)							
$\rightarrow CO + HNO$ (b)							
$\rightarrow CHO + NO$ (c)							
$\rightarrow HCN + O_2$ (d)							
$\rightarrow CO + NO + H$ (e)							
$\rightarrow NCO + OH$ (f)							
Methylidyne + Nitrogen oxide (NO_2)							
82 WAG/CAR	EX	298	(1.00±0.06)(13)			2	
$k_a + k_b + k_c + k_d + k_e + k_f$. Laser-induced Fluorescence. CH generated by IR-Multiphoton dissociation of CH_3CN, or CH_3NH_2, or Cyclopropane in Ar. P(Ar) = 5 torr.							
$CH + N_2O \rightarrow$ products							
Methylidyne + Nitrogen oxide N_2O							
82 WAG/CAR	EX	298	(4.70±0.84)(13)			2	
Laser-induced fluorescence. CH generated by IR-Multiphoton dissociation of CH_3NH_2, or Cyclopropane in Ar. P(Ar) = 20 torr.							
$CH + NH_3 \rightarrow$ products							
Methylidyne + Ammonia							
71 BOS/PER	EX	298	5.9(10)			2	1.17
$CH + CO \rightarrow$ products							
Methylidyne + Carbon monoxide							
71 BOS/PER	EX	298	2.9(12)			2	
81 BUT/FLE	EX	298	(1.26±0.18)(13)			2	
193 nm. $CHBr_3$ Multiphoton dissociation at 193 nm. at 193 nm. Laser induced fluorescence. Same data given in 80 BUT/FLE. P($CHBr_3$) = (5-50) mtorr. P(Total) = 100 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 BER/FLE2	EX	297-676	(2.77±0.60)(11)	0	-861±101	2	
Reaction of CH with CO in Ar. Laser-photolysis/ LIF. CH generated by $CHBr_3$ Multiphoton dissociation at 266 nm. P(Total) = 100 torr.(Ar)							
CH + CO_2 → products							
Methylidyne + Carbon dioxide							
81 BUT/FLE	EX	298	(1.14±0.24)(12)			2	
$CHBr_3$ Multiphoton dissociation at 193 nm. Laser-induced fluorescence. Same data given in 80 BUT/FLE. P(Total) 100 torr. $P(CHBr_3)$ = (5-50) mtorr.							
82 BER/FLE2	EX	297-676	(3.43±0.54)(12)	0	345±53	2	
M = Ar. Laser-photolysis/LIF. CH generated by $CHBr_3$ Multiphoton dissociation at 266 nm. P(Total) = 100 torr.(Ar)							
CH + CH_2 → H_2 + CH≡C*							
Methylidyne + Methylene							
82 GRE/HOM2	EX	298	≥1.0(14)			2	
Reaction of the CH≡CH/O/H in N_2/He. Discharge-flow. Resonance-fluorescence. Lower-limit k. P = 2 torr.							
CH + CH_4 → products							
Methylidyne + Methane							
71 BOS/PER	EX	298	(2.01±0.05)(13)			2	
79 BUT/GOS	EX	298	(1.81±0.60)(14)			2	
$CHBr_3$ Multiphoton photodissociation. Laser-induced fluorescence. Superseded by 81 BUT/FLE. P ~ 2 mtorr.							
81 BUT/FLE	EX	298	(6.02±1.81)(13)			2	
$CHBr_3$ Multiphoton dissociation at 193 nm. Laser-induced fluorescence. $P(CHBr_3)$ = (5-50) mtorr. P(Total) = 100 torr. Same data given in 80 BUT/FLE.							
CH + CH≡CH → products							
Methylidyne + Ethyne							
71 BOS/PER	EX	298	4.5(13)			2	1.2

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
80 FLE/FUJ $CHBr_3$ Multiphoton dissociation at 193 nm. Laser-induced fluorescence.	EX	298	(8.42±2.71)(13)			2	
81 BUT/FLE $CHBr_3$ Multiphoton dissociation at 193 nm. Laser-induced fluorescence. $P(CHBr_3)$ = (5-50) mtorr. P(Total) = 100 torr.	EX	298	(1.33±0.24)(14)			2	
82 BER/FLE1 M = Ar. Laser-photolysis/LIF. CH generated by $CHBr_3$ Multiphoton dissociation at 266 nm. Before forming the products, CH adds to the triple bond, giving the intermediate:  P(Total) = 100 torr.(Ar)	EX	160-652	(2.10±0.25)(14)	0	-61±36	2	

$CH + CH_2{=}CH_2 \rightarrow$  $\rightarrow CH_2{=}CHCH_2$ (a)

$\rightarrow$ any other products (b)

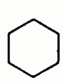
Methylidyne + Ethene

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 BER/FLE1 k_a. M = Ar. Laser-photolysis/LIF. CH generated by $CHBr_3$ Multiphoton dissociation at 266 nm. P(Total) = 100 torr.(Ar)	EX	171-657	(1.34±0.16)(14)	0	-173±35	2	
71 BOS/PER $k_{overall}$.	EX	298	(6.9±0.6)(13)			2	
80 FLE/FUJ $k_{overall}$. $CHBr_3$ Multiphoton dissociation at 193 nm. Laser-induced fluorescence.	EX	298	(1.54±0.08)(14)			2	
81 BUT/FLE $k_{overall}$. $CHBr_3$ Multiphoton dissociation at 193 nm. Laser-induced fluorescence. $P(CHBr_3)$ = (5-50) mtorr. P(Total) = 100 torr.	EX	298	(1.26±0.48)(14)			2	

$CH + CH_3CH_3 \rightarrow$ products

Methylidyne + Ethane

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 BUT/FLE $CHBr_3$ Multiphoton dissociation at 193 nm. Laser induced fluorescence. Same data given in 80 BUT/FLE. P(Total) = 100 torr. $P(CHBr_3)$ = (5-50) mtorr.	EX	298	(2.41±0.6)(14)			2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH + CH_3C{\equiv}CH \rightarrow$ products							
Methylidyne + 1-Propyne							
80 FLE/FUJ	EX	298	(2.64±0.51)(14)			2	
Multiphoton dissociation of $CHBr_3$ at 193 nm.							
Laser-induced fluorescence.							
81 BUT/FLE	EX	298	(2.77±0.90)(14)			2	
Multiphoton dissociation of $CHBr_3$ at 193 nm.							
Laser-induced fluorescence. P(Total) = 100 torr.							
CH +  $\rightarrow$ products							
Methylidyne + Cyclopropane							
81 BUT/FLE	EX	298	(1.44±0.42)(14)			2	
Multiphoton dissociation of $CHBr_3$ at 193 nm.							
Laser-induced fluorescence. P(Total) = 100 torr.							
$CH + CH_3CH_2CH_3 \rightarrow$ products							
Methylidyne + Propane							
71 BOS/PER	EX	298	8.2(13)			2	1.2
$CH + CH_3CH_2CH_2CH_3 \rightarrow$ products							
Methylidyne + Butane							
71 BOS/PER	EX	298	(7.8±0.7)(13)			2	
81 BUT/FLE	EX	298	(3.49±0.30)(14)			2	
Multiphoton dissociation of $CHBr_3$ at 193 nm.							
Laser-induced fluorescence.							
P(Total) = 100 torr.							
Same data given in 80 BUT/FLE.							
CH +  $\rightarrow$ products							
Methylidyne + Cyclohexane							
81 BUT/FLE	EX	298	(2.77±1.14)(14)			2	
Multiphoton dissociation of $CHBr_3$ at 193 nm.							
Laser-induced fluorescence. P(Total) = 100 torr.							
$CH_2(X^3B_1) + O_2 \rightarrow$ products							
Methylene + Oxygen molecule							
73 JON/BAY2	RL	296	(9.5±3.0)(-2)			2/2	
k_{ref}: $CH_2 + O \rightarrow CO + H + H$.							
73 PEE/MAH2	ES	1200-1600	1.0(14)	0	1860	2	
74 LAU/BAS	EX	298	(9.03±0.60)(11)			2	
M = He. Limiting high-pressure k.							

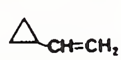
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
75 PEE/VIN1	ES	2000	≃1.2(13)			2	
75 PEE/VIN2	RL	1500-2200	≃3.0			2/2	
k_{ref}: $OH + CH_3 \rightarrow H_2O + CH_2$. Average ratio.							
75 PEE/VIN2	RN	1500-2200	≃1.2(13)	0	0	2	
NH_4/O_2 and $CH_2{=}CH_2/O_2$ flames, diluted in Ar. k determined relative to reaction: $OH + CH_3 \rightarrow H_2O + CH_2$							
77 PIL/ROB	ES	298	7.23(11)			2	
79 VIN/DEB1 [1])	EX	295-600	1.33(13)	0	755±151	2	1.55
79 VIN/DEB2 [1])	EX	295	(1.02±0.24)(12)			2	
[1]) CH≡CH oxidation. Fast-flow. P(Total) 2.2 torr.							
$CH_2(a^1A_1) + O_2 \rightarrow$ products							
Methylene + Oxygen molecule							
74 LAU/BAS	EX	298	<1.81(13)			2	
M = He. Limiting high-pressure, upper-limit k.							
$CH_2(X^3B_1) + H_2 \rightarrow CH_3 + H$							
Methylene + Hydrogen molecule							
77 PIL/ROB	ES	298	<3.01(9)			2	
Upper-limit k.							
$CH_2(a^1B_1) + H_2 \rightarrow CH_3 + H$							
Methylene + Hydrogen molecule							
77 PIL/ROB	ES	298	1.20(13)			2	
$CH_2(^1A_1) + H_2O \rightarrow CH_3OH$							
Methylene + Water							
81 HAT/BAN	RN	298	≃1.81(12)			2	
Diazomethane Photolysis in air, or N_2, in presence of Water. P(Diazomethane) ~ 9 mtorr. P(air,or N_2) = 760 torr. $P(H_2O)$ = (0-4) torr. k estimated relative to the reaction: $CH_2(^1A_1) + CH_2N{\equiv}N \rightarrow CH_2{=}CH_2 + N_2$.							
$CH_2(X^3B_1) + N_2 \rightarrow HCN + NH$							
Methylene + Nitrogen molecule							
78 LAU/BAS	EX	300	≤6.02(7)			2	
Flash-photolysis of CH_2CO/N_2 and CH_2N_2/N_2 systems. Upper-limit k.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_2(X^3B_1)$ + NO → CH_2NO → products							
Methylene + Nitrogen oxide (NO)							
74 LAU/BAS	EX	298	(9.64±0.60)(12)			2	
M = He.							
Limiting high-pressure k.							
77 PIL/ROB	ES	298	6.02(12)			2	
79 VIN/DEB1	EX	295-600	(1.39±0.83)(12)	0	-554±201	2	
CH≡CH oxidation.							
Fast-flow.							
P(Total) = 2.2 torr.							
$CH_2(a^1A_1)$ + NO → products							
Methylene + Nitrogen oxide (NO)							
74 LAU/BAS	EX	298	<2.41(13)			2	
M = He.							
Limiting high-pressure, upper-limit k.							
$CH_2(X^3B_1)$ + CO → CH≡CH + O (a)							
→ any other products (b)							
Methylene + Carbon monoxide							
81 TSU/HAS	ES	1200-1800	1.34(13)	0	26943	2	
k_a. M = Ar.							
Thermal oxidation of CH_3OH/O_2 mixtures							
behind reflected shock-waves.							
74 LAU/BAS	EX	298	6.02(8)			2	
$k_{overall}$.							
Limiting high-pressure, upper-limit k.							
$CH_2(a^1A_1)$ + CO → products							
Methylene + Carbon monoxide							
74 LAU/BAS	EX	298	<5.42(12)			2	
M = He.							
Limiting high-pressdure, upper-limit k.							
$CH_2(X^3B_1)$ + CO_2 → HCHO + O_2							
Methylene + Carbon dioxide							
77 LAU/BAS	EX	298	2.3(10)			2	1.5
$CH_2(X^3B_1)$ + CH_3 → CH_2=CH_2 + H							
Methylene + Methyl							
75 LAU/BAS1	EX	295	6.0(13)			2	1.3
75 PIL/ROB	DE	298	3.0(13)			2	
Computer fit.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
78 OLS/GAR	DE	1800-2700	2.00(13)	0	0	2	
Shock-waves. Absorption-spectroscopy.							
Best data-fit to a proposed mechanism.							
Total conc.: ~7.2×10^{17} molec.cm^{-3}.							
$CH_2(X^3B_1) + CH_4 \rightarrow CH_3CH_3$							
Methylene + Methane							
73 HAL/CRU [1])	RL	304	(4.3±0.2)(-1)			2/2	
k_{ref}: $CH_2(X^3B_1) + CH_3CH_2CH_2CH_3 \rightarrow CH_3(CH_2)_3CH_3$							
73 HAL/CRU [1])	RL	304	(2.3±0.1)(-1)			2/2	
k_{ref}:							
$CH_2(X^3B_1) + CH_3CH_2CH_2CH_3 \rightarrow CH_3(CH_2)_3CH_3$ (a)							
$\rightarrow (CH_3)_2CHCH_2CH_3$ (b)							
[1]) Limiting high-pressure k.							
$CH_2(X^3B_1) + CH_2{=}N{\equiv}N \rightarrow CH_2{=}CH_2 + N_2$							
Methylene + Methane, diazo-							
71 BEL	RL	298	(4.0±1.0)(2)			2/2	
Diazomethane/Propane Photolysis.							
Gas-Chromatography.							
Estimated ratio.							
k_{ref}: $CH_2 + CH_3CH_2CH_3 \rightarrow CH_3. + CH_3CH_2CH_2$ (a)							
$\rightarrow CH_3 + (CH_3)_2CH$ (b)							
$CH_2(a^1A_1) + CH_2{=}N{\equiv}N \rightarrow CH_2{=}CH_2 + N_2$							
Methylene + Methane, diazo-							
71 BEL	ES	298	(1.87±0.60)(13)			2	
Diazomethane/Propane Photolysis.							
Gas-Chromatography.							
81 HAT/BAN	RL	298	(1.8±0.6)(1)			2/2	
Diazomethane photolysis in air or N_2,							
in presence of H_2O.							
k_{ref}: $CH_2(^1A_1) + H_2O \rightarrow CH_3OH$.							
P(Diazomethane) ~ 9 mtorr.							
P(air,or N_2) = 760 torr.							
P(H_2O) = (0-4) torr.							
$CH_2(X^3B_1) + CH{\equiv}CH \rightarrow CH_2{=}C{=}CH_2$ (a)							
$\rightarrow CH_3C{\equiv}CH$ (b)							
Methylene + Ethyne							
74 LAU/BAS	EX	298	(4.52±0.60)(12)			2	
$k_a + k_b$.							
Limiting high-pressure k.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
77 PIL/ROB	ES	298	2.41(12)			2	
$k_a + k_b$.							
79 VIN/DEB2	EX	295	(7.83±1.81)(11)			2	
$k_a + k_b$.							
CH≡CH oxidation. Fast-flow.							
The intermediate step:							
$CH_2(X^3B_1) + CH{\equiv}CH \rightarrow CH_2C{\equiv}CH + H$							
is suggested, leading to the products							
of channels (a) and (b).							
P(Total) = 2.2 torr.							
$CH_2(X^3B_1) + CH_3CH_3 \rightarrow CH_3CH_2CH_3$							
Methylene + Ethane							
73 HAL/CRU [1])	RL	304	2.52			2/2	
k_{ref}: $CH_2(X^3B_1) + CH_4 \rightarrow CH_3CH_3$							
73 HAL/CRU [1])	RN	304	2.89(12)			2	
73 HAL/CRU [1])	RL	304	(1.08±0.01)			2/2	
k_{ref}: $CH_2(X^3B_1) + CH_3CH_2CH_2CH_3 \rightarrow CH_3(CH_2)_3CH_3$							
73 HAL/CRU [1])	RL	304	(5.8±0.1)(-1)			2/2	
k_{ref}:							
$CH_2(X^3B_1) + CH_3CH_2CH_2CH_3 \rightarrow CH_3(CH_2)_3CH_3$ (a)							
$\rightarrow (CH_3)_2CHCHH2CH_3$ (b)							
73 HAL/CRU [1])	RL	304	(7.4±0.4)(-1)			2/2	
k_{ref}:							
$CH_2(X^3B_1) + (CH_3)_3CH \rightarrow (CH_3)_2CHCH_2CH_3$							
73 HAL/CRU [1])	RL	304	(6.5±0.3)(-1)			2/2	
k_{ref}:							
$CH_2(X^3B_1) + (CH_3)_3CH \rightarrow (CH_3)_2CHCH_2CH_3$ (a)							
$\rightarrow (CH_3)_4C$ (b)							
[1]) Insertion at primary CH bond.							
$CH_2(a^1A_1) + CH_2{=}C{=}O \rightarrow CH_2{=}CH_2 + CO$							
Methylene + Ethenone (Ketene)							
74 LAU/BAS	EX	298	(1.93±0.72)(13)			2	
M = He. Limiting high-pressure k.							
77 PIL/ROB	ES	298	2.11(12)			2	
$CH_2(a^1B_1) + CH_2{=}C{=}O \rightarrow CH_2{=}CH_2 + CO$							
Methylene + Ethenone (Ketene)							
77 PIL/ROB	ES	298	1.81(13)			2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CD_2 + CD_2{=}C{=}O \rightarrow CD_2{=}CD_2 + CO$							
Methylene-d_2 + Ethenone-d_2 (Ketene-d_2)							
71 MCN/KEL	RL	653	6.6			2/2	
k_{ref}: $CD_2 + (CH_3)_4C \rightarrow CD_2H + (CH_3)_3CCH_2$							
$CH_2(X^3B_1) + CH_3CH_2CH_3 \rightarrow CH_3CH_2CH_2CH_3$ (a)							
$\rightarrow (CH_3)_3CH$ (b)							
Methylene + Propane							
73 HAL/CRU	RL	304	3.32			2/2	
$(k_a + k_b)/k_{ref}$.							
k_{ref}: $CH_2(X^3B_1) + CH_4 \rightarrow CH_3CH_3$							
73 HAL/CRU	RL	304	(8.0±0.2)(-1)			2/2	
$(k_a + k_b)/k_{ref}$.							
k_{ref}: $CH_2(X^3B_1) + CH_3CH_2CH_2CH_3 \rightarrow CH_3(CH_2)_3CH_3$ (a)							
$\rightarrow (CH_3)_2CHCH_2CH_3$ (b)							
73 HAL/CRU	RN	304	3.79(12)			2	
$k_a + k_b$.							
73 HAL/CRU [1]	ES	304	2.65(12)			2	
k_a. Insertion at primary CH bond.							
73 HAL/CRU [1]	ES	304	1.14(12)			2	
k_b. Insertion at secondary CH bond.							
[1]) Recalculated from the reported 1.20 efficiency of CH_2 insertion at secondary over primary bonds in Propane.							
73 HAL/CRU	RL	304	1.02			2/2	
k_a/k_{ref}. Insertion at primary CH bond.							
k_{ref}: $CH_2(X^3B_1) + CH_3CH_2CH_2CH_3 \rightarrow CH_3(CH_2)_3CH_3$							
73 HAL/CRU	RL	304	(4.4±0.11)(-1)			2/2	
k_b/k_{ref}. Insertion at secondary CH bond.							
k_{ref}: $C_2(X^3B_1) + CH_3CH_2CH_2CH_3 \rightarrow CH_3(CH_2)_3CH_3$							
73 HAL/CRU	RL	304	(2.4±0.11)(-1)			2/2	
k_b/k_{ref}. Insertion at secondary CH bond.							
k_{ref}: $C_2(X^3B_1) + CH_3CH_2CH_2CH_3 \rightarrow CH_3(CH_2)_3CH_3$ (a)							
$\rightarrow (CH_3)_2CHCH_2CH_3$ (b)							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_2(a^1A_1) + CH_3CH_2CH_3 \rightarrow CH_3CH_2CH_2CH_3$ (a)							
$\rightarrow (CH_3)_3CH$ (b)							
Methylene + Propane							
71 BEL [1])	ES	298	(2.65±0.72)(12)			2	
k_a.							
71 BEL [1])	ES	298	(1.14±0.30)(12)			2	
k_b.							
71 BEL [1])	ES	298	(3.79±1.02)(12)			2	
$k_a + k_b$.							
[1]) Dizomethane-Propane Photolysis.							
Gas-chromatography.							
75 ZAB/CAR	RL	298	1.67(1)			2/2	
$k_a + k_b$.							
k_{ref}:							
$CH_2(a^1A_1) + M \rightarrow CH_2(X^3B_1) + M$.							
$CH_2(a^1A_1) + CH_2{=}CHCH{=}CH_2 \rightarrow$ cis-$CH_2CH{=}CHCH{=}CHCH_3$ (a)							
$\rightarrow$ trans-$CH_2{=}CHCH{=}CHCH_3$ (b)							
$\rightarrow CH_2{=}C(CH_3)CH{=}CH_2$ (c)							
$\rightarrow$  (d)							
Methylene + 1,3-Butadiene							
75 CRA/ROS	RL	298	1.4(-1)			2/2	
$(k_a + k_b + k_c)/k_d$.							
Bond insertion versus bond addition.							
$CH_2(X^3B_1) + CH_3CH_2CH_2CH_3 \rightarrow CH_3CH_2CH_2CH_2CH_3$ (a)							
$\rightarrow (CH_3)_2CHCH_2CH_3$ (b)							
Methylene + Butane							
73 HAL/CRU	RL	304	4.28			2/2	
$(k_a + k_b)/k_{ref}$.							
k_{ref}:							
$CH_2(X^3B_1) + CH_4 \rightarrow CH_3CH_3$							
73 HAL/CRU	RN	304	4.88(12)			2	
$k_a + k_b$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
73 HAL/CRU [1]) k_a. Insertion at primary CH bond.	ES	304	2.59(12)			2	
73 HAL/CRU [1]) k_b. Insertion at secondary CH bond. [1]) Recalculated from the reported 1.31 efficiency of CH_2 insertion at secondary over primary CH bonds in Butane.	ES	304	2.29(12)			2	
73 HAL/CRU k_b/k_a. Secondary versus primary CH insertion.	RL	304	(8.8±0.1)(-1)			2/2	
$CH_2(a^1A_1) + CH_3CH_2CH_2CH_3 \rightarrow CH_3CH_2CH_2CH_2CH_3^\dagger$ (a) **$\rightarrow (CH_3)_2CHCH_2CH_3^\dagger$ (b)** Methylene + Butane							
72 GRO/HAS [1]) $(k_a + k_b)/k_{ref}$.	RL	298	1.89			2/2	
72 GRO/HAS [1]) k_b/k_{ref}. [1]) k_{ref}: $CH_2(a^1A_1) + CH_3CH_3 \rightarrow CH_3CH_2CH_3^\dagger$	RL	298	(8.9±0.07)(-1)			2/2	
$CH_2(X^3B_1) + (CH_3)_3CH \rightarrow (CH_3)_2CHCH_2CH_3$ (a) **$\rightarrow (CH_3)_4C$ (b)** Methylene + Propane, 2-methyl-							
73 HAL/CRU $(k_a + k_b)/k_{ref}$. k_{ref}: $CH_2(X^3B_1) + CH_4 \rightarrow CH_3CH_3$	RL	304	3.89			2/2	
73 HAL/CRU $k_a + k_b$.	RN	304	4.46(12)			2	
73 HAL/CRU [1]) k_a. Insertion at primary CH bond.	ES	304	3.88(12)			2	
73 HAL/CRU [1]) k_b. Insertion at tertiary CH bond. [1]) Recalculated from the reported 1.33 efficiency of CH_2 insertion at secondary over primary CH bonds in 2-Methylpropane.	ES	304	5.80(12)			2	
73 HAL/CRU k_b/k_a. Tertiary versus primary CH insertion.	RL	304	(1.5±0.1)(-1)			2/2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_2(a^1A_1) + CH_3CH_2CH_2CH_2CH_3 \rightarrow CH_3CH_2CH_2CH_2CH_2CH_3$ (a)							
$\rightarrow CH_3CH_2CH_2CH_2CH(CH_3)_2$ (b)							
$\rightarrow CH_3CH_2CH(CH_3)CH_2CH_3$ (c)							
Methylene + Pentane							
75 ZAB/CAR	RL	298	1.11(1)			2/2	
$k_a + k_b + k_c$.							
k_{ref}: $CH_2(a^1A_1) + M \rightarrow CH(X^3B_1) + M$.							
$CD_2 + (CH_3)_4C \rightarrow CD_2H + (CH_3)_3CCH_2$							
Methylene-d_2 + Propane, 2,2-dimethyl-							
71 MCN/KEL	RL	653	(2.1±0.5)			2/2	
k_{ref}: $CD_2 + CD_2{=}C{=}O \rightarrow CD_3 + CD{=}C{=}O$							
71 MCN/KEL	RN	653	1.5(11)			2	1.5
CH_3 (+ M) $\rightarrow CH_2 + H$ (+ M)							
Methyl							
80 BHA/FRA	EX	1700-2300	6.1(15)	0	44900	2	
M = Ar. Shock-tube. Atomic Resonance-Absorption.							
80 ROT/BAR	EX	2150-2850	1.95(16)	0	46100	2	
M = Ar. Ethane Thermolysis behind shock-waves. Atomic Resonance-Absorption. Same data in 79 ROT/BAR and 80 ROT. Total conc. ~4.0×10^{18} molec.cm^{-3}.							
$CH_3 + O_2$ (+ M) $\rightarrow HCHO + O + H$ (+ M) (a)							
$\rightarrow CH_3O + O$ (+ M) (b)							
$\rightarrow CO + OH + H_2$ (+ M) (c)							
$\rightarrow HCHO + OH$ (+ M) (d)							
$\rightarrow CH_3O_2$ (+ M) (e)							
Methyl + Oxygen molecule							
80 BHA/FRA	EX	1700-2300	7.0(12)	0	12910	2	
k_a. Shock-tube. Absorption-spectrometry.							
75 BRA/BRO	EX	1200-1800	2.4(13)	0	14500	2	
k_b.							
78 REI/ROM	CO	300-2000	1.69(13)	0	15350	2	
k_b. RRKM calculation.							
72 SKI/LIF	ES	1000-2500	4.0(12)	0	9059	2	
k_c.							
75 BOW1	ES	1900-2400	1.2(11)	0	5000	2	
k_d. Best data-fit.							
76 TSU	DE	1500-2000	9.0(11)	0	6014	2	
k_d. Computer calculation.							
76 WAS/BAY	EX	259-341	1.74(11)	0	940±250	2	2.24
k_d.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
71 CLA/IZO2	ES	1350	1.99(10)			2	
k_d. Shock-waves and TOF Mass-spectrometry. Total conc. = $9x10^{13}$ molec.cm^{-3}.							
71 DEA/KIS	DE	1750-2575	3.01(13)	0	5033	2	
k_d. Shock-waves. Best data-fit. Total conc. = $5x10^{17}$ molec.cm^{-3}.							
71 IZO/KIS	DE	1400-2200	1.20(12)	0	6291	2	
k_d. Shock waves. Best data-fit. Total conc. = $5x10^{17}$ molec.cm^{-3}.							
78 OLS/GAR	DE	1800-2700	6.92(11)	0	4530	2	
k_d. Shock-waves. Absorption-spectroscopy. Best data-fit. Total conc. = ~$7.2x10^{17}$ molec.cm^{-3}.							
78 REI/ROM	CO	300-2000	1.69(11)	0	4982	2	
k_d. RRKM Calculation.							
79 KLA/AND	EX	368	≤1.81(8)			2	
k_d. Flash-photolysis. Resonance-fluorescence. Upper-limit k.							
79 TAB/BAU	ES	1950-2770	2.70(12)	0	6039	2	
k_d. M = Ar. CH_4 oxidation in shock-waves. Best data-fit on the basis of a proposed mechanism. Total conc. = $(2.3-4.4)x10^{18}$ molec.cm^{-3}.							
80 BHA/FRA	EX	1700-2300	≤5.2(13)	0	17400	2	
k_d. Shock-tube. Atomic Resonance-Absorption Spectrometry. Upper-limit k.							
80 BOR/ZAM	EX	880-1670	2.00(12)	0	6714	2	
k_d. Spontaneous ignition of $CH_4/O_2/N_2O$ mixtures.							
80 WAS	EX	298	(1.02±0.96)(10)			2	
k_d. M = He. Generation of CH_3 by reaction of O with CH_2=CH_2. Fast-flow reactor. Photoionization Mass-spectrometry. k measurements by both, Stern-Volmer plots and steady-state. Comparable data given in 79 WAS1, 79 WAS2, and 79 WAS3. $P(CH_2=CH_2)_o$ = (0.30-0.65) mtorr. $P(O)_o$ = (0.04-0.19) mtorr. P(Total) = (1.9-6.0) torr. $P(O_2)$ = (48-229) mtorr.							
81 BOR/DRA	EX	880-1670	2.00(12)	0	6670	2	
k_d. Combustion of CH_4/O_2 mixtures behind reflected shock-waves. P = 750 torr.							
82 PAR	EX	1097	3.96(10)			2	
k_d. Reaction of CH_4 with O_2 in single-pulse shock-waves. Mass-spectrometry.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 PLU/RYA2	EX	295	≤1.81(8)			2	
k_d. Reaction of CH_3 with O_2 in a flow-reactor, in He. CH_3 generated by reacting F with CH_4. F atoms generated by dissociation of CF_4 in a microwave-discharge. Mass-spectrometry. Upper-limit k. $[CH_3]_o$ = (3.7-9.3)x10^{10} molec.cm^{-3}. $[CF_4]_o$ = (2.5-7.5)x10^{11} molec.cm^{-3}. [He] = (0.2-2.1)x10^{17} molec.cm^{-3}. $[CH_4]$ = (8-12)x10^{12} molec.cm^{-3}. $[O_2]$ = 5.2x10^{15} molec.cm^{-3}.							
71 VAN/CAL	ES	295	~1.1(12)			2	
k_e. M = $CH_3CH_2CH_3$. Limiting high pressure k.							
72 BAS/JAM	EX	295	(3.1±0.3)(11)			2	
k_e. M = N_2,or $(CH_3)_4C$. Limiting high-pressure k.							
73 SOK/NIK	EX	453	1.5(12)			2	
k_e. M = He. Limiting high-pressure k.							
75 LAU/BAS2	RN	298	1.02(12)			2	
k_e. M = He, Ar, N_2. Limiting high-pressure k.							
77 HOC/GHO	EX	295	(1.3±0.2)(12)			2	
k_e. M = H_2. Limiting high-pressure k.							
77 PAR	EX	298	(7.23±3.61)(11)			2	
k_e. M = N_2. Limiting high-pressure k.							
72 BAS/JAM	EX	295	(3.6±0.3)(17)			3	
k_e. M = $(CH_3)_4C$. Low-pressure k.							
72 BAS/JAM	EX	295	(9.4±0.3)(16)			3	
k_e. M = N_2. Low-pressure k.							
73 SOK/NIK	EX	453	3.9(16)			3	
k_e. M = He. Low-pressure k.							
77 PAR	EX	298	(1.12±0.79)(17)			3	
k_e. M = N_2. Low-pressure k.							
77 PAR	EX	298	(5.44±2.90)(17)			3	
k_e. M = $(CH_3)_4C$. Low-pressure k.							
80 WAS	EX	298	(5.80±4.35)(16)			3	
k_e. M = He. Generation of CH_3 by reaction of O with CH_2=CH_2 Fast-flow reactor. Photoionization Mass-spectrometer. k measurements by both, Stern-Volmer plots and steady-state. Comparable data given in 79 WAS1, 79 WAS2 and 79 WAS3. P(Total) = (1.9-6.0) torr. $P(CH_2{=}CH_2)_o$ = (0.30-0.65) mtorr. $P(O)_o$ = (0.04-0.19) mtorr. $P(O_2)$ = (48-339) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 PLU/RYA2	EX	295	(1.23±0.40)(17)			3	
k_e. Flow-reactor. CH_3 generated by reacting F with CH_4 in He. F atoms generated by dissociation of CF_4 in a Microwave-discharge. Limiting low-pressure k. $[CH_3]_o = (3.7-9.3)x10^{10}$ molec.cm^{-3}. $[CF_4]_o = (2.5-7.5)x10^{11}$ molec.cm^{-3}. [He] = $(0.2-2.1)x10^{17}$ molec.cm^{-3}. $[CH_4] = (8-12)x10^{12}$ molec.cm^{-3}. $[O_2] = 5.2x10^{15}$ molec.cm^{-3}.							
$CD_3 + O_2 \rightarrow DCDO + OD$							
Methyl-d_3 + Oxygen molecule							
80 CHI/SKI	EX	1700-2200	6.8(11)	0	4571	2	
CD_4 oxidation in $CD_4/O_2/Ar$ behind reflected shock-waves. Resonance-absorption spectroscopy.							
$CH_3 + O_3 \rightarrow CH_3O + O_2$ (a)							
$\rightarrow HCHO + H + O_2$ (b)							
Methyl + Ozone							
75 SIM/HEI [1])	RL	221	1.2				2/2
75 SIM/HEI [1])	RL	298	2.2				2/2
[1]) $(k_a + k_b)/k_{ref}$.							
k_{ref}: $CH_3 + O_2 \rightarrow CH_3O_2$							
75 SIM/HEI	RN	221-298	3.25(12)	0	528	2	
$k_a + k_b$.							
80 WAS/AKI	EX	298	(4.22±1.63)(11)			2	
M = He. Generation of CH_3 by reaction of O with CH_2=CH_2. Fast-flow. Photoionization Mass-Spectrometry. k measureents by Stern-Volmer plots. 3 other possible channels suggested. Comparable data reported in 79 WAS1, 79 WAS2 and 79 WAS3. $P(O)_o$ = (0.16-0.40) mtorr. $P(CH_2=CH_2)_o$ = (0.36-0.45) mtorr. P(Total) = (1.9-5.7) torr.							
81 OGR/PAL [2])	EX	243-384	(3.25±0.90)(12)	0	216±80	2	
n = 0 assumed.							
81 OGR/PAL [2])	EX	243-384	(1.56±0.42)(12)	0.71	0	2	
The preexponential factor expressed as: $A(T/298)^{0.71}$.							
[2]) $k_a + k_b$. M = He. Flash-photolysis of CH_3O_2 at 193 nm. with an ArF laser, in a O_3/O_2/He mixture. P(Total) = (2-4) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3 + H_2 \rightarrow CH_4 + H$							
Methyl + Hydrogen molecule							
72 SHA/WES	RL	398-718	(9.11±0.20)(-1)	0	-668±12	2/2	
k_{ref}: $CH_3 + D_2 \rightarrow CH_3D + D$.							
73 CLA/DOV2	EX	1340	(4.6±1.4)(10)			2	
73 CLA/DOV2	ES	1200-2000	1.55(13)	0	7801	2	2.0
74 KOB/PAC	EX	372-1370	7.05(10)	2.0	4811	2	
The preexponential factor expressed as: $A(T/298)^{2.0}$.							
81 MAR/SHA	EX	584-671	5.01(11)	0	5293	2	
Azomethane Decomposition in H_2. Flow-system. P(Total) = (5-26) torr.							
$CH_3^* + H_2 \rightarrow CH_4 + H$							
Methyl + Hydrogen molecule							
73 TIN/WES	RL	298	(7.5±0.25)(-2)			2/2	
k_{ref}: $CH_3^* + CH_3Br \rightarrow CH_4 + CH_2Br$. CH_3^* is a 'hot' radical formed by photolysis of CH_3Br at 185 nm.							
$CH_3 + HD \rightarrow CH_4 + D$							
Methyl + Deuterium hydride							
72 SHA/WES	RL	398-718	(2.83±2.58)(-1)	0	-971±347	2/2	
k_{ref}: $CH_3 + DH \rightarrow CH_3D + H$							
$CH_3 + D_2 \rightarrow CH_3D + D$							
Methyl + Deuterium molecule							
76 PRA/ROG2	EX	300-1118	1.60(12)	0	6369±41	2	1.08
77 YAN	RL	1260-1390	3.4(-1)			2/2	
k_{ref}: $CH_3 + CH_3CH{=}CH_2 \rightarrow CH_4 + CH_2CH{=}CH_2$ Estimated ratio.							
$CH_3^* + D_2 \rightarrow CH_3D + D$							
Methyl + Deuterium molecule							
73 TIN/WES	RL	298	(8.00±0.13)(-2)			2/2	
k_{ref}: $CH_3^* + CH_3Br \rightarrow CH_4 + CH_2Br$. CH_3^* is a 'hot' radical formed by photolysis of CH_3Br at 185 nm.							
$CD_3 + H_2 \rightarrow CD_3H + H$							
Methyl-d_3 + Hydrogen molecule							
72 SHA/WES	RL	398-718	(1.592±0.124)	0	-296±35	2/2	
k_{ref}: $CD_3 + D_2 \rightarrow CD_4 + D$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CD_3^* + H_2 \rightarrow CD_3H + H$							
Methyl-d_3 + Hydrogen molecule							
73 TIN/WES	RL	298	(9.25±0.65)(-2)			2/2	
k_{ref}: $CD_3^* + CD_3Br \rightarrow CD_4 + CD_2Br$.							
CD_3^* is a 'hot' radical formed by photolysis							
of CD_3Br at 185 nm.							
$CD_3 + HD \rightarrow CD_3H + D$							
Methyl-d_3 + Deuterium hydride							
72 SHA/WES	RL	398-718	(9.32±1.33)(-1)	0	-275±66	2/2	
k_{ref}: $CD_3 + DH \rightarrow CD_4 + H$.							
$CD_3^* + D_2 \rightarrow CD_4 + D$							
Methyl-d_3 + Deuterium molecule							
73 TIN/WES	RL	298	(2.15±0.20)			2/2	
k_{ref}: $CD_3^* + H_2 \rightarrow CD_4H + H$.							
CD_3^* is a 'hot' radical formed by photolysis							
of CD_3Br at 185 nm.							
$CH_3 + SO_2$ (+ M) $\rightarrow CH_3SO_2$ (+ M)							
Methyl + Sulfur dioxide							
74 JAM/KER	EX	298	(1.75±0.25)(11)			2	
Azomethane Flash-photolysis. M = Ar, or N_2.							
P-independent k. P(Total) = (50-200) torr.							
Same data given in 73 JAM/KER.							
$CH_3 + NO$ (+ M) $\rightarrow CH_3NO$ (+ M)							
Methyl + Nitrogen oxide (NO)							
71 VAN/CAL	EX	295	(1.00±0.15)(13)			2	
M = N_2, or Propane. Limiting high-pressure k.							
72 DAV/COR	RL	295	6.2(-1)			2/2	
k_{ref}: $CH_3 + NO_2 \rightarrow CH_3NO_2$							
74 TIT/BAL	EX	443	1.8(12)			2	1.1
M = $(CH_3)_2CO$. Limiting high-pressure k.							
75 LAU/BAS2	RN	298	1.93(13)			2	
M = He,Ar,N_2. Limiting high-presure k. RRKM fit.							
76 PIL/ROB	EX	298	(7.23±0.60)(12)			2	
M = Ar, or SF_6. RRKM extrapolation of data.							
Limiting high-pressure k.							
74 PRA/VEL	EX	295	(1.0±0.1)(17)			3	
M = He.							
74 TIT/BAL	EX	443	6.1(18)			3	
M = $(CH_3)_2CO$. Low-preessure k.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
76 PRA/VEL2	CO	325-521	7.24(16)	0	-211±10	3	1.20
M = He. RRKM calculation.							
80 WAS	EX	298	(8.71±2.90)(17)			3	
CH_3 generated by reacting O with Ethene. Fast-flow. Photoionization Mass-spectrometry. Comparable data in 79 WAS1, 79 WAS2 and 79 WAS3. P(He) = (1.8-6.3) torr. $P(CH_2{=}CH_2)_o$ = (0.45-0.57)mtorr. $P(O)_o$ = (0.15-0.31) mtorr.							
$CH_3 + NO_2$ (+ M) → CH_3O + NO (+ M) (a)							
→ CH_3ONO (+ M) (b)							
→ CH_3NO_2 (+ M) (c)							
Methyl + Nitrogen oxide (NO_2)							
74 GLA/TRO2	EX	1100-1400	1.3(13)	0	0	2	
k_a.							
81 YAM/SLA	EX	295	(1.51±0.30)(13)			2	
k_a. CH_3 produced by IR Multiphoton dissociation of $C_6F_5OCH_3$ in He. Photoionization Mass-spectrometry. $[NO_2]$ = (1.10-3.31)x10^{12} molec.cm^{-3}. $[CH_3]_o$ = 1.1x10^{11} molec.cm^{-3}. P(Total) = 1 torr.							
72 DAV/COR	RL	295	2.17			2/2	
k_b/k_c.							
74 GLA/TRO2 [1])	RN	300-1400	≈2.07(13)	-0.6	0	2	
k_c. M = Ar. Estimated, limiting high-pressure k.							
74 GLA/TRO2 [1])	RN	300-1400	≈3.58(20)	-6.0	0	3	
k_c. M = Ar. Estimated, low-presure k. Rate constant expressed as k/[Ar].							
[1]) Preexponential factor expressed as: $A(T/298)^n$.							
$CH_3 + N_2O$ → $CH_3O + N_2$							
Methyl + Nitrogen oxide (N_2O)							
73 FAL/HOA	RN	873	(1.4±0.3)(7)			2	
77 BOR/ZAM	ES	1000-2000	<1.0(15)	0	14276	2	
Estimated, upper-limit k.							
CH_3 + CO (+ M) → CH_3CO (+ M) (a)							
→ CH≡CH + OH (+ M) (b)							
Methyl + Carbon monoxide							
74 WAT/WOR	RN	260-296	1.58(11)	0	3007±12	2	1.58
k_a.							
82 ANA/MAW [1])	EX	303	9.64(6)			2	
k_a. Limiting high-pressure k.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 ANA/MAW [1])	EX	343	3.43(7)			2	
k_a. Limiting high-pressure k.							
81 PAR [2])	EX	298	(1.08±0.12)(6)			3	
k_a. P(CO) = 100 torr.							
81 PAR [2])	EX	298	(3.61±0.60)(6)			3	
k_a. P(CO) = 750 torr.							
82 ANA/MAW [1])	EX	303	2.07(12)			3	
k_a. Limiting low-pressure k.							
82 ANA/MAW [1])	EX	343	3.88(12)			3	
k_a. Limiting low-pressure k.							
81 TSU/KAT	ES	1500-1900	3.80(13)	0	30432	2	
k_b. M = Ar. Thermal oxidation of CH_3OH/O_2 behind reflected shock-waves. UV-absorption. IR-emission. Same data given in 81 TSU/HAS.							
[1]) M = CO. Molecular modulation. CH_3 produced by photolysis of Azoethane. [Azomethane] = $1.0x10^{17}$ molec.cm^{-3}. [CO] = $(0.3-2.7)x10^{19}$ molec.cm^{-3}.							
[2]) Photolysis of Acetone at (25.4-40.0) nm. Molecular modulation.							

$CH_3 + CH_3$ (+ M) → CH_3CH_2 + H (+ M) (a)
→ CH_2=CH_2 + H_2 (+ M) (b)
→ CH_3CH_3 (+ M) (c)

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
Methyl							
80 ROT/BAR	DE	2150-1850	8.01(14)	0	13400	2	
k_a. CH_3CH_3 thermolysis behind shock-waves. Atomic Resonance-Absorption. Computer simulation. Decomposition of CH_3CH_2 to CH_2=CH_2 + H is suggested. Total conc. ~ $4.0x10^{18}$ molec.cm^{-3}. Same data given in 79 ROT/JUS2 and 80 ROT.							
81 CHI/SKI2	ES	1240-1700	4.0(14)	0	13387	2	
k_a. M = Ar. Ethane pyrolysis behind reflected shock-waves. Resonance-absorption spectroscopy. Decomposition of CH_3CH_2 is suggested. Data-fit. P(Total) = (2-3) atm.							
78 TSU	EX	1396-2396	9.7(15)	0	15396	2	
$k_a + k_b$. Shock-tube.							
75 GAR/OWE	EX	2000-2651	6.0(16)	0	21651	2	
k_b.							
71 CLA/IZO1	EX	1120-1400	(8.4±3.6)(12)	0	0	2	
k_c. Shock-waves. TOF Mass-spectrometry.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
72 TEN/JON	CO	303-603	2.63(13)	0	216	2	
k_c. Data-fit to a proposed mechanism.							
73 BAS/LAU	EX	298	(5.74±0.71)(13)			2	
k_c. M = He. Limiting high-pressure k.							
73 BAY/BRO	EX	295	(2.4±0.2)(13)			2	
k_c.							
73 TRU/RIC	EX	313	(2.41±0.18)(13)			2	
k_c. M = N_2. Limiting high-pressure k.							
74 JAM/SIM	EX	298	(3.37±0.46)(13)			2	
k_c. M = Ar.Limiting high-pressure k.							
74 POH/LEI	EX	298	(2.7±0.3)(13)			2	
k_c. M = He, or N_2, or N_2 + CO.							
76 CAL/MET	EX	295	(3.31±0.18)(13)			2	
k_c.							
76 GLA/QUA	EX	1200-1500	(1.02±0.36)(13)			2	
k_c. M = Ar. Limiting high-pressure k. Average k at highest concentrations.							
76 PAR/PAU	EX	250-450	(2.41±0.52)(13)			2	
k_c. M = N_2.							
76 VAN	EX	1350	2.0(13)			2	1.5
k_c. Extrapolated, limiting high-pressure k.							
77 GLA/QUA	EX	1400	(1.75±0.90)(13)			2	
k_c. M = Ar. Limiting high-pressure k.							
77 HEL/MAN	ES	1005	1.41(13)			2	
k_c. Flow-reactor. UV absorption spectroscopy. Limiting high-pressure k. P = (10-80) torr.							
77 HOC/GHO	EX	295	(3.1±0.6)(13)			2	
k_c. M = N_2. Limiting high-pressure k.							
78 PAC/WIM	CO	821	2.1(13)			2	
k_c. Neopentane flow-pyrolysis. P = 7.6 torr.							
79 SEP/MAR [1])	EX	750	5.0(12)			2	
P(Ar) ~ 14 torr.							
79 SEP/MAR [1])	EX	640-818	3.98(12)			2	
P(Ar) = 7.4 torr.							
[1]) k_c. Discharge-flow. Best-fit.							
79 ZAS/SMI	EX	1750	(1.33±0.66)(13)			2	
k_c. M = Ar. Tetramethyltin decomposition behind incident and reflected shock-waves. High-pressure k. [Ar] = $(0.1\text{-}5.5)\times10^{19}$ molec.cm^{-3}.							
80 ADA/BAS2	EX	298	(3.2±0.4)(13)			2	
k_c. Azomethane Flash-photolysis. Absorption spectroscopy.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
80 BAU/DUX	RE	250-420	2.40(13)	0	0	2	1.2
k_c. Recommended high-pressure k. Critical review.							
80 PAC/WIM1	EX	823	(2.2±0.5)(13)			2	
k_c. $C(CH_3)_4$ pyrolysis in a flow-reactor. Extrapolated limiting high-pressure k. P = (4-335) torr.							
76 VAN [2])	EX	450	2.3(21)			3	4.0
k_c. M = He. Extrapolated limiting low-pressure k.							
76 VAN [2])	CO	450	7.4(21)			3	
k_c. M = He. Calculated limiting low-pressure k.							
76 VAN [2])	EX	1350	1.2(19)			3	4.0
k_c. M = Ar. Extrapolated limiting low-pressure k.							
76 VAN [2])	CO	1350	2.8(19)			3	2.0
k_c. M = Ar. Calculated limiting low-pressure k.							
[2]) Rate constants expressed as k/[M].							

$CH_3^* + CH_3 \rightarrow CH_4 + CH_2$

Methyl

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
77 RIC/TRU	EX	298	≤1.02(14)			2	
Upper-limit k. M = Ar. CH_3^* is an energy-rich radical formed by photolysis of CH_3I at 260 nm.							

$CD_3 + CD_3\ (+ M) \rightarrow CD_2{=}CD_2 + D + D\ (+ M)$ (a)

$\rightarrow CD_3CD_3\ (+ M)$ (b)

Methyl-d_3

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 CHI/SKI2	ES	1240-1700	4.0(14)	0	13387	2	
k_a. M = Ar. Ethane pyrolysis behind reflected shock-waves. Resonance-absorption. Data-fit to a proposed mechanism. P(Total) = (2-3) atm.							
76 CAL/MET	EX	295	(2.95±0.24)(13)			2	
k_b. M = N_2.							
76 GLA/QUA	EX	1200-1500	(1.33±0.54)(13)			2	
k_b. M = Ar. Limiting high-pressure k. Averge k at highest concentrations.							
76 PAR/PAU	EX	298	(2.41±0.52)(13)			2	
k_b. M = N_2.							
77 GLA/QUA	EX	1400	(1.93±1.02)(13)			2	
k_b. M = Ar. Limiting high-pressure k.							
76 VAN	EX	1350	7.0(19)			3	4.0
k_b. M = Ar. Extrapolated limiting low-pressure k.							
76 VAN	CO	1350	7.7(19)			3	
k_b. M = Ar. Calculated limiting low-pressure k.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3 + CH_4 \rightarrow CH_3CH_3 + H$ (a)							
$\rightarrow CH_3CH_2 + H_2$ (b)							
Methyl + Methane							
79 TAB/BAU [1]	ES	1950-2770	8.0(13)	0	20131	2	
k_a.							
79 TAB/BAU [1]	ES	1950-2770	1.0(13)	0	11576	2	
k_b.							
[1] M = Ar. Methane pyrolysis in shock-waves. Best data-fit on the basis of a proposed mechanism. Total conc.: $(1.4-5.4)\times10^{18}$ molec.cm^{-3}.							
$CH_3 + CHO \rightarrow CH_4 + CO$ (a)							
$\rightarrow CH_3CHO$ (b)							
Methyl + Methyl, oxo-							
77 HEL/MAN	ES	1005	3.78(13)			2	
k_a. Pyrolysis in a flow-reactor. Absorption-spectroscopy. Gas-chromatography. P = (10-80) torr.							
79 NAD/SAR4	EX	298	>3.01(13)			2	
k_a. Intracavity laser spectroscopy. Lower-limit k.							
80 MUL	EX	298	(2.66±0.97)(13)			2	
k_b. CH_3CHO decomposition by pulsed UV-Photolysis. Internal-resonator Laser-Spectroscopy.							
79 NAD/SAR2	EX	298	(1.39±0.60)(14)			2	
$k_{overall}$. Pulse-photolysis of CH_3CHO.							
$CH_3 + HCHO \rightarrow CH_4 + CHO$							
Methyl + Formaldehyde							
77 HEL/MAN	ES	1005	3.16(10)			2	
Pyrolysis in a flow-reactor. UV-Absorption-spectroscopy. Gas-chromatography. P = (10-80) torr.							
$CH_3 + CH_3O \rightarrow CH_4 + HCHO$ (a)							
$\rightarrow CH_3OCH_3$ (b)							
Methyl + Methoxy							
79 HAS/KOS [1]	RN	298	2.71(13)			2	
k_a.							
79 HAS/KOS [1]	RN	298	3.31(13)			2	
k_b.							
[1] Flash-photolysis of CH_3COOCH_3. k's determined relative to the reaction: $CH_3 + CH_3 \rightarrow CH_3CH_3$. P = (1.5-700) torr. Gas-chromatography.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3 + CH_3O_2 \rightarrow CH_3O + CH_3O$							
Methyl + Methyldioxy							
77 PAR	EX	298	(3.61±0.60)(13)			2	
$CD_3 + COS \rightarrow CD_3S + CO$							
Methyl-d_3 + Carbon oxide sulfide							
72 JAK/AHM	RN	354-490	3.80(11)	0	5712±176	2	1.78
$CH_3 + CH_3N{=}NH \rightarrow CH_4 + CH_3N{=}N$							
Methyl + Diazene, methyl-							
76 VID/WIL	EX	294	(1.31±0.17)(10)			2	
$CH_3 + CH_3NO_2 \rightarrow CH_4 + CH_2NO_2$							
Methyl + Methane, nitro-							
80 BAL/FED	EX	413-482	7.07(11)	0	5606±282	2	1.95
Continuous-circulation Molybdenum glass-reactors. Gas-chromatography. P(Total) = (126-133) torr.							
$CH_3 + CH{\equiv}CH \rightarrow CH_3CH{=}CH$							
Methyl + Ethyne							
77 HOL/KER	RN	379-487	6.19(11)	0	3875±755	2	6.31
$CH_3 + CH_2{=}CH_2 \rightarrow CH_4 + CH_2{=}CH$ (a)							
$\rightarrow CH_3CH_2CH_2$ (b)							
Methyl + Ethene							
76 CHE/BAC	RN	1038	1.0(9)			2	
k_a.							
79 TAB/BAU	EX	1950-2770	5.0(12)	0	6543	2	
k_a. M = Ar. CH_4 pyrolysis in shock-waves. Best data-fit. Total conc.: $(1.4\text{-}5.4)\times10^{18}$ molec.cm^{-3}.							
72 TED/WAL [1])	RL	335-424	7.24(2)	0	-468±101	2/2	1.07
k_{ref}: $CH_3 + CH_2{=}CHF \rightarrow CH_3CH_2CHF$							
72 TED/WAL [1])	RL	335-424	4.90(1)	0	-2416±503	2/2	1.23
k_{ref}: $CH_3 + CH_2{=}CF_2 \rightarrow CH_3CH_2CF_2$							
72 TED/WAL [1])	RL	335-424	8.32(3)	0	1319±554	2/2	1.23
k_{ref}: $CH_3 + CF_2{=}CF_2 \rightarrow CH_3CF_2CF_2$							
72 TED/WAL [1])	RL	335-424	2.88(2)	0	-941±252	2/2	1.10
k_{ref}: $CH_3 + CH_2{=}CHCl \rightarrow CH_3CH_2CHCl$							
72 TED/WAL [1])	RL	335-424	1.07(4)	0	-377±201	2/2	1.07
k_{ref}: $CH_3 + CH_2CH{=}CH_2 \rightarrow CH_3CH_2CHCH_3$							

[1]) k_b/k_{ref}.

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
75 CAM/MAR	DE	676-813	3.16(10)	0	3969	2	
k_b. Determined from k_{-b} and thermochemical data.							
77 HOL/KER	RN	350-503	2.09(11)	0	3674±503	2	3.16
k_b.							
$CH_3 + CH_3CH_2 \rightarrow CH_3CH_2CH_3$							
Methyl + Ethyl							
72 TEN/JON	CO	303-603	2.51(13)	0	201	2	
75 LIF/FRE1	DE	1050-1250	2.4(12)			2	
$k_1 = k_{-1}K$.							
80 KOI/GAR	ES	1300-1700	7.24(12)	0	0	2	
Propane Thermolysis behind reflected shock-waves. Absorption Spectroscopy. Data-fit to a proposed mechanism.							
82 SIM/GAR [1])	ES	1300-1700	8.0(10)	0	-5700	2	
4.3% Propane in Ar. Conc. = 6.0×10^{18} molec.cm^{-3}.							
82 SIM/GAR [1])	ES	1300-1700	9.0(7)	0	-14700	2	
5% Propane in Ar. Conc. = 9.0×10^{18} molec.cm^{-3}.							
[1]) Pyrolysis of Propane in Ar behind reflected shock-waves. Data-fit to a proposed mechanism.							
$CH_3 + CH_3CH_3 \rightarrow CH_4 + CH_3CH_2$							
Methyl + Ethane							
71 CLA/IZO1	ES	1485	3.55(11)			2	
Shock-waves. Time-of-flight Mass-spectrometry.							
72 PAC/PUR2	EX	920-1040	5.01(14)	0	10826±2406	2	10.
73 CLA/DOV1	CO	300-1800	4.34(9)	4.0	4167±15	2	1.02
BEBO calculation. The preexponential factor expressed as: $A(T/298)^{4.0}$.							
74 YAM/RYB	RN	980-1130	3.02(12)	0	6844±1107	2	3.16
76 BRA/WES2	DE	1055-1325	3.24(13)	0	9057	2	1.78
Computer simulation optimization.							
76 CHE/BAC	EX	1038	(1.3±0.3)(10)			2	
k for $\alpha \sim 1$. Measured k values also given at T = 880, 995 and 1068 K. Non-Arrhenius behaviour.							
77 HEL/MAN	ES	1005	3.98(9)			2	
Flow-reactor pyrolysis. Absorption spectroscopy. Gas-chromatography. P = (10-80) torr.							
79 ROT/JUS2	DE	1450-1600	5.00(13)	0	9800	2	
Shoch-tube. Atomic Resonance-absorption Spectrophotometry. k determined by computer simulation. Total conc. = $(0.2-2.3) \times 10^{19}$ molec.cm^{-3}.							

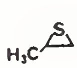
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3 + CH_3CO \rightarrow CH_4 + CH_2{=}C{=}O$ (a)							
$\rightarrow CH_3CH_3 + CO$ (b)							
$\rightarrow (CH_3)_2CO$ (c)							
Methyl + Ethyl, 1-oxo- (Acetyl)							
78 ADA/BAS	ES	298	7.5(13)			2	
$k_a + k_b + k_c$. Acetone Flash-photolysis Kinetic Spectroscopy. P(Total) = 50 torr.							
81 ADA/BAS2	ES	298	8.6(13)			2	
$k_a + k_b + k_c$. Acetone Flash-photolysis. Kinetic Spectroscopy.							
81 ADA/BAS2	RL	298	3.8(-1)			2/2	
$k_b/(k_a + k_b + k_c)$. Acetone Flash-photolysis. Kinetic-Spectroscopy. Estimated ratio.							
79 HAS/KOS	RN	298	3.30(13)			2	
k_c. Flash-photolysis of CH_3COOCH_3. k determined relative to the reaction: $CH_3 + CH_3 \rightarrow CH_3CH_3$. Gas-chromatography. P = (1.5-700) torr.							
82 ANA/MAW	RN	263-343	(2.26±0.27)(13)	0	0	2	
k_c. Average of 24 k values obtained through data-fit. Molecular Modulation Spectroscopy. CH_3 and CH_3CO produced by photolysis of Azomethane in presence of CO. Gas-chromatography. P-independent k. [Azomethane] = 1.0×10^{17} molec.cm^{-3}. [CO] = $(0.3\text{-}2.7) \times 10^{19}$ molec.cm^{-3}.							
82 TIM/KAL	EX	298	(2.98±0.17)(13)			2	
k_c. Flash-photolysis of 2,3-Butanedione. Gas-chromatography. $[CH_3] = (0.26\text{-}6.08) \times 10^{18}$ molec.cm^{-3}. $[CH_3CO] = (1.14\text{-}5.77) \times 10^{18}$ molec.cm^{-3}. P = (11-47) torr.							
$CD_3 + CD_3CO \rightarrow CD_4 + CD_2{=}C{=}O$ (a)							
$\rightarrow CD_3CD_3 + CO$ (b)							
$\rightarrow (CD_3)_2CO$ (c)							
Methyl-d_3 + Ethyl-2,2,2-d_3-1-oxo- (Acetyl-d_3)							
81 ADA/BAS2	ES	298	5.2(13)			2	
$k_a + k_b + k_c$. Acetone-d_6 Flash-photolysis. Kinetic Spectroscopy.							
81 ADA/BAS2	RL	298	4.7(-1)			2/2	
$k_b/(k_a + k_b + k_c)$. Acetone-d_6 Flash-photolysis. Kinetic-Spectroscopy. Estimated ratio.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3 + CH_3CHO \rightarrow CH_4 + CH_3CO$ (a)							
$\rightarrow CH_4 + CH_2CHO$ (b)							
$\rightarrow (CH_3)_2CHO$ (c)							
Methyl + Acetaldehyde							
71 BAL/LAN	ES	713-813	(1.6±0.6)(12)	0	4127±252	2	
k_a.							
75 COL/NAE	ES	800-1225	4.37(15)	0	14570	2	
k_b.							
76 BAR/BER	RL	785	2.7			2/2	
$(k_a + k_b)/k_{ref}$.							
k_{ref}: $CH_3 + CH_3CDO \rightarrow CH_3D + CH_3CO$							
75 BAT/MCC	ES	393-473	7.94(10)	0	0±503	2	
k_c.							
$CH_3 + CH_3CDO \rightarrow CH_3D + CH_3CO$ (a)							
$\rightarrow CH_4 + CH_2CDO$ (b)							
Methyl + Acetaldehyde-1-d							
76 BAR/BER	RL	785	6.2(-1)			2/2	
k_b/k_a.							
$CH_3 + HC(O)OCH_3 \rightarrow CH_4 + C(O)OCH_3$ (a)							
$\rightarrow CH_4 + HC(O)OCH_2$ (b)							
Methyl + Formic acid methyl ester (Methyl formate)							
71 DON/DOR 1)	EX	400-513	5.01(11)	0	5184±101	2	1.26
71 DON/DOR 1)	EX	455	5.62(6)			2	
1) $k_a + k_b$. Acetone photolysis. Mass-spectrometry.							
$CD_3 + HC(O)OCH_3 \rightarrow CD_3H + C(O)OCH_3$ (a)							
$\rightarrow CD_3H + HC(O)OCH_2$ (b)							
Methyl-d_3 + Formic acid methyl ester (Methyl formate)							
71 DON/DOR 1)	EX	400-513	3.55(11)	0	5033±252	2	1.74
71 DON/DOR 1)	EX	455	5.25(6)			2	
1) k_a. Acetone photolysis. Mass-spectrometry.							
71 DON/DOR 2)	EX	400-513	4.37(11)	0	5083±151	2	1.38
71 DON/DOR 2)	EX	455	6.17(6)			2	
1) $k_a + k_b$. Acetone photolysis. Mass-spectrometry.							
$CD_3 + DC(O)OCH_3 \rightarrow CD_4 + C(O)OCH_3$ (a)							
$\rightarrow CD_3H + DC(O)OCH_2$ (b)							
Methyl-d_3 + Formic-d acid methyl ester (Methyl formate-d)							
71 DON/DOR 1)	EX	400-513	3.02(11)	0	5888±151	2	1.45
71 DON/DOR 1)	EX	455	6.92(5)			2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
[1]) k_a. Acetone photolysis. Mass-spectrometry.							
71 DON/DOR [2])	EX	400-513	1.23(11)	0	5435±101	2	1.29
71 DON/DOR [2])	EX	455	7.59(5)			2	
[2]) k_b. Acetone photolysis. Mass-spectrometry.							
[1]) Photolysis of Acetone. Mass-spectrometry.							
$CH_3 + (CH_3)_2O \rightarrow CH_4 + CH_2OCH_3$							
Methyl + Methane, oxybis- (Dimethyl ether)							
75 PAC	EX	782-936	3.16(13)	0	7578±842	2	2.51
Curved Arrhenius plot over the extended T-range (373-936) K.							
77 HEL/MAN	ES	1005	1.31(10)			2	1.58
Pyrolysis in a flow-reactor. UV-Absorption spectroscopy. Gas-chromatography. P = (10-80) torr.							
82 BAT/ALV [1])	EX	373-473	2.00(11)	0	4781±101	2	1.26
82 BAT/ALV [1])	SE	373-935	3.55(12)	0	5939±101	2	1.26
Extended T-range by combining the above k with data found in the literature.							
[1]) Photolysis of Azomethane in the presence of Dimethyl ether. $P(CH_3OCH_3)$ = (0-470) torr. P(Azomethane) = 23 torr.							
CH_3 +  **$\rightarrow CH_3S + CH_2{=}CH_2$**							
Methyl + Thiirane (Ethylene episulfide)							
72 JAK/AHM	RN	304-478	7.08(10)	0	3372±403	2	3.02
CD_3 +  **$\rightarrow CD_3H$ +**  **(a)**							
$\rightarrow CD_3S + CH_2{=}CH_2$ (b)							
Methyl-d_3 + Thiirane (Ethylene episulfide)							
72 JAK/AHM	RN	303-477	2.19(11)	0	4801±503	2	3.98
k_a.							
72 JAK/AHM	RN	303-477	5.89(10)	0	3271±554	2	4.37
k_b.							
$CH_3 + (CH_3)_2S \rightarrow CH_4 + CH_3SCH_2$							
Methyl + Methane, thiobis- (Dimethyl sulfide)							
76 ART/LEE	RN	393-518	4.17(11)	0	4613±82	2	1.20

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3 + CH_3N{=}NCH_3 \rightarrow CH_4 + CH_3N{=}NCH_2$							
Methyl + Diazene, dimethyl- (Azomethane)							
77 SCH/KNO	RL	524-565	1.0	0	-604±302	2/2	2.0
k_{ref}: $CH_3 + CD_3COCOCD_3 \rightarrow CH_3D + CD_3COCOCD_3$							
80 DUR/MAR	EX	323-453	1.07(12)	0	4906±132	2	1.41
Photolysis of 14% Azomethane in Propane at 366 nm. P = (25-300) torr.							
$CD_3 + CH_3N{=}NCH_3 \rightarrow CD_3H + CH_2N{=}NCH_3$							
Methyl-d_3 + Diazene, dimethyl- (Azomethane)							
77 SCH/KNO	RL	524-565	6.3(-1)	0	-755±302	2/2	2.0
k_{ref}: $CD_3 + CD_3COCOCD_3 \rightarrow CD_4 + CD_2COCOCD_3$							
$CH_3 + CH_2{=}C{=}CH_2 \rightarrow CH_2C(CH_3){=}CH_2$							
Methyl + 1,2-Propadiene (Allene)							
73 TSA2	ES	996-1180	1.58(11)	0	2500	2	
1100 K given by the author as central T.							
$CH_3 + (CH_3)_2CH \rightarrow CH_4 + CH_3CH{=}CH_2$ (a)							
$\rightarrow (CH_3)_3CH$ (b)							
Methyl + Ethyl, 1-methyl- (Isopropyl)							
72 ARI/STE	RL	295	(2.4±0.3)(-1)			2/2	
k_a/k_b. Azoisopropane photolysis.							
$CH_3 + CH_3CH_2CH_3 \rightarrow CH_4 + CH_3CH_2CH_2$ (a)							
$\rightarrow CH_4 + (CH_3)_2CH$ (b)							
Methyl + Propane							
75 CAM/MAR	EX	676-743	2.00(12)	0	5689±818	2	3.31
$k_a + k_b$. Low-T region.							
75 CAM/MAR	EX	743-813	5.01(15)	0	11595±902	2	3.24
$k_a + k_b$. High-T region.							
75 LIF/FRE1	EX	1050-1250	3.55(12)	0	5184	2	
$k_a + k_b$. Data-fit to a proposed mmechanism.							
79 PRA/ROG2	ES	1008	(4.2±1.1)(9)			2	
$k_a + k_b$. M = Ar. Propane pyrolysis in a wall-less reactor. Average k at the mean experimental T. Other k values within the 967-1051 K T-range are also given. Approximate fit. P(Ar) = 600 torr.							
80 DUR/MAR	RN	323-453	2.6(11)	0	4896±132	2	1.41
$k_a + k_b$. Photolysis of 14% Azomethane in Propane at 366 nm. P = (25-300) torr. k determined relative to the reaction: $CH_3 + CH_3 \rightarrow CH_3CH_3$							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 HAU/SAN	EX	1110-1235	6.23(9)	4.0	4177	2	
$k_a + k_b$. Pyrolysis in a flow-reactor. The preexponential factor expressed as: $A(T/298)^n$.							
$CH_3 + CH_3C(O)CHO \rightarrow CH_4 + CH_3CO + CO$							
Methyl + Propanal, 2-oxo-							
77 KYL/ORC	RN	353-444	1.38(11)	0	3332±337	2	2.40
$CH_3 + (CH_3)_2CO \rightarrow CH_4 + CH_2C(O)CH_3$ (a)							
$\rightarrow (CH_3)_3CO$ (b)							
$\rightarrow CH_3CH_2CH(CH_3)O$ (c)							
Methyl + 2-Propanone							
72 SHA/WES	RL	398-718	(6.17±0.46)(-1)	0	-1021±38	2/2	
k_a/k_{ref}. k_{ref}: $CH_3 + D_2 \rightarrow CH_3D + D$.							
72 SHA/WES	RL	398-718	(2.3±0.92)	0	-413±186	2/2	
k_a/k_{ref}. k_{ref}: $CH_3 + DH \rightarrow CH_3D + H$.							
76 ART/LEE	RN	393-518	4.07(11)	0	4869±55	2	1.12
k_a.							
79 ART/NEW1	EX	117-244	3.39(11)	0	4882±20	2	1.05
k_a. Acetone photolysis.							
71 CAD/TRO	DE	373-423	1.74(9)	0	6772±902	2	10.0
k_b. $k_b = k_{-b}K$.							
80 KNO/RIC	RN	413-563	3.16(10)	0	5788±554	2	2.51
k_b. Thermolysis of Azomethane and di-t-Butyl peroxide. Mass-spectrometry. k determined relative to reaction: $CH_3 + (CD_3)_2CO \rightarrow CH_3D + CD_2C(O)CD_3$							
75 BAT/MCC	ES	393-473	2.0(11)	0	0±503	2	
k_c.							
$CH_3 + (CD_3)_2CO \rightarrow CH_3D + CD_2C(O)CD_3$ (a)							
$\rightarrow (CD_3)_2C(CH_3)O$ (b)							
Methyl + 2-Propanone-1,1,1,3,3,3-d_6							
80 KNO/RIC [1])	RL	413-563	1.48(1)	0	-151±86	2/2	1.17
k_a/k_b.							
80 KNO/RIC [1])	RN	413-563	3.16(10)	0	5888±252	2	1.59
k_b.							
[1]) Thermolysis of Azomethane and di-t-Butyl peroxide.							
$CD_3 + (CD_3)_2CO \rightarrow CD_4 + CD_3C(O)CD_2$							
Methyl-d_3 + 2-Propanone-1,1,1,3,3,3-d_6							
72 SHA/WES	RL	398-718	(8.56±0.68)(-1)	0	532±36	2/2	
k_{ref}: $CD_3 + H_2 \rightarrow CD_3H + H$							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
72 SHA/WES	RL	398-718	(1.47±0.13)	0	340±42	2/2	
k_{ref}: $CD_3 + HD \rightarrow CD_3H + D$							
$CH_3 + CH_3C(O)OCH_3 \rightarrow CH_4 + CH_2C(O)OCH_3$ (a)							
$\rightarrow CH_4 + CH_3C(O)OCH_2$ (b)							
Methyl + Acetic acid methyl ester (Methyl acetate)							
79 ART/NEW2 [1])	EX	389-497	1.48(11)	0	5160±212	2	1.66
k_a.							
79 ART/NEW2 [1])	EX	389-497	2.75(11)	0	5651±155	2	1.45
k_b.							
79 ART/NEW2 [1])	EX	389-497	3.63(11)	0	5344±117	2	1.32
$k_a + k_b$.							
[1]) Photolysis in silica vessel.							
$CH_3 + CH_3C(O)OCD_3 \rightarrow CH_4 + CH_2C(O)OCD_3$ (a)							
$\rightarrow CH_3D + CH_3C(O)OCD_2$ (b)							
Methyl + Methan-d_3-ol acetate (Methyl-d_3 acetate)							
81 ART/NEW [1])	EX	386-505	2.04(11)	0	5232±124	2	1.32
k_a.							
81 ART/NEW [1])	EX	386-505	2.14(11)	0	6430±77	2	1.20
k_b.							
[1]) Photolysis in silica vessel.							
$CH_3 + CD_3C(O)OCH_3 \rightarrow CH_3D + CD_2C(O)OCH_3$ (a)							
$\rightarrow CH_4 + CD_3C(O)OCH_2$ (b)							
Methyl + Acetic acid-d_3 methyl ester (Methyl acetate-d_3)							
79 ART/NEW2	EX	389-497	2.45(11)	0	6268±40	2	1.10
k_a.							
Photolysis in silica vessel.							
CH_3 +  $\rightarrow CH_3S + CH_3CH{=}CH_2$ (a)							
$\rightarrow CH_4 + [C_3H_5S]$ (b)							
Methyl + Thiirane, methyl-							
72 JAK/AHM	RN	339-435	2.14(11)	0	3749±835	2	8.32
k_a.							
72 JAK/AHM	RN	339-435	1.0(11)	0	4157±438	2	3.02
k_b.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3 + (CH_3)_2CHNO_2 \rightarrow CH_4 + CH_2CH(CH_3)NO_2$ (a)							
$\rightarrow CH_4 + (CH_3)_2CNO_2$ (b)							
Methyl + Propane, 2-nitro-							
77 BAL/TIT 1)	EX	413-479	1.38(11)	0	4222±257	2	1.74
78 TIT/BAL 1)	EX	413-479	1.26(11)	0	4227±252	2	2.0
1) $k_a + k_b$.							
Flow-reactor.							
P(Total) 100 torr.							
$CH_3 + CH_2C(CH_3){=}CH_2 \rightarrow CH_3CH_2C(CH_3){=}CH_2$							
Methyl + 2-Propenyl, 2-methyl-							
73 TSA2	EX	996-1180	2.0(13)			2	
1020 K given by the author as central-T.							
CH_3 + trans-$CH_3CH{=}CHCH_3 \rightarrow CH_4 + CH_2CH{=}CHCH_3$							
Methyl + 2-Butene, (Z)-							
73 RIC/MAR	RL	768	≃8.0			2/2	
k_{ref}:							
$CH_3 + CH_3CHO \rightarrow CH_4 + CH_3CO$							
$CH_3 + (CH_3)_2C{=}CH_2 \rightarrow CH_4 + CH_2C(CH_3){=}CH_2$							
Methyl + 1-Propene, 2-methyl-							
73 KON/MAR	ES	770-855	1.12(14)	0	8858	2	
73 RIC/MAR	RL	768	≃5.0			2/2	
k_{ref}:							
$CH_3 + CH_3CHO \rightarrow CH_4 + CH_3CO$							
76 BRA/WES1 1)	EX	1030-1300	2.6(16)	0	13352	2	6.61
76 BRA/WES2 1)	DE	1055-1325	6.8(13)	0	9803	2	1.62
1) Computer data-fit to a proposesd mechanism.							
80 PAC/WIM1	EX	823	2.2(9)			2	
Neopentane Pyrolysis.							
P = (4-335) torr.							
$CH_3 + (CH_3)_3C \rightarrow (CH_3)_4C$							
Methyl + Ethyl, 1,1-dimethyl- (t-Butyl)							
76 MAR/PUR	DE	756-845	7.9(12)	0	0	2	
Estimated k. Computer-fit of data.							
$CH_3 + CH_3CH_2CH_2CH_3 \rightarrow CH_4 + CH_3CH_2CH_2CH_2$ (a)							
$\rightarrow CH_4 + CH_3CH_2CHCH_3$ (b)							
Methyl + Butane							
75 YAM	ES	980-1060	5.01(11)	0	6844	2	
k_a.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
72 PAC/PUR1 [1])	DE	869-952	2.51(14)	0	9160±1610	2	6.31
Calculation based on experimental data.							
74 HUG/MAR [1])	DE	895-981	3.16(13)	0	7434±1804	2	7.94
Calculation based on experimental data.							
75 YAM [1])	RN	980-1060	3.16(12)	0	5586±1007	2	2.57
76 YAM/NAM [1])	EX	980-1060	3.16(12)	0	5586±1007	2	2.57
[1]) $k_a + k_b$.							
75 YAM	ES	980-1060	4.26(11)	0	5284	2	
k_b.							
$CH_3 + (CH_3)_3CH \rightarrow CH_4 + (CH_3)_2CHCH_2$ (a)							
$\rightarrow CH_4 + (CH_3)_3C$ (b)							
Methyl + Propane, 2-methyl- (i-Butyl)							
73 KON/MAR	ES	770-855	1.45(13)	0	8203	2	
k_a.							
82 SHE/GUS [1])	RL	1023-1123	(2.2±0.2)			2/2	
$(k_a + k_b)/k_{ref}$.							
Average ratio.							
k_{ref}:							
$CH_3 + CH_3CH_2CH_3 \rightarrow CH_4 + CH_3CH_2CH_2$ (c)							
$\rightarrow CH_4 + (CH_3)_2CH$ (d)							
73 KON/MAR	ES	770-855	3.24(12)	0	6492	2	
k_b.							
82 SHE/GUS [1])	RL	1023-1123	1.17			2/2	
k_b/k_a. Recalculated from a reported tertiary per primary bond rate constant ratio of 10.5							
[1]) Propane/Isobutane pyrolysis.							
P = 100 torr.							
$CH_3 + CH_3C(O)C(O)CH_3 \rightarrow (CH_3)_2CO + CH_3CO$ (a)							
$\rightarrow CH_4 + CH_2C(O)C(O)CH_3$ (b)							
$\rightarrow (CH_3)_2C(O^\cdot)COCH_3$ (c)							
Methyl + 2,3-Butanedione (Biacetyl)							
73 KNO/SCH	ES	240-277	2.51(10)	0	3221	2	
k_a. Estimation based on some experimental data.							
75 SCH/PLA	RN	822-905	1.58(11)	0	4328	2	
k_a.							
73 KNO/SCH	ES	240-277	3.16(11)	0	4177	2	
k_b. Estimation based on some experimental data.							
75 SCH/PLA	RN	822-905	7.94(11)	0	4731	2	
k_b.							
75 SCH/PLA	RL	822-905	5.01	0	403±755	2	63.1
k_b/k_a.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
77 SCH/KNO	RL	524-565	3.16	0	-302±428	2/2	3.16
k_b/k_{ref}.							
k_{ref}:							
$CH_3 + CD_3C(O)C(O)CD_3 \rightarrow CH_3D + CD_3C(O)C(O)CD_2$							
78 KNO/SCH [1])	RL	655-690	1.58(1)	0	1107±352	2/2	1.58
k_b/k_c.							
78 KNO/SCH [1])	RN	655-690	2.0(10)	0	3070±503	2	2.51
k_c.							
[1]) Thermolysis. Gas-chromatography.							
$CH_3 + CD_3C(O)C(O)CD_3 \rightarrow CD_3CO + CH_3C(O)CD_3$ (a)							
$\rightarrow CD_3 + CH_3C(O)C(O)CD_3$ (b)							
$\rightarrow CH_3D + CD_2C(O)C(O)CD_3$ (c)							
Methyl + 2,3-Butanedione-1,1,1,4,4,4-d_6 (Biacetyl-d_6)							
77 SCH/KNO	RL	524-565	5.0(-1)	0	604±403	2/2	2.51
k_a/k_{ref}.							
k_{ref}:							
$CD_3 + CD_3C(O)C(O)CD_3 \rightarrow CD_3CO + CD_3C(O)CD_3$							
77 SCH/KNO	RL	524-565	3.16	0	3120±453	2/2	2.51
k_b/k_a.							
77 SCH/KNO	RN	524-565	7.94(10)	0	7529±377	2	2.51
k_c.							
$CD_3 + CH_3C(O)C(O)CH_3 \rightarrow CD_3H + CH_2C(O)C(O)CH_3$							
Methyl-d_3 + 2,3-Butanedione (Biacetyl)							
77 SCH/KNO	RL	524-565	1.26	0	-906±101	2/2	1.26
k_{ref}: $CD_3 + CD_2HC(O)C(O)CD_3 \rightarrow CD_3H + CD_2C(O)C(O)CD_3$							
$CD_3 + CD_2HC(O)C(O)CD_3 \rightarrow CD_2HC(O)D_3 + CD_3CO$							
Methyl-d_3 + 2,3-Butanedione-1,1,1,4,4-d_5 (Biacetyl-d_5)							
77 SCH/KNO	RL	660-685	2.0(-1)	0	-906±151	2/2	1.58
k_{ref}: $CD_3 + CD_3C(O)C(O)CD_3 \rightarrow CD_3CO + CD_3C(O)CD_3$							
$CD_3 + CD_3C(O)C(O)CD_3 \rightarrow CD_4 + CD_2C(O)C(O)CD_3$ (a)							
$\rightarrow CD_3CO + (CD_3)_2CO$ (b)							
Methyl-d_3 + 2,3-Butanedione-1,1,1,4,4,4-d_6 (Biacetyl-d_6)							
77 SCH/KNO	RL	660-685	3.98	0	906±101	2/2	1.26
k_a/k_{ref}. k_{ref}: $CD_3 + CD_2HC(O)C(O)CD_3 \rightarrow CD_3H + CD_2C(O)C(O)CD_3$							
77 SCH/KNO	RL	660-685	1.0(1)	0	1359±302	2/2	1.58
k_a/k_b.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
77 SCH/KNO	RN	660-685	1.26(11)	0	4680±377	2	2.51
k_a.							
77 SCH/KNO	RN	660-685	1.26(10)	0	3322±503	2	3.98
k_b.							
$CH_3 + CH_3C(O)CH_2CH_3 \rightarrow CH_4 + CH_2C(O)CH_2CH_3$ (a)							
$\rightarrow CH_4 + CH_3C(O)CH_2CH_2$ (b)							
$\rightarrow CH_4 + CH_3C(O)CHCH_3$ (c)							
$\rightarrow (CH_3)_2C(O\cdot)CH_2CH_3$ (d)							
Methyl + 2-Butanone							
80 KNO [1])	RL	563	(4.95±1.90)(2)			2/2	
$(k_a + k_b + k_c)/k_d$.							
80 KNO [1])	RN	563	2.00(5)			2	2.51
k_d.							
[1]) Azomethane-sensitized decomposition.							
$CH_3 + CD_3C(O)CD_2CH_3 \rightarrow CH_3D + CD_2C(O)CD_2CH_3$ (a)							
$\rightarrow CH_3D + CD_3C(O)CDCH_3$ (b)							
Methyl + 2-Butanone-1,1,1,3,3-d_5							
74 SCH/DRE	RN	523-563	1.26(11)	0	4504±277	2	2.58
$k_a + k_b$.							
$CH_3 + CH_3CH_2CH_2CH{=}CH_2 \rightarrow CH_3CH_2CH_2CHCH_2CH_3$ (a)							
$\rightarrow CH_3CH_2CH_2CH(CH_3)CH_2$ (b)							
$\rightarrow CH_4 + CH_3CH_2CHCH{=}CH_2$ (c)							
$\rightarrow CH_4 + CH_3CHCH_2CH{=}CH_2$ (d)							
$\rightarrow CH_4 + CH_2CH_2CH_2CH{=}CH_2$ (e)							
Methyl + 1-Pentene							
74 SHI/AMA	RL	923	1.0			2/2	
$(k_a + k_b)/(k_c + k_d + k_e)$.							
$CH_3 + CH_3CH_2CH{=}CHCH_3 \rightarrow CH_3CH_2CHCH(CH_3)_2$ (a)							
$\rightarrow CH_3CH_2CH(CH_3)CHCH_3$ (b)							
$\rightarrow CH_4 + CH_3CH_2CH{=}CHCH_2$ (c)							
$\rightarrow CH_4 + CH_3CHCH{=}CHCH_3$ (d)							
$\rightarrow CH_4 + CH_2CH_2CH{=}CHCH_3$ (e)							
Methyl + 2-Pentene (Unspecified form)							
74 SHI/AMA	RL	923	2.0(-1)			2/2	
$(k_a + k_b)/(k_c + k_d + k_e)$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3 + CH_3CH{=}C(CH_3)_2 \rightarrow CH_4 + CH_3CH{=}C(CH_3)CH_2$ (a)							
$\rightarrow CH_4 + CH_3CHC(CH_3){=}CH_2$ (b)							
$\rightarrow CH_4 + CH_2CH{=}C(CH_3)_2$ (c)							
Methyl + 2-Butene, 2-methyl-							
75 BUL/MAR	ES	667-770	5.01(13)	0	7578	2	
$k_a + k_b$.							
Static system pyrolysis.							
$CH_3 + CH_3CH_2CH_2CH_2CH_2 \rightarrow CH_4 + CH_3CH_2CH_2CH{=}CH_2$							
Methyl + Pentyl							
71 WAT	RL	298	≥3.3(-1)			2/2	
Lower-limit estimate.							
k_{ref}:							
$CH_3 + CH_3(CH_2)_3CH_2 \rightarrow CH_3(CH_2)_4CH_3$							
$CH_3 + CH_3CH_2CH_2CHCH_3 \rightarrow CH_3CH_2CH_2CH(CH_3)_2$ (a)							
$\rightarrow CH_4 + CH_3CH_2CH_2CH{=}CH_2$ (b)							
Methyl + Butyl, 1-methyl-							
71 WAT	RL	298	1.16			2/2	
$(k_a + k_b)/k_a$.							
$CH_3 + (CH_3)_4C \rightarrow CH_4 + (CH_3)_3CCH_2$							
Methyl + Propane, 2,2-dimethyl- (Neopentane)							
71 MCN/KEL	RL	653	(6.7±0.9)			2/2	
k_{ref}:							
$CH_3 + CD_2{=}C{=}O \rightarrow CH_3D + CD{=}C{=}O$							
73 PAC	RN	793-953	3.16(13)	0	8059±241	2	1.26
76 BRA/WES1	DE	1030-1300	6.6(14)	0	10826	2	1.66
Computer data-fit to a proposed mechanism.							
72 FUR/LAI2	RN	529-608	4.9(11)	0	5788	2	
Hg-photosensitized decomposition of Neopentane.							
k determined relative to the reaction:							
$CH_3 + CH_3 \rightarrow CH_3CH_3$							
78 MAR/COM	EX	703-743	5.01(11)	0	5184	2	
Stirred flow-reactor pyrolysis.							
P(Neopentane) = 50 torr.							
78 PAC/WIM	EX	821	(1.36±0.16)(9)			2	
Neopentane flow-pyrolysis.							
P = 7.6 torr.							
80 PAC/WIM1	EX	823	(1.6±0.1)(9)			2	
Pyrolysis of Neopentane in a flow-reactor.							
Gas-chromatography.							
P = (4-335) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3 + CH_3C(O)C(O)CH_2CH_3 \rightarrow CH_4 + CH_2C(O)C(O)CH_2CH_3$ (a)							
$\rightarrow CH_4 + CH_3C(O)C(O)CHCH_3$ (b)							
$\rightarrow CH_4 + CH_3C(O)C(O)CH_2CH_2$ (c)							
$\rightarrow (CH_3)_2CO + CH_3CH_2CO$ (d)							
Methyl + 2,3-Pentanedione							
74 SCH/KNO	RL	362-398	≈4.5	0	0	2/2	
k_b/k_a. T-dependence not detectable.							
74 SCH/KNO	RL	362-398	≈3.0(-1)	0	0	2/2	
k_c/k_a. T-dependence not detectable.							
74 SCH/KNO	RL	362-398	2.51(1)	0	151±654	2/2	2.51
$(k_a + k_b + k_c)/k_d$.							
$CH_3 + CH_3CD_2C(O)CD_2CH_3 \rightarrow CH_4 + CH_2CD_2C(O)CD_2CH_3$ (a)							
$\rightarrow CH_3D + CH_3CDC(O)CD_2CH_3$ (b)							
Methyl + 3-Pentanone-2,2,4,4-d_4							
72 SCH/WOL1	EX	513-572	2.00(11)	0	5544±454	2	3.16
k_a.							
72 SCH/WOL1	EX	513-572	1.26(11)	0	4177±201	2	1.78
k_b.							
$CH_3 + CH_3CH_2CH_2C(CH_3)=CH_2$							
$\rightarrow CH_3CH_2CH_2C(CH_3)CH_2CH_3$ (a)							
$\rightarrow CH_3CH_2CH_2C(CH_3)_2CH_2$ (b)							
$\rightarrow CH_4 + CH_3CH_2CHC(CH_3)=CH_2$ (c)							
$\rightarrow CH_4 + CH_2CH_2CH_2C(CH_3)=CH_2$ (d)							
$\rightarrow CH_4 + CH_3CH_2CH_2C(=CH_2)CH_2$ (e)							
Methyl + 1-Pentene, 2-methyl-							
74 SHI/AMA	RL	923	5.0			2/2	
k_a/k_b.							
74 SHI/AMA	RL	923	6.0(-1)			2/2	
$(k_a + k_b)/(k_c + k_d + k_e)$.							
$CH_3 + CH_3CH_2CH=C(CH_3)_2 \rightarrow CH_3CH_2CH(CH_3)C(CH_3)_{23}$ (a)							
$\rightarrow CH_3CH_2CHC(CH_3)_3$ (b)							
$\rightarrow CH_4 + CH_3CH_2CH=C(CH_3)CH_2$ (c)							
$\rightarrow CH_4 + CH_3CHCH=C(CH_3)_2$ (d)							
Methyl + 2-Pentene, 2-methyl-							
74 SHI/AMA	RL	923	1.0			2/2	
k_a/k_b.							
74 SHI/AMA	RL	923	1.2(-1)			2/2	
$(k_a + k_b)/(k_c + k_d)$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3 + CH_3(CH_2)_4CH_3 \rightarrow CH_4 + CH_3(CH_2)_4CH_2$ (a)							
$\rightarrow CH_4 + CH_3(CH_2)_3CHCH_3$ (b)							
$\rightarrow CH_4 + CH_3(CH_2)_2CHCH_2CH_3$ (c)							
Methyl + Hexane							
76 YAM	RN	973-1088	4.2(12)	0	5637	2	
$k_a + k_b + k_c$.							
$CH_3 + (CH_3)_2CHCH(CH_3)_2 \rightarrow CH_4 + (CH_3)_2CHCH(CH_3)CH_2$ (a)							
$\rightarrow CH_4 + (CH_3)_2CCH(CH_3)_2$ (b)							
Methyl + Butane, 2,3-dimethyl-							
75 BUL/MAR [1])	RL	667-770	1.0(-1)	0	-2526	2/2	
k_b/k_a. Estimated ratio.							
75 BUL/MAR [1])	ES	667-770	2.00(13)	0	7217	2	
$k_a + k_b$.							
[1]) Static system pyrolysis.							
$CH_3 + CH_3C(O)CH_2CH_2C(O)CH_3$							
$\rightarrow CH_4 + CH_2C(O)CH_2CH_2C(O)CH_3$ (a)							
$\rightarrow CH_4 + CH_3C(O)CHCH_2C(O)CH_3$ (b)							
$\rightarrow (CH_3)_2CO + CH_2CH_2C(O)CH_3$ (c)							
Methyl + 2,5-Hexanedione							
75 KNO/SCH	RL	515-712	1.0	0	-1631±10	2/2	
$(k_a + k_b)/k_c$.							
75 KNO/SCH	CO	515-712	3.16(11)	0	4026	2	
$k_a + k_b$.							
75 KNO/SCH	RN	515-712	3.16(11)	0	5637	2	
k_c.							
$CH_3 + (CH_3)_3COOC(CH_3)_3 \rightarrow CH_4 + (CH_3)_3COOC(CH_3)_2CH_2$							
Methyl + Peroxide, bis(1,1-dimethylethyl)-							
80 KNO/RIC [1])	RL	413	(3.5±0.3)			2/2	
k_{ref}:							
$CH_3 + (CD_3)_2CO \rightarrow CH_3D + CD_2C(O)CD_3$							
80 KNO/RIC [1])	RN	413	(1.06±0.12)(6)			2	
[1]) Thermolysis of Azomethane and di-t-Butylperoxide. Mass-spectrometry.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
CH_4 (+ M) → CH_3 + H (+ M) (a)							
→ any other products (b)							
Methane							
71 DEA/KIS	DE	1750-2575	1.63(18)	0	51837	2	
k_a. M = Ar. Shock-waves. Best-fit to experimental data. Total conc.: $5x10^{17}$ $molec.cm^{-3}$.							
71 HAR/TRO	EX	1850-2500	1.26(15)	0	52340±1007	1	
k_a. M = Ar. Limiting high-pressure k.							
71 HAR/TRO	EX	1850-2500	2.00(17)	0	44288±1007	2	
k_a. M = Ar. Low-pressure k.							
72 NAP/SUB	EX	1750-2700	3.8(13)	0	47106	1	
k_a. M = Ar.							
73 VOM2	EX	2000-2700	3.98(9)	0	31706±2516	1	3.16
k_a. M = Ne. The experimental conditions correspond to the limiting case of low pressures.							
75 BOW1	ES	1900-2400	1.4(17)	0	44500	2	
k_a. M = Ar.							
75 CHE/BAC	EX	995-1103	2.8(16)	0	54152	1	
k_a. Limiting high-pressure k.							
75 GAR/OWE	EX	2000-2700	2.3(14)	0	32477	2	
k_a. M = H_2, Ne, Ar, Kr.							
75 ROT/JUS	EX	1700-2300	4.73(17)	0	46911	2	
k_a. M = Ar.							
77 HEF/PAR	EX	2023-2721	2.2(17)	0	45345	2	
k_a. M = Ar.							
78 FEN/SUL	EX	2023-2721	2.2(17)	0	45345	2	
k_a. M = Ar. CH_4 pyrolysis in reflected shock-waves. He/Ne Laser-absorption. P(Total) = (2.3-4.2) atm.							
79 TAB/BAU	EX	1950-2770	(1.01±0.23)(17)	0	43181±503	2	
k_a. M = Ar. CH_4 pyrolysis behind shock-waves. Total conc.: $(1.4-5.4)x10^{18}$ $molec.cm^{-3}$.							
80 ROT	EX	1800-2300	4.73(17)	0	46800	2	
k_a. M = Ar. CH_4 Thermolysis behind shock-waves. Atomic Resonance-Absorption Spectrophotometry. Same data published in 79 ROT/JUS1.							
82 KLO/DRO	EX	1500-3000	1.0(15)	0	51482	1	
$k_{overall}$. M = Ar. CH_4 pyrolysis behind single-pulse shock-waves. High-pressure. P = (6-10) atm.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
CD_4 (+ M) → CD_3 + D (+ M)							
Methane-d_4							
80 CHI/BAK [1])	EX	1780-2440	1.4(11)	0	40765	1	
80 CHI/BAK [1])	EX	1780-2440	2.1(16)	0	42728	2	
M = Ar.							
[1]) CD_4 Pyrolysis behind shock-waves. Resonance-Absorption Spectroscopy.							
CHO (+ M) → CO + H (+ M)							
Methyl, oxo- (Formyl)							
76 TSU	DE	1500-2000	1.0(14)	0	11066	2	
M =r. Computer calculation on the basis of a suggested mechanism.							
CHO + O_2 (+ M) → CO + HO_2 (+ M) (a)							
→ CO_2 + OH (+ M) (b)							
→ HCO_3 (+ M) (c)							
Methyl, oxo- (Formyl) + Oxygen molecule							
74 WAS/MAR	RL	297	(2.74±0.21)(-2)			2/2	
k_a/k_{ref}. k_{ref}: O + CHO → H + CO_2 (d) → OH + CO (e)							
81 MOR/HEI	RL	296	(2.1±0.7)(-1)			2/2	
k_a/k_{ref}. Photolysis of NO_2 in presence of HCHO and O_2, at 360 nm. P(Total) = 52 torr. k_{ref}: NO_2 + CHO → NO + HCOO							
73 PEE/MAH1	ES	1600	≈3.0(13)			2	
k_a. Tentative k.							
74 WAS/MAR	RN	297	(3.43±0.72)(12)			2	
k_a. Ethylene used as source of CHO.							
76 MAR	RN	297	(4.70±2.59)(12)			2	
k_a. Formaldehyde used as source of CHO.							
77 SHI/EBA	EX	298	(5.12±0.60)(12)			2	
k_a.							
78 CLA/MOO	EX	298	(2.41±0.48)(12)			2	
k_a. Monochromatic laser photolysis.							
78 REI/CLA	EX	298	(2.41±0.48)(12)			2	
k_a. HCHO photolysis with tunable pulsed UV-laser.							
81 CHE/RHO	DE	250-2000	(3.5±0.5)(12)	0	0	2	
k_a. Kinetic modelling Of CO oxidation in flames.							
81 GIL/JOH	EX	298	(2.53±0.42)(12)			2	
k_a. CH_3CHO Flash-photolysis. Time-resolved intracavity laser detection. P(CH_3CHO) = 0.2 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 VEY/LES	EX	298-503	3.39(12)	-0.4	0	2	
k_a. CHO generated by Flash-photolysis of HCHO, or CH_3CHO. Laser-Resonance-absorption. The pre-exponential factor expressed as: $A(T/298)^{-0.4}$. P(Total) = 45, or 500 torr.							
76 OSI/HEI	RL	296	≤1.9(-1)			2/2	
k_b/k_a. Upper-limit ratio.							
79 NAD/SAR3 [1])	RL	298	1.9(-1)			2/2	
k_b/k_a. Flash-photolysis of CH_3CHO, or HCHO. P(Total) = (13-100) torr.							
76 OSI/HEI	RL	296	(5.0±1.0)			2/2	
k_c/k_{ref}. k_{ref}: $CHO + O_2 \rightarrow CO + HO_2$							
79 NAD/SAR3 [1])	RL	298	(5.0±1.0)			2/2	
k_c/k_a. Flash-photolysis of CH_3CHO, or HCHO. P(Total) = (13-100) torr.							
79 NAD/SAR3 [1])	EX	298	(2.41±0.60)(12)			2	
$k_a + k_b + k_c$. CH_3CHO flash-photolysis.							
79 NAD/SAR3 [1])	EX	298	(2.23±0.48)(12)			2	
$k_a + k_b + k_c$. HCHO flash-photolysis. [1]) Intracavity laser spectroscopy. P(Total) = (3-100) torr.							
78 HOR/SU	EX	298	≥(4.4±1.6)(17)			3	
k_c. HCHO photolysis at 313 nm. Lower-limit k. P(HCHO) = 8 torr. $P(CO_2)$ = (0-300) torr. $P(O_2)$ = (0.02-8) torr.							
$CHO + NO \rightarrow CO + HNO$							
Methyl, oxo- (Formyl) + Nitrogen oxide (NO)							
77 SHI/EBA	EX	298	(3.37±0.54)(12)			2	
78 CLA/MOO	EX	298	(8.73±1.20)(12)			2	
Monochromatic laser photolysis.							
78 REI/CLA	EX	298	(8.43±1.20)(12)			2	
HCHO photolysis with tunable pulsed UV-laser.							
80 NAD/SAR	EX	298	(7.22±2.41)(12)			2	
$CH_3CHO/HCHO/NO$ Flash-photolysis. Pulse-photolysis. Intracavity laser spectroscopy. P(Total) = (13-100) torr.							
81 VEY/LES	EX	298-503	7.40(12)	-0.4	0	2	
CHO generated by Flash-photolysis of HCHO, or CH_3CHO. Laser Resonance-absroption. P(Total) = 45, or 500 torr. The preexponential factor expressed as: $A(T/298)^{-0.4}$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CHO + NO_2 \rightarrow HCOO + NO$							
Methyl, oxo- (Formyl) + Nitrogen oxide (NO_2)							
80 MOR/HEI	RL	296	≃(1.07±0.13)			2/2	
NO_2/HCHO Photolysis at 366 nm.							
IR-Absorption spectroscopy.							
k_{ref}: $NO_2 + CHO \rightarrow HCOONO$ (a)							
$\rightarrow HCONO_2$ (b)							
81 MOR/HEI [1])	RL	296	(2.1±0.7)(-1)			2/2	
k_{ref}: $O_2 + CHO \rightarrow HO_2 + CO$.							
81 MOR/HEI [1])	RN	296	(1.63±0.54)(13)			2	
[1]) $NO_2/HCHO/O_2$ Photolysis at 360 nm.							
P(Total) = 52 torr.							
$CHO + CHO \rightarrow CO + CO + H_2$ (a)							
$\rightarrow HCHO + CO$ (b)							
$\rightarrow OHCCHO$ (c)							
Methyl, oxo- (Formyl)							
79 FOE/BER	RL	253-298	(8.0±2.0)	0	0	2/2	
k_a/k_c. Butanal photolysis. Rate ratio derived from a suggested reaction scheme.							
78 HOR/CAL	EX	298	5.8			2	
k_b/k_a. HCHO Photolysis at 313 nm. P(HCHO) = (1-12) torr.							
78 REI/CLA	EX	298	3.80(13)			2	3.2
k_b. HCHO photolysis with tunable pulsed UV-laser. Preliminary k.							
79 FOE/BER	RL	253-298	(1.7±0.5)	0	0	2/2	
k_b/k_c. Butanal photolysis. Rate ratio derived from a suggested reaction scheme.							
79 NAD/SAR2	EX	298	(1.81±0.72)(13)			2	
$k_a + k_b + k_c$. Pulse-photolysis of CH_3CHO. Gas-chromatography.							
79 NAD/SAR4	EX	298	>3.0(12)			2	
$k_a + k_b + k_c$. Intracavity laser spectroscopy. Unreported T assumed to be 298 K. Lower-limit k.							
80 HOC/SWO1	EX	298	(1.4±0.3)(13)			2	
$k_a + k_b + k_c$. H_2 flash-photolysis in presence of CO. P = 760 torr.							
80 MUL	EX	298	(2.15±0.34)(13)			2	
$k_a + k_b + k_c$. CH_3CHO decomposition by pulsed UV-Photolysis. Internal resonator Laser-Spectroscopy.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CHO + CH_3CH_2CH_2 \rightarrow CO + CH_3CH_2CH_3$							
Methyl, oxo- (Formyl) + Propyl							
79 FOE/BER	DE	253-298	3.16(13)	0	0	2	1.58
Butanal photolysis.							
k derived from a suggested reaction scheme.							
$CHO + CH_3CH_2CH_2CHOH \rightarrow CO + CH_3CH_2CH_2CH_2OH$							
Methyl, oxo- (Formyl) + Butyl, 1-hydroxy-							
79 FOE/BER	RL	253-298	(4.1±1.4)	0	0	2/2	
Butanal photolysis. T-independent. Derived from a suggested reaction scheme. k_{ref}: $CH_3CH_2CH_2 + CH_3CH_2CH_2CHOH \rightarrow (CH_3CH_2CH_2)_2CHOH$							
$HCHO^*$ (or HC(:)OH) $\rightarrow H + CHO$ (a)							
$\rightarrow H_2 + CO$ (b)							
Formaldehyde (or Methylene, hydroxy-)							
79 MOR/HEI	RL	296	(6.1±1.5)(-1)			1/1	
$k_a/(k_a + k_b)$. HCHO photolysis at 313 nm.							
HCHO (+ M) $\rightarrow$ H + CHO (+ M) (a)							
$\rightarrow H_2$ + CO (+ M) (b)							
Formaldehyde							
81 TSU/KAT [1])	ES	1500-1900	6.92(11)	0	36206	1	
Total conc. = $6.0x10^{18}$ molec.cm^{-3}.							
81 TSU/KAT [1])	ES	1500-1900	2.51(12)	0	36206	1	
Total conc. = $3.0x10^{19}$ molec.cm^{-3}.							
81 TSU/KAT [1])	ES	1500-1900	3.55(12)	0	36206	1	
Total conc. = $6.0x10^{19}$ molec.cm^{-3}.							
[1]) k_a. M = Ar. CH_3OH/O_2 thermal oxidation. Reflected shock-waves. UV-absorption.							
75 BOW1	ES	1900-2400	1.0(14)	0	18500	2	
k_a. M = Ar.							
79 DEA/CRA	EX	1800-2500	3.61(17)	0	43784±6014	2	2.95
k_a. M = Ar. Reflected shock waves. [HCHO] = $(2.4-4.5)x10^{18}$ molec.cm^{-3}							
80 DEA/JOH1	EX	1700-2500	3.31(16)	0	40777	2	
k_a. M = Ar. HCHO Decomposition behind shock-waves. Best data-fit. Total conc. = $5x10^{18}$ molec.cm^{-3}.							
73 PEE/MAH1	EX	1100-1900	2.1(16)	0	17614±2516	2	
k_b. M = O_2, H_2O, CO_2.							
77 MIY/MOR	DE	500-2090	2.1(15)	0	17620	2	
k_b. Calculation based on a proposed mechanism.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 VAN/VAN	DE	1000-2000	2.5(14)	0	14595	2	
k_b. M = Ar. CH_3OH/O_2 lean flames at 40 torr. Molecular beam sampling. Mass-spectrometry.							
82 KLI/PEN	EX	1200-2200	2.4(13)	0	8254	2	
k_b. M = H_2. HCHO/Ar Pyrolysis behind reflected shock-waves. P = (1.8-2.7) torr.							
DCDO (+ M) → D + D + CO (+ M)							
Formaldehyde-d_2							
80 CHI/SKI	EX	1700-2200	4.5(16)	0	36206	2	
M = Ar. CD_4/O_2/Ar oxidation behind reflected shock-waves. Resonance-Absorption.							
HCOOH (+ M) → CO + H_2O (+ M) (a)							
→ CO_2 + H_2 (+ M) (b)							
Formic acid							
71 BLA/DAV [1])	EX	943-1053	2.45(12)	0	30432	1	
k_a.							
71 BLA/DAV [1])	EX	730-1053	2.95(9)	0	24417±854	1	2.95
k_b. Static vessel.							
71 BLA/DAV [1])	EX	730-1053	2.75(8)	0	22962±349	1	1.48
k_b. Unpacked flow vessel.							
71 BLA/DAV [1])	EX	730-1053	3.98(9)	0	26523±445	1	1.59
k_b. Packed flow-vessel.							
[1]) HCOOH Pyrolysis. Flow, or static system. P = (20-230) torr.							
76 SAM/PET [2])	EX	900-1000	3.16(14)	0	33216±1912	1	7.94
Based on $E_a(CHClF_2)$ = (55.0±2.5) kcal.mol^{-1}.							
76 SAM/PET [2])	EX	900-1000	1.0(15)	0	33568±2013	1	7.94
Based on $E_a(CHClF_2)$ = (55.8±2.5) kcal.mol^{-1}.							
76 SAM/PET [2])	EX	900-1000	3.16(13)	0	31052±1812	1	6.31
Based on $E_a(CHClF_2)$ = (51.4±2.5) kcal.mol^{-1}.							
[2]) $k_a + k_b$. Chanel (a) is predominant. $HCOOH/CHClF_2$ Decomposition induced by a CO_2 laser. P(HCOOH) = 1.5 torr. P($CHClF_2$) = 4 torr.							
82 HSU/SHA [3])	EX	1280-2030	2.3(15)	0	25164±856	2	
k_a. M = Ar.							
82 HSU/SHA [3])	EX	1280-2030	1.5(16)	0	28686±1409	2	
k_b.							
[3]) M = Ar. HCOOH Pyrolysis behind incident, or reflected shock-waves. Laser-probing apparatus. P(Total) = (0.75-2.8) atm. [HCOOH] = (0.07-1.6)%							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$HCOOH + HCOOH \rightarrow HCHO + CO_2 + H_2O$							
Formic acid							
71 BLA/DAV	EX	730-873	2.75(11)	0	15938	2	
HCOOH pyrolysis in a flow, or static system. Gas-chromatography. Above 873 K the Arrhenius plot becomes curved but straightens out again above 943 K, to become first order. P = (20-230) torr.							
CH_3O (+ M) → HCHO + H (+ M) (a)							
→ CH_2OH (+ M) (b)							
Methoxy							
79 BAT	ES	393-473	1.58(14)	0	13840±503	1	3.16
k_a. Conventional static system.							
81 BAT/BUR	ES	393-473	1.0(13)	0	13078±1151	1	3.16
k_b. Probably an upper-limit k.							
82 GUT/SAN	ES	298	<2.0(2)			1	
k_b. CH_3ONO photolysis at 266 nm. Laser-induced fluorescence. M = N_2, or SF_6. P-independent. Upper-limit k. P = (10-100) torr.							
CH_3O^* → HCHO + H							
Methoxy							
73 WIE/HEI	RL	298	1.04(-7)			1/2	
M = N_2. k_{ref}: CH_3O^* + M → CH_3O + M. CH_3O^* formed by photolysis of CH_3ONO at 366 nm.							
$CH_3O + O_2 \rightarrow HCHO + HO_2$							
Methoxy + Oxygen molecule							
73 WIE/VIL	RL	298	4.7(-5)			2/2	
k_{ref}: CH_3O + NO → HCHO + HNO + CH_3ONO							
75 ALC/MIL	ES	373	1.2(9)			2	
75 GLA	RL	296	(5.2±0.7)(-5)			2/2	
k_{ref}: CH_3O + NO → CH_3ONO							
75 GLA	RL	296	≤(7.4±0.7)(-5)			2/2	
Upper-limit ratio. k_{ref}: $CH_3O + NO_2 \rightarrow CH_3ONO_2$							
75 MEN/GOL	ES	300	3.5(8)			2	
77 ALC/MIL [1])	RL	373	(5.8±0.8)			2/2	
Estimated ratio. k_{ref}: $CH_3 + (CH_3)_2CHCH(CH_3)_2 \rightarrow CH_3OH + (CH_3)_2CHC(CH_3)_2$							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
77 ALC/MIL [1]	RL	373	3.3			2/2	
Estimated ratio.							
k_{ref}: $CH_3O_2 + (CH_3)_2CHCH(CH_3)_2 \rightarrow CH_3OOH + (CH_3)_2CHC(CH_3)_2$							
77 ALC/MIL [1]	ES	373	1.2(9)			2	
[1] Azomethane photolysis.							
77 BAR/BEN1	RN	396-442	3.16(11)	0	2013±1409	2	31.6
Vacuum technique. Chromatography.							
79 BAT/RAT	EX	383-433	1.0(12)	0	2265±554	2	4.0
Static system. Gas-chromatography.							
79 BAT/ROB	EX	383-433	1.0(12)	0	2416±554	2	4.0
Static system. Gas-chromatography.							
80 COX/DER2	EX	296-450	7.59(10)	0	1352±340	2	2.5
$ONOCH_3$ photolysis. Gas-chromatography.							
80 SAN/BUT2	EX	298	<1.20(9)			2	
CH_3ONO photolysis at 266 nm. Laser-induced Fluorescence. Upper-limit k. P (Max) = 50 torr. Same data published in 80 SAN/BUT1.							
81 KIR/PAR	RL	373	<4.0(-1)			2/2	
Azo-t-butane/O_2 photolysis. Upper-limit ratio.							
k_{ref}: $CH_3O + (CH_3)_3COOH \rightarrow CH_3OH + (CH_3)_3CO_2$							
82 GUT/SAN	EX	413-628	6.3(10)	0	1309	2	
CH_3ONO photolysis at 266 nm. Laser-induced fluorescence. $P(O_2 + N_2)$ = 40 torr.							
$CH_3O + O_3 \rightarrow$ products							
Methoxy + Ozone							
75 SIM/HEI	EX	298	<1.20(9)			2	
Upper-limit k.							
$CH_3O + NO \rightarrow HCHO + HNO$ (a)							
$\rightarrow CH_3ONO$ (b)							
Methoxy + Nitrogen oxide (NO)							
73 WIE/HEI [1]	RL	298-423	1.45(-1)	0	0	2/2	
Electronically excited $ONOCH_3$.							
73 WIE/VIL [1]	RL	298	1.45(-1)			2/2	
75 GLA [1]	RL	296	1.3(-1)			2/2	
[1] $k_a/(k_a + k_b)$.							
75 BAT/MCC [2]	ES	393-473	3.98(12)	0	0±503	2	3.16
77 BAT/MIL3 [2]	ES	440-473	2.0(12)	0	0±503	2	
[2] k_a.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
73 WIE/VIL	RL	298	1.2			2/2	
$(k_a + k_b)/k_{ref}$.							
k_{ref}: $CH_3O + NO_2 \rightarrow HCHO + HONO$ (c)							
$\rightarrow CH_3ONO_2$ (d)							
80 SAN/BUT2	EX	298	(1.3±0.1)(13)			2	
$k_a + k_b$. M = SF_6. CH_3ONO photolysis at 266 nm. Laser-induced fluorescence. Limiting high-pressure k. Same data given in 80 SAN/BUT1.							
79 BAT/RAT	RL	420	(2.03±0.47)			2/2	
k_b/k_{ref}. Static system. Spherical and packed reaction vessels. CH_3O generated by CH_3OOCH_3 decomposition.							
k_{ref}: $CH_3O + NO_2 \rightarrow CH_3ONO_2$.							
$[NO_2] = (3.73\text{-}4.10)\times10^{16}$ molec.cm^{-3}.							
$[NO] = (2.65\text{-}2.77)\times10^{17}$ molec.cm^{-3}.							
$[CH_3OOCH_3] = 6.0\times10^{16}$ molec.cm^{-3}.							
74 BAT/MIL [3])	ES	393-473	1.26(13)	0	0±503	2	2.51
75 BAT/MCC [3])	ES	393-473	1.26(13)	0	0±503	2	2.51
77 BAT/MIL3 [3])	ES	440-473	1.26(13)	0	0±503	2	3.98
[3]) k_b.							
$CH_3O + NO_2 \rightarrow HCHO + HONO$ (a)							
$\rightarrow CH_3ONO_2$ (b)							
Methoxy + Nitrogen oxide (NO_2)							
77 BAR/BEN1 [1])	RL	396-442	(3.0±0.5)(-1)	0	0	2/2	
k_a/k_b. Assumed to be T-independent.							
77 BAR/BEN1 [1])	RN	396-442	2.0(9)	0	0	2	
k_a.							
[1]) Vacuum technique. Chromatography.							
77 BAT/MIL3	ES	440-473	5.01(11)	0	0	2	
k_a.							
73 WIE/VIL	RL	298	9.2(-1)			2/2	
$k_b/(k_a + k_b)$.							
77 BAR/BEN1	SE	396-442	6.31(12)	0	0	2	3.16
k_b. Review of literature data.							
77 BAT/MIL3	ES	440-473	5.01(12)	0	0	2	
k_b.							
79 BAT/RAT	RN	420	7.94(12)			2	2.51
k_b. Static system. Spherical and packed reaction vessels. CH_3O generated by CH_3OOCH_3 decomposition. $[CH_3OOCH_3] = 6.0\times10^{16}$ molec.cm^{-3}.							
$[NO_2] = (3.73\text{-}4.10)\times10^{16}$ molec.cm^{-3}.							
$[NO] = (2.65\text{-}2.77)\times10^{17}$ molec.cm^{-3}.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3O + N_2O \rightarrow$ products							
Methoxy + Nitrogen oxide (N_2O)							
80 SAN/BUT2	EX	298	<1.20(10)			2	
CH_3ONO photolysis at 266 nm. Laser-induced fluorescence. P(Max) = 5 torr. Upper-limit k.							
$CH_3O + NH_3 \rightarrow CH_3OH + NH_2$							
Methoxy + Ammonia							
80 SAN/BUT2	EX	298	<6.02(10)			2	
CH_3ONO photolysis at 266 nm. Laser-induced fluorescence. P(Max) = 1 torr. Upper-limit k.							
$CH_3O + CO \rightarrow CH_3 + CO_2$ (a)							
$\rightarrow$ any other products (b)							
Methoxy + Carbon monoxide							
73 LIS/MAS	EX	396-426	1.6(13)	0	5939±755	2	3.98
k_a.							
73 WIE/HEI	RL	298-423	~5.0(-4)	0	0	2/2	
$k_{overall}/k_{ref}$. Assumed to be T-independent. k_{ref}: $CH_3O + NO \rightarrow HCHO + HNO$ (c) $\rightarrow CH_3ONO^*$ (d)							
80 SAN/BUT2	EX	298	<6.02(9)			2	
$k_{overall}$. CH_3ONO photolysis at 266 nm. Laser-induced fluorescence. Upper-limit k. P(Max) = 10 torr.							
$CH_3O + CH_4 \rightarrow$ products							
Methoxy + Methane							
80 SAN/BUT2	EX	298	<6.02(9)			2	
CH_3ONO photolysis at 266 nm. Laser-induced fluorescence. P(Max) = 10 torr. Upper-limit k.							
$CH_3O + CH_3O \rightarrow HCHO + CH_3OH$ (a)							
$\rightarrow CH_3OOCH_3$ (b)							
Methoxy							
73 SHO/HEI	RL	298	8.9			2/2	1.3
k_a/k_b.							
75 WEA/SHO [1])	RL	288	1.0			2/2	
$k_a/(k_a + k_b)$.							
79 HAS/KOS	EX	298	2.32(13)			2	
k_a. Flash-photolysis of CH_3COOCH_3. Gas-chromatography. P = (1.5-700) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
76 BAT/MCC1	ES	383-413	2.0(13)	0	0	2	3.16
k_b.							
75 WEA/SHO [1])	RL	288	~0			2/2	
$k_b/(k_a + k_b)$.							
[1]) Azomethane Photolysis.							
77 BAR/BEN2	ES	391-432	5.01(12)	0	0	2	
k_b. VLP-Pyrolysis. RRKM best-fit estimate.							
$CD_3O + CD_3O \rightarrow DCDO + CD_3OD$ (a)							
$\rightarrow CD_3OOCD_3$ (b)							
Methoxy-d_3							
75 WEA/SHO [1])	RL	288	1.0			2/2	
$k_a/(k_a + k_b)$.							
75 WEA/SHO [1])	RL	288	~0			2/2	
$k_b/(k_a + k_b)$.							
[1]) Azomethane-d_6 Photolysis.							
$CH_3O + CH_3OH \rightarrow$ products							
Methoxy + Methanol							
80 SAN/BUT2	EX	298	<6.02(10)			2	
CH_3ONO photolysis at 266 nm. Laser-induced fluorescence. Upper-limit k. P(Max) = 1 torr. Same data given in SAN/BUT1.							
$CH_3O + CH_2{=}CH_2 \rightarrow CH_3OCH_2CH_2$							
Methoxy + Ethene							
75 LIS/MAS	RN	300	(3.7±0.8)(7)			2	
$CH_3O + CH_3CO \rightarrow HCHO + CH_3CHO$							
Methoxy + Ethyl, 1-oxo- (Acetyl)							
79 HAS/KOS	EX	298	3.42(13)			2	
$CH_3C(O)OCH_3$ Flash-photolysis. P = (1.5-700) torr.							
$CH_3O + CH_3CHO \rightarrow CH_3OH + CH_3CO$							
Methoxy + Acetaldehyde							
75 WEA/MEA	RL	298	~(1.5±0.5)(1)			2/2	
Estimated ratio. k_{ref}: $CH_3O + O_2 \rightarrow HCHO + HO_2$							
75 WEA/MEA	ES	298	(2.55±0.85)(9)			2	
78 KEL/HEI [1])	RL	298	(1.40±0.28)(1)			2/2	
k_{ref}: $CH_3O + O_2 \rightarrow HCHO + HO_2$							
78 KEL/HEI [1])	RN	298	(5.0±1.0)(9)			2	
[1]) Azomethane photolysis.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3O + CH_3OOCH_3 \rightarrow CH_3OH + HCHO + CH_3O$							
Methoxy + Peroxide, dimethyl-							
77 BAR/BEN1	ES	391-432	≈5.0(7)	0	0	2	
Vacuum technique. Chromatography.							
$CH_3O + (CH_3)_3C \rightarrow (CH_3)_3COCH_3$							
Methoxy + Ethyl, 1,1-dimethyl- (t-Butyl)							
76 BAT/MCC1	ES	383-413	5.01(12)	0	0	2	
$CH_3O + (CH_3)_3CH \rightarrow CH_3OH + (CH_3)C$							
Methoxy + Propane, 2-methyl-							
79 BAT/RAT	EX	383-433	3.98(11)	0	1208±554	2	3.98
Static system.							
80 SAN/BUT2	EX	298	<1.20(11)			2	
CH_3ONO photolysis at 266 nm. Laser-induced Fluorescence. Upper-limit k. P(Max) = 0.5 torr. Same data given in 80 SAN/BUT1.							
$CH_3O + CH_3CH_2CH{=}CH_2 \rightarrow$ products							
Methoxy + 1-Butene							
80 SAN/BUT2	EX	298	<2.41(11)			2	
CH_3ONO photolysis at 266 nm. Laser-induced Fluorescence. Upper-limit k. P(Max) = 0.25 torr. Same data given in 80 SAN/BUT1.							
$CH_3O + (CH_3)_3COOH \rightarrow CH_3OH + (CH_3)_3CO_2$							
Methoxy + Hydroperoxide, 1,1-dimethylethyl- (t-Butyl hydroperoxide)							
81 KIR/PAR	RN	373	>4.22(9)			2	
Azo-t-butane/O_2 Photolysis. Lower-limit k, determined relative to reaction: $CH_3O + O_2 \rightarrow HCHO + HO_2$							
$CH_3O + (CH_3)_2CHCH(CH_3)_2 \rightarrow CH_3OH + (CH_3)_2CHC(CH_3)_2$							
Methoxy + Butane, 2,3-dimethyl-							
75 ALC/MIL	ES	373	4.0(8)			2	
$CH_2OH (+ M) \rightarrow HCHO + H (+ M)$							
Methyl, hydroxy-							
75 BOW2	ES	1545-2180	3.0(9)	0	14600	1	
M = Ar. Reflected shock waves. Best data-fit. [Ar] = $(5.7-17.0)\times10^{18}$ molec.cm^{-3}. $[CH_3OH] = 1.3\times10^{17}$ molec.cm^{-3}.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 TSU/KAT [1])	CO	1500-1900	1.3(10)	0	14550	1	
Total conc. = $6.0x10^{18}$ molec.cm^{-3}.							
81 TSU/KAT [1])	CO	1500-1900	5.6(10)	0	14550	1	
Total conc. = $3.0x10^{19}$ molec.cm^{-3}.							
81 TSU/KAT [1])	CO	1500-1900	1.0(11)	0	14550	1	
Total conc. = $6.0x10^{19}$ molec.cm^{-3}.							
[1]) M = Ar. CH_3OH/O_2 thermal oxidationin Ar, behind reflected shock-waves. Same data given in 81 TSU/HAS.							
$CH_2OH + O_2 \rightarrow HCHO + HO_2$							
Methyl, hydroxy- + Oxygen molecule							
80 RAD	EX	300	1.20(12)			2	2.0
M = He. Flow-tube. LMR-spectroscopy. P(He) = 0.5 torr.							
81 TSU/HAS	ES	1200-1800	1.0(13)	0	0	2	
M = Ar. CH_3OH/O_2 thermal oxidation behind reflected shock-waves.							
81 VAN/VAN	DE	1000-2000	1.0(14)	0	2516	2	
CH_3/O_2 oxidation in lean flames. Molecular beam sampling. Mass-spectrometry. P = 40 torr.							
$CH_2OH + H_2O \rightarrow CH_3OH + OH$							
Methyl, hydroxy- + Water							
81 TSU/HAS	CO	1200-1800	1.55(14)	0	13231	2	
M = Ar.							
$CH_2OH + H_2O_2 \rightarrow CH_3OH + HO_2$							
Methyl, hydroxy- + Hydrogen peroxide							
81 TSU/HAS	CO	1200-1800	2.69(11)	0	-241	2	
M = Ar.							
$CH_3O_2 + O_3 \rightarrow$ products							
Methyldioxy + Ozone							
75 SIM/HEI	EX	298	<1.45(7)			2	
Upper-limit k.							
$CH_3O_2 + SO_2 \rightarrow CH_3O + SO_3$ (a); $\rightarrow CH_3O_2SO_2$ (b)							
Methyldioxy + Sulfur dioxide							
78 WHI/BOT	EX	298	≤2.0(9)			2	
k_a. Kinetic spectroscopy. Upper-limit k.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
79 SIM/HEI k_b/k_{ref}. Azomethane/O_2/SO_2/NO photolysis. k_{ref}: $CH_3O_2 + NO \rightarrow CH_3O + NO_2$.	RL	296	(2.5±0.5)(-3)			2/2	
81 KAN/CAL k_b. Azomethane/SO_2/Air photolysis. FTIR-Spectroscopy. $P(O_2)$ = 100 torr. $P(N_2)$ = 600 torr.	EX	298	(8.43±1.20)(9)			2	
79 KAN/MCQ [1])	ES	298	≤(3.2±0.7)(9)			2	
79 KAN/MCQ [1]) [1]) $k_a + k_b$. Azomethane/Oxygen Flash-photolysis. k estimated as 1/2 of the measured apparent k. The lower limit estimate probably most nearly correct.	ES	298	≤(6.4±1.4)(9)			2	
79 SAN/SIM $k_a + k_b$. Flash-photolysis of Cl_2/CH_4/O_2 mixtures. P = (60-700) torr.	EX	298	(4.94±0.30)(9)			2	
81 SAN/WAT1 $k_a + k_b$. CH_3O_2 produced by Cl_2/CH_4/O_2 Photolysis. UV-Absorption. Upper-limit k. $[CH_3O_2]_o$ = (0.5-5.0)x10^{12} molec.cm^{-3}. $[SO_2]$ = (0.76-5.66)x10^{16} molec.cm^{-3}. P(Total) ~250 torr.	EX	298-423	≤3.01(7)			2	
$CH_3O_2 + NO \rightarrow CH_3O + NO_2$ (a) **$\rightarrow CH_3O_2NO$ (b)** **$\rightarrow HCHO + HONO$ (c)** Methyldioxy + Nitrogen oxide (NO)							
74 SIM/HEI3 $k_a/(k_a + k_b)$.	RL	298	2.2			2/2	
76 COX/DER2 k_a. Lower-limit estimate.	ES	298	≥7.23(11)			2	
79 SIM/HEI k_a. Azomethane/O_2/SO_2/NO photolysis. Determined relative to the reaction: $SO_2 + CH_3O_2 \rightarrow CH_3O_2SO_2$.	RN	296	1.90(12)			2	1.58
80 COX/TYN k_a. Molecular modulation-UV Absorption spectroscopy. P = 540 torr.	EX	298	(3.91±1.20)(12)			2	
80 SAN/WAT k_a. Flash-photolysis. UV-absorption. P = (50-700) torr.	EX	298	(4.28±0.84)(12)			2	

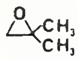
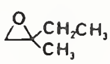
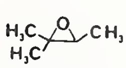
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 PLU/RYA1	EX	295	(5.18±1.20)(12)			2	
k_a. M = He. Discharge-flow. Mass-spectrometry.							
CH_3O_2 generated by reacting Cl atom with CH_4							
in presence of O_2.							
$[Cl]_o$ = (2.0-7.0)x10^{11} molec.cm^{-3}.							
$[O_2]$ = (8.0-10.0)x10^{15} molec.cm^{-3}.							
[NO] = (0.25-3.0)x10^{13} molec.cm^{-3}.							
[He] = 1.9x10^{17} molec.cm^{-3}.							
81 SIM/HEI	EX	218-365	(1.26±0.60)(12	0	-380±250	2	
k_a. M = CH_4. Flash-photolysis of Cl_2 in							
presence of CH_4/O_2/NO mixtures. UV-Absorption							
spectroscopy. P(Total) ~ 200 torr.							
$P(CH_3O_2)_o$ = (0.7-2.0) torr.							
$P(NO)_o$ = (11-28) mtorr.							
$P(CH_4)$ = (70-600) torr.							
73 SPI/VIL	RL	298	(6.0±1.0)(-1)			2/2	
$k_b/(k_a + k_b)$.							
78 ANA/SMI2	ES	298	>6.02(11)			2	
$k_a + k_b + k_c$. Flash-photolysis of							
Azomethane/O_2/NO mixtures. Lower-limit k.							
[Azomethane] = (1.0-3.0)x10^{17} molec.cm^{-3}.							
[NO] = (0.1-1.0)x10^{16} molec.cm^{-3}.							
79 ADA/BAS1	EX	298	(1.8±0.1)(12)			2	
$k_a + k_b + k_c$. Flash-photolysis.							
Kinetic spectroscopy.							
[Azomethane] = 5.5x10^{16} molec.cm^{-3}.							
$[O_2]$ = 7.2x10^{16} molec.cm^{-3}.							
[Ar] ~ 2.4x10^{18} molec.cm^{-3}.							
79 PLU/RYA	EX	295	(4.82±1.20)(12)			2	
$k_a + k_b + k_c$. Flow-reactor.							
Mass-spectrometry. Channel (a) is predominant.							
81 RAV/EIS [1])	EX	240-339	(3.79±1.51)(12)	0	-86±112	2	
81 RAV/EIS [1])	EX	240-339	(4.88±0.96)(12)	0	0	2	
Nearly T-independent k (E_a ~0 preferred).							
[1]) $k_a + k_b + k_c$. Azomethane (or Cl_2)/O_2 pulsed							
laser-photolysis in Ar(or CH_4) at 355 nm.							
Laser-induced Fluorescence.							
Channel (a) predominant.							
P(Ar) = (40-100) torr. $P(CH_4)$ = 50 torr.							
[Azomethane] = (0.5-1.6)x10^{16} molec.cm^{-3}.							
$[CH_3O_2]$ = (1.2-8.6)x10^{12} molec.cm^{-3}.							
$[O_2]$ = (1.2-2.6)x10^{17} molec.cm^{-3}.							
[NO] = (0.7-4.1)x10^{14} molec.cm^{-3}.							

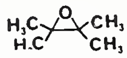
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3O_2 + NO_2 \rightarrow CH_3O + NO_3$ (a)							
$\rightarrow HCHO + HONO_2$ (b)							
$\rightarrow CH_3OONO_2$ (c)							
Methyldioxy + Nitrogen oxide (NO_2)							
76 COX/DER2	RL	298	≈5.0(-2)			2/2	
$(k_a + k_b + k_c)/k_{ref}$. Approximate ratio.							
k_{ref}: $CH_3O_2 + NO \rightarrow CH_3O + NO_2$							
80 ADA/BAS1	EX	298	(9.2±0.4)(11)			2	
$k_a + k_b + k_c$. Azomethane Flash-photolysis.							
Kinetic Spectroscopy.							
P = (53-580) torr.							
73 SPI/VIL	RL	298	(7.5±0.5)(-1)			2/2	
$k_c/(k_b + k_c)$.							
80 COX/TYN [1])	EX	298	(9.6±1.81)(11)			2	
$P(N_2)$ = 540 torr.							
80 COX/TYN [1])	EX	298	(7.23±1.81)(11)			2	
$P(Ar + CH_4)$ = 50 torr.							
[1]) k_c. UV-Absorption Spectroscopy.							
80 RAV/EIS [2])	EX	298	(8.19±1.39)(11)			2	
$P(N_2)$ = 76 torr.							
80 RAV/EIS [2])	EX	298	(2.48±0.23)(12)			2	
$P(N_2)$ = 722 torr.							
[2]) k_c. M = N_2. Azomethane/N_2/O_2/NO_2 photolysis. k's at other temperatures, for various N_2 pressures and concentrations of reactants also included.							
[Azomethane] = (0.5-2.1) molec.cm^{-3}.							
$[CH_3O_2]_o$ = (0.9-0.7) molec.cm^{-3}.							
$[NO_2]$ = (2.6-31.7) molec.cm^{-3}.							
80 SAN/WAT [3])	EX	298	(5.32±0.39)(11)			2	
M = He.							
80 SAN/WAT [3])	EX	298	(6.93±0.60)(11)			2	
M = N_2.							
80 SAN/WAT [3])	EX	298	(7.71±0.96)(11)			2	
M = SF_6.							
[3]) k_c. Flash-photolysis/UV-Absorption. P = 50 torr. Other k's are given for various pressures up to to 700 torr. The k's increase with the pressure.							
$CH_3O_2 + CO \rightarrow CH_3O + CO_2$							
Methyldioxy + Carbon monoxide							
80 SAN/WAT	EX	298	≤4.22(6)			2	
Flash-photolysis/UV-Absorption.							
P = (50-700) torr. Upper-limit k.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3O_2 + HCHO \rightarrow CH_3OOH + CHO$							
Methyldioxy + Formaldehyde							
79 SEL/WAD	ES	410	≈1.2(6)			2	
Di-t-butyl peroxide pyrolysis in a static system.							
$CH_3O_2 + CH_3O_2 \rightarrow HCHO + CH_3OH + O_2$ (a)							
$\rightarrow CH_3O + CH_3O + O_2$ (b)							
$\rightarrow CH_3OOCH_3 + O_2$ (c)							
Methyldioxy							
75 ALC/MIL	ES	373	2.4(11)			2	
k_a.							
75 PAR	EX	298	1.48(11)			2	
k_a. Unreported T assumed to be 298 K.							
77 ALC/MIL	RN	373	2.4(11)			2	
k_a. Azomethane photolysis.							
77 ALC/MIL	RL	373	(2.5±1.2)(-1)			2/2	
k_a/k_b. Estimated ratio. Azomethane photolysis.							
79 SEL/WAD	RL	410	(6.9±0.8)(-1)			2/2	
k_a/k_b. Di-t-butyl peroxide thermolysis. Static system. Gas-chromatography. Mass-spectrometry.							
80 KAN/CAL [1])	RL	298	(1.32±0.16)			2/2	
k_a/k_b.							
80 KAN/CAL [1])	RL	298	≥7.0			2/2	
k_a/k_c. Lower-limit ratio.							
[1]) Photolysis of Azomethane and Oxygen mixtures.							
75 WEA/MEA [2])	RL	298	5.0(-1)			2/2	
75 WEA/SHO [2])	RL	288	5.0(1)			2/2	
Azomethane photolysis. FTIR-Spectroscopy.							
81 NIK/MAK [2])	RL	297	6.0(-1)			2/2	
Photooxidation of Azomethane, or Cl-atom initiated oxidation of CH_4 in O_2/N_2. FTIR-method. P = 700 torr.							
[2]) $k_a/(k_a + k_b + k_c)$.							
75 ALC/MIL [3])	ES	373	2.3(11)			2	
75 PAR [3])	EX	298	8.73(10)			2	
77 ALC/MIL [3])	ES	373	2.3(11)			2	
Azomethane photolysis.							
77 PAR [3])	EX	298	(9.64±2.41)(10)			2	
[3]) k_b.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
75 WEA/MEA [4]	RL	298	4.3(-1)			2/2	
75 WEA/SHO [4]	RL	288	4.3(-1)			2/2	
Azomethane photolysis.							
81 NIK/MAK [4]	RL	297	3.2(-1)			2/2	
Photooxidation of Azomethane, or Cl-atom, initiated oxidation of CH_4 in O_2/N_2. FTIR-method. P = 700 torr.							
[4] $k_b/(k_a + k_b + k_c)$.							
75 WEA/MEA [5]	RL	298	7.0(-2)			2/2	
75 WEA/SHO [5]	RL	288	7.2(-2)			2/2	
Azomethane Photolysis.							
81 NIK/MAK [5]	RL	297	8.0(-2)			2/2	
Photooxidation of Azomethane, or Cl-atom initiated oxidation of CH_4 in O_2/N_2. FTIR-method. P = 700 torr.							
[5] $k_c/(k_a + k_b + k_c)$.							
75 PAR [6]	EX	298	(2.35±0.30)(11)			2	
79 COX/TYN [6]	EX	298	(3.13±0.54)(11)			2	
[6] $k_a + k_b$.							
77 PAR	EX	298	(1.84±0.48)(11)			2	
$k_a + k_c$.							
73 PAR/PAU [7]	EX	298	(1.99±0.66)(11)			2	
77 HOC/GHO [7]	EX	295	(2.3±0.3)(11)			2	
Molecular-Modulation UV-Absorption Spectrometry.							
78 ANA/SMI2 [7]	EX	298	(2.65±0.60)(11)			2	
Azomethane/O_2 Flash-photolysis. [Azomethane] = $(1-3)\times10^{17}$ molec.cm^{-3}.							
79 KAN/MCQ [7]	ES	298	(2.4±0.1)(11)			2	
Azomethane/O_2 Flash-photolysis.							
79 SAN/SIM [7]	EX	298	(2.23±0.18)(11)			2	
Flash-photolysis of $Cl_2/CH_4/O_2$. P = (70-600) torr.							
80 ADA/BAS2 [7]	EX	298	(3.5±0.3)(11)			2	
Azomethane/O_2 Flash-photolysis.							
80 SAN/WAT [7]	EX	298	(2.17±0.42)(11)			2	
Flash-photolysis. UV-Absorption. P = (50-700) torr.							
81 SAN/WAT2 [7]	EX	248-417	(8.43±1.20)(10)	0	-223±41	2	
CH_3O_2 produced by $Cl_2/CH_4/O_2$ Flash-photolysis. UV-Absorption Spectrometry. $[CH_3O_2] = (0.04-2.0)\times10^{14}$ molec.cm^{-3}. P(Total) ~ 250 torr.							
[7] $k_a + k_b + k_c$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CD_3O_2 + CD_3O_2 \rightarrow DCDO + CD_3OD + O_2$ (a)							
$\rightarrow CD_3O + CD_3O + O_2$ (b)							
$\rightarrow CD_3OOCD_3 + O_2$ (c)							
Methyldioxy-d_3							
75 WEA/MEA [1]) [4])	RL	298	4.1(-1)			2/2	
75 WEA/SHO [1]) [4])	RL	288	6.0(-1)			2/2	
[1]) $k_a/(k_a + k_b + k_c)$.							
75 WEA/MEA [2]) [4])	RL	298	4.5(-1)			2/2	
75 WEA/SHO [2]) [4])	RL	288	2.2(-1)			2/2	
[2]) $k_b/(k_a + k_b + k_c)$.							
75 WEA/MEA [3]) [4])	RL	298	1.4(-1)			2/2	
75 WEA/SHO [3]) [4])	RL	288	1.8(-1)			2/2	
[3]) $k_c/(k_a + k_b + k_c)$.							
[4]) Azomethane-d_6 Photolysis.							
$CH_3O_2 + CH_2{=}CH_2 \rightarrow CH_3O +$ 							
Methyldioxy + Ethene							
80 SEL/WAD	EX	410	(1.2±0.7)(3)			2	
Di-t-Butyl peroxide oxidation.							
Static system.							
Gas-chromatography.							
Mass-spectrometry.							
81 NIK/MOS	EX	593	(4.6±0.9)(7)			2	
CH_3O_2 generated by Thermolysis of Di-t-butyl							
peroxide [P(Total) = (50-400) torr.], or of							
Azomethane [P(Total) = (50-60) torr.],							
in presence of O_2 and $CH_2{=}CH_2$.							
Gas-chromatography.							
$CH_3O_2 + CH_3C(O)OO \rightarrow CH_3O + CH_3 + CO_2 + O_2$							
Methyldioxy + Ethyldioxy, 1-oxo-							
80 ADD/BURR	DE	302	1.81(12)			2	2.0
Cl_2 modulated photolysis, in presence							
of CH_3CHO and O_2.							
Computer simulation data-fit.							
$CH_3O_2 + CH_3N{=}NCH_3 \rightarrow$ products (overall)							
Methyldioxy + Diazene, dimethyl- (Azomethane)							
79 KAN/MCQ	EX	298	(8.0±3.0)(7)			2	
Azomethane/O_2 Flash-photolysis.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3O_2 + (CH_3)_2CHO_2 \rightarrow CH_3OH + (CH_3)^2CO + O_2$							
Methyldioxy + Ethyldioxy, 1-methyl-							
77 ALC/MIL	ES	373	6.2(11)			2	
Azomethane photolysis.							
Same data given in 75 ALC/MIL.							
$CH_3O_2 + (CH_3)_2C{=}CH_2 \rightarrow CH_3O +$ 							
Methyldioxy + 1-Propene, 2-methyl-							
80 SEL/WAD	EX	410	(9.8±1.6)(3)			2	
Di-t-Butyl peroxide oxidation. Static system.							
Gas-chromatography.							
Mass-spectrometry.							
$CH_3O_2 + (CH_3)_3CO_2 \rightarrow CH_3O + (CH_3)_3CO + O_2$ (a)							
$\rightarrow HCHO + (CH_3)_3OH + O_2$ (b)							
Methyldioxy + Ethyldioxy, 1,1-dimethyl-							
75 PAR	EX	298	(3.01±1.51)(10)			2	
$k_a = k_b$. Unreported T assumed to be 298 K.							
81 KIR/PAR [1])	EX	333	1.0			2	
81 KIR/PAR [1])	EX	373	1.7			2	
[1]) k_a/k_b. Azo-t-butane/O_2 photolysis.							
Gas-chromatography.							
Approximate rate ratios.							
$CH_3O_2 + CH_2{=}C(CH_3)CH_2CH_3 \rightarrow CH_3O +$ 							
Methyldioxy + 1-Butene, 2-methyl-							
80 OSB/WAD	EX	373-403	3.98(11)	0	6351±650	2	5.25
Di-t-Butyl peroxide oxidation. Static system.							
Gas-chromatography.							
Mass-spectrometry.							
$CH_3O_2 + (CH_3)_2C{=}CHCH_3 \rightarrow CH_3O +$ 							
Methyldioxy + 2-Butene, 2-methyl-							
80 OSB/WAD	EX	373-403	1.44(11)	0	5100±433	2	3.09
Di-t-Butyl peroxide oxidation. Static system.							
Gas-chromatography.							
Mass-spectrometry.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3O_2 + (CH_3)_2C{=}C(CH_3)_2 \rightarrow CH_3O +$ 							
Methyldioxy + 2-Butene, 2,3-dimethyl-							
80 OSB/WAD	EX	373-403	1.38(11)	0	4378±337	2	2.09
Di-t-Butyl peroxide oxidation. Static system.							
Gas-chromatography. Mass-spectrometry.							
$CH_3O_2 + (CH_3)_2CHCH(CH_3)_2 \rightarrow CH_3OOH + (CH_3)_2CHC(CH_3)_2$							
Methyldioxy + Butane, 2,3-dimethyl-							
75 ALC/MIL	ES	373	1.6(5)			2	
77 ALC/MIL	ES	373	1.6(5)			2	
Azomethane photolysis.							
$CH_3O_2 + (CH_3)_2CHC(OO\cdot)(CH_3)_2$							
$\rightarrow HCHO + (CH_3)_2CHC(OH)(CH_3)_2 + O_2$							
Methyldioxy + Propyldioxy, 1,1,3-trimethyl-							
77 ALC/MIL	ES	373	2.4(11)			2	
Azomethane photolysis.							
$HOCH_2O + O_2 \rightarrow HCOOH + HO_2$							
Methoxy, hydroxy- + Oxygen molecule							
82 VEY/RAY	DE	298	(2.11±0.96)(10)			2	
$HCHO/O_2/NO$ Flash-photolysis.							
Computer simulation data-fit.							
$[HCHO]_o$ = (2-30) torr.							
$[O_2]_o$ = (2.5-45) torr.							
$[NO]_o$ = (15-200) torr.							
$HOCH_2O + NO \rightarrow HOCH_2ONO$ (a)							
$\rightarrow HNO + HCOOH$ (b)							
Methoxy, hydroxy- + Nitrogen oxide (NO)							
82 VEY/RAY	DE	298	(2.41±1.14)(13)			2	
$k_a + k_b$. $HCHO/O_2/NO$ flash-photolysis.							
Computer simulation data-fit.							
$[O_2]_o$ = (2.5-45) torr.							
$[HCHO]_o$ = (2-30) torr.							
$[NO]_o$ = (15-200) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$HOCH_2O_2 \rightarrow HO_2 + HCHO$							
Methyldioxy, hydroxy-							
79 SU/CAL3	ES	298	1.5			1	
Cl_2/HCHO/synthetic air photolysis.							
FTIR-Spectroscopy.							
P(Total) ~ 700 torr.							
82 VEY/RAY	ES	298	3.0(1)			1	
HCHO/O_2/NO flash-photolysis. Data-fit.							
$[O_2]_o$ = (2.5-45) torr.							
$[NO]_o$ = (15-200) torr.							
$[HCHO]_o$ = (2-30) torr.							
$HOCH_2O_2 + NO \rightarrow HOCH_2O + NO_2$							
Methyldioxy, hydroxy- + Nitrogen oxide (NO)							
82 VEY/RAY	ES	298	3.37(12)			2	
HCHO/O_2/NO flash-photolysis. Data-fit.							
$[O_2]_o$ = (2.5-445] torr.							
$[NO]_o$ = (15-200) torr.							
$[HCHO]_o$ = (2-30) torr.							
$HOCH_2O_2 + HOCH_2O_2 \rightarrow HOCH_2O + HOCH_2O + O_2$							
Methyldioxy, hydroxy-							
79 SU/CAL3	ES	298	7.23(10)			2	
Cl_2/HCHO/synthetic air photolysis.							
FTIR-Spectroscopy.							
P(Total) ~ 700 torr.							
$CH_3OH (+ M) \rightarrow CH_3 + OH (+ M)$							
Methanol							
75 BOW2	ES	1545-2180	4.0(15)	0	34200	2	
M = Ar. Reflected shock waves. Best data-fit.							
[Ar] = $(5.7-17.0)x10^{18}$ molec.cm^{-3}.							
$[CH_3OH]$ = $1.3x10^{17}$ molec.cm^{-3}.							
$[O_2]$ = $2.5x10^{17}$ molec.cm^{-3}.							
81 TSU/KAT [1])	EX	1500-1900	6.0(12)	0	37288	1	
Total conc. = $6.0x10^{18}$ molec.cm^{-3}.							
81 TSU/KAT [1])	EX	1500-1900	3.5(13)	0	37769	1	
Total conc. = $3.0x10^{19}$ molec.cm^{-3}.							
81 TSU/KAT [1])	EX	1500-1900	8.7(13)	0	38251	1	
Total conc. = $6.0x10^{19}$ molec.cm^{-3}.							
81 TSU/KAT [1])	EX	1500-1900	2.0(18)	0	47510	1	
Limiting high-pressure k.							
Tentative.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 TSU/KAT [1]	EX	1500-1900	9.0(18)	0	40536	2	
Limiting low-pressure k. Tentative.							
[1]) M = Ar. CH_3/O_2 Thermal oxidation behind reflected shock-waves. UV-absorption. IR-emission. Same data given in 81 TSU/HAS.							
82 SPI/WAG [2]	EX	1600-2100	9.4(15)	0	45227	1	
Limiting high-pressure k.							
82 SPI/WAG [2]	EX	1600-2100	2.0(17)	0	34441	2	
Limiting low-pressure k.							
[2]) Methanol Thermolysis behind reflected shock-waves. Total conc. = $(0.1\text{-}3.8)\times10^{19}$ molec.cm^{-3}. $[CH_3OH]_o$ = $(0.1\text{-}3.0)\times10^{16}$ molec.cm^{-3}.							
CS_2 (+ M) → CS + S (+ M)							
Carbon disulfide							
74 TRA	EX	[1])	6.76(14)	0	35984±705	2	
[1]) Shock-tube. Unspecified high-T range.							
80 SAI/TOR	EX	2000-2900	2.51(14)	0	37393±3271	2	3.16
M = Ar. Thermolysis behind reflected shock-waves. $[CS_2]$ = $(0.9\text{-}2.4)\times10^{16}$ molec.cm^{-3}. Total Conc. = $(2.0\text{-}4.8)\times10^{16}$ molec.cm^{-3}.							
COS (+ M) → products							
Carbon oxide sulfide							
74 TRA	EX	[1])	8.32(14)	0	31706±654	2	
[1]) Shock-tube. Unspecified high-T range.							
CH_3S + CH_3S → HCHS + CH_3SH (a)							
→ CH_3SSCH_3† (b)							
Methylthio							
73 TYC/KNI [1])	RL	298	4.0(-2)			2/2	
k_a/k_b.							
73 TYC/KNI [1])	RN	298	9.8(11)			2	
k_a.							
73 TYC/KNI [1])	RN	298	2.4(13)			2	
k_b.							
[1]) Hg-photosensitized CH_3SH decomposition.							
CH_3S + #172 → CH_3S_2 + CH_2=CH_2							
Methyl, mercapto- + Thiirane (Ethylene episulfide)							
72 JAK/AHM	ES	304-478	~3.16(11)	0	~4429	2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
CN (+ M) → C + N (+ M)							
Cyanogen							
76 SLA	EX	4400-1300	(1.2±0.4)(14)	0	70961±5536	2	
M = Ar.							
CN(v=n) + O_2 → NCO + O							
Cyanogen + Oxygen molecule							
72 BUL/COO1 [1])	EX	303	(6.77±0.15)(12)			2	
v = 0.							
72 BUL/COO1 [1])	EX	375	(6.34±0.22)(12)			2	
v = 0.							
72 BUL/COO1 [1])	EX	303	(7.6±0.2)(12)			2	
v = 1.							
72 BUL/COO1 [1])	EX	303	(9.26±0.22)(12)			2	
v = 2.							
72 BUL/COO1 [1])	EX	303	(9.83±0.31)(12)			2	
v = 3.							
72 BUL/COO1 [1])	EX	303	(1.17±0.35)(13)			2	
v = 4.							
72 BUL/COO1 [1])	EX	375	(1.11±0.06)(13)			2	
v = 4.							
[1]) Possible small negative E_a.							
72 SCH/WOL2	EX	298	4.7(12)			2	
k decreasing to $1.8 \times 10^{12} cm^3 mol^{-1} s^{-1}$ between v=0 and v=6. Unreported T assumed 298 K.							
73 SCH/SCH1	EX	298	6.31(12)			2	
k(v=7) = 1.58×10^{12} $cm^3 mol^{-1} s^{-1}$. k decreases monotonically from v=0 to v=7.							
74 SCH/SCH	EX	299-388	3.16(13)	0	503	2	
v = 0.							
75 ALB/HOY	EX	718-1111	(3.2±1.0)(13)	0	505±168	2	
v = 0.							
CN + H_2 → HCN + H							
Cyanogen + Hydrogen molecule							
74 SCH/SCH	EX	298-388	6.31(13)	0	2667	2	
75 ALB/HOY	EX	718-1111	(6.0±2.0)(13)	0	2670±301	2	
77 SCH/WAG	EX	259-396	(6.0±2.0)(13)	0	2670±301	2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
CN(v=n) + NO(v'=0) → N_2 + CO (a)							
→ CN(v=n-1) + NO(v'=1) (b)							
CN(v=n) + NO (+ M)→ NOCN (+ M) (c)							
Cyanogen + Nitrogen oxide (NO)							
75 MUL/PHI	ES	1500	7.3(12)			2	
k_a. n = 0.							
78 LAM/DUG [1])	EX	300	(7.23±3.61)(10)			2	
k_a. n = 0.							
78 LAM/DUG [1])	EX	300	(1.57±0.30)(11)			2	
$k_a + k_b$.							
n = 1.							
78 LAM/DUG [1])	EX	300	(2.79±0.51)(17)			3	
k_c. n = 0.							
78 LAM/DUG [1])	EX	300	(1.09±0.40)(17)			3	
k_c. n = 1.							
[1]) M = Ar.							
Flash-photolysis.							
Laser-induced fluorescence.							
CN + CO_2 → CNO + CO							
Cyanogen + Carbon dioxide							
75 HAY/IVE	EX	1830-2400	(3.7±0.4)(12)	0	0	2	
CN(v=n) + CH_4 → HCN + CH_3							
Cyanogen + Methane							
71 BUL/COO [1])	EX	300	(4.46±0.1)(13)			2	
n = 0.							
CN Absorption band: 0,0.							
71 BUL/COO [1])	EX	300	(5.0±0.2)(11)			2	
n = 0.							
CN Absorption band: 4,4.							
[1]) Radiolysis of C_2N_2 + Ar.							
72 BUL/COO2	EX	300-377	1.29(13)	0	1006±96	2	
n = 0.							
74 SCH/SCH	EX	298-388	3.16(13)	0	1459	2	
n = 0.							
77 SCH/WAG	EX	259-396	(6.0±3.0)(12)	0	866±301	2	
n = 0.							
77 SCH/WAG	EX	298	7.0(11)			2	
n = 1.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CN + CD_4 \rightarrow DCN + CD_3$							
Cyanogen + Methane-d_4							
72 BUL/COO2	EX	300	(2.4±0.4)(11)			2	
CN(0,0) band.							
72 BUL/COO2	EX	300	(3.5±0.2)(11)			2	
CN(4,4) band.							
$CN + COS \rightarrow SCN + CO$							
Cyanogen + Carbon oxide sulfide							
79 ADD/LEI	EX	295	≥1.81(13)			2	
Time-resolved spectrophotometry.							
Lower-limit k.							
$CN(v{=}n) + CH{\equiv}CH \rightarrow$ products							
Cyanogen + Ethyne							
77 SCH/WAG	EX	259-396	(3.0±1.0)(13)	0	0	2	
v = 0.							
77 SCH/WAG	EX	298	≥1.5(14)			2	
v = 1. Lower-limit k.							
$CN + CH_2{=}CH_2 \rightarrow CH_2CH_2CN$ (a)							
$\rightarrow$ any other products (b)							
Cyanogen + Ethene							
71 BUL/COO [1]	EX	300	(1.16±0.15)(14)			2	
CN Absorption band: 0,0.							
71 BUL/COO [1]	EX	300	(1.35±0.20)(14)			2	
CN Absorption band: 4,4.							
[1] k_a. Radiolysis of C_2N_2 + Ar.							
77 SCH/WAG [2]	EX	259-396	(3.0±0.5)(13)	0	0	2	
v = 0.							
77 SCH/WAG [2]	EX	298	6.5(13)			2	
v=1.							
[2] $k_{overall}$.							
$CN + CH_3CH_3 \rightarrow HCN + CH_3CH_2$							
Cyanogen + Ethane							
71 BUL/COO	EX	300	(1.45±0.10)(13)			2	
CN Absorption bands: 0,0 and 4,4.							
Radiolysis of C_2N_2 + Ar.							
72 BUL/COO2	EX	300-415	2.40(13)	0	192	2	
72 BUL/COO2	EX	300-415	1.48(13)	0	0	2	
B = 0 assumed.							
74 SCH/SCH	EX	298	7.94(12)			2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
CN + NCCN → [C_3N_3]							
Cyanogen + Ethanedinitrile							
72 BUL/COO1	EX	300-377	5.62(11)	0	1576	2	
CN + $CH_3CH{=}CH_2$ → products							
Cyanogen + 1-Propene							
71 BUL/COO	EX	300	(1.6±0.2)(14)			2	
CN Absorption band: 0,0. C_2N_2/Ar Radiolysis.							
CN + $CH_3CH_2CH_3$ → HCN + $CH_3CH_2CH_2$ (a)							
→ HCN + $(CH_3)_2CH$ (b)							
Cyanogen + Propane							
72 BUL/COO2	EX	300	(3.2±0.5)(13)			2	
$k_a + k_b$.							
CN + $CH_2{=}CHCH{=}CH_2$ → products							
Cyanogen + 1,3-Butadiene							
71 BUL/COO	EX	300	(2.6±0.3)(14)			2	
CN Absorption band: 0,0. C_2N_2/Ar Radiolysis.							
NCO + O_2 → NO + CO_2							
Cyanato + Oxygen molecule							
74 SCH/SCH	EX	298	7.94(11)			2	
HCN (+ M) → H + CN (+ M)							
Hydrocyanic acid							
76 ROT/JUS	EX	2200-2700	5.72(16)	0	58940	2	
M = Ar. Thermolysis behind shock-waves.							
80 ROT	EX	2200-2700	5.72(16)	0	59060	2	
M = Ar. HCN Thermolysis behind shock-waves.							
Resonance-absorption.							
Same data given in 79 ROT/JUS1.							
82 SZE/HAN	EX	3570-5036	4.07(17)	0	44740±1060	2	1.29
M = Ar. HCN Thermolysis behind incident							
shock-waves in Ar. P = (128-218) torr.							
CH_3NH_2 (+ M) → CH_3 + NH_2 (+ M)							
Methanamine							
79 DOR/PCH [1])	EX	1275-2400	6.92(10)	0	24233	1	
Limiting high-pressure k.							
79 DOR/PCH [1])	EX	1275-2400	3.16(13)	0	17685	2	
Limiting low-pressure k.							

[1]) Reflected shock-waves. IR-emission techniques.

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3N{=}N \rightarrow CH_3 + N_2$							
Diazenyl, methyl-							
76 VID/WIL	EX	295	≥3.0(6)			1	
$CH_3NHNH_2 \rightarrow CH_2{=}NH + NH_3$ (a)							
$\rightarrow CH_3N{=}NH + H_2$ (b)							
Hydrazine, methyl-							
72 GOL/SOL	EX	943-1263	1.58(13)	0	27177	1	
k_a.							
RRKM fit of experimental data.							
72 GOL/SOL	EX	943-1263	3.16(13)	0	28686	1	
k_b.							
RRKM fit of experimental data.							
NH_2CO (+ M) $\rightarrow NH_2 + CO$ (+ M)							
Amidogen, formyl-							
73 YOK/BAC	RN	578	(5.9±2.0)(12)			1	
M = $HCONH_2$.							
Limiting high-pressure k.							
73 YOK/BAC	RN	578	(1.04±0.35)(17)			2	
k_o.							
M = $HCONH_2$.							
Low-pressure.							
$NH_2CO + NH_2CO \rightarrow NH_2COCONH_2$ (a)							
$\rightarrow HNCO + HCONH_2$ (b)							
Amidogen, formyl-							
73 YOK/BAC	EX	578	(3.1±1.0)(13)			2	
$k_a + k_b$.							
$CH_3NO^\dagger \rightarrow CH_3 + NO$							
Methane, nitroso-							
74 TIT/BAL	ES	443	2.0(7)			1	
$CH_3NO^\dagger$ generated by reacting CH_3 with NO.							
CH_3ONO (+ M) $\rightarrow HCHO + HNO$ (+ M) (a)							
$\rightarrow CH_3O. + NO$ (+ M) (b)							
Nitrous acid methyl ester							
75 BAT/MCC	ES	393-473	1.0(10)	0	16004	1	
k_a.							
77 BAT/MIL3	ES	440-473	3.98(13)	0	19376±503	1	3.98
k_a.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
74 BAT/MIL	ES	393-473	6.31(15)	0	20735±503	1	2.51
k_b.							
75 BAT/MCC	ES	393-473	6.31(15)	0	20735±503	1	2.51
k_b.							
77 BAT/MIL3	ES	440-473	6.31(15)	0	20745±503	1	3.98
k_b.							
75 MAL/GAN	EX	715-1118	2.29(16)	0	15299±428	2	1.66
M = Ar.							
Incident and reflected shockwaves.							
P = (0.8-5) atm.							
CH_3NO_2 (+ M) → CH_3 + NO_2 (+ M)							
Methane, nitro-							
72 GLA/TRO	EX	900-1400	1.78(16)	0	29441±252	1	
M = Ar.							
Limiting high-pressure k.							
72 GLA/TRO	EX	900-1370	1.26(17)	0	21137	2	
M = Ar.							
Low-pressure k.							
CH_3ONO_2 → CH_3O + NO_2							
Nitric acid methyl ester							
77 BAT/MIL3	ES	440-473	5.01(15)	0	20382±503	1	3.98
$CH_3O_2NO_2$ (+ M) → CH_3O_2 + NO_2 (+ M)							
Peroxynitric acid methyl ester							
82 BAH/SIM [1])	EX	256-268	6.0(15)	0	10619±755	1	
Experimental k.							
P ~ 350 torr.							
82 BAH/SIM [1])	DE	256-268	(6.0±3.0)(15)	0	10720±151	1	
Optimization based on combination of the above experimental data with k_{-1} and thermodynamic data.							
82 BAH/SIM [1])	CO	256-268	2.1(16)	0	10921±151	1	
Limiting high-pressure k.							
82 BAH/SIM [1])	DE	256-268	2.0(20)	0	10141±151	2	
Limiting low-pressure k. Both limiting k values are evaluations based on the P-dependence of k_{-1}.							
[1]) $CH_3O_2NO_2$ decomposition in a Pyrex reaction cell with vacuum system. UV-spectrometry. $CH_3O_2NO_2$ generated by $Cl_2/O_2/CH_4/NO_2$ photolysis.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$C_2(X^1\Sigma_g^+ = A^3\Pi_g)$ (+ M) → C + C (+ M)							
Carbon dimer							
75 BEC/MAC	EX	4860-6920	3.71(14)	0	69885±7097	2	1.86
M = Ar.							
Shock-wave pyrolysis of CH≡CH in Ar.							
$C_2(X^1\Sigma_g^+) + O_2$ → CO^* + CO (a)							
→ any other products (b)							
Carbon dimer + Oxygen molecule							
80 REI/MAN1	EX	300	(1.81±0.12)(12)			2	
k_a. CH_2=CHCN/O_2 Multiphoton dissociation.							
CO^* is in an electronically excited							
triplet state.							
79 PAS/MCD	EX	298	(1.70±0.05)(12)			2	
$k_{overall}$. $CF_3C≡CF_3$ Multiphoto-n laser photo-							
dissociation. Laser-induced fluorescence.							
80 MAN/REI	CO	298	1.63(12)			2	
$k_{overall}$. CH_2=CN or CHCl=CCl_2 Multiphoton							
laser dissociation in a fluorescence chamber.							
82 PIT/PAS [1])	EX	300-600	(6.44±1.51)(12)	0	337±81	2	
$C_2(X^1\Sigma_g^+)$ reacts as fast as $C_2(a^3\Pi_u)$.							
82 PIT/PAS [1])	EX	300-600	(2.00±0.60)(13)	0	604±101	2	
$C_2(X^1\Sigma_g^+)$ reacts much faster than $C_2(a^3\Pi_u)$.							
[1]) $k_{overall}$. Dye-laser induced fluorescence.							
C_2 produced by multiphoton UV-photolysis							
of CF_3≡CCF_3.							
$C_2(a^3\Pi_u) + O_2$ → CO($A^1\Pi$) + CO (a)							
→ CO^* + CO (b)							
Carbon dimer + Oxygen molecule							
79 FIL/HAN	EX	298	2.05(12)			2	
k_a. Laser-induced fluorescence.							
80 REI/MAN1	EX	300	(1.81±0.12)(12)			2	
k_b. CH_2=CHCN/O_2 Multiphoton dissociation.							
CO^* is an electronically excited triplet.							
79 DON/PAS	EX	298	(1.78±0.04)(12)			2	
$k_{overall}$. CH≡CH Multiphoton photolysis.							
Dye-laser induced fluorescence.							
P(N_2) = (10-45) torr.							
80 MAN/REI	CO	298	1.63(12)			2	
$k_{overall}$. CH_2=CHCN or CHCl=CCl_2 Multiphoton							
dissociation in a fluorescence chamber.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 PIT/PAS	EX	300-600	(6.44±1.51)(12)	0	337±81	2	
$k_{overall}$. $C_2(a^3\Pi_u)$ is assumed to react as fast as $C_2(X^1\Sigma_g^+)$. Dye-laser induced fluorescence. C_2 produced by Multiphoton Photolysis of $CF_3{\equiv}CCF_3$.							
$C_2(X^1\Sigma_g^+) + H_2O \rightarrow$ products							
Carbon dimer + Water							
80 REI/MAN2	EX	300	<1.81(10)			2	
$CH_2{=}CHCN$ or $CHCl{=}CCl_2$ Multiphoton dissociation. Laser-induced fluorescence. Upper-limit k.							
$C_2(a^3\Pi_u) + H_2O \rightarrow$ products							
Carbon dimer + Water							
80 REI/MAN2	EX	300	<1.81(10)			2	
$CH_2{=}CHCN$ or $CHCl{=}CCl_2$ Multiphoton dissociation. Laser-induced fluorescence. Upper-limit k.							
$C_2(X^1\Sigma_g^+) + N_2 \rightarrow$ products							
Carbon dimer + Nitrogen molecule							
80 REI/MAN2	EX	300	<1.81(10)			2	
$CH_2{=}CHCN$ or $CHCl{=}CCl_2$ Multiphoton dissociation. Laser-induced fluorescence. Upper-limit k.							
$C_2(a^3\Pi_u) + N_2 \rightarrow$ products							
Carbon dimer + Nitrogen molecule							
80 REI/MAN2	EX	300	<1.81(10)			2	
$CH_2{=}CHCN$ or $CHCl{=}CCl_2$ Multiphoton dissociation. Laser-induced fluorescence. Upper-limit k.							
$C_2(X^1\Sigma_g^+) + NO \rightarrow CN(X^2\Sigma^+) + CO$ (a)							
$\rightarrow CN(A^2\Pi) + CO$ (b)							
Carbon dimer + Nitrogen oxide (NO)							
82 LE	ES	2700	3.6(14)			2	
k_a. Premixed fuel-rich $CH{\equiv}CH/NO$ flames, at 250-600 nm. P = 80 torr.							
80 REI/MAN2	EX	300	1.26(14)			2	
$k_a + k_b$. $CH_2{=}CHCN$ or $CHCl{=}CCl_2$ Multiphoton dissociation. Laser-induced fluorescence.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$C_2(a^3\Pi_u) + NO \rightarrow CN(X^2\Sigma^+) + CO$ (a)							
$\rightarrow CN(B^2\Sigma^+) + CO$ (b)							
$\rightarrow CN(A^2\Pi) + CO$ (c)							
$\rightarrow CN(X^2\Sigma^+) + CO(a^3\Pi)$ (d)							
Carbon dimer + Nitrogen oxide (NO)							
79 REI/MAN [1])	EX	298	(4.40±0.54)(13)			2	
k determined by using LIF to monitor $C_2(a^3\Pi_u)$.							
79 REI/MAN [1])	EX	298	(4.52±0.18)(13)			2	
k determined from $CN(B^2\Sigma^+ \rightarrow X^2\Sigma^+)$ chemiluminescence.							
79 REI/MAN [1])	EX	298	(4.40±0.18)(13)			2	
k determined from $CN(A^2\Pi \rightarrow X^2\Sigma^+)$ chemiluminescence.							
[1]) $k_a + k_b + k_c + k_d$.							
Ethylene, or Vinyl cyanide Multiple-photon dissociation.							
Time-resolved Chemiluminescence.							
Laser-induced Fluorescence.							
$P(CH_2{=}CHCN)$ = (1-10) mtorr.							
$P(CH_2{=}CH_2)$ = (1-10) mtorr.							
P(Ar) = (50-500) mtorr.							
$C_2(X^1\Sigma_g{}^+) + CO_2 \rightarrow$ products							
Carbon dimer + Carbon dioxide							
80 REI/MAN2	EX	300	<1.81(10)			2	
$CH_2{=}CHCN$ or $CHCl{=}CCl_2$ Multiphoton dissociation.							
Laser-induced fluorescence.							
Upper-limit k.							
$C_2(a^3\Pi_u) + CO_2 \rightarrow$ products							
Carbon dimer + Carbon dioxide							
80 REI/MAN2	EX	300	<1.81(10)			2	
$CH_2{=}CHCN$ or $CHCl{=}CCl_2$ Multiphoton dissociation.							
Laser-induced fluorescence.							
Upper-limit k.							
$C_2(X^1\Sigma_g{}^+) + CH_4 \rightarrow CH{\equiv}C + CH_3$ (a)							
$\rightarrow CH_3C{\equiv}CH$ (b)							
Carbon dimer + Methane							
79 PAS/MCD	EX	298	(1.13±0.03)(13)			2	
k_a.							
$CF_3C{\equiv}CCF_3$ Multiphoton laser photodissociation.							
Laser-induced fluorescence.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 PIT/PAS	EX	300-600	(3.04±0.09)(13)	0	297±10	2	
k_b. Dye-laser induced fluorescence. C_2 produced by multiphoton UV-Photolysis of $CF_3C{\equiv}CCF_3$.							
80 REI/MAN2	EX	300	(1.02±0.12)(13)			2	
$k_{overall}$. $CH_2{=}CHCN$ or $CHCl{=}CCl_2$ Multiphoton dissociation. Laser-induced fluorescence.							
$C_2(a^3\Pi_u) + CH_4 \rightarrow$ products							
Carbon dimer + Methane							
79 DON/PAS	EX	298	<6.02(7)			2	
$CH{\equiv}CH$ Multiphoton photolysis. Dye-laser induced fluorescence. Upper-limit k. $P(CH_4)$ = (0-250) torr. $P(N_2)$ = (0-10) torr.							
80 PAS/BAR	EX	337-605	(9.94±1.20)(12)	0	2805±55	2	
$CF_3C{\equiv}CCF_3$ Multiphoton UV-photolysis. Dye-laser induced fluorescence. $P(CF_3C{\equiv}CCF_3)$ = (1.5-4.0) mtorr. $P(CH_4)$ ~ (10-170) torr.							
80 REI/MAN2	EX	300	<1.81(10)			2	
$CH_2{=}CHCN$ or $CHCl{=}CCl_2$ Multiphoton dissociation. Laser-induced fluorescence. Upper-limit k.							
$C_2(X^1\Sigma_g^+) + CH{\equiv}CH \rightarrow$ products							
Carbon dimer + Ethyne							
80 REI/MAN2	EX	300	(2.59±0.24)(14)			2	
$CH_2{=}CHCN$ or $CHCl{=}CCl_2$ Multiphoton dissociation. Laser-induced fluorescence.							
$C_2(a^3\Pi_u) + CH{\equiv}CH \rightarrow$ products							
Carbon dimer + Ethyne							
79 DON/PAS	EX	298	(5.78±0.18)(13)			2	
$CH{\equiv}CH$ Multiphoton photolysi Dye-laser induced fluorescence. P-independent.							
$C_2(X^1\Sigma_g^+) + CH_2{=}CH_2 \rightarrow$ products							
Carbon dimer + Ethene							
79 PAS/MCD	EX	298	(1.96±0.03)(13)			2	
$CF_3C{\equiv}CCF_3$ Multiphoton laser photodissociation. Laser-induced fluorescence.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$C_2(a^3\Pi_u) + CH_2{=}CH_2 \rightarrow$ products							
Carbon dimer + Ethene							
79 DON/PAS	EX	298	(8.67±0.36)(13)			2	
$CH{\equiv}CH$ Multiphoton photolysis. Dye-laser induced fluorescence. $P(N_2)$ = (10-60) torr.							
81 PAS/PIT	EX	300-600	(7.23±0.96)(13)	0	-5±46	2	
$CF_3C{\equiv}CCF_3$ or C_6H_6 Multiphoton laser dissociation. Laser-induced fluorescence.							
$C_2(X^1\Sigma_g^+) + CH_3CH_3 \rightarrow CH{\equiv}C + CH_3CH_2$							
Carbon dimer + Ethane							
79 PAS/MCD	EX	298	(9.58±0.30)(13)			2	
$CF_3C{\equiv}CCF_3$ Multiphoton laser photodissociation. Laser-induced fluorescence.							
$C_2(a^3\Pi_u) + CH_3CH_3 \rightarrow CH{\equiv}C + CH_3CH_2$							
Carbon dimer + Ethane							
79 DON/PAS	EX	298	(7.83±0.36)(11)			2	
$CH{\equiv}CH$ Multiphoton photolysis. Dye-laser induced fluorescence. $P(N_2)$ = (10-60) torr.							
81 PAS/PIT	EX	300-600	(1.46±0.06)(13)	0	919±15	2	
$CF_3C{\equiv}CCF_3$ or C_6H_6 Multiphoton laser dissociation. Laser-induced fluorescence.							
$C_2(X^1\Sigma_g^+) + CH_2{=}CHCN \rightarrow$ products							
Carbon dimer + 2-Propenenitrile (Acrylonitrile)							
80 REI/MAN2	EX	300	(2.65±0.18)(14)			2	
$CH_2{=}CHCN$ or $CHCl{=}CCl_2$ Multiphoton dissociation. Laser-induced fluorescence.							
$C_2(a^3\Pi_u) + CH_2{=}CHCN \rightarrow$ products							
Carbon dimer + 2-Propenenitrile (Acrylonitrile)							
80 REI/MAN2	EX	300	(3.43±0.24)(13)			2	
$CH_2{=}CHCN$ or $CHCl{=}CCl_2$ Multiphoton dissociation. Laser-induced fluorescence.							
$C_2(X^1\Sigma_g^+) + CH_2{=}C{=}CH_2 \rightarrow$ products							
Carbon dimer + 1,2-Propadiene							
80 REI/MAN2	EX	300	(2.83±0.24)(14)			2	
$CH_2{=}CHCN$ or $CHCl{=}CCl_2$ Multiphoton dissociation. Laser-induced fluorescence.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$C_2(a^3\Pi_u) + CH_2{=}C{=}CH_2 \rightarrow$ products							
Carbon dimer + 1,2-Propadiene							
80 REI/MAN2	EX	300	(1.57±0.12)(14)			2	
$CH_2{=}CHCN$ or $CHCl{=}CCl_2$ Multiphoton dissociation. Laser-induced fluorescence. Upper-limit k.							
$C_2(X^1\Sigma_g^+) + CH_3CH_2CH_3 \rightarrow$ products							
Carbon dimer + Propane							
80 REI/MAN2	EX	300	(1.99±0.12)(14)			2	
$CH_2{=}CHCN$ or $CHCl{=}CCl_2$ Multiphoton dissociation. Laser-induced fluorescence. Upper-limit k.							
$C_2(a^3\Pi_u) + CH_3CH_2CH_3 \rightarrow CH{\equiv}C + CH_3CH_2CH_2$ (a)							
$\rightarrow CH{\equiv}C + (CH_3)_2CH$ (b)							
Carbon dimer + Propane							
81 PAS/PIT	EX	300-600	(1.11±0.10)(13)	0	97±36	2	
$k_a + k_b$. $CF_3C{\equiv}CCF_3$ Multiphoton laser dissociation. Laser-induced fluorescence.							
80 REI/MAN2	EX	300	(1.00±0.06)(14)			2	
$k_{overall}$. $CH_2{=}CHCN$ or $CHCl{=}CCl_2$ Multiphoton dissociation. Laser-induced fluorescence.							
$C_2(a^3\Pi_u) + CH_3CH_2CH_2CH_3 \rightarrow CH{\equiv}C + CH_3CH_2CH_2CH_2$ (a)							
$\rightarrow CH{\equiv}C + CH_3CH_2CHCH_3$ (b)							
Carbon dimer + Butane							
81 PAS/PIT	EX	300-600	(2.95±0.30)(13)	0	71±41	2	
$CF_3C{\equiv}CCF_3$ or C_6H_6 Multiphoton laser dissociation. Laser-induced fluorescence.							
$C_2O + CH{\equiv}CH \rightarrow$ products							
Carbon oxide (C_2O) + Ethyne							
80 DON/PIT	EX	298	<6.02(9)			2	
C_3O_2 photodissociation at 266 nm. Dye-laser induced fluorescence. Upper-limit k.							
$C_2O + CH_2{=}CH_2 \rightarrow$ products							
Carbon oxide (C_2O) + Ethene							
80 DON/PIT	EX	298	<6.02(9)			2	
C_3O_2 photodissociation at 266 nm. Dye-laser induced fluorescence. Upper-limit k.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$C_2O + (CH_3)_2C{=}CH_2 \rightarrow$ products							
Carbon oxide (C_2O) + 1-Propene, 2-methyl-							
80 DON/PIT	EX	298	(6.75±0.30)(10)			2	
C_3O_2 Laser photodissociation at 266 nm.							
Dye-laser induced fluorescence.							
$CH{\equiv}C$ (+ M) $\rightarrow C_2$ + H (+ M)							
Ethynyl							
75 BEC/MAC [1])	DE	4860-6920	3.61(15)	0	71930	2	
M = Ar.							
75 BEC/MAC [1])	DE	4860-6920	6.02(13)	0	14554	2	
M = H.							
[1]) Shock-wave pyrolysis. $CH{\equiv}CH$ in Ar. Best-fit.							
$CH{\equiv}C + O_2 \rightarrow$ products							
Ethynyl + Oxygen molecule							
75 LAN/WAG	EX	320	≈3.3(12)			2	
Discharge-flow. Mass-spectrometry. P = 4.1 torr.							
82 REN/SHO	EX	300	(1.26±0.18)(13)			2	
M = He or Ar. Vacuum chamber. $CH{\equiv}C$ produced by Laser-Photolysis of $CH{\equiv}CH$, $CH{\equiv}CBr$, $CH{\equiv}CHO$, or $CH{\equiv}CCF_3$ in presence of O_2, at 192 nm. Time-resolved chemiluminescence. IR-Spectroscopy. P(Ar, or He) = (210-860) mtorr. P($CH{\equiv}CH$) = (5-25) mtorr. P(O_2) = (80-500) mtorr.							
$CH{\equiv}C + H_2 \rightarrow CH{\equiv}CH$ + H							
Ethynyl + Hydrogen molecule							
74 YAM/LAV	DE	1063-1233	6.02(12)	0	3271	2	
$k_1 = k_{-1}K$.							
75 LAN/WAG	EX	320	≈1.0(11)			2	
Discharge-flow. Mass-spectrometry. P = 4.2 torr.							
79 LAU/BAS	EX	298	4.9(-3)			2	
Vacuum-UV flash-photolysis. Kinetic-spectroscopy. Gas-chromatography.							
k_{ref}: $CH{\equiv}CH + CH{\equiv}C \rightarrow H + CH{\equiv}CC{\equiv}CH$							
80 TAN/GAR2	ES	625-3400	3.39(13)	0	0	2	
$CH{\equiv}CH$ Pyrolysis. Based on a modelling study.							
81 KOI/MOR1	ES	1800-2600	2.51(12)	0	0	2	
$CH{\equiv}CH$ Pyrolysis behind incident shock-waves. P = 380 torr. Based on a modelling study.							

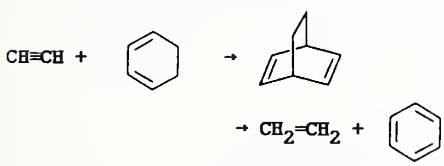
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 OKA	EX	298	(7.75±0.68)(-3)			2	
$CH{\equiv}CH/H_2$ photolysis at 147 nm.							
P(CH≡CH) = (0.1-10) torr.							
81 REN/SHO	EX	300	(7.23±1.81)(12)			2	
CH≡C produced by laser photolysis of CH≡CH,							
CH≡CBr, or CH≡CCHO in presence of O_2, at 193 nm.							
Time-Resolved Chemiluminescence.							
P(Ar, or He) = (180-400) mtorr.							
$P(O_2)$ = (20-400) mtorr.							
$CH{\equiv}C + CH_4 \rightarrow CH{\equiv}CH + CH_3$							
Ethynyl + Methane							
73 CUL/HUC [1])	RL	298	(1.6±0.5)(-2)			2/2	
73 CUL/HUC [1])	RL	478	1.1(-1)			2/2	
73 CUL/HUC [1])	RL	298-478	(2.36±1.09)	0	1508±153	2/2	
Calculated from the reported reverse ratio.							
[1]) k_{ref}: CH≡C + CH≡CBr → CH≡CC≡CH + Br							
81 LAU	EX	297	(7.23±1.20)(11)			2	
Flash-photolysis. Kinetic-spectroscopy. k inde-							
pendent of He over the (20-700) torr. P-range.							
81 OKA	RL	298	(3.20±0.18)(-2)			2/2	
Photolysis of $CH{\equiv}CH/CH_4$ mixtures at 147 nm.							
P(CH≡CH) = (0.1-10) torr.							
k_{ref}: CH≡CH + CH≡H → CH≡CC≡CH + H							
81 REN/SHO	EX	300	(2.89±0.60)(12)			2	
CH≡C produced by laser photolysis of CH≡CH,							
CH≡CBr, or CH≡CCHO in presence of O_2, at 193 nm.							
Time-resolved Chemiluminescence.							
P(Ar, He) = (180-400) mtorr.							
$P(O_2)$ = (20-400) mtorr.							
CH≡C + CH≡CH → CH≡CC≡CH + H							
Ethynyl + Ethyne							
73 CUL/HUC	ES	298	1.0(11)	0	1504	2	
75 LAN/WAG	EX	320	≃3.0(13)			2	
Discharge-flow. Mass-spectrometry. P = 4.1 torr.							
79 LAU/BAS	EX	298	(1.87±0.12)(13)			2	
Vacuum-UV flash-photolysis.							
Kinetic Spectroscopy.							
80 FRA/JUS	ES	2300-2700	(3.5±0.5)(13)	0	0	2	
Pyrolysis of CH≡CH and CH≡CC≡CH in Ar, behind							
shock-waves. Data-fit based on a proposed mecha-							
nism. Total Conc. = $(0.4\text{-}1.6)\times10^{19}$ $molec.cm^{-3}$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
CH≡C + CD≡CD → CH≡CC≡CD + D							
Ethynyl + Ethyne-d_2							
73 CUL/HUC	RL	298	(2.8±2.5)			2/2	
k_{ref}: CH≡C + CD≡CD → CH≡CD + CD≡C							
73 CUL/HUC	RL	298	(6.7±1.6)(-1)			2/2	
Calculated from the reported reverse ratio.							
k_{ref}: CH≡C + CH≡CBr → CH≡CC≡CH + Br							
CH≡C + CH_3CH_3 → CH≡CH + CH_3CH_2							
Ethynyl + Ethane							
73 CUL/HUC	RL	298	(5.4±0.4)(-1)			2/2	
k_{ref}: CH≡C + CH≡CBr → CH≡CC≡CH + Br							
81 LAU	EX	297	(3.91±0.24)(12)			2	
Flash-photolysis. Kinetic-spectroscopy. k independent of He over the (20-700) torr. P-range.							
CH≡C + CD_3CD_3 → CH≡CD + CD_3CD_2							
Ethynyl + Ethane-d_6							
81 LAU	EX	297	(1.87±0.30)(12)			2	
Flash-photolysis. Kinetic-spectroscopy. k independent of He over the (20-700) torr. P-range.							
CH≡C + CH_3C≡CH → CH≡CH + CH_2C≡CH (a)							
→ CH≡CC≡CH + CH_3 (b)							
→ CH≡CC≡CCH_3 + H (c)							
Ethynyl + 1-Propyne							
73 CUL/HUC	RL	298	(2.5±0.3)(1)			2/2	
k_a/k_c.							
73 CUL/HUC	RL	298	(9.9±1.0)			2/2	
k_b/k_c.							
73 CUL/HUC [1])	RL	298	(4.43±0.58)(-2)			2/2	
k_{ref}: CH≡C + CH≡CBr → CH≡CC≡CH + C≡CBr							
73 CUL/HUC [1])	RL	298	(2.38±0.95)(-1)			2/2	
k_{ref}: CH≡C + CH≡CBr → CH≡CC≡CH + Br							
[1]) k_c/k_{ref}. Calculated from the reverse ratio.							
CH≡C + CH≡CC≡CH → CH≡CH + CH≡CC≡C (a)							
→ CH≡CC≡CC≡CH + H (b)							
Ethynyl + 1,3-Butadiyne							
73 CUL/HUC	RL	298	(1.1±0.2)			2/2	
k_a/k_b.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
73 CUL/HUC	RL	298	(1.71±0.29)			2/2	
k_b/k_{ref}. Calculated from the reverse ratio.							
k_{ref}: CH≡C + CH≡CBr → CH≡CH + C≡CBr							
80 FRA/JUS	ES	2400-2700	(2.5±1.5)(13)	0	0	2	
k_b. CH≡CH and CH≡CC≡CH Pyrolysis in Ar behind shock-waves. Data-fit on the basis of a given mechanism.							
Total Conc. = (0.4-1.6)x10^{19} molec.cm^{-3}.							
CH≡C + CH_2=CHC≡CH → CH≡CH + CH≡CHC≡CH							
Ethynyl + 1-Buten-3-yne							
80 TAN/GAR2	ES	625-3400	3.98(13)	0	0	2	
CH≡CH Pyrolysis. Based on modelling study.							
CH≡C + $(CH_3)_4C$ → CH≡CH + $(CH_3)_3CCH_2$							
Ethynyl + Propane, 2,2-dimethyl-							
73 CUL/HUC	RL	298	(9.1±0.4)(-1)			2/2	
k_{ref}: CH≡C + CH≡CBr → CH≡CC≡CH + Br							
CH≡CH (+ M) → CH≡C + H (+ M) (a)							
→ C + C + H_2 (+ M) (b)							
Ethyne							
74 ALT	EX	1700-2000	1.0(15)	0	55360	1	
k_a.							
78 CUN/FUS	ES	1500-2000	1.58(7)	0	24899	1	
$k_{overall}$. M = Ar. Incident shock-waves.							
P = (1-2) bar.							
75 BEC/MAC [1])	DE	4860-6920	6.02(15)	0	75419	2	
k_a. M = Ar.							
75 BEC/MAC [1])	DE	4860-6920	5.42(13)	0	12028	2	
k_a. M = H.							
[1]) CH≡CH Shock-wave pyrolysis in Ar. Best-fit of experimental data.							
80 FRA/JUS	EX	2100-3000	(3.6±0.6)(16)	0	53600±400	2	
k_a. M = Ar. CH≡CH and CH≡CC≡CH pyrolysis in Ar, behind shock-waves.							
Total Conc. = (0.4-1.6)x10^{19} molec.cm^{-3}.							
82 THR/WIN	EX	3900-4250	1.00(14)	0	30673±8420	2	10.0
k_b. M = Ar. CH≡CH decomposition in an Ar plasma. Mass-spectrometry.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
CH≡CH + CH≡CH → CH≡CCH=CH + H (a)							
→ CH≡CC≡CH + H + H (b)							
→ CH_2=CHC≡CH (c)							
Ethyne							
80 TAN/GAR2	ES	625-3400	2.00(12)	0	23095	2	
k_a. CH≡CH pyrolysis. Modelling study.							
80 BAR/DOV [1])	EX	2650	1.98(10)			2	
k_a.							
80 BAR/DOV [1])	SE	1600-2650	6.0(13)	0	20634	2	
k_a. Based on present and previous k's.							
[1]) CH≡CH pyrolysis behind shock-waves.							
80 FRA/JUS [2])	ES	1845-2000	(1.51±0.79)(8)	0	0	2	
k_a.							
80 FRA/JUS [2])	ES	1845-2000	(3.0±1.0)(8)	0	0	2	
k_b.							
[2]) CH≡CH/CH≡CC≡CH Pyrolysis in Ar behind shock-waves. Data-fit based on a proposed mechanism. Total Conc. = $(0.4\text{-}1.6)\times10^{19}$ molec.cm^{-3}.							
77 OGU1 [3])	EX	1000-1670	2.45(14)	0	23352±705	2	1.82
77 OGU2 [3])	EX	1000-1600	(1.48±0.18)(14)	0	22245±755	2	
[3]) k_c.							

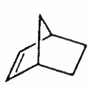
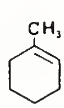
Ethyne + 1,3-Cyclopentadiene → Bicyclo[2.2.1]hepta-2,5-diene (2,5-Norbornadiene)							
75 WAL/WEL	EX	525-756	3.24(7)	0	12174±75	2	1.12
Static system. Gas-chromatography. Diels-Alder addition of CH≡CH to 1,3-Cyclopentadiene.							

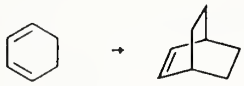


Ethyne + 1,3-Cyclohexadiene → Bicyclo[2.2.2]octa-2,5-diene → Ethene + Benzene							
82 HUY/LEE	EX	450-592	3.09(10)	0	13664±60	2	1.12
Thermal Diels-Alder addition of CH≡CH to 1,3-Cyclohexadiene. NMR-Spectrometry. Gas-chromatography. Static system. P(1,3-Cyclohexadiene) = (8-62) torr. P(CH≡CH) = (25-112) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
CH_2=CH (+ M) → CH≡CH + H (+ M)							
Ethenyl							
73 PEE/MAH2	ES	1500	2.0(12)			2	
CH_2=CH + CH≡CH → CH_2=CHC≡CH + H							
Ethenyl + Ethyne							
80 TAN/GAR2	ES	625-3400	1.58(13)	0	12630	2	
CH≡CH Pyrolysis. Based on a modelling study.							
CH_2=CH + CH_2=CH → CH≡CH + CH_2=CH_2 (a)							
→ CH_2=CHCH=CH_2 (b)							
Ethenyl							
75 IBU/TAK	RL	296	8.7(-2)			2/2	
k_a/k_b. Conventional vacuum system.							
CH_2=CH + CH_3CH_2 → CH≡CH + CH_3CH_3 (a)							
→ CH_2=CH_2 + CH_2=CH_2 (b)							
→ CH_3CH_2CH=CH_2 (c)							
Ethenyl + Ethyl							
75 IBU/TAK [1]	RL	296	3.69(-1)			2/2	
k_a/k_c.							
75 IBU/TAK [1]	RL	296	6.8(-1)			2/2	
k_b/k_c.							
[1] Conventional vacuum system.							
CH_2=CH_2 (+ M) → CH_2=CH + H (+ M) (a)							
→ CH≡CH + H_2 (+ M) (b)							
Ethene							
73 ROT/JUS [1]	EX	1675-2210	1.78(17)	0	39004	2	
77 JUS/ROT [1]	EX	1700-2200	(3.8±1.3)(17)	0	49400±900	2	
80 TAN/GAR1 [1]	EX	2000-2450	3.09(17)	0	48114	2	
Pyrolysis behind incident shock-waves.							
Total Conc. = (1.1-2.2)x10^{18} molec.$^{-3}$.							
[1] k_a. M = Ar.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_2{=}CH_2 + CH_2{=}CH_2 \rightarrow CH_2{=}CH + CH_3CH_2$ (a)							
→  (b)							
Ethene							
81 AYR/BAC	RN	750	1.58(16)	0	33719	2	
k_a. Static system pyrolysis. Gas-chromatography. k determined relative to the reaction: $CH_3CH_2CH{=}CH_2 \rightarrow CH_3 + CH_2CH{=}CH_2$							
72 QUI/KNE	EX	723-786	6.92(10)	0	22043	2	1.15
k_b.							
$CH_2{=}CH_2 + CH_3CH{=}CH_2 \rightarrow CH_3CH_2CH_2CH{=}CH_2$							
Ethene + 1-Propene							
78 RIC/BAC	EX	682-754	2.82(10)	0	18621±503	2	2.0
Static system pyrolysis. P(olefin) = (33-300) torr.							
$CH_2{=}CH_2$ + cis-$CH_3CH{=}CHCH_3$							
→ $CH_3CH_2CH(CH_3)CH{=}CH_2$ (a)							
→ cis-$CH(CH_3)CH(CH_3)CH_2CH_2$ (b)							
Ethene + 2-Butene, (Z)-							
78 RIC/SCA	EX	689-754	1.12(10)	0	18369±503	2	2.0
k_a. Static system pyrolysis. P(olefin) = (20-200) torr.							
77 SCA/BAC	EX	663-703	(1.28±0.16)(12)	0	24270±71	2	
k_b. A-factor recalculated from the reported experimental data. Average k.							
77 SCA/RIC	RN	693	8.0(-4)			2	
k_b. Determined from present and literature data for the rate of geometric isomerization of 1,2-Dimethyl-cyclobutane. Static system. P = 12 atm.							
$CH_2{=}CH_2$ + trans-$CH_3CH{=}CHCH_3$							
→ $CH_3CH_2CH(CH_3)CH{=}CH_2$ (a)							
→ trans-$CH(CH_3)CH(CH_3)CH_2CH_2$ (b)							
Ethene + 2-Butene, (E)-							
78 RIC/SCA	EX	689-754	3.55(10)	0	18621±503	2	2.0
k_a. Static system pyrolysis. P(olefin) = (20-200) torr.							
77 SCA/BAC	EX	663-703	(4.49±0.89)(11)	0	23136±120	2	
k_b. A-factor recalculated from the reported experimental data.							

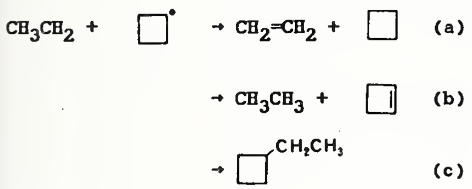
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
77 SCA/BAC	RL	663-703	(1.80±0.10)	0	0	2/2	
k_b/k_{ref}. Average, estimated ratio.							
k_{ref}: CH_2=CH_2 + cis-CH_3CH=$CHCH_3$ → cis-$CH_3CHCH(CH_3)CH_2CH_2$							
77 SCA/RIC [1])	RL	693	(1.86±0.1)			2/2	
k_b/k_{ref}.							
k_{ref}: CH_2=CH_2 + cis-CH_3CH=$CHCH_3$ → cis-$CH(CH_3)CH(CH_3)CH_2CH_2$							
77 SCA/RIC [1])	RN	693	1.48(-3)			2	
k_b. Determined from present and literature data for the rate of geometric isomerization of 1,2-Dimethyl-cyclobutane.							
[1]) Static system. P = 12 atm.							
CH_2=CH_2 + $(CH_3)_2C$=CH_2 → $CH_3CH_2C(CH_3)$=CH_2							
Ethene + 1-Propene, 2-methyl-							
78 RIC/BAC	EX	682-754	1.78(11)	0	19124±503	2	2.0
Pyrolysis in a static system. P(olefin) = (33-300) torr.							
CH_2=CH_2 +  → 							
Ethene + 1,3-Cyclopentadiene → Bicyclo(2.2.1)hept-2-ene (Norbornene)							
76 WAL/WEL	EX	521-570	3.89(10)	0	11912±785	2	4.27
Diels-Alder addition of Ethene to 1,3-Cyclopentadiene in a static system. Gas-chromatography.							
CH_2=CH_2 + CH_2=$C(CH_3)CH$=CH_2 → 							
Ethene + 1,3-Butadiene, 2-methyl- → Cyclohexene, 1-methyl-							
78 SIM	DE	1000-1180	1.32(11)	0	14900	1	
Single-pulse shock-tube. From k_r and thermodynamic data.							
CH_2=CH_2 +  **→ CH_3CH_3 +** 							
Ethene + Cyclopentene → Ethane + 1,3-Cyclopentadiene							
80 LAL/BAC	EX	598-778	1.0(15)	0	25013	2	
Static system. P(Total) = (150-350) torr.							

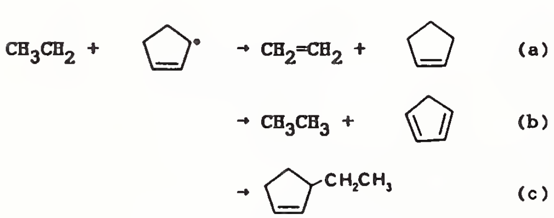
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_2{=}CH_2$ + 							
Ethene + 1,3-Cyclohexadiene → Bicyclo[2.2.2]oct-2-ene							
80 HUY/RIG	EX	466-591	4.57(9)	0	13070±25	2	1.05
Vacuum system. Gas-chromatography. Diels-Alder addition of Ethene to 1,3-Cyclohexadiene.							
77 TAN	EX	2000-2500	1.2(17)	0	38700	2	
k_b. M = Ar. Pyrolysis in shock-waves. Laser-schlieren. P = (0.9-1.7) kPa. of Ethene in Ar.							
77 JUS/ROT	EX	1700-2200	(2.6±0.5)(17)	0	39900±500	2	
k_b. M = Ar.							
80 TAN/GAR1	EX	2000-2450	2.95(17)	0	40897	2	
k_b. M = Ar. Ethene pyrolysis. Incident shock-waves. Total Conc. = $(1.1\text{-}2.2)\times10^{18}$ molec.cm^{-3}.							
78 CUN/FUS	ES	1500-2000	6.31(6)	0	27305	1	
$k_{overall}$. M = Ar. Incident shock-waves. P = (1-2) bar.							
CH_3CH_2 (+ M) → $CH_2{=}CH_2$ + H (+ M)							
Ethyl							
79 PRA/ROG1	CO	941-1073	3.16(13)	0	21050±1443	1	5.01
M = Ar. Ethane pyrolysis in a wall-less reactor. P(Ar) = 600 torr. Gas-chromatography. Data-fit.							
81 COR/MAR	ES	803	2.0(2)			1	
Ethane pyrolysis. Flow-reactor. Based on a proposed mechanism. P = 40 torr.							
76 CHE/BAC	CO	995	3.29(4)			2	
80 PAC/WIM2	RN	903	(3.6±0.5)(3)			2	
Estimated k. Ethane pyrolysis. Flow-reactor. Gas-chromatography. P = 100 torr.							
CH_3CH_2 + O_2 → $CH_2{=}CH_2$ + HO_2 (a)							
→ $CH_3CH_2O_2$ (b)							
→ CH_3CHO + OH (c)							
→  **+ OH (d)**							
Ethyl + Oxygen molecule							
71 BAL/LAN	RL	713	(4.1±0.5)(1)			2/2	
k_a/k_{ref}. Estimated ratio. k_{ref}: CH_3CH_2 + CH_3CH_2CHO → CH_3CH_3 + CH_3CH_2CO							

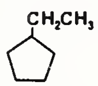
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
71 BAK/BAL [1]	ES	896	1.0(11)			2	
71 BAL/LAN [1]	ES	713	8.2(10)			2	
80 BAL/PIC [1]	EX	673-813	8.51(11)	0	1949	2	
Static system. Gas-chromatography.							
81 PLU/RYA2 [1] [2]	EX	295	(1.26±0.30)(11)			2	
M = He. k is independent of [He].							
[1] k_a.							
81 PLU/RYA2 [2]	ES	295	~2.65(12)			2	
k_b. M = He. k strongly dependent on [He]. Limiting high-pressure k.							
71 BAK/BAL	ES	773	3.4(8)			2	
k_c.							
71 BAK/BAL	ES	773	2.6(9)			2	
k'_d.							
81 PLU/RYA2 [2]	EX	295	(7.23±1.80)(11)			2	
$k_{overall}$. M = He. [He] = 2.0×10^{16} molec.cm^{-3}. k increases with [He].							
81 PLU/RYA2 [2]	EX	295	(2.17±0.54)(12)			2	
$k_{overall}$. M = He. [He] = 3.4×10^{17} molec.cm^{-3}. k incrreases with [He].							
[2] Flow-reactor. Mass-spectrometry. CH_3CH_2 produced by reaction of Cl with Ethane.							
CH_3CH_2 + O_3 → products							
Ethyl + Ozone							
82 PAL	EX	298	(1.40±0.22)(13)			2	
Photoionization Mass-spectrometry. CH_3CH_2 generated by photodissociation of $CH_3CH_2NO_2$. P = 2 torr.							
CH_3CH_2 + H_2 → CH_3CH_3 + H							
Ethyl + Hydrogen molecule							
71 BAL/LAN	RL	713	(1.24±0.17)(-1)			2/2	
k_{ref}: CH_3CH_2 + CH_3CH_2CHO → $CH_3CH_3CH_3CH_2CO$ Estimated ratio.							
71 BAL/LAN	ES	713	2.15(8)			2	
82 CAO/BAC	EX	1111-1200	3.98(13)	0	11575	2	
Cylindrical quartz reactor, with packed or unpacked vessels. Static system. CH_3CH_2 generreacting Ethene with H_2. [CH_2=CH_2] = 4.6×10^{14} molec.cm^{-3}. P(Total) = (100-300) torr.							

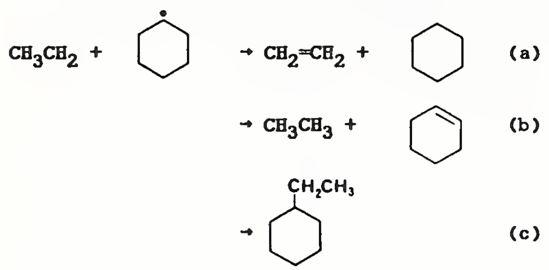
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3CH_2 + D_2 \rightarrow CH_3CH_2D + D$							
Ethyl + Deuterium molecule							
71 BAL/LAN	ES	713	(4.76±0.50)(-2)			2/2	
k_{ref}: $CH_3CH_2 + CH_3CH_2CHO \rightarrow CH_3CH_3CH_3CH_2CO$							
71 BAL/LAN	ES	713	8.3(7)			2	
$CH_3CH_2 + NO \rightarrow CH_3CH_2NO$							
Ethyl + Nitrogen oxide (NO)							
74 PRA/VEL	EX	295	(1.2±0.1)(11)			2	
76 PRA/VEL2	EX	325-521	(1.4±0.2)(11)	0	0	2	
$CH_3CH_2 + CO \rightarrow CH_3CH_2CO$							
Ethyl + Carbon monoxide							
73 WAT/THO	RN	238-378	1.55(11)	0	2416±50	2	
$CH_3CH_2 + CH_4 \rightarrow CH_3CH_3 + CH_3$							
Ethyl + Methane							
76 CHE/BAC	CO	995	9.0(7)			2	
$CH_3CH_2 + CH_3CH_2 \rightarrow CH_2{=}CH_2 + CH_3CH_3$ (a)							
$\rightarrow CH_3CH_2CH_2CH_3$ (b)							
Ethyl							
71 FAL/SUN [1])	RL	298	1.4(-1)			2/2	
73 HAR/TAN [1])	RL	298	(1.6±0.4)(-1)			2/2	
$CH_2{=}CH_2$ photolysis at 163.4 nm.							
73 HAR/TAN [1])	RL	298	(2.1±0.6)(-1)			2/2	
$CH_2{=}CH_2$ photolysis at 184.9 nm.							
75 HOO/SIM [1])	RL	173-298	1.45(-1)			2/2	
77 MAR/MAC [1])	RL	553-673	(1.4±0.3)(-1)			2/2	
Thermolysis in a vacuum system.							
79 ADA/BAS3 [1])	RL	298	(1.39±0.13)(-1)			2/2	
Flash-photolysis. Absorption-spectroscopy.							
[1]) k_a/k_b.							
72 TEN/JON [2])	CO	303-603	7.59(12)	0	96	2	
Data-fit to a proposed mechanism.							
72 HIA/BEN2 [2])	ES	350-410	3.98(11)	0	0±101	2	
72 MAR/PUR [2])	ES	350-950	2.51(11)	0	0	2	
72 PAC/PUR1 [2])	DE	951	3.16(11)			2	
75 HUG/MAR [2])	ES	693-803	2.51(11)	0	0	2	
76 GOL/CHO [2])	EX	860	4.5(12)			2	
Low-pressure k.							
76 PAR/QUI [2])	RN	298	(7.83±1.81)(12)			2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
79 ADA/BAS3 2) Flash-photolysis. Absorption-spectroscopy.	RN	298	(1.24±0.23)(13)			2	
80 PAC/WIM2 2) Ethane pyrolysis in a flow-reactor. Gas-chromatography. P = 100 torr.	ES	903	(1.1±0.4)(13)			2	
2) k_b.							
79 ADA/BAS3 k_a + k_b. Flash-photolysis. Absorption spectroscopy.	EX	298	(1.40±0.27)(13)			2	
81 COR/MAR k_a + k_b. Ethane pyrolysis in a continuous-flow stirred reactor. Gas-chromatography. P = 40 torr.	EX	803	5.6(12)			2	
82 DEM/LES k_a + k_b. Flash-photolysis. Laser Resonance-absorption. CH_3CH_2 generated by flashing NH_3 in presence of Ethene. Best-fit by simulation.	DE	298	1.2(13)			2	
CH_3CH_2 + CH_3CHO → $CH_3CH_2CH(O\cdot)CH_3$ Ethyl + Acetaldehyde							
75 BAT/MCC	ES	393-473	7.94(11)	0	0±503	2	
CH_3CH_2 + CH_3CH_2NO → $(CH_3CH_2)_2NO$ Ethyl + Ethane, nitroso-							
72 TAN/LAM Lower-limit k.	EX	329	≥1.45(10)			2	
CH_3CH_2 + CH_3CH_2CHO → CH_3CH_3 + CH_3CH_2CO Ethyl + Propanal							
71 BAL/LAN k_{ref}: CH_3CH_2 + H_2 → CH_3CH_3 + H	RL	713	(8.1±1.0)			2/2	
71 BAL/LAN k_{ref}: CH_3CH_2 + D_2 → CH_3CH_2D + D	RL	713	(2.1±0.2)(1)			2/2	
CH_3CH_2 + $CH_2{=}CHCH_2CH_2$ → $CH_2{=}CH_2$ + $CH_2{=}CHCH_2CH_3$ (a) **→ CH_3CH_3 + $CH_2{=}CHCH{=}CH_2$ (b)** **→ $CH_2{=}CHCH_2CH_2CH_2CH_3$ (c)** Ethyl + 3-Butenyl							
75 STE/RAB $(k_a + k_b)/k_c$. Dispr./Comb. ratio.	RL	298	(3.0±0.6)(-1)			2/2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3CH_2 + (CH_3)_2C{=}CH_2 \rightarrow CH_3CH_2CH_2C(CH_3)_2$							
Ethyl + 1-Propene, 2-methyl-							
78 MYS/SHO	EX	323-423	(1.26±0.04)(5)	0	805±50	2	
CH_3CH_2Br ^{60}Co γ-irradiation. Gas-chromatography.							
							
Ethyl + Cyclobutyl							
75 STE/RAB	RL	298	(2.3±0.2)(-1)			2/2	
$(k_a + k_b)/k_c$.							
Dispr./Comb. ratio.							
$CH_3CH_2 + CH_3CH_2CH_2CH_3 \rightarrow CH_3CH_3 + CH_3CH_2CH_2CH_2$ (a)							
$\rightarrow CH_3CH_3 + CH_3CH_2CHCH_3$ (b)							
Ethyl + Butane							
72 PAC/PUR1 [1])	ES	869-952	3.16(13)	0	10116±856	2	2.51
74 HUG/MAR [1])	DE	895-981	7.94(13)	0	11162±806	2	2.51
Calculation based on experimental data.							
76 YAM/NAM [1])	EX	980-1060	3.16(12)	0	6442±1359	2	3.55
[1]) $k_a + k_b$.							
$CH_3CH_2 + CH_3C(O)C(O)CH_3 \rightarrow CH_3 + CH_3CH_2C(O)CH_3$ (a)							
$\rightarrow CH_3CH_3 + CH_2C(O)C(O)CH_3$ (b)							
$\rightarrow CH_3CH_2C(O)CH_3 + CH_3CO$ (c)							
Ethyl + 2,3-Butanedione (Biacetyl)							
76 SCH/KNO	RN	525-556	2.51(8)	0	3573±302	2	2.0
k_a.							
76 SCH/KNO	RN	525-556	3.98(12)	0	5385±1560	2	15.8
k_b.							
76 SCH/KNO	RN	525-556	3.98(8)	0	2969±302	2	2.0
k_c.							
$CH_3CH_2 + (CH_3CH_2)_2O \rightarrow CH_3CH_3 + CH_3CH_2OCH_2CH_2$							
Ethyl + Ethane, 1,1'-oxybis- (Diethyl ether)							
77 SER/LAB	ES	763-823	3.0(11)	0	4026	2	
Diethyl ether/Acetaldehyde pyrolysis. k determined on the basis of a proposed mechanism.							

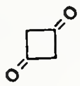
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3CH_2 + (CH_3CH_2)_2S \rightarrow CH_3CH_3 + CH_3CHSCH_2CH_3$ (a)							
$\rightarrow CH_3CH_3 + CH_2CH_2SCH_2CH_3$ (b)							
Ethyl + Ethane, 1,1'-thiobis- (Diethyl sulfide)							
81 EKW/SAF2	RN	298-461	(7.4±0.5)(13)	0	3452±49	2	
k_a.							
H atoms generated by Hg-photosensitized decomposition of H_2.							
Vacuum system.							
k determined relative to the reaction:							
$CH_3CH_2 + CH_3CH_2 \rightarrow CH_3CH_2H_2CH_3$							
P(Diethyldisulfide) = (1-32) torr.							
$P(H_2) \sim 580$ torr.							
$CH_3CH_2 + CH_3CH_2N{=}NCH_2CH_3 \rightarrow CH_3CH_3 + CH_2CH_2N{=}NCH_2CH_3$							
Ethyl + Diazene, diethyl-							
76 SCH/KNO	RN	525-556	7.94(11)	0	3775±1359	2	10.0
$CH_3CH_2 + (CH_3CH_2)_2NOH \rightarrow CH_3CH_3 + (CH_3CH_2)_2NO$							
Ethyl + Ethanamine, N-ethyl-N-hydroxy-							
78 ABU/ENC	RN	298	(3.0±0.7)(9)			2	
Azoethane photolysis. The abstract gives a rate constant of:							
$7.2 \times 10^8\ cm^3 mol^{-1} s^{-1}$,							
smaller by a factor of 4.4 than the above tabulated k value, which was reported in the text.							
k deteremined relative to the reaction:							
$CH_3CH_2 + CH_3CH_2 \rightarrow CH_3CH_2CH_2CH_3$.							
It probably involves abstraction from the hydroxylic Hydrogen.							
							
Ethyl + 2-Cyclopenten-1-yl							
75 STE/RAB	RL	298	(1.6±0.3)(-1)			2/2	
$(k_a + k_b)/k_c$.							
Dispr./Comb. ratio.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3CH_2 + CH_3CH{=}CHCH_2CH_2$							
→ CH_3CH_3 + cis-$CH_3CH{=}CHCH{=}CH_2$ (a)							
→ CH_3CH_3 + trans-$CH_3CH{=}CHCH{=}CH_2$ (b)							
→ $CH_2{=}CH_2$ + cis-$CH_3CH{=}CHCH_2CH_3$ (c)							
→ $CH_2{=}CH_2$ + trans-$CH_3CH{=}CHCH_2CH_3$ (d)							
→ $CH_3CH{=}CHCH_2CH_2CH_2CH_3$ (e)							
Ethyl + 3-Pentenyl							
75 STE/RAB [1]	RL	298	(8.7±1.0)(-2)			2/2	
$(k_a + k_b)/k_e$.							
75 STE/RAB [1]	RL	298	(9.3±0.3)(-2)			2/2	
$(k_c + k_d)/k_e$.							
[1]) Dispr./Comb. ratios.							
CH_3CH_2 +  → $CH_2{=}CH_2$ +  (a)							
→ CH_3CH_3 +  (b)							
→  (c)							
Ethyl + Cyclopentyl							
75 STE/RAB	RL	298	(2.6±0.3)(-1)			2/2	
$(k_a + k_b)/k_c$. Dispr./Comb. ratio.							
$CH_3CH_2 + CH_3C(O)C(O)CH_2CH_3$							
→ $CH_3CH_3 + CH_2C(O)C(O)CH_2CH_3$ (a)							
→ $CH_3CH_3 + CH_3C(O)C(O)CHCH_3$ (b)							
→ $CH_3CH_3 + CH_3C(O)C(O)CH_2CH_2$ (c)							
→ $(CH_3CH_2)_2CO + CH_3CO$ (d)							
Ethyl + 2,3-Pentanedione							
74 SCH/KNO	RL	362-398	≈4.5	0	0	2/2	
k_b/k_a. T-dependence not detectable.							
74 SCH/KNO	RL	362-398	≈3.0(-1)	0	0	2/2	
k_c/k_a. T-dependence not detectable.							
74 SCH/KNO	RL	362-398	5.01(1)	0	1409±1158	2/2	6.31
$(k_a + k_b + k_c)/k_d$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
							
Ethyl + Cyclohexyl							
75 STE/RAB	RL	298	≤(3.4±0.5)(-1)			2/2	
$(k_a + k_b)/k_c$. Dispr./comb. ratio.							
$CH_3CH_2 + CH_3(CH_2)_4CH_3$ → $CH_3CH_3 + CH_3(CH_2)_4CH_2$ (a) → $CH_3CH_3 + CH_3(CH_2)_3CHCH_3$ (b) → $CH_3CH_3 + CH_3(CH_2)_2CHCH_2CH_3$ (c)							
Ethyl + Hexane							
76 YAM	RN	973-1088	1.8(13)	0	8052	2	
$k_a + k_b + k_c$.							
CH_3CH_3 (+ M) → $CH_3 + CH_3$ (+ M) (a) → $CH_2{=}CH_2 + H_2$ (+ M) (b)							
Ethane							
72 PAC/PUR2	EX	920-1040	5.01(16)	0	44505	1	
k_a.							
73 BUR/SKI	CO	1000-1500	7.94(16)	0	45043	1	
k_a. M = Ar. Limiting high-pressure k. RRKM Correlation of experimental data.							
76 CLA/QUI	EX	778-878	1.17(16)	0	43533±252	1	1.38
k_a.							
79 OLS/GAR [1]	CO	1330-2500	7.07(16)	0	45361	1	
Extrapolated limiting high-pressure expression obtained by applying RRK or RRKM methods to the experimental Ethane pyrolysis data from 79 OLS/TAN.							
79 OLS/GAR [1]	CO	250-2500	2.04(16)	0	44210	1	
Limiting high-pressure k, extended to lower T-range by combining k's for CH_3 recombination at low T, with k's for Ethane decomposition.							
[1] k_a. M = Ar. Decomposition of Ethane behind incident shock-waves by Laser-absorption and Laser-schlieren experiments.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
79 ROT/JUS2	DE	1450-2100	2.0(15)	0	42000	1	
$_a$. Shock-tube. Atomic resonance-absorption.							
k determined by computer simulation.							
Total Conc. = (0.2-2.3)x10^{19} molec.cm^{-3}.							
79 TRE	EX	840-913	5.25(16)	0	44716±342	1	1.48
k_a. Thermolysis. P = (3-700) torr.							
80 BHA/FRA	DE	1700-2300	8.0(12)	0	35400	1	
k_a. Shock-tube. Resonance-absorption. Computer							
simulation based on a proposed mechanism.							
80 PAC/WIM2	EX	903	(1.15±0.16)(-5)			1	
k_a. Ethane pyrolysis. Flow-reactor.							
P = = 100 torr.							
81 CHI/SKI2	RN	1240-1700	2.8(15)	0	42400	1	
k_a. M = Ar. Ethane pyrolysis behind reflected							
shock-waves. Resonance-absorption spectroscopy.							
k determined relative to the reaction:							
$CH_3 + CH_3CH_3 \rightarrow CH_4 + CH_3CH_2$							
P(Total) = (2-3) atm.							
81 COR/MAR	EX	840	4.1(-8)			1	
k_a. Ethane pyrolysis in a continuous-flow							
stirred tank reactor. Gas-chromatography.							
P = 40 torr.							
80 BAU/DUX 2)	RE	750-1500	2.40(16)	0	44010±3170	1	3.16
High-pressure k. Critical review.							
81 BAR 2)	EX	963-1333	1.55(14)	0	33468	1	
Pyrolysis in a quartz reactor.							
81 BAR 2)	EX	963-1333	1.0(10)	0	23905±5033	1	
Pyrolysis in an inconel reactor.							
2) k_b.							
71 ILL/WEL 3)	EX	993-1097	4.57(15)	0	36633	1	
71 KOR/KAL 3)	EX	1070-1200	5.0(16)	0	39758	1	1.2
Pyrolysis in a quartz reactor.							
Gas-chromatography. P(Total) = 100 torr.							
72 ILL/SZA 3)	EX	933-1097	6.44(14)	0	34701	1	1.1
74 BAK/NOV 3)	EX	973-1123	1.37(16)	0	38853±1510	1	
78 COH 3)	EX	1040-1190	3.0(16)	0	44288	1	
Pyrolysis in a flow-reactor.							
3) $k_{overall}$.							
78 VER/BEL 4)	RL	1043-1103	(3.2±0.7)(-1)			1/1	
k_{ref}: $CH_3CH_2CH_3 \rightarrow$ products.							
78 VER/BEL 4)	RL	1023-1193	(1.75±0.15)(-1)			1/1	
k_{ref}: $CH_3CH_2CH_2CH_3 \rightarrow$ products.							
4) $k_{overall}/k_{ref}$. Pyrolysis in a flow-reactor.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
71 IZO/KIS	DE	1400-2200	2.4(21)	0	44288	2	
k_a. Shock waves. Best data fit.							
Total conc.: $5x10^{17}$ molec.cm^{-3}.							
79 OLS/TAN	DE	1300-2500	6.34(48)	-25.26	80320	2	
k_a. M = Ar.							
Decomposition behind incident shock-waves.							
Laser-absorption. Laser-schlieren. Computer							
simulation by fitting the data to an assumed							
mechanism with 14 steps.							
The preexponential factor expressed as:							
$A(T/298)^{-25.26}$.							
$CH_3CH_3^{\dagger} \rightarrow CH_3 + CH_3$							
Ethane							
76 SHI/OBI	EX	298	5.0(9)			1	
At 163 nm. $CH_3CH_3^{\dagger}$ formed by $CH_2^{\dagger} + CH_4$.							
76 SHI/OBI	EX	298	6.0(9)			1	
At 147 nm. $CH_3CH_3^{\dagger}$ formed by $CH_2^{\dagger} + CH_4$.							
78 LIN/YEH	EX	308	1.7(-7)			1	
Hg-sensitized photolysis.							
$CH_3CH_3^{>}$ formed by H + CH_3CH_2.							
P = (1.5-30) torr.							
$CD_3CD_3 \rightarrow CD_3 + CD_3$							
Ethane-d_6							
76 CLA/QUI	EX	778-878	3.20(16)	0	44269±121	1	1.16
81 CHI/SKI2	RN	1240-1700	2.8(15)	0	42400	1	
M = Ar. Pyrolysis behind reflected shock-waves.							
Resonance-absorption.							
k determined relative to the reaction:							
$CD_3 + CD_3CD_3 \rightarrow CD_4 + CD_3CD_2$							
P(Total) = (2-3) atm.							
CH=C=O + O_2 → products							
Ethenyl, 2-oxo- + Oxygen molecule							
73 JON/BAY2	RL	296	(1.8±0.3)(-2)			2/2	
k_{ref}: CH=C=O + O → products.							
73 JON/BAY2	RN	296	(2.2±1.2)(10)			2	
CH=C=O + CH≡CH → products							
Ethenyl, 2-oxo- + Ethyne							
73 JON/BAY1	EX	298	<5.0(8)			2	
Upper-limit k.							

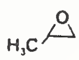
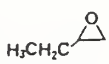
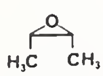
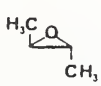
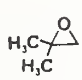
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_2=C=O + CH_2=C=O \rightarrow$ 							
Ethenone (Ketene)							
72 BLA/DAV	EX	498-596	1.78(8)	0	8901±132	2	
$CH_2=C=O + CH_3COOH \rightarrow (CH_3CO)_2O$							
Ethenone (Ketene) + Acetic acid							
76 BLA/VAY	EX	368-489	1.26(9)	0	6003±114	2	1.29
76 BLA/VAY	EX	428	1.02(3)			2	
$CH_2=C=O + CH_3CH_2COOH \rightarrow CH_3CH_2COOCOCH_3$							
Ethenone (Ketene) + Propanoic acid							
76 BLA/VAY	EX	368-489	1.74(9)	0	6102±90	2	1.23
76 BLA/VAY	EX	428	1.12(3)			2	
$CH_2=C=O + CH_3CH_2CH_2COOH \rightarrow CH_3CH_2CH_2COOCOCH_3$							
Ethenone (Ketene) + Butanoic acid							
76 BLA/VAY	EX	428	1.26(3)			2	
$CH_2=C=O + (CH_3)_2CHCOOH \rightarrow (CH_3)_2CHCOOCOCH_3$							
Ethenone (Ketene) + Propanoic acid, 2-methyl-							
76 BLA/VAY	EX	428	1.57(3)			2	
$CH_2=C=O + (CH_3)_3CCOOH \rightarrow (CH_3)_3CCOOCOCH_3$							
Ethenone (Ketene) + Propanoic acidm 2,2-dimethyl-							
76 BLA/VAY	EX	368-489	1.55(9)	0	5754±100	2	1.26
76 BLA/VAY	EX	428	2.23(3)			2	
$CH_2=C=O + (CH_3)_3CCH_2COOH \rightarrow (CH_3)_3CCH_2COOCOCH_3$							
Ethenone (Ketene) + Butanoic acid, 3,3-dimethyl-							
76 BLA/VAY	EX	428	1.63(3)			2	
$CH_3CO (+ M) \rightarrow CH_3 + CO (+ M)$							
Ethyl, 1-oxo- (Acetyl)							
73 FRE/VIN	RN	326	(1.91±0.3)(1)			1	
Estimated k on the basis of a proposed mechanism.							
74 SZI/WAL [1])	RL	507	(2.41±0.34)(-8)			1/2	
k_{ref}: $CH_3CO + HI \rightarrow CH_3CHO + I$							
74 SZI/WAL [1])	RN	498-525	2.00(13)	0	10970±902	1	3.16
Estimated, limiting high-pressure k.							

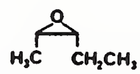
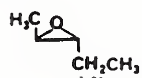
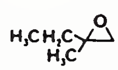
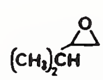
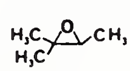
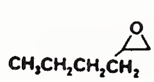
[1]) M = N_2, or cy-$(CF_2)_4$.

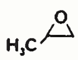
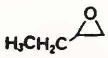
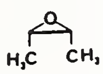
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
74 WAT/WOR	RN	333-413	1.58(13)	0	8661±241	1	2.0
82 ANA/MAW 2)	EX	323	(2.45±0.74)(1)			1	
82 ANA/MAW 2)	EX	343	(1.86±0.56)(2)			1	
Limiting high-pressure k.							
82 ANA/MAW 2)	EX	343	(1.87±0.56)(7)			2	
Limiting low-pressure k.							
2) M = CO. Molecular modulation spectroscopy. CH_3CO produced by Azomethane/CO photolysis. [Azomethane] = $1.0x10^{17}$ molec.cm^{-3}. [CO] = $(0.3-2.7)x10^{19}$ molec.cm^{-3}.							
$CH_3CO + O_2 \rightarrow CH_3C(O)O_2$							
Ethyl, 1-oxo- (Acetyl) + Oxygen molecule							
74 DIX/SKI1	ES	336-357	(1.2±0.3)(10)			2	
82 MCD/LEN	EX	298	(1.20±0.24)(12)			2	
CH_3CO generated by Photolysis of Acetone, or Acetyl-Acetone vapor in (1-4) torr. He.							
$CH_3CO + NO \rightarrow$ products							
Ethyl, 1-oxo- (Acetyl) + Nitrogen oxide (NO)							
82 MCD/LEN	EX	298	(5.60±1.63)(11)			2	
CH_3CO generated by Photolysis of Acetone, or Acetylacetone vapor, in (1-4) Torr He.							
$CH_3CO + NO_2 \rightarrow CH_3CO_2 + NO$							
Ethyl, 1-oxo- (Acetyl) + Nitrogen oxide (NO_2)							
82 SLA/GUT	EX	295	(1.51±0.36)(13)			2	
Flow-reactor. CH_3CO generated by reacting Cl atoms with CH_3CHO. Cl atoms generated by IR-multiphoton-induced decomposition of CF_2Cl_2. $[CH_3CO]_o$ = $(1.9-4.6)x10^{10}$ molec.cm^{-3}. $[CH_3CHO]$ = $(5.7-6.5)x10^{14}$ molec.cm^{-3}. $[NO_2]$ = $(0-5)x10^{12}$ molec.cm^{-3}. P = (1-20) torr.							
$CH_3CO + CH_3CO \rightarrow CH_3C(O)C(O)CH_3$ (a)							
$\rightarrow (CH_3)_2CO + CO$ (b)							
$\rightarrow CH_3CHO + CH_2{=}C{=}O$ (c)							
Ethyl, 1-oxo- (Acetyl)							
79 HAS/KOS	EX	298	2.37(13)			2	
k_a. CH_3OOCH_3 Flash-photolysis. Gas-chromatography. P = (1.5-700) torr.							

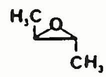
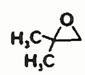
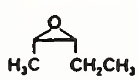
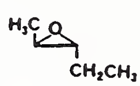
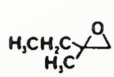
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 PAR	EX	298	(1.81±0.60)(13)			2	
k_a. Photolysis of Acetone at (25.4-40.0) nm.							
Molecular modulation spectroscopy.							
82 ANA/MAW	EX	263-343	(7.23±1.81)(12)	0	0	2	
k_a. Average of 24 k values obtained through							
a data-fit procedure.							
Molecular Modulation Spectroscopy.							
CH_3 and CH_3CO produced by Azomethane/CO							
photolysis. P-independent k.							
[Azomethane] = $1.0x10^{17}$ molec.cm^{-3}.							
[CO] = $(0.3-2.7)x10^{19}$ molec.cm^{-3}.							
82 TIM/KAL	EX	298	(2.43±0.14)(13)			2	
k_a. 2,3-Butanedione flash-photolysis.							
Gas-chromatography.							
[CH_3CO] = $(1.14-5.77)x10^{18}$ molec.cm^{-3}.							
P = (11-47) torr.							
78 ADA/BAS	ES	298	4.5(13)			2	
$k_a + k_b + k_c$. Acetone Flash-photolysis.							
Kinetic Spectroscopy.							
P(Total) = 50 torr.							
81 ADA/BAS2	ES	298	3.5(13)			2	
$k_a + k_b + k_c$. Acetone Flash-photolysis.							
Kinetic Spectroscopy.							
$CD_3CO + CD_3CO \rightarrow CD_3C(O)C(O)CD_3$ (a)							
$\rightarrow (CD_3)_2CO + CO$ (b)							
$\rightarrow CD_3CDO + CD_2{=}C{=}O$ (c)							
Ethyl-2,2,2-d_3, 1-oxo- (Acetyl)							
81 ADA/BAS2	ES	298	3.4(13)			2	
$k_a + k_b + k_c$. Acetone-d_6 Flash-photolysis.							
Kinetic Spectroscopy.							
$CH_3CO + CH_3CHO \rightarrow (CH_3)_2CO + CHO$							
Ethyl, 1-oxo- (Acetyl) + Acetaldehyde							
81 GIL/JOH	EX	298	(1.71±0.37)(11)			2	
Flash-photolysis of CH_3CHO. Time-resolved							
intracavity laser detection.							
P(CH_3CHO) = 0.2 torr.							
$CH_3CO + CH_2{=}CHCH{=}CH_2 \rightarrow CH_3C(O)CH_2CHCH{=}CH_2$							
Ethyl, 1-oxo- + 1,3-Butadiene							
73 ENC/LIS	RL	333-397	1.6(3)	0	-5284±503	2/1	5.01
k_{ref}: $CH_3CO (+M) \rightarrow CH_3 + CO (+M)$							

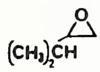
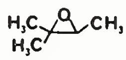
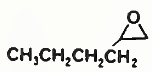
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3C(O)O + NO_2 \rightarrow CH_3C(O)O_2NO_2$							
Ethoxy, 1-oxo- + Nitrogen oxide (NO_2)							
77 HEN/KEN	ES	298-318	6.3(11)	0	0	2	
$CH_3C(O)OO + NO \rightarrow CH_3 + CO_2 + NO_2$ (a)							
$\rightarrow CH_3C(O)O + NO_2$ (b)							
Ethyldioxy, 1-oxo- + Nitrogen oxide (NO)							
76 COX/DER3	RL	296	(1.73±0.006)			2/2	
k_a/k_{ref}.							
k_{ref}: $CH_3C(O)OO + NO_2 \rightarrow CH_3C(O)OONO_2$							
77 HEN/KEN	RL	298-318	(3.1±0.5)	0	0	2/2	
k_b/k_{ref}.							
k_{ref}: $CH_3C(O)OO + NO_2 \rightarrow CH_3C(O)OONO_2$							
77 COX/ROF [1])	ES	300	1.63(12)			2	
77 HEN/KEN [1])	RN	298-318	2.0(12)	0	0	2	
[1]) k_b.							
$CH_3C(O)OO + NO_2 \rightarrow CH_3C(O)OONO_2$ (a)							
$\rightarrow$ any other products (b)							
Ethyldioxy, 1-oxo- + Nitrogen oxide (NO_2)							
77 COX/ROF [1])	RL	303-328	≃(5.4±1.7)(-1)			2/2	
k_a/k_{ref}.							
Mean rate ratio.							
k_{ref}: $CH_3C(O)OO + NO \rightarrow CH_3C(O)O + NO_2$							
77 COX/ROF [1])	DE	300	8.43(11)			2	
k_a.							
Based on k/k_{ref} and Thermodynamic data.							
[1]) Thermolysis in a flow-reactor.							
80 ADD/BUR [2])	EX	302	(1.26±0.06)(12)			2	
P = 28 torr.							
80 ADD/BUR [2])	EX	302	(2.83±0.18)(12)			2	
P = 715 torr.							
[2]) k_a.							
$Cl_2/CH_3CHO/O_2$ Modulated Photolysis.							
77 COX/DER3	RL	298	(2.4±1.4)(-1)			2/2	
$k_{overall}/k_a$.							
$CH_3C(O)OO + HCHO \rightarrow CH_3C(O)OOH + CHO$							
Ethyldioxy, 1-oxo- + Formaldehyde							
74 DIX/SKI2	RL	392-461	(2.4±0.2)	0	0	2/2	
Rate-ratio assumed to be T-independent.							
k_{ref}:							
$CH_3C(O)OO + CH_3CHO \rightarrow CH_3C(O)OOH + CH_3CO$							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3C(O)OO + CH_3C(O)OO$							
→ $CH_3O_2 + CH_3O_2 + CO_2 + CO_2 + O_2$ (a)							
→ any other products (b)							
Ethyldioxy, 1-oxo-							
80 ADD/BURR [1])	DE	302	1.51(12)			2	2.0
k_a. Data-fit by computer simulation on the basis of a proposed mechanism.							
80 ADD/BURR [1])	EX	302	(3.9±1.8)(12)			2	
$k_{overall}$. Weighted least-squares fit by assumming a simple second-order rate law.							
[1]) $Cl_2/CH_3CHO/O_2$ modulated photolysis.							
$CH_3C(O)OO + CH_3CH{=}CH_2 \rightarrow CH_3 + CO_2 +$ 							
Ethyldioxy, 1-oxo- + 1-Propene							
77 DIA/SEL	RN	393	(6.40±0.36)(6)			2	
$CH_3C(O)OO + CH_3CH_2CH{=}CH_2 \rightarrow CH_3 + CO_2 +$ 							
Ethyldioxy, 1-oxo- + 1-Butene							
74 DIA/WAD	RN	393	3.5(7)			2	
75 SEL/WAD	RN	357-410	8.7(10)	0	3480±422	2	3.0
$CH_3C(O)OO$ + cis-$CH_3CH{=}CHCH_3$							
$\rightarrow CH_3 + CO_2 +$ 							
Ethyldioxy, 1-oxo- + 2-Butene, (Z)-							
72 RAY/WAD	ES	457	2.0(9)			2	
75 DIA/SEL	RN	393	(7.5±0.1)(7)			2	
$CH_3C(O)OO$ + trans-$CH_3CH{=}CHCH_3$							
$\rightarrow CH_3 + CO_2 +$ 							
Ethyldioxy, 1-oxo- + 2-Butene, (E)-							
75 DIA/SEL	RN	393	(1.2±0.1)(8)			2	
$CH_3C(O)OO + (CH_3)_2C{=}CH_2 \rightarrow CH_3 + CO_2 +$ 							
Ethyldioxy, 1-oxo- + 1-Propene, 2-methyl-							
75 SEL/WAD	RN	357-410	1.9(11)	0	3012±141	2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3C(O)OO$ + cis-$CH_3CH{=}CHCH_2CH_3$							
→ CH_3 + CO_2 + 							
Ethyldioxy, 1-oxo- + 2-Pentene, (Z)-							
77 DIA/SEL	RN	393	(1.41±0.84)(8)			2	
$CH_3C(O)OO$ + trans-$CH_3CH{=}CHCH_2CH_3$							
→ CH_3 + CO_2 + 							
Ethyldioxy, 1-oxo- + 2-Butene, (E)-							
77 DIA/SEL	RN	393	(1.41±0.84)(8)			2	
$CH_3C(O)OO$ + $CH_3CH_2C(CH_3){=}CH_2$							
→ CH_3 + CO_2 + 							
Ethyldioxy, 1-oxo- + 1-Butene, 2-methyl-							
74 DIA/WAD	RN	393	5.0(8)			2	
77 DIA/SEL	RN	393	(1.52±0.08)(8)			2	
$CH_3C(O)OO$ + $(CH_3)_2CHCH{=}CH_2$							
→ CH_3 + CO_2 + 							
Ethyldioxy, 1-oxo- + 1-Butene, 3-methyl-							
77 DIA/SEL	RN	393	(1.25±0.62)(7)			2	
$CH_3C(O)OO$ + $(CH_3)_2C{=}CHCH_3$							
→ CH_3 + CO_2 + 							
Ethyldioxy, 1-oxo- + 2-Butene, 2-methyl-							
77 DIA/SEL	RN	370-410	1.21(11)	0	1965±109	2	1.31
77 DIA/SEL	RN	393	(8.38±0.84)(8)			2	
$CH_3C(O)OO$ + $CH_3CH_2CH_2CH_2CH{=}CH_2$							
→ CH_3 + CO_2 + 							
Ethyldioxy, 1-oxo- + 1-Hexene							
77 DIA/SEL	RN	393	(2.24±0.83)(7)			2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
CH_3CHO (+ M) → CH_3 + CHO (+ M)							
Acetaldehyde							
73 BAR/MAR	EX	768-813	(3.88±2.94)(16)	0	40106±695	1	
M = H_2. Based on analytical data.							
73 BAR/MAR	EX	768-813	(8.87±4.42)(16)	0	41012±1636	1	
M = H_2. Based on pressure-time data.							
75 COL/NAE	EX	800-1225	7.08(15)	0	41155±503	1	1.62
M = N_2.							
76 ERN/SPI	EX	1350-1650	1.2(16)	0	41137±481	1	
M = Ar. Limiting high-pressure k.							
CH_3CHO + $CH_3C(O)OOH$ → products							
Acetaldehyde + Ethaneperoxoic acid							
74 DIX/SKI1 [1])	RN	336	2.0(-1)			2	
74 DIX/SKI1 [1])	RN	345	1.9(-1)			2	
74 DIX/SKI1 [1])	RN	393	4.45			2	
[1]) Surface/volume ratio = 0.6 cm^{-1}.							
74 DIX/SKI1 [2])	RN	345	7.3(-1)			2	
74 DIX/SKI1 [2])	RN	393	2.1(2)			2	
[2]) Surface/volume ratio = 6.1 cm^{-1}.							
$CH_3C(O)OOH$ + $CH_3CH{=}CH_2$ → CH_3COOH + 							
Ethaneperoxoic acid + 1-Propene							
77 DIA/SEL	RN	393	(2.32±0.86)			2	
$CH_3C(O)OOH$ + $CH_3CH_2CH{=}CH_2$ → CH_3COOH + 							
Ethaneperoxoic acid + 1-Butene							
75 SEL/WAD	RN	357-410	4.8(11)	0	9915±1241	2	25.0
$CH_3C(O)OOH$ + cis-$CH_3CH{=}CHCH_3$ → CH_3COOH + 							
Ethaneperoxoic acid + 2-Butene, (Z)-							
75 DIA/SEL	RN	393	(3.0±0.7)(1)			2	
Alkene added after CH_3CHO consumption.							
75 DIA/SEL	RN	393	(3.4±1.0)(1)			2	
Alkene added at the start of CH_3CHO + O_2 reaction.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3C(O)OOH$ + trans-$CH_3CH{=}CHCH_3$							
→ CH_3COOH + 							
Ethaneperoxoic acid + 2-Butene, (E)-							
75 DIA/SEL	RN	393	(3.0±0.7)(1)			2	
Alkene added after CH_3CHO consumption.							
75 DIA/SEL	RN	393	(3.4±1.0)(1)			2	
Alkene added at the start of CH_3CHO + O_2 reaction.							
$CH_3C(O)OOH$ + $(CH_3)_2C{=}CH_2$							
→ CH_3COOH + 							
Ethaneperoxoic acid + 1-Propene, 2-methyl-							
75 SEL/WAD	RN	357-410	4.3(10)	0	7939±1629	2	
$CH_3C(O)OOH$ + cis-$CH_3CH{=}CHCH_2CH_3$							
→ CH_3COOH + 							
Ethaneperoxoic acid + 2-Pentene, (Z)-							
77 DIA/SEL	RN	393	(4.28±1.70)			2	
$CH_3C(O)OOH$ + trans-$CH_3CH{=}CHCH_2CH_3$							
→ CH_3COOH + 							
Ethaneperoxoic acid + 2-Pentene, (E)-							
77 DIA/SEL	RN	393	(4.38±1.70)			2	
$CH_3C(O)OOH$ + $CH_3CH_2C(CH_3){=}CH_2$							
→ CH_3COOH + 							
Ethaneperoxoic acid + 1-Butene, 2-methyl-							
77 DIA/SEL	RN	393	(6.03±2.16)(1)			2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3C(O)OOH + (CH_3)_2CHCH{=}CH_2$							
$\rightarrow CH_3COOH +$ 							
Ethaneperoxoic acid + 1-Butene, 3-methyl-							
77 DIA/SEL	RN	393	(9.97±2.10)			2	
$CH_3C(O)OOH + (CH_3)_2C{=}CHCH_3$							
$\rightarrow CH_3COOH +$ 							
Ethaneperoxoic acid + 2-Butene, 2-methyl-							
77 DIA/SEL	RN	370-410	1.70(11)	0	7410±291	2	2.14
77 DIA/SEL	RN	393	(1.24±0.15)(3)			2	
$CH_3C(O)OOH + CH_3CH_2CH_2CH_2CH{=}CH_2$							
$\rightarrow CH_3COOH +$ 							
Ethaneperoxoic acid + 1-Hexene							
77 DIA/SEL	RN	393	(2.13±1.20)(1)			2	
$CH_3CH_2O \rightarrow CH_3 + HCHO$ (a)							
$\rightarrow CH_3CHO + H$ (b)							
Ethoxy							
74 MOS/POL	RL	593	(1.4±0.2)(5)			1/2	
k_{ref}:							
$CH_3CH_2O + CH_3CH_3 \rightarrow CH_3CH_2OH + CH_2CH_5$							
77 BAT/MIL2 [1])	ES	435-491	1.0(15)	0	10871	1	
79 BAT [1])	ES	393-473	1.0(15)	0	10871±503	1	3.16
[1]) k_a.							
Conventional static system.							
77 BAT/MIL2 [2])	ES	435-491	2.51(14)	0	9763	1	
79 BAT [2])	ES	393-473	2.51(14)	0	11778	1	
[2]) k_b.							
Conventional static system.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3CH_2O + O_2 \rightarrow CH_3CHO + HO_2$							
Ethoxy + Oxygen molecule							
82 GUT/SAN [1])	EX	296	4.8(9)			2	
82 GUT/SAN [1])	EX	353	5.9(9)			2	
[1]) CH_3CH_2ONO photolysis at 266 nm. Laser-induced Fluorescence. $P(O_2 + N_2)$ = 40 torr.							
$CH_3CH_2O + NO \rightarrow CH_3CHO + HNO$ (a)							
$\rightarrow CH_3CH_2ONO$ (b)							
Ethoxy + Nitrogen oxide (NO)							
77 BAT/MIL2	ES	435-491	6.31(12)	0	0±503	2	2.51
k_a.							
80 ROS	RL	298	(0.18±0.02)			2/2	
k_a/k_{ref}. $CH_3CH_2NO_2/NO_2$ photolysis at 366 nm. k_{ref}: $CH_3CH_2O + NO \rightarrow CH_3CH_2ONO$							
77 BAT/MIL2	ES	435-491	2.0(13)	0	0±503	2	2.51
k_b. Same data in 74 BAT/MIL and 75 BAT/MCC.							
$CH_3CH_2O + NO_2 \rightarrow CH_3CHO + HONO$ (a)							
$\rightarrow CH_3CH_2ONO_2$ (b)							
Ethoxy + Nitrogen oxide (NO_2)							
77 BAT/MIL2	ES	435-491	3.98(12)	0	0	2	
k_a.							
80 ROS	RL	298	(9.0±1.0)(-2)			2/2	
k_a/k_b. $CH_3CH_2NO_2/NO_2$ photolysis at 366 nm.							
77 BAT/MIL2	ES	435-491	7.94(12)	0	0	2	
k_b.							
$CH_3CHOH (+ M) \rightarrow CH_3CHO + H (+ M)$							
Ethyl, 1-hydroxy-							
82 NAT/BHA	ES	1300-1700	5.00(13)	0	11000	2	
M = O_2 + Ar. Ethanol/O_2/Ar ignition behind reflected shock-waves. Data-fit. P = (1-2) atm.							
$CH_3CHOH + O_2 \rightarrow CH_3CHO + HO_2$ (a)							
$\rightarrow CH_3CH(OH)OO$ (b)							
Ethyl, 1-hydroxy- + Oxygen molecule							
82 NAT/BHA	ES	1300-1700	1.00(13)	0	2800	2	
k_a. M = O_2 + Ar. Ethanol/O_2/Ar ignition behind reflected shock-waves. Data-fit. P = (1-2) atm.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 WAS	RL	298	(1.4±0.4)(-1)			2/2	
$k_{overall}$. Fast-flow reactor.							
Photoionization Mass-spectrometry.							
P(Ethanol) = 1.15 mtorr.							
P(Total) = 3.73 mtorr.							
$P(O)_o$ = 9.78 mtorr.							
P(O) = 9.42 mtorr.							
k_{ref}: $CD_3CDOH + {}^{18}O \rightarrow CD_3CDO + {}^{18}OH$ (c)							
$\rightarrow CD_3CD^{18}O \rightarrow OH$ (d)							
$CH_3CH_2O_2 \rightarrow HCHO + CH_3O$ (a)							
$\rightarrow CH_3CHO + OH$ (b)							
$\rightarrow CH_2CH_2OOH$ (c)							
Ethyldioxy							
74 MOS/POL	RL	593	1.34(1)			1/1	
k_a/k_b.							
80 BAL/PIC	ES	673-813	1.94(13)	0	17285±1208	1	3.16
k_c. Static system. Gas-chromatography.							
$CH_3CH_2O_2 + NO \rightarrow CH_3CH_2O + NO_2$							
Ethyldioxy + Nitrogen oxide (NO)							
79 ADA/BAS5	EX	298	(1.6±0.1)(12)			2	
Azoethane/O_2/Ar photolysis.							
Kinetic-spectroscopy.							
[Azoethane] = (2.2-6.6)x10^{16} molec.cm^{-3}.							
[O_2] = (2.0-3.3]x10^{17} molec.cm^{-3}.							
[Ar] = (1.1-2.5)x10^{18} molec.cm^{-3}.							
[NO] = (0.2-2.1)x10^{15} molec.cm^{-3}.							
Flash energy = 263cal.(1.1kJ).							
82 PLU/RYA1	EX	295	(5.36±1.81)(12)			2	
Flow-reactor. M = He. Mass-spectrometry.							
$CH_3CH_2O_2$ generated by reacting Cl_2 with							
CH_3CH_3 and O_2 in He, in a microwave							
discharge.							
[He] = 1.6x10^{17} molec.cm^{-3}.							
$CH_3CH_2O_2 + NO_2 \rightarrow$ products							
Ethyldioxy + Nitrogen oxide (NO_2)							
79 ADA/BAS2	EX	298	(7.48±0.39)(11)			2	
Flash-photolysis. Kinetic-spectroscopy.							
[Azoethane] < 3.0x10^{17} molec.cm^{-3}.							
[Ar] ~ 1.2x10^{18} molec.cm^{-3}.							
[O_2] < 2.2x10^{19} molec.cm^{-3}.							

Reaction, Reference Code, Notes	Data	T/K	k,k/k(ref),	n	B,	k,A	k err.
$CH_3CH_2O_2 + CH_2{=}CH_2 \rightarrow CH_3CH_2O +$ 							
Ethyldioxy + Ethene							
78 MOS/POL [1])	ES	593	2.0(8)			2	
78 MOS/POL [1])	DE	653	1.1(9)			2	
[1]) Static reactor.							
Gas-chromatography.							
Based on calculated $CH_3CH_2O_2$ concentrations.							
$CH_3CH_2O_2 + CH_3CH_2O_2 \rightarrow CH_3CH_2O + CH_3CH_2O + O_2$ (a)							
$\rightarrow CH_3CHO + CH_3CH_2OH + O_2$ (b)							
$\rightarrow CH_3CH_2OOCH_2CH_3 + O_2$ (c)							
Ethyldioxy							
79 ADA/BAS4	DE	298	(6.0±0.6)(10)			2	
$k_a + k_b + k_c$.							
Flash-photolysis.							
Absorption-spectroscopy							
Computer data-fit.							
82 NIK/MAK2 [1])	RL	298	1.3			2/2	
k_a/k_b.							
82 NIK/MAK2 [1])	RL	298	≤2.2(-1)			2/2	
k_c/k_b.							
[1]) FTIR-Spectroscopy.							
$CH_3CH_2O_2$ generated by photolysis							
of an Azoethane/O_2/N_2 mixture.							
[Azoethane] = 6.15×10^{14} molec.cm^{-3}.							
$P(N_2)$ = 650 torr.							
$P(O_2)$ = 50 torr.							
$CH_3CH_2OH (+ M) \rightarrow CH_3 + CH_2OH (+ M)$							
Ethanol							
76 TSA1	ES	1080-1165	2.51(6)	0	42500	1	
82 NAT/BHA	CO	1300-1700	3.00(18)	0	38000	2	
M = O_2 + Ar.							
Ethanol/O_2/Ar ignition behind							
reflected shock-waves.							
Data-fit.							
P = (1-2) atm.							
$(CH_3)_2O \rightarrow CH_3O + CH_3$							
Methane, oxybis- (Dimethyl ether)							
75 PAC	EX	782-936	1.0(15)	0	38251±962	1	3.16
77 ARO/NAE1	EX	1063-1223	2.16(15)	0	38551	1	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
77 HEL/MAN	DE	1005	3.1(-2)			1	
Pyrolysis in a flow-reactor.							
UV-absorption-spectroscopy.							
Computer simulation.							
High-pressure k.							
78 ARO	EX	1062-1223	2.16(15)	0	38551	1	
Pyrolysis in a flow reactor.							
82 BAT/ALV	EX	680-850	3.16(16)	0	41772±1007	1	6.31
$(CH_3)_2O$ pyrolysis with, or without CH_4.							
Static system.							
$P(CH_3OCH_3)$ = (400-800) torr.							

$CH_3OOCH_3 \rightarrow CH_3O + CH_3O$

Peroxide, dimethyl-

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
73 LIS/MAS	ES	400	3.3(-4)			1	
76 BAT/MCC1	EX	383-413	3.16(15)	0	18621±101	1	3.16
77 BAR/BEN1	EX	391-432	5.01(15)	0	18671±453	1	3.16
Vacuum technique.							
Gas-chromatography.							
79 BAT/RAT [1]	EX	383-420	7.94(13)	-0	16960±554	1	3.98
k determined in presence of NO and CF_4.							
79 BAT/RAT [1]	EX	383-433	2.51(16)	0	19376±302	1	1.58
k determined in presence of NO and NO_2.							
[1] Static system, with packed reaction vessels.							

 **$\rightarrow CH_2{=}CH_2 + S$**

Thiirane (Ethylene episulfide)

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 AMA/YAM	EX	1030-1100	6.31(15)	0	21339	1	
VLP-Pyrolysis. P < 10^{-5} torr.							

 **$\rightarrow CH_2{=}CHSH$**

Thiirane (Ethylene apisulfide)

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
79 SHE/SAF [1]	EX	298	5.0(10)			1	
k determined by experimental kinetics.							
79 SHE/SAF [1]	CO	298	7.6(10)			1	
k calculated by RRKM theory.							
[1] COS UV-photolysis.							
High-vacuum system.							
Thiirane is in a vibrationally excited							
singlet ground state formed by							
$S(^1D_2) + CH_2{=}CH_2$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3SCH_2 + CH_4 \rightarrow (CH_3)_2S + CH_3$							
Methyl, (methylthio)- + Methane							
76 ART/LEE	DE	393-518	6.31(1)	0	7662	2	
Calculation based on the reverse reaction and Thermochemical data.							
$NCCN (+ M) \rightarrow CN + CN (+ M)$							
Ethane dinitrile							
73 FUE/TAB	EX	2200-3700	(6.66±1.25)(16)	0	49643±609	2	
M = Ar.							
$CH_3NC \rightarrow CH_3CN$							
Methane, isocyano-							
76 COL/PRI	EX	393-593	2.24(13)	0	19225±101	1	1.3
Thermal isomerization in static vessels. P = (2-100) torr.							
$(CH_3)_2N + O_2 \rightarrow CH_2{=}NCH_3 + HO_2$							
Amidogen, dimethyl- + Oxygen molecule							
79 LIN/CAL [1]	RL	298	(1.48±0.07)(-6)			2/2	
k_{ref}: $(CH_3)_2N + NO \rightarrow (CH_3)_2NN{=}O$							
79 LIN/CAL [1]	RL	298	(3.90±0.28)(-7)			2/2	
k_{ref}: $(CH_3)_2N + NO_2 \rightarrow (CH_3)_2NNO_2$							
[1] Long-path, FTIR-spectroscopy.							
$(CH_3)_2N + NO_2 \rightarrow CH_2{=}NCH_3 + HONO$ (a)							
$\rightarrow (CH_3)_2NNO_2$ (b)							
Amidogen, dimethyl- + Nitrogen oxide (NO_2)							
79 LIN/CAL	RL	298	(2.2±0.6)(-1)			2/2	
k_a/k_b. Long-path, FTIR-Spectroscopy.							
$CH_3N{=}NCH_3 \rightarrow CH_3 + CH_3 + N_2$ (a)							
$\rightarrow CH_3CH_3 + N_2$ (b)							
Diazene, dimethyl- (Azomethane)							
75 CAM/MAR	EX	676-813	2.00(13)	0	22734±481	1	2.0
k_a.							
78 MAR/PAG [1]	EX	534-657	7.94(13)	0	23287±301	1	1.66
k_a.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
78 MAR/PAG [1]	EX	534-657	3.39(11)	0	22193±854	1	3.89
k_b.							
[1] Azomethane pyrolysis in a static vacuum system. P = (50-150) torr.							
$CH_3N{=}NCH_3^* \rightarrow CH_3 + CH_3 + N_2$							
Diazene, dimethyl- (Azomethane)							
77 CHE/ORE	CO	298	>4.0(10)			1	
Azomethane/He high-P photolysis. RRKM data-fit to a proposed mechanism. Azomethane assumed to be in a vibrationally excited T_1 electronic state. Lower-limit k. (He) = (0-100) atm.							
$(CH_3)_2NNH_2 \rightarrow (CH_3)_2N + NH_2$							
Hydrazine, 1,1-dimethyl-							
72 GOL/SOL	EX	869-1076	3.98(17)	0	31706	1	
RRKM fit of experimental data.							
$CH_3NHNHCH_3 \rightarrow CH_3N{=}NCH_3 + H_2$							
Hydrazine, 1,2-dimethyl-							
72 GOL/SOL	EX	910-1271	3.16(13)	0	28686	1	
RRKM fit of experimental data.							
$CH_3COOONO_2 \rightarrow CH_3COOO + NO_2$							
Peroxide, acetyl nitro-							
77 COX/ROF	EX	294-328	7.94(14)	0	12510±385	1	3.98
Thermolysis in a flow reactor.							
77 HEN/KEN	EX	298-313	1.95(16)	0	13543±453	1	3.98
77 HEN/KEN	EX	298	(4.0±0.9)(-4)			1	
$CH_3CH_2NO + CH_3CH_2NO \rightarrow (CH_3CH_2NO)_2$							
Ethane, nitroso-							
72 TAN/LAM	EX	314	(3.01±0.30)(4)			2	
$CH_3CH_2NO_2$ (+ M) $\rightarrow CH_3CH_2 + NO_2$ (+ M)							
Ethane, nitro-							
73 GLA/TRO [1]	EX	900-1350	7.94(15)	0	28686	1	
Limiting high-pressure k.							
73 GLA/TRO [1]	EX	900-1350	1.0(18)	0	18118	2	
Limiting low-pressure k.							
[1] Thermolysis in shock waves. Conc.(Ar): $(0.027\text{-}1.807)10^{20}$ molec.cm^{-3}.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3CH_2ONO \rightarrow CH_3CHO + HNO$ (a)							
$\rightarrow CH_3CH_2O + NO$ (b)							
Nitrous acid ethyl ester (Ethyl nitrite)							
75 BAT/MCC [1])	ES	393-473	6.31(13)	0	18873	1	
77 BAT/MIL2 [1])	ES	435-491	5.01(13)	0	18873	1	
78 BAT/ISL2 [1])	EX	433-473	7.94(14)	0	20081±503	1	3.16
Pyrolysis in a static system.							
Gas-chromatography.							
[1]) k_a.							
77 BAT/MIL2	ES	435-491	1.0(16)	0	21037±453	1	2.51
k_b.							
Same data given in 74 BAT/MIL and 75 BAT/MCC.							
$CH_3CH_2ONO_2 \rightarrow CH_3CH_2 + NO_2$							
Nitric acid ethyl ester (Ethyl nitrate)							
77 BAT/MIL2	ES	435-491	1.0(16)	0	20131	1	
$C_3 + O_2 \rightarrow C_2(d^3\Pi, v=1) + CO + O$ (or CO_2) (a)							
$\rightarrow$ any other product (b)							
Carbon trimer + Oxygen molecule							
77 MAN	EX	2470	≥1.20(12)			2	
k_a. High-T flowing system.							
Lower-limit k.							
80 LES/HIC	EX	298	≤9.03(9)			2	
$k_{overall}$. Laser-induced fluorescence.							
Upper-limit k.							
80 REI/MAN1	EX	300	≤1.20(10)			2	
$k_{overall}$. Upper-limit k.							
IR Multiphoton dissociation of Allene.							
82 NEL/HEL	EX	295-610	≤1.20(8)			2	
$k_{overall}$. C_3 generated by multiphoton							
UV-photolysis of C_6H_6 at 249 nm.							
Laser-induced Fluorescence.							
Upper-limit k.							
P(Total) = (5-100) torr.							
$P(C_6H_6)$ = (1-2) mtorr.							
P(O) = 90 torr.							
$C_3 + N_2 \rightarrow$ products							
Carbon trimer + Nitrogen molecule							
80 REI/MAN1	EX	300	≤1.81(10)			2	
IR-Multiphoton dissociation of Allene.							
Upper-limit k.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
C_3 + NO → products							
Carbon trimer + Nitrogen oxide (NO)							
80 LES/HIC	EX	298	1.26(11)			2	
Dye-laser induced fluorescence.							
80 REI/MAN1	EX	300	≤1.81(10)			2	
IR Multiphoton dissociation of 1,2-Propadiene. Upper-limit k.							
C_3 + CH_4 → products							
Carbon trimer + Methane							
80 REI/MAN1	EX	300	≤1.81(10)			2	
IR-Multiphoton dissociation of Allene. Upper-limit k.							
82 NEL/HEL	EX	295-610	≤3.01(8)			2	
C_3 generated by Multiphoton Laser-photolysis of C_6H_6 at 249 nm. Laser-induced fluorescence. Upper-limit k. P(Total) = (5-100) torr. P(C_6H_6) = (1-2) mtorr. P(CH_4) = 90 torr.							
C_3 + CH≡CH → products							
Carbon trimer + Ethyne							
81 NEL/PAS	EX	294	<6.02(8)			2	
C_3 generated by multiphoton UV excimer laser photolysis of C_6H_6. Laser-induced Fluorescence. Upper-limit k. P(CH≡CH) = (0-50) torr.							
82 NEL/HEL	EX	295-610	(5.47±1.61)(12)	0	4065±161	2	
C_3 generated by multiphoton UV-photolysis of C_6H_6 at 249 nm. Laser-induced Fluorescence. Probable Products: C_3H + CH≡C. P(Total) = (5-100) torr. P(C_6H_6) = (1-2) mtorr. P(CH≡CH) = (0-30) torr.							
C_3 + CH_2=CH_2 → products							
Carbon trimer + Ethene							
81 NEL/PAS	EX	294	<6.02(8)			2	
C_3 is generated by multiphoton UV excimer laser photolysis of C_6H_6. Laser-induced Fluorescence. Upper-limit k. P(CH_2=CH_2) = (0-68) torr.							
82 NEL/HEL	EX	295-610	(1.03±0.31)(12)	0	3277±168	2	
C_3 generated by multiphoton UV-photolysis of C_6H_6 at 249 nm. Laser-induced Fluorescence. Probable products: C_3H + CH_2=CH. P(Total) = (5-100) torr. P(CH_2=CH_2) = (0-50) torr. P(C_6H_6) = (1-2) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
C_3 + CH_3CH_3 → products							
Carbon trimer + Ethane							
80 REI/MAN1	EX	300	≤1.81(10)			2	
IR-Multiphoton dissociation of Allene.							
Upper-limit k.							
C_3 + $CH_3C{\equiv}CH$ → products							
Carbon trimer + 1-Propyne							
81 NEL/PAS	EX	294	(1.98±0.04)(11)			2	
C_3 generated by multiphoton UV excimer							
laser Photolysis of C_6H_6.							
Laser-Fluorescence.							
P($CH_3CH{\equiv}CH$) = (0-2.8) torr.							
82 NEL/HEL	EX	295-610	(2.97±0.28)(12)	0	121±35	2	
C_3 generated by multiphoton UV-Photolysis							
of C_6H_6 at 249 nm.							
Laser-induced fluorescence.							
P(Total) = (5-100) torr.							
P($CH_3C{\equiv}CH$) = (0-1) torr.							
P(C_6H_6) = (1-2) mtorr.							
C_3 + $CH_2{=}C{=}CH_2$ → products							
Carbon trimer + 1,2-Propadiene (Allene)							
80 LES/HIC	EX	298	2.59(11)			2	
Dye-laser induced fluorescence.							
81 NEL/PAS	EX	294	(5.36±0.36)(10)			2	
C_3 generated by multiphoton UV excimer laser							
Photolysis of C_6H_6.							
Laser-induced Fluorescence.							
P(Allene) = (0-3.71) torr.							
C_3 + $CH_3CH{=}CH_2$ → products							
Carbon trimer + 1-Propene							
81 NEL/PAS	EX	294	(3.03±0.19)(10)			2	
C_3 generated by multiphoton UV excimer laser							
Photolysis of C_6H_6. Laser-induced Fluorescence.							
P($CH_3CH{=}CH_2$) = (0-6.0) torr.							
82 NEL/HEL	EX	295-610	(6.26±0.36)(10)	0	159±21	2	
C_3 generated by multiphoton UV-Photolysis of							
C_6H_6 at 249 nm. Laser-induced Fluorescence.							
P($CH_3CH{=}CH_2$) = (0-6.25) torr.							
P(Total) = (5-100) torr.							
P(C_6H_6) = (1-2) mtorr.							

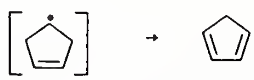
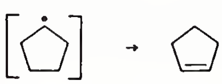
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
C_3 + $CH_3CH_2CH{=}CH_2$ → products							
Carbon trimer + 1-Butene							
81 NEL/PAS	EX	294	(5.52±0.37)(10)			2	
C_3 generated by multiphoton UV excimer laser Photolysis of C_6H_6. Laser-induced Fluorescence. $P(CH_3CH_2CH{=}CH_2)$ = (0-4.8) torr.							
82 NEL/HEL	EX	295-610	(7.34±0.30)(10)	0	139±17	2	
C_3 generated by multiphoton UV-Photolysis of C_6H_6 at 249 nm. Laser-induced fluorescence. P(1-Butene) = (0-7) torr. P(Total) = (5-100) torr. $P(C_6H_6)$ = (1-2) mtorr.							
C_3 + cis-$CH_3CH{=}CHCH_3$ → products							
Carbon trimer + 2-Butene, (Z)-							
81 NEL/PAS	EX	294	(2.51±0.08)(11)			2	
C_3 generated by multiphoton UV excimer laser Photolysis of C_6H_6. Laser-induced Fluorescence. P(cis-2-Butene) = (0-0.98) torr.							
82 NEL/HEL	EX	295-610	(1.26±0.06)(11)	0	-201±19	2	
C_3 generated by multiphoton UV-Photolysis of C_6H_6 at 249 nm. Laser-induced Fluorescence. P(cis-2-Butene) = (0-1) torr. P(Total) = (5-100) torr. $P(C_6H_6)$ = (1-2) mtorr.							
C_3 + $(CH_3)_2C{=}CH_2$ → products							
Carbon trimer + 1-Propene, 2-methyl-							
81 NEL/PAS	EX	294	(2.91±0.11)(12)			2	
C_3 generated by multiphoton UV excimer laser Photolysis of C_6H_6. Laser-induced Fluorescence. P(Isobutene) < 0.082 torr.							
82 NEL/HEL	EX	295-610	(2.53±0.10)(11)	0	-759±15	2	
C_3 geneated by multiphoton UV-photolysis of C_6H_6 at 249 nm. Laser-induced Fluorescence. P(2-Methyl-1-propene) = (0-0.08) torr. P(Benzene) = (1-2) mtorr. P(Total) = (5-100) torr.							

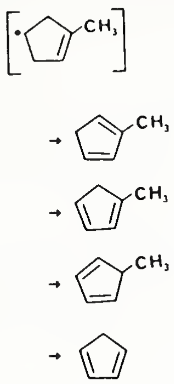
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$C_3 + CH_3CH_2CH_2CH_3 \rightarrow$ products							
Carbon trimer + Butane							
82 NEL/HEL	EX	295-610	≤1.20(8)			2	
C_3 generated by Multiphoton UV-photolysis of C_6H_6 at 249 nm. Laser-induced fluorescence. Upper-limit k. P(Total) = (5-100) torr. P(C_6H_6) = (1-2) mtorr. P(Butane) = 90 torr.							
$C_3 + CH_3CH_2CH_2C{\equiv}CH \rightarrow$ products							
Carbon trimer + 1-Pentyne							
81 NEL/PAS	EX	294	(3.37±0.19)(11)			2	
C_3 generated by multiphoton UV excimer laser Photolysis of C_6H_6. Laser induced Fluorescence. P(1-Pentyne) = (0-0.48) torr.							
$C_3 + CH_3CH{=}C{=}CHCH_3 \rightarrow$ products							
Carbon trimer + 2,3-Pentadiene							
81 NEL/PAS	EX	294	(6.45±0.54)(11)			2	
C_3 generated by multiphoton UV excimer laser Photolysis of C_6H_6. Laser-induced Fluorescence. 2,3-Pentadiene form unspecified (cis, or trans). P(2,3-Pentadiene) = (0-0.4) torr.							
$C_3 + (CH_3)_2C{=}CHCH_3 \rightarrow$ products							
Carbon trimer + 2-Butene, 2-methyl-							
81 NEL/PAS	EX	294	(8.97±0.60)(12)			2	
C_3 generated by multiphoton UV excimer laser Photolysis of C_6H_6. Laser-induced Fluorescence. P(2-Methylbut-2-ene) = (0-0.044) torr.							
82 NEL/HEL	EX	295-610	(3.35±0.27)(11)	0	-1014±34	2	
C_3 generated by multiphoton UV-photolysis of C_6H_6 at 249 nm. Laser-induced Fluorescence. P(2-Methyl-2-Butene) = 90 torr. P(Total) = (5-100) torr. P(C_6H_6) = (1-2) mtorr.							
$C_3 + CH_3CH_2CH_2C{\equiv}CCH_3 \rightarrow$ products							
Carbon trimer + 2-Hexyne							
81 NEL/PAS	EX	294	(4.01±0.18)(12)			2	
C_3 generated by multiphoton UV excimer laser Photolysis of C_6H_6. Laser-induced Fluorescence. P(2-Hexyne) = (0-0.1) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 NEL/HEL	EX	295-610	(6.50±0.05)(11)	0	-695±25	2	
C_3 generated by multiphoton UV-photolysis of							
C_6H_6 at 249 nm. Laser-induced fluorescence.							
P(2-Hexyne) = (0-0.07) torr.							
P(Total) = (5-100) torr.							
$P(C_6H_6)$ = (1-2) mtorr.							
$C_3 + (CH_3)_2C{=}C(CH_3)_2 \rightarrow$ products							
Carbon trimer + 2-Butene, 2,3-dimethyl-							
82 NEL/HEL	EX	295-610	(1.26±0.11)(12)	0	-917±33	2	
C_3 generated by multiphoton UV-photolysis of							
C_6H_6 at 249 nm. Laser-induced fluorescence.							
P(2,3-Dimethyl-2-butene) = (0-0.08) torr.							
P(Total) = (5-100) torr.							
$P(C_6H_6)$ = (1-2) mtorr.							
$C_3 + (CH_3)_2C{=}C{=}C(CH_3)_2 \rightarrow$ products							
Carbon trimer + 2,3-Pentadiene, 2,4-dimethyl-							
81 NEL/PAS	EX	294	(3.15±0.94)(12)			2	
C_3 generated by multiphoton UV excimer laser							
Photolysis of C_6H_6. Laser-induced Fluorescence.							
P(2,4-Dimethylpenta-2,3-diene) = (0-0.07) torr.							
$CH_3C{\equiv}CD \rightarrow CH_2{=}C{=}CHD$ (a)							
$\rightarrow CH_2DC{\equiv}CH$ (b)							
1-Propyne-d							
80 HOP/PRI [1])	RL	853-1033	2.86(-1)			1/1	
k_a/k_b. Best data-fit.							
80 HOP/PRI [1])	EX	853-1033	1.26(11)	0	28334±604	1	2.0
$k_a + k_b$.							
[1]) $CH_3C{\equiv}CD$ pyrolysis in a flow-reactor.							
$P(N_2)$ = 760 torr.							
$CH_2DC{\equiv}CH \rightarrow CH_3C{\equiv}CD$ (a)							
$\rightarrow CH_2{=}C{=}CHD$ (b)							
1-Propyne-3-d							
80 HOP/PRI [1])	RL	853-1033	3.33(-1)			1/1	
k_a/k_{ref}.							
80 HOP/PRI [1])	RL	853-1033	2.50(-1)			1/1	
k_b/k_{ref}.							
[1]) $CH_3C{\equiv}CD$ pyrolysis in a flow-reactor.							
$P(N_2)$ = 760 torr. Best data-fit.							
k_{ref}: $CH_3C{\equiv}CD \rightarrow CH_2DC{\equiv}CH$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_2{=}C{=}CH_2$ (+ M) → $CH_3C{\equiv}CH$ (+ M) (a)							
→  (+ M) (b)							
1,2-Propadiene (Allene)							
75 BRA/WES	EX	1440-1700	3.02(14)	0	46670±1925	1	3.63
k_a. M = Ar. Limiting high-pressure k.							
75 LIF/FRE2	EX	1030-1220	1.48(13)	0	30398±1560	1	3.98
k_a. M = Ar.							
78 SIM/MEL	EX	1156-1172	(1.78±0.11)(1)	0	0	1	
k_a. Allene isomerization. Single-pulse shock-tube. M = Ar. P(Total) = 2 atm.							
78 BAI/WAL	EX	466-516	1.12(13)	0	32056	1	
k_b. Allene cyclization. Pyrolysis in a static system. P(Total) ~ 413 torr.							
$CH_2{=}C{=}CHD$ → $CH_3C{\equiv}CD$ (a)							
→ $CH_2DC{\equiv}CH$ (b)							
1,2-Propadiene-1-d							
80 HOP/PRI [1])	RL	853-1033	2.46(-1)	0	0	1/1	
k_a/k_{ref}.							
80 HOP/PRI [1])	RL	853-1033	6.47(-1)	0	0	1/1	
k_b/k_{ref}.							
[1]) Pyrolysis in a flow-reactor. Best data-fit. k_{ref}: $CH_3C{\equiv}CD$ → $CH_2DC{\equiv}CH$. P(N_2) = 760 torr.							
 → $CH_3C{\equiv}CH$ (a)							
→ $CH_2{=}C{=}CH_2$ (b)							
Cyclopropene							
78 BAI/WAL [2])	EX	466-516	1.23(13)	0	18776±49	1	1.09
k_a.							
78 BAI/WAL [2])	EX	466-516	1.78(13)	0	18861	1	
k_a. Limiting high-pressure k. Adjusted value on the basis of theory.							
78 BAI/WAL [2])	EX	466-516	1.78(13)	0	21810	1	
k_b.							
[2]) Pyrolysis in a static system. P(Total) 413 torr.							
$CH_3CH{=}CH^{\dagger}$ → $CH_2CH{=}CH_2^{\dagger}$							
1-Propenyl							
74 IBU/MUR [1])	EX	402	4.04(7)			1	
74 IBU/MUR [1])	EX	453	8.38(7)			1	
[1]) $CH_3CH{=}CH^{\dagger}$ formed by CH_3 + $CH{\equiv}CH$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_2{=}CHCH_2^{\dagger} \rightarrow CH_2{=}C{=}CH_2 + H$							
2-Propenyl (Allyl)							
78 WIE/COL [1]	EX	298	(5.1±0.3)(6)			1	
At 7.1 eV.							
78 WIE/COL [1]	EX	298	(1.28±0.07)(7)			1	
At 7.6 eV.							
[1]) Photolysis. Static system. Gas-chromatography. $CH_2{=}CHCH_2^{\dagger}$ formed in photolysis of 1-Pentene by $CH_3CH_2CH_2CH{=}CH_2^{**} \rightarrow CH_2{=}CHCH_2^{\dagger} + CH_3CH_2$							
$CD_2{=}CDCD_2^{\dagger} \rightarrow CD_2{=}C{=}CD_2 + D$							
2-Propenyl-1,1,2,3,3-d_5 (Allyl-d_5)							
78 WIE/COL [1]	EX	298	(3.4±0.3)(6)			1	
At 7.1 eV.							
78 WIE/COL [1]	EX	298	(7.5±0.5)(6)			1	
At 7.6 eV.							
[1]) Photolysis. Static system. Gas-chromatography. $CD_2{=}CDCD_2^{\dagger}$ formed in photolysis of 1-Pentene-d_{10} by $CD_3CD_2CD_2CD{=}CD_2^{**} \rightarrow CD_2{=}CDCD_2^{\dagger} + CD_3CD_2$							
$CH_2{=}CHCH_2 + O_2 \rightarrow CH_2{=}CHCH_2O_2$							
2-Propenyl (Allyl) + Oxygen molecule							
81 RUI/BAY	EX	348	(9.51±1.91)(10)			2	
M = He. Photoionization Mass-spectrometry. Flash-Photolysis of 1,5-Hexadiene/O_2 at 193 nm. with an ArF excimer laser. P(Total) = 2.8 torr. P(1,5-Hexadiene) ~100 mtorr. P(O_2) = (4.1-27.4) mtorr.							
$CH_2{=}CHCH_2 + NO\ (+ M) \rightarrow C_3H_5NO\ (+ M)$							
2-Propenyl (Allyl) + Nitrogen oxide (NO)							
82 TUL/MAC [1]) [3])	EX	295	(8.13±0.18)(12)			2	
82 TUL/MAC [1]) [3])	EX	350	(6.74±0.24)(12)			2	
82 TUL/MAC [1]) [3])	EX	404	(5.60±0.18)(12)			2	
[1]) Limiting high-pressure k.							
82 TUL/MAC [2]) [3])	EX	295	(1.45±0.62)(19)			3	
82 TUL/MAC [2]) [3])	EX	350	(9.07±3.63)(18)			3	
82 TUL/MAC [2]) [3])	EX	404	(5.80±2.18)			3	
(The product is probably $CH_2{=}CHCH_2NO$)							
[2]) Limiting low-pressure k.							
[3]) M = Ar. 1,5-Hexadiene/NO/Ar flash-photolysis. P(Total) = (50-500) torr. P(NO) = (20-100) torr.							

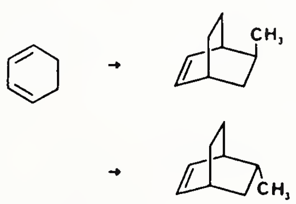
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_2{=}CHCH_2 + NO_2 \rightarrow CH_2{=}CHCH_2O + NO$ (a)							
$\rightarrow CH_2{=}C{=}CH_2 + HONO$ (b)							
2-Propenyl (Allyl) + Nitrogen oxide (NO_2)							
81 SLA/YAM	EX	300	(2.34±0.48)(13)			2	
$k_a + k_b$. Allyl radicals generated by pulsed IR-Multiphoton-induced decomposition of Allyl bromide in a tubular reactor. Photoionization Mass-spectrometry. Detection problems prevented determination of channel (b) products.							
$[NO_2]_o = 3.3x10^{12}$ molec.cm^{-3}. P = 1 torr.							
$[CH_2{=}CHCH_2]_o < 1.0x10^{11}$ molec.cm^{-3}.							
$CH_2{=}CHCH_2 + CH{\equiv}CH \rightarrow$  + H							
2-Propenyl (Allyl) + Ethyne → [3-Cyclopenten-1-yl]							
→ 1,3-Cyclopentadiene + Hydrogen atom							
81 NOH/SAK [1]	ES	723-783	3.98(14)	0	12509	2	
81 NOH/SAK [1]	ES	773	4.37(7)			2	
[1]) Pyrolysis of Ethanedioic acid di-2-propenyl ester, followed by cycloaddition in a flow-reactor. Mass-spectrometry. Same data given in 80 NOH/SAK.							
$CH_2{=}CHCH_2 + CH_2{=}CH_2 \rightarrow$  + H (a)							
$\rightarrow CH_2{=}CHCH_2CH_2CH_3$ (b)							
2-Propenyl (Allyl) + Ethene → [Cyclopentyl]							
→ Cyclopentene + Hydrogen atom (a)							
→ 1-Pentene (b)							
81 NOH/SAK [1]	ES	723-783	5.89(9)	0	5774	2	
k_a.							
81 NOH/SAK [1]	ES	773	3.31(6)			2	
k_a.							
81 NOH/SAK [1]	ES	723-783	1.26(11)	0	8396	2	
k_b.							
81 NOH/SAK [1]	ES	773	2.40(6)			2	
k_b. For channel (b), the intermediate (Cyclopentyl) abstracts a H atom from any RH to form 1-Pentene.							
[1]) Pyrolysis of Ethanedioic acid di-2-propenyl ester followed by cycloaddition in a flow-reactor. Mass-spectrometry. Same data in given 80 NOH/SAK.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_2{=}CHCH_2 + CH{\equiv}CCH_3 \rightarrow$  + H (a); + H (b); + H (c); + CH_4 (d)							
→ $CH_2{=}CHCH_2CH{=}CHCH_3$ (e)							
→ $CH_2{=}CHCH_2C(CH_3){=}CH_2$ (f)							
2-Propenyl (Allyl) + 1-Propyne							
→ [3-Cyclopenten-1-yl, 3-methyl-]							
→ 1,3-Cyclopentadiene, 2-methyl- + H atom (a)							
→ 1,3-Cyclopentadiene, 1-methyl- + H atom (b)							
→ 1,3-Cyclopentadiene, 5-methyl- + H atom (c)							
→ 1,3-Cyclopentadiene + Methane (d)							
→ 1,4-Hexadiene (e)							
→ 1,4-Pentadiene, 2-methyl- (f)							
81 NOH/SAK [1]) [6])	ES	723-783	7.94(13)	0	12269	2	
81 NOH/SAK [1]) [6])	ES	773	9.33(6)			2	
[1]) k_a.							
81 NOH/SAK [2]) [6])	ES	723-783	1.26(14)	0	12870	2	
81 NOH/SAK [2]) [6])	ES	773	7.76(6)			2	
[2]) k_b.							
81 NOH/SAK [3]) [6])	ES	723-783	2.00(14)	0	14073	2	
81 NOH/SAK [3]) [6])	ES	773	2.24(6)			2	
[3]) k_c.							
81 NOH/SAK [4]) [6])	ES	723-783	2.5(13)	0	12028	2	
81 NOH/SAK [4]) [6])	ES	773	4.07(6)			2	
The intermediate abstracts a H atom from any RH to form 1,3-Cyclopentadiene and Methane.							
[4]) k_d.							
81 NOH/SAK [5]) [6])	ES	723-783	7.94(11)	0	9659	2	
81 NOH/SAK [5]) [6])	ES	773	3.24(6)			2	
The intermediate abstracts a H atom from any RH to form 1,4-Hexadiene.							
[5]) k_e.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 NOH/SAK [6])	ES	773	1.48(6)			2	
k_f. The intermediate abstracts a H atom from any RH to form 2-Methyl-1,4-pentadiene.							
[6]) Pyrolysis of Ethanedioic acid di-2-propenyl ester, followed by cycloaddition in a flow-reactor. Gas-chromatography. Mass-spectrometry. The intermediate is 3-Methylcyclopent-3-en-1-yl radical.							
CH_2=$CHCH_2$ + CH_2=$CHCH_2$ → CH_2=$CHCH_2CH_2CH$=CH_2							
2-Propenyl (Allyl)							
79 ROS/KIN [1])	EX	625	(6.5±1.0)(12)			2	
79 ROS/KIN [1])	EX	880	(1.9±0.8)(12)			2	
Average of 7 k's determined at various temperatures within the 844-922 K range.							
[1]) VLP-pyrolysis.							
82 TUL/MAC	EX	293-571	(1.02±0.02)(13)	0	-132±12	2	
2-Propenyl generated by 1,5-Hexadiene Flash-photolysis in Ar. P(1,5-Hexadiene) = (0.04-1.0) torr. P(Ar) = (0-250) torr.							
CH_3CH=CH_2 (+ M) → CH_3 + CH_2=CH (+ M) (a)							
→ any other products (b)							
1-Propene							
74 BAK/NOV	EX	973-1123	2.3(14)	0	37141±1510	1	
$k_{overall}$.							
75 BUR	EX	1160-1700	1.0(13)	0	37242±503	2	3.16
k_a. M = Ar. Concentration-dependent k, with Arrhenius expression = k/[Ar].							
82 KIE/ALA [1])	EX	1650-2300	7.71(36)	-15.7	60393	2	
The preexponential factor expressed as: $A(T/298)^{-15.7}$.							
82 KIE/ALA [1])	DE	2000	6.20(10)			2	
[1]) k_a. M = Kr, or 1-Propene. Pyrolysis of 1-Propene behind incident shock-waves. Laser-schlieren. k derived from a simulation-assisted extrapolation-measured density gradient to the presumed instant of shock-heating. [M] = $(0.6-1.3)\times10^{18}$ molec.cm^{-3}. P = (2.8-10.3) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3CH{=}CH_2^{\dagger} \rightarrow H + CH_2{=}CHCH_2$							
1-Propene							
80 IBU/TAK	EX	288	(5.04±0.11)(7)			1	
Decomposition of chemically activated 1-Propene, generated by combination of CH_3 with $CH_2{=}CH$. CH_3 generated by the Hg-photosensitized decomposition of CH_4. $CH_2{=}CH$ generated by combination of H with CH≡CH.							
$CH_3CH{=}CH_2 + CH_3CH{=}CH_2 \rightarrow CH_2CH{=}CH_2 + (CH_3)_2CH$ (a)							
$\rightarrow CH_3CH_2CH_2CH_2CH{=}CH_2$ (b)							
$\rightarrow (CH_3)_2CHCH_2CH{=}CH_2$ (c)							
1-Propene							
73 SIM/BAC	EX	743-803	2.51(13)	0	21892	2	
k_a.							
78 RIC/BAC	EX	682-754	3.55(9)	0	18621±503	2	2.0
$k_b = k_c$. Pyrolysis in a static system. P(olefin) = (33-300) torr.							

$CH_3CH{=}CH_2$ +

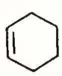


(a)

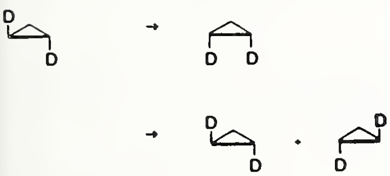
(b)

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
1-Propene + 1,3-Cyclohexadiene →							
→ Bicyclo[2.2.2]oct-2-ene, 5-methyl- (1α,4α,5α)- (Exo form) (a)							
→ Bicyclo[2.2.2]oct-2-ene, 5-methyl-, (1α,4α,5β)- (Endo form) (b)							
74 DEB/HUY [1])	EX	512-638	4.57(9)	0	15143±40	2	1.07
k_a.							
74 DEB/HUY [1])	EX	512-638	5.50(8)	0	13120±40	2	1.07
k_b.							

[1]) Addition of Propene to 1,3-Cyclohexadiene in a cylindrical Pyrex reaction vessel. Gas-chromatography. Mass-spectrometry. P = (70-640) torr.

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
 → $CH_2CH{=}CH_3$ (a)							
→ any other products (b)							
Cyclopropane							
73 DOR/CRO	EX	1158-1323	5.0(9)	0	16104	1	3.0
k_a. M = Ar. Cyclopropane thermal isomerization behind reflected shock-waves.							
78 TSA2 [1])	EX	1000-1200	1.26(14)	0	31100±200	1	1.26
k_a. P = 1.7 Atm.							
78 TSA2 [1])	EX	1000-1200	2.0(14)	0	31100±100	1	1.26
k_a. P = 5.0 Atm.							
[1]) Cyclopropane Thermolysis in a single-pulse shock-tube in Ar, in presence of Cyclohexane and Toluene. k's determined relative to the reaction:  → $CH_2{=}CHCH{=}CH_2$ + $CH_2{=}CH_2$ [Cyclopropane] = 0.01%. [Cyclohexene] = 0.01%. P(Ar) ~(1.7-7) atm. [Toluene] = 1%.							
71 DOR/MCG	EX	935-1397	3.16(14)	0	32763±403	1	1.38
k_a. M = He + Ar. Cyclopropane isomerization to 1-Propene behind reflected shock-waves. Limiting high-pressure k. [Cyclopropane] = (0.1-1.0)% P_o = (103-259) torr.							
73 JEF/DAS	RN	980-1040	1.82(15)	0	33669	1	
k_a. M = Ar. Cyclopropane thermal isomerization in a single-pulse shock-tube. Measurement relative to the Cyclohexane decomposition. Gas-chromatography.							
73 JEF/LEW	EX	970-1265	1.58(15)	0	32713	1	
k_a. M = Ar. Cyclopropane Thermal isomerization behind reflected shock-waves, in a single-pulse shock-tube. Limiting high-pressure k. [Cyclopropane] = (0.25-10)% P(Total) = (0.5-7.0) atm.							
74 BAR/COC [2])	EX	950	4.43			1	
74 BAR/COC [2])	EX	1052	1.35(2)			1	
74 BAR/COC [2])	EX	1096	8.73(2)			1	
74 BAR/COC [2])	EX	1302	2.16(3)			1	
74 BAR/COC [2])	EX	1452	5.96(3)			1	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
74 BAR/COC 2)	EX	1653	2.34(4)			1	
2) k_a. M = He + Ar. Cyclopropane thermal isomerization behind reflected shock-waves in a single-pulse shock-tube. Limiting high-pressure k. Other rate constants at various temperatures within the 950-1653 K range are tabulated. The Arrhenius plot shows a pronounced curvature in the vicinity of 1080 K. [Cyclopropane] = (0.2-1.0)%.							
71 BRA/FRE 3)	EX	1060-1300	7.94(11)	0	27665	1	
71 BRA/FRE 3)	EX	1350-1800	5.62(4)	0	5834	1	
3) $k_{overall}$. M = Ar. Shock-tube pyrolysis. P(Total) = 500 torr.							



(a)

(b)

(Racemic mixture)

Cyclopropane-1,2-d_2, (1S-trans)-

→ Cyclopropane-1,2-d_2, cis- (a)

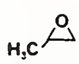
→ Cyclopropane-1,2-d_2, trans-(±)- (racemic) (b)

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
76 BER/PED 1)	EX	696	(6.75±0.14)(-5)			1	
k_a. Thermal trans-cis isomerization.							
76 BER/PED 1)	EX	696	(6.33±0.14)(-5)			1	
k_b. Thermal racemization.							
1) trans-(+)-Cyclopropane-1,2-d_2 thermal stereomutation. Gas-chromatography. Supersedes 75 BER/PED. P = 631 torr.							

Cyclopropane-1,2-d_2, (1R-trans)-

→ Cyclopropane-1,2-d_2, cis-

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
76 BER/PED	EX	696	(6.75±0.14)(-5)			1	
Thermal trans-cis isomerization of optically active trans-(-)-Cyclopropane-1,2-d_2 in a reaction vessel. Gas-chromatography. Supersedes 75 BER/PED. P = 631 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3CH_2CH_2$ (+ M) → CH_3 + $CH_2{=}CH_2$ (+ M)							
Propyl							
71 PAP/LAI	EX	525-623	2.5(14)	0	16407±252	1	
Limiting high-pressure k. M = $CH_3CH_2CH_3$							
75 CAM/MAR	EX	676-813	1.26(12)	0	16359±962	1	3.16
80 GAW/MAK [1])	EX	298	2.9(10)			1	
At 228.8 nm.							
80 GAW/MAK [1])	EX	298	7.0(9)			1	
At 253.7 nm.							
[1]) H_2S irradiation with UV-light. Reaction of hot H atoms with Propene in a conventional vacuum system. Best data fit. P = (0.4-760) torr.							
71 PAP/LAI	EX	525-623	2.5(7)	0	8556±252	2	
Limiting low-pressure k. M = $CH_3CH_2CH_3$							
$CH_3CH_2CH_2$ + O_2 → $CH_3CH{=}CH_2$ + HO_2 (a)							
→ CH_3CH_2CHO + OH (b)							
→  + OH (c)							
→ $CH_3CH_2CH_2O_2$ (d)							
Propyl + Oxygen molecule							
71 BAK/BAL [1])	RL	753	(1.41±0.23)(6)			2/1	
Least-squares treatment.							
71 BAK/BAL [1])	RL	753	(1.25±0.20)(6)			2/1	
Computer treatment.							
[1]) k_a/k_{ref}. k_{ref}: $CH_3CH_2CH_2$ → CH_3 + $CH_2{=}CH_2$							
71 BAK/BAL	ES	753	3.8(10)			2	
k_a.							
71 BAK/BAL	ES	753	1.1(8)			2	
k_b.							
71 BAK/BAL	ES	753	3.1(9)			2	
k_c.							
82 RUI	EX	298	(3.43±0.10)(13)			2	
k_d. M = N_2. Photoionization mass-spectrometry. k increases with the pressure. Near high-pressure limiting k. P(Total) = 4 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3CH_2CH_2 + O_3 \rightarrow$ products							
Propyl + Ozone							
82 PAL	EX	298	(1.47±0.29)(13)			2	
Photoionization mass-spectrometry. Propyl formed by photodissociation of $CH_3CH_2CH_2NO_2$. P = 2 torr.							
$CH_3CH_2CH_2 + HCHO \rightarrow CH_3CH_2CH_3 + CHO$ (a)							
$\rightarrow CH_3CH_2CH_2CH_2O$ (b)							
Propyl + Formaldehyde							
80 KNO/NAC [1])	RN	333-363	1.0(11)	0	3921±253	2	2.0
k_a.							
80 KNO/NAC [1])	RN	333-363	7.94(10)	0	3367±253	2	3.16
k_b.							
[1]) Azopropane/Formaldehyde photolysis. Mass-spectrometry.							
$CH_3CH_2CH_2 + CH{\equiv}CH \rightarrow$ cis-$CH_3CH_2CH_2CH{=}CH^\dagger$ (a)							
$\rightarrow$ trans-$CH_3CH_2CH_2CH{=}CH^\dagger$ (b)							
Propyl + Ethyne							
72 WAT/OLS	ES	343-405	1.15(12)	0	4529	2	
$k_a + k_b$. Azo-n-propane photolysis. P = (90-480) torr.							
$CH_3CH_2CH_2 + CH_2{=}CH_2 \rightarrow CH_3CH_2CH_2CH_2CH_2^\dagger$							
Propyl + Ethene							
71 WAT/LAW	ES	330-373	1.41(11)	0	3724	2	
Azo-n-propane Photolysis. k determined relative to the reaction: $CH_3CH_2CH_2 + CH_3CH_2CH_2\cdot \rightarrow CH_3CH_2CH_2CH_2CH_2CH_3$							
$CH_3CH_2CH_2 + CH_3CH_2CH_2 \rightarrow CH_3CH{=}CH_2 + CH_3CH_2CH_3$ (a)							
$\rightarrow CH_3CH_2CH_2CH_2CH_2CH_3$ (b)							
Propyl							
71 FAL/SUN	RL	298	1.5(-1)			2/2	
k_a/k_b.							
81 ADA/BAS1 [1])	EX	298	(1.9±0.2)(12)			2	
k_a.							
81 ADA/BAS1 [1])	EX	298	(1.0±0.1)(12)			2	
k_b.							
[1]) Azo-n-propane Flash-photolysis. Kinetic Spectroscopy.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3CH_2CH_2 + (CH_3)_2CH \rightarrow CH_3CH{=}CH_2 + CH_3CH_2CH_3$ (a)							
$\rightarrow (CH_3)_2CHCH_2CH_2CH_3$ (b)							
Propyl + Ethyl, 1-Methyl- (i-Propyl)							
71 FAL/SUN	RL	298	4.1(-1)			2/2	
k_a/k_b.							
$CH_3CH_2CH_2 + CH_3CH_2CH_2CHO \rightarrow CH_3CH_2CH_3 + CH_3CH_2CH_2CO$ (a)							
$\rightarrow CH_3CH_2CH_3 + CH_3CH_2CHCHO$ (b)							
$\rightarrow CH_3CH_2CH_3 + CH_3CHCH_2CHO$ (c)							
Propyl + Butanal							
79 FOE/BER [1])	DE	273-529	1.0(11)	0	3322±252	2	2.0
k_a.							
79 FOE/BER [1])	DE	273-529	3.98(10)	0	4328±352	2	3.16
k_b.							
79 FOE/BER [1])	DE	426-529	3.98(10)	0	5184	2	
k_c.							
[1]) Butanal photolysis. Rate constants determined relative to the reaction: $CH_3CH_2CH_2 + CH_3CH_2CH_2 \rightarrow CH_3CH_2CH_2CH_2CH_2CH_3$ on the basis of a suggested reaction scheme.							
$CH_3CH_2CH_2 + CH_3CH_2CH_2CH_2CH_2$							
$\rightarrow CH_3CH{=}CH_2 + CH_3CH_2CH_2CH_2CH_3$ (a)							
$\rightarrow CH_3CH_2CH_3 + CH_3CH_2CH_2CH{=}CH_2$ (b)							
$\rightarrow CH_3(CH_2)_6CH_3$ (c)							
Propyl + Pentyl							
71 WAT/LAW [1])	RL	330	1.14			2/2	
$(k_a + k_b + k_c)/k_c$. Estimated ratio.							
71 WAT/LAW [1])	RL	330	5.6(-2)			2/2	
k_b/k_c.							
[1]) Azo-n-propane Photolysis.							
$CH_3CH_2CH_2 + CH_3CH_2CH_2CHCH_3$							
$\rightarrow CH_3CH{=}CH_2 + CH_3CH_2CH_2CH_2CH_3$ (a)							
$\rightarrow CH_3CH_2CH_3 + CH_3CH_2CH_2CH{=}CH_3$ (b)							
$\rightarrow CH_3CH_2CH_3$ + cis-$CH_3CH_2CH{=}CHCH_3$ (c)							
$\rightarrow CH_3CH_2CH_3$ + trans-$CH_3CH_2CH{=}CHCH_3$ (d)							
$\rightarrow (CH_3CH_2CH_2)_2CH(CH_3)$ (e)							
Propyl + Butyl, 1-methyl-							
71 WAT/LAW	RL	330	1.41			2/2	
$(k_a + k_b + k_c + k_d + k_e)/k_e$.							
Azo-n-propane Photolysis. Estimated ratio.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$(CH_3)_2CH \rightarrow H + CH_3CH{=}CH_2$ (a)							
$\rightarrow CH_3 + CH_2{=}CH_2$ (b)							
Ethyl, 1-methyl- (i-Propyl)							
71 PAP/LAI	EX	525-623	2.0(14)	0	19480	1	
k_a. Limiting high-pressure k. M = $CH_3CH_2CH_3$.							
75 CAM/MAR	EX	676-813	2.51(13)	0	20569±1202	1	5.01
k_a.							
75 BUL/MAR	RL	667-770	4.0(-2)	0	0	1/1	
k_b/k_a.							
Static system pyrolysis. Average ratio.							
$(CH_3)_2CH^{\dagger} \rightarrow H + CH_3CH{=}CH_2$ (a)							
$\rightarrow CH_3 + CH_2{=}CH_2$ (b)							
Ethyl, 1-methyl- (-Propyl)							
72 ARI/STE 1)	ES	2)	1.0(14)	0	20634	1	
k_a.							
72 ARI/STE 1)	ES	2)	1.0(14)	0	23150	1	
k_b.							
1) $(CH_3)_2CH^{\dagger}$ formed by Photolysis of Azoisopropane.							
2) Arrhenius expression determined from a pressure-wavelength data-fit to the RRKM theory.							
$(CH_3)_2CH + O_2 \rightarrow CH_3CH{=}CH_2 + HO_2$ (a)							
$\rightarrow (CH_3)_2CHO_2$ (b)							
Ethyl, 1-methyl- (i-Propyl) + Oxygen molecule							
76 BAL/CLE 1)	RL	713	(3.06±0.25)(3)			2/2	
k_{ref}: $(CH_3)_3CH + H_2 \rightarrow CH_3CH_2CH_3 + H$							
76 BAL/CLE 1)	RL	713	(7.68±0.30)(3)			2/2	
k_{ref}: $(CH_3)_3CH + D_2 \rightarrow CH_3CHDCH_3 + D$							
1) k_a/k_{ref}.							
82 RUI	EX	298	(7.83±1.20)(12)			2	
k_b. M = He. Photoionization Mass-spectrometry.							
Near high-pressure limiting k.							
k is P-independent.							
P(Total) = 1 torr.							
$(CH_3)_2CH + O_3 \rightarrow$ products							
Ethyl, 1-methyl- (i-Propyl) + Ozone							
82 PAL	EX	298	(2.80±0.32)(13)			2	
Photoionization mass-spectrometry.							
$(CH_4)_2CH$ formed by photodissociation of $(CH_3)_2CHNO_2$.							
P = 2 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$(CH_3)_2CH + H_2 \rightarrow CH_3CH_2CH_3 + H$							
Ethyl, 1-methyl- (i-Propyl) + Hydrogen molecule							
76 BAL/CLE	RL	713	(2.51±0.20)			2/2	
k_{ref}: $(CH_3)_2CH + D_2 \rightarrow CH_3CHDCH_3 + D$							
$(CH_3)_2CH + CH_3CH_3 \rightarrow CH_3CH_2CH_3 + CH_3CH_2$							
Ethyl, 1-methyl- (i-Propyl) + Ethane							
74 SZI/MAR	RN	496-548	2.511(10)	0	6392±403	2	2.51
76 SZI/MAR	RN	496-548	1.0(11)	0	6495±361	2	2.51
Azoisopropane sensitized pyrolysis of Ethane in a static system. k determined relative to the reaction: $(CH_3)_2CH + (CH_3)_2CH \rightarrow (CH_3)_2CHCH(CH_3)_2$ P = (38-230) torr.							
$(CH_3)_2CH + CH_3CH{=}CH_2 \rightarrow CH_3CH_2CH_3 + CH_2{=}CHCH_2$							
Ethyl, 1-methyl (i-Propyl) + 1-Propene							
76 SZI/MAR	RN	496-548	5.01(9)	0	3850±850	2	5.01
Azoisopropane sensitized pyrolysis of Ethane in a static system. k determined relative to the reaction: $(CH_3)_2CH + (CH_3)_2CH \rightarrow (CH_3)_2CHCH(CH_3)_2$ P = (38-230) torr.							
$(CH_3)_2CH + (CH_3)_2CH \rightarrow CH_3CH{=}CH_2 + CH_3CH_2CH_3$ (a)							
$\rightarrow (CH_3)_2CHCH(CH_3)_2$ (b)							
Ethyl, 1-methyl- (i-Propyl)							
71 FAL/SUN [1])	RL	298	6.9(-1)			2/2	
72 ARI/STE [1])	RL	295	(5.7±0.5)(-1)			2/2	
Azoisopropane Photolysis.							
74 GOL/PIS [1])	RL	683	(1.0±0.5)			2/2	
74 GOL/PIS [1])	RL	808	(1.5±0.5)			2/2	
76 PAR/QUI [1])	RL	298	(6.5±0.5)(-1)			2/2	
77 MCK/TUR [1])	RL	518	5.2(-1)			2/2	
Azoisopropane thermolysis.							
77 MCK/TUR [1])	RL	573	4.9(-1)			2/2	
Azoisopropane thermolysis.							
79 KIR/PAR [1])	RL	302	(6.0±0.1)(-1)			2/2	
Photolysis of trans-2,2'-Azopropane. Gas-chromatography. Mass-spectrometry.							
79 SZI [1])	RL	494-546	(7.6±1.6)(-1)			2/2	
Azoisopropane pyrolysis in a static system. Average ratio.							

[1]) k_a/k_b.

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
78 ARR/KIR	EX	301-424	(3.01±0.60)(12)	0	-25±313	2	
k_a. Molecular Modulation Spectrometer technique.							
81 ADA/BAS1	EX	298	(5.0±1.2)(12)			2	
k_a. Flash-photolysis of Azoisopropane. Kinetic spectroscopy.							
82 DEM/LES	ES	298	6.0(12)			2	
$k_a + k_b$. Flash-photolysis. Laser-resonance-absorption. $(CH_3)_2CH$ generated by flashing NH_3 in presence of 1-Propene. Best data-fit.							
72 HIA/BEN1 [1])	ES	415	3.98(11)			2	12.6
74 GOL/PIS [1])	RN	683-808	3.16(12)	0	0	2	1.58
76 PAR/QUI [1])	RN	298	(5.0±1.2)(12)			2	
78 ARR/KIR [1])	EX	301-424	(8.43±1.69)(12)	0	161±313	2	
Molecular Modulation Spectrometer technique.							
81 ADA/BAS1 [1])	EX	298	(7.7±1.6)(12)			2	
Flash-photolysis of Azoisopropane.							

[1]) k_b.

$(CH_3)_2CH + (CH_3)_2CHCHO \rightarrow CH_3CH_2CH_3 + (CH_3)_2CHCO$ (a)

$\rightarrow CH_3CH_2CH_3 + (CH_3)_2CCHO$ (b)

Ethyl, 1-methyl- (i-Propyl) + Propanal, 2-methyl-

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
76 BAL/CLE	RL	713	3.2(-3)			2/2	1.1
$(k_a + k_b)/k_{ref}$. k_{ref}: $(CH_3)_2CH + O_2 \rightarrow CH_3CH{=}CH_2 + HO_2$							

$(CH_3)_2CH + (CH_3)_4C \rightarrow CH_3CH_2CH_3 + (CH_3)_3CCH_2$

Ethyl, 1-methyl- (i-Propyl) + Propane, 2,2-dimethyl- (Neopentane)

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
79 SZI/MAR	EX	512-571	3.16(10)	0	6616±601	2	6.31
Neopentane pyrolysis in presence of Azo-isopropane. P(Total) = (15-300) torr.							

$(CH_3)_2CH + (CH_3)_2CHCH(CH_3)_2$

$\rightarrow CH_3CH_2CH_3 + (CH_3)_2CHCH(CH_3)CH_2$ (a)

$\rightarrow CH_3CH_2CH_3 + (CH_3)_2CHC(CH_3)_2$ (b)

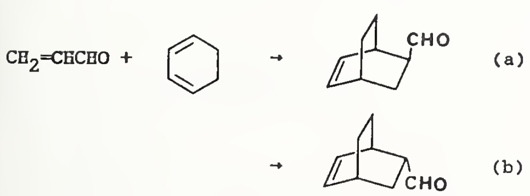
Ethyl, 1-methyl- (i-Propyl) + Butane, 2,3-dimethyl-

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
75 BUL/MAR [1])	RL	667-770	6.31(-1)	0	-9863	2/1	
$(k_a + k_b)/k_{ref}$. k_{ref}: $(CH_3)_2CH \rightarrow H + CH_3CH{=}CH_2$							
75 BUL/MAR [1])	ES	667-770	1.58(13)	0	10710	2	
$k_a + k_b$.							

[1]) Static system pyrolysis.

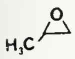
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$(CH_3)_2CH + (CH_3)_2CHN{=}NCH(CH_3)_2$							
$\rightarrow CH_3CH_2CH_3 + CH_2CH(CH_3)N{=}NCH(CH_3)_2$							
Ethyl, 1-methyl- (i-Propyl) + Diazene,							
bis(1-methylethyl)- (Azoisopropane)							
79 SZI	EX	494-546	5.01(9)	0	3248±241	2	1.58
Azoisopropane pyrolysis in a static system.							
$CH_3CH_2CH_3$ (+ M) $\rightarrow CH_3 + CH_3CH_2$ (+ M) (a)							
$\rightarrow$ any other products (+ M) (b)							
Propane							
79 PRA/ROG2	EX	1008	(3.0±1.5)(-3)			1	
k_a. M = Ar. Pyrolysis in a wall-less reactor.							
Average k at the mean experimental T.							
Other k values within (967-1051) K T-range							
also given. Approximate fitted values.							
P(Ar) = 600 torr.							
81 CHI/SKI1 [1])	EX	1200-1450	6.7(16)	0	45395	1	
k_a. Experimental k.							
81 CHI/SKI1 [1])	SE	1200-1450	2.5(16)	0	44036	1	2.0
k_a. Recommended k.							
[1]) Pyrolysis behind reflected shock-waves.							
Resonance-absorption spectroscopy. Same data							
given in 79 CHI/SKI. P (Total) = (2-3) atm.							
81 JUS/SCA	EX	873-1053	≃4.47(16)	0	≃42627	1	
k_a. Pyrolysis in a jet-stirred tank-reactor.							
Gas-chromatography.							
P(Propane) ~20 torr.							
82 ALA	EX	1400-1800	7.74(11)	0	28048	1	
k_a. Pyrolysis behind incident shock-waves.							
Laser-schlieren. Limiting high-pressure k.							
P = (150-550) torr.							
72 ILL/SZA [2])	EX	910-1075	6.37(13)	0	31807	1	1.1
74 BAK/NOV [2])	EX	973-1123	3.5(12)	0	28737±1007	1	
78 VER/BEL [2])	RL	873-1103	(6.35±1.05)(-1)			1/1	
Pyrolysis in a flow-reactor. Average ratio.							
k_{ref}: $CH_3CH_2CH_2CH_3 \rightarrow$ products.							
79 BRA [2])	EX	1210-1680	1.98(8)	0	18885	1	1.38
Pyrolysis in a single-pulse shock-tube.							
79 ZYC/BAC [2])	EX	1000-1120	1.7(11)	0	26572±352	1	
Pyrolysis in a tubular reactor. P = 1 atm.							
81 HAU/SAN [2])	EX	1110-1235	3.16(12)	0	29517±906	1	2.19
Pyrolysis in a flow-reactor.							
[2]) $k_{overall}$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
79 CHI/SKI	EX	1200-1450	2.6(21)	0	45244	2	
k_a. M = Ar. Pyrolysis behind reflected shock-waves. P = (2-3) Atm.							
82 ALA	EX	1800-2300	2.68(17)	0	28278	2	
k_a. Pyrolysis behind incident shock-waves. Limiting low-pressure k. P = (150-550) torr.							
$CH_3CH_2CH_3^\dagger \rightarrow CH_3 + CH_3CH_2$ (a)							
$\rightarrow CH_4 + CH_2{=}CH_2$ (b)							
Propane							
71 LEX/MAR1 [1])	RL	290	(3.99±0.46)(-8)			1/2	
k_a. P(Ar) = (4-16) torr.							
72 GRO/HAS	EX	298	(4.7±1.2)(8)			1	
k_a.							
71 LEX/MAR1 [1])	RL	290	(3.22±0.28)(-8)			1/2	
k_b. P(Ar) = (4-16) torr.							
71 LEX/MAR2 [1])	RL	290	(3.28±0.41)(-8)			1/2	
k_b. P(Ar) = (4-12) torr.							
[1]) M = Ar. Discharge flow. $CH_3CH_2CH_3^\dagger$ formed by H + $(CH_3)_2CH$. k_{ref}: $CH_3CH_2CH_3^\dagger + M \rightarrow CH_3CH_2CH_3 + M$.							
$CD_3CD_2CD_3 \rightarrow CD_3 + CD_3CD_2$							
Propane-d_8							
81 CHI/SKI1 [1])	EX	1200-1450	6.7(16)	0	45395	1	
81 CHI/SKI1 [1])	SE	1200-1450	2.5(16)	0	44036	1	2.0
Recommended k.							
[1]) Pyrolysis behind reflected shock-waves. Resonance-absorption spectroscopy. Same data given in 79 CHI/SKI. P(Total) = (2-3) atm.							



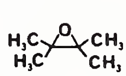
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
2-Propenal (Acrolein) + 1,3-Cyclohexadiene							
→ Bicyclo[2.2.2]oct-5-ene-2-carboxaldehyde, (1α,2α,4α)- (Exo form) (a)							
→ Bicyclo[2.2.2]oct-5-ene-2-carboxaldehyde, (1α,2β,4α)- (Endo form) (b)							
76 HUY/PAT [1])	EX	486-871	3.24(5)	0	10382±25	2	1.05
k_a.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
76 HUY/PAT [1]	EX	486-871	4.47(5)	0	9799±25	2	1.05
k_b.							
[1]) Diels-Alder addition of Acrolein to 1,3-Cyclohexadiene in a Pyrex reaction vessel. Gas-chromatography. P = (55-240) torr.							
CH_3CH_2CO (+ M) → CH_3CH_2 + CO (+ M)							
Propyl, 1-oxo-							
73 WAT/THO	ES	238-278	5.89(12)	0	7247	1	
76 ERN/SPI	EX	1350-1650	2.7(16)	0	41137±1443	1	
M = Ar. Limiting high-pressure k. Supersedes 75 ERN/SPI.							
$CH_3CH_2CO + O_2 \rightarrow CH_2{=}CH_2 + CO_2 + OH$							
Propyl, 1-oxo- + Oxygen molecule							
79 BAL/LEW1	RL	713	(1.12±0.10)(-1)			2/2	
M = N_2. Oxidation in an aged boric-acid-coated vessel. k_{ref}: $CH_3CH_2CO + M \rightarrow CH_3CH_2 + CO + M$							
$CH_2{=}CHCH_2O_2 \rightarrow CH_2{=}CHCH_2 + O_2$							
2-Propenyldioxy							
81 RUI/BAY	EX	348	(2.60±0.96)(1)			1	
M = He. Photoionization mass-spectrometry. k_1 Measured simultaneously with k_{-1}. Allyl formed by Hexadiene/O2 flash-photolysis at 193 nm., with anArF excimer laser. P(1,5-Hexadiene) ~100 mtorr. P(O_2) = (4.1-27.4) mtorr. P(Total) = 2.8 torr.							
$CH_3CH_2CHO + CH_3CH_2C(O)OOH \rightarrow$ products							
Propanal + Propaneperoxoic acid							
74 DIX/SKI1	RN	337	1.0			2	
 **→ HCHO + $CH_2{=}CH_2$**							
Oxetane							
75 HOL/SCO	EX	693-753	5.13(15)	0	31719±422	1	2.04
Pyrolysis in a cylindrical Pyrex vessel. High-vacuum system. Gas-chromatography. NMR, and IR-Spectrometry. P_o = (0.4-117) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
 → CH_3CH_2CHO (a)							
→ $(CH_3)_2CO$ (b)							
→ CH_2=$CHCH_2OH$ (c)							
→ CH_2=$CHOCH_3$ (d)							
Oxirane, methyl-							
77 FLO [1]	EX	654-717	2.45(14)	0	29434±289	1	1.51
k_a. P_o = 131 torr.							
77 FLO [1]	EX	654-717	1.51(14)	0	30131±289	1	1.51
k_b. P_o = 131 torr.							
77 FLO [1]	ES	654-717	1.70(14)	0	30552	1	
k_b. Limiting high-pressure k. RRKM calculation.							
77 FLO [1]	EX	654-717	7.94(12)	0	28760±241	1	1.41
k_c. P_o = 131 torr.							
77 FLO	EX	654-717	3.24(14)	0	29578±373	1	1.70
k_d. P_o = 131 torr.							
77 FLO [1] [2]	EX	654-717	4.37(14)	0	29470±156	1	1.26
Without added NO.							
77 FLO [1] [2]	EX	654-717	3.09(14)	0	29145±397	1	1.78
Packed reaction vessel without added NO.							
77 FLO [1] [2]	EX	654-717	4.07(14)	0	29482±229	1	1.38
With 8.5% NO added.							
[1] Thermolysis in a static system. Gas-chromatography. Mass-spectrometry. P = (5-326) torr.							
[2] $k_a + k_b + k_c + k_d$.							
$HC(O)OCH_2CH_3$ → products							
Formic acid ethyl ester (Ethyl formate)							
71 BLA/SAN	EX	830-903	2.19(12)	0	24207±252	1	
$CH_3C(O^{18})OCH_3$ → $CH_3COO^{18}CH_3$							
Acetic-^{18}O acid ^{16}O-methyl ester							
81 CAR/EGS [1]	EX	1253	3.72(2)			1	
81 CAR/EGS [1]	EX	1404	1.78(3)			1	
[1] Flash-vacuum thermolysis.							
$CH_3C(O)OCH_3$ → products							
Acetic acid methyl ester (Methyl acetate)							
82 BLA/SHR	EX	743-834	2.00(6)	0	17358±780	1	2.63
Thermolysis. Apparent k, reflecting the importance of heterogeneous processes in the decomposition. P(Methyl acetate)$_o$ = (30-70) torr.							

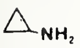
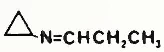
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3CH_2CH_2O + NO \rightarrow CH_3CH_2CHO + HNO$ (a)							
$\rightarrow CH_3CH_2CH_2ONO$ (b)							
Propoxy + Nitrogen oxide (NO)							
80 ROS	RL	298	(1.1±0.1)(-1)			2/2	
k_a/k_b. Propyl nitrite/NO_2 photolysis at 366 nm.							
$CH_3CH_2CH_2O + NO_2 \rightarrow CH_3CH_2CHO + HONO$ (a)							
$\rightarrow CH_3CH_2CH_2ONO_2$ (b)							
Propoxy + Nitrogen oxide (NO_2)							
80 ROS	RL	298	(1.1±0.1)(-1)			2/2	
k_a/k_b. Propyl nitrite photolysis at 366 nm. in presence of NO_2. Gas-chromatography.							
75 MEN/GOL	DE	300	3.16(12)	0	0	2	
k_b. Estimated fromrmochemical data and the assumption that $E_a \sim 0$.							
77 BAR/BEN2	ES	580-800	3.16(12)			2	
k_b. VLP-Pyrolysis. RRKM best-fit estimate.							
$(CH_3)_2CHO \rightarrow CH_3CHO + CH_3$ (a)							
$\rightarrow (CH_3)_2CO + H$ (b)							
Ethoxy, 1-methyl-							
75 BAT/MCC	ES	393-473	2.51(14)	0	8606	1	
k_a.							
79 BAT [1]	ES	393-473	3.98(14)	0	8656±503	1	3.16
k_a.							
79 BAT [1]	ES	393-473	2.00(14)	0	10820	1	
k_b. Preliminary k.							
[1] Static system. Same data given in 77 BAT/MIL1.							
$(CH_3)_2CHO + NO \rightarrow (CH_3)_2CHONO$ (a)							
$\rightarrow (CH_3)_2CO + HNO$ (b)							
$\rightarrow (CH_3)_2CHONO$ (c)							
Ethoxy, 1-methyl- + Nitrogen oxide (NO)							
74 BAT/MIL [1]	ES	393-473	2.51(13)	0	0±503	2	2.51
77 BAT/MIL [1]	ES	403-433	3.16(13)	0	0±403	2	2.51
[1] k_a.							
74 BAT/MIL [2]	ES	393-473	3.98(12)	0	0±503	2	3.16
77 BAT/MIL [2]	ES	503-433	3.16(13)	0	0±503	2	2.51
[2] k_b.							
74 BAT/MIL	ES	393-473	2.51(13)	0	0±503	2	2.51
k_c.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$(CH_3)_2CHO + (CH_3)_2CHOOH \rightarrow (CH_3)_2CHO_2 + (CH_3)_2CHOH$							
Ethoxy, 1-methyl- + Hydroperoxide, 1-methylethyl-							
79 KIR/PAR	RL	302	(1.66±0.05)(-2)			2/2	
trans-2,2'-Azopropane photolysis.							
Mass-spectrometry.							
k_{ref}: $(CH_3)_2CHO + O_2 \rightarrow (CH_3)_2CO + HO_2$.							
$CH_3CH_2CH_2O_2 + CH_3CH_2CH_2O_2$							
$\rightarrow CH_3CH_2CH_2O + CH_3CH_2CH_2O + O_2$ (a)							
$\rightarrow CH_3CH_2CH_2OH + CH_3CH_2CHO + O_2$ (b)							
Propyldioxy							
82 ADA/BAS1	EX	298	(2.0±0.2)(8)			2	
$k_a + k_b$.							
Azo-n-propane Flash-photolysis in Ar.							
P(Azo-n-propane) = (4.5-10) torr.							
P(Pentane) = (0-86) torr.							
$P(O_2)$ = (2.2-670) torr.							
P(Ar) = (0-540) torr.							
$P(N_2)$ = (0-720) torr.							
$(CH_3)_2CHO_2 + NO \rightarrow CH_{32}CHO + NO_2$							
Ethyldioxy, 1-methyl- + Nitrogen oxide (NO)							
82 ADA/BAS2	EX	298	(2.1±0.2)(12)			2	
Azoisopropane Flash-photolysis.							
Kinetic-spectroscopy.							
k is P-independent in							
the (55-400) torr. range.							
$P(NO_2) = (1.1\text{-}6.1)\times10^{-2}$ torr.							
$P(NO) = (1.4\text{-}6.1)\times10^{-2}$ torr.							
P(Azoisopropane) ~2 torr.							
$P(O_2)$ = (5.7-15.5) torr.							
$(CH_3)_2CHO_2 + NO_2 \rightarrow (CH_3)_2CHOONO_2$							
Ethyldioxy,1-methyl- + Nitrogen oxide (NO_2)							
82 ADA/BAS2	EX	298	(3.4±0.1)(12)			2	
Azoisopropane Flash-photolysis.							
Kinetic spectroscopy.							
k is P-independent in							
the (55-400) torr. range.							
$P(NO_2) = (1.1\text{-}6.1)\times10^{-2}$ torr.							
$P(NO) = (1.4\text{-}6.1)\times10^{-2}$ torr.							
P(Azoisopropane) ~2 torr.							
$P(O_2)$ = (5.7-15.5) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$(CH_3)_2CHO_2 + (CH_3)_2CHO_2$							
$\rightarrow (CH_3)_2CHO + (CH_3)_2CHO + O_2$ (a)							
$\rightarrow (CH_3)_2CHOH + (CH_3)_2CO + O_2$ (b)							
Ethyldioxy, 1-methyl-							
79 KIR/PAR	EX	302	(2.99±0.20)(8)			2	
k_a. trans-2,2'-Azopropane photolysis. Gas-chromatography. Mass-spectrometry.							
82 COW/WAD	EX	333-373	(1.38±0.26)(12)	0	2562±180	2	
k_a. trans-2,2'-Azopropane Photooxidation, with or without O_2. $P(O_2)$ = (0-500) torr. P(trans-2,2'-Azoisopropane) = 5 torr. $P(N_2)$ = (300-500) torr.							
79 KIR/PAR	EX	302	(2.15±0.10)(8)			2	
k_b. trans-2,2'-Azopropane photolysis. Gas-chromatography. Mass-spectrometry.							
82 COW/WAD	EX	333-373	(2.44±0.31)(10)	0	1443±120	2	
k_b. trans-2,2'-Azopropane Photooxidation, with or without O_2. $P(O_2)$ = (0-500) torr. P(trans-2,2'-Azoisopropane) = 5 torr. $P(N_2)$ = (300-500) torr.							
78 KIR/PAR	EX	300-373	(1.43±0.10)(12)	0	2243±60	2	
$k_a + k_b$. Azoisopropane/O_2/N_2 photolysis.							
82 ADA/BAS1	EX	298	(7.8±2.2)(8)			2	
$k_a + k_b$. Azoisopropane flash-photolysis at 260 nm. in Ar. P(Azoisopropane) = (4.5-10) torr. $P(N_2)$ = (0-720) torr. P(Ar) = (0-540) torr. P(Pentane) = (0-86) torr. $P(O_2)$ = (2.2-670) torr.							
$(CH_3)_2CHO_2 + (CH_3)_2C{=}C(CH_3)_2$							
$\rightarrow (CH_3)_2CHO +$ 							
Ethyldioxy, 1-methyl- + 2-Butene, 2,3-dimethyl-							
82 SWA/WAD	EX	303-363	9.12(10)	0	4916±214	2	3.16
Reaction of Isopropylperoxyl with 2,3-Dimethyl-2-butene in a Pyrex vessel. The radicals generated by trans-2,2'-Azopropane/ O_2/N_2 photooxidation. P(2,3-Dimethyl-2-butene) = 20 torr. P(trans-2,2'-Azoisopropane) = 5 torr. $P(O_2)$ = (50-450) torr. $P(N_2)$ = (25-450) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$(CH_3)_2CHO_2 + (CH_3)_2CHC(OO\cdot)(CH_3)_2 \rightarrow$ products							
Ethyldioxy, 1-methyl- + Propyldioxy, 1,1,2-trimethyl-							
75 ALC/MIL	ES	373	6.2(11)			2	
$CH_3CH_2CH_2OH \rightarrow CH_3CH_2CHO + H_2$ (a)							
$\rightarrow CH_3CH{=}CH_2 + H_2O$ (b)							
$\rightarrow CH_3 + CH_2CH_2OH$ (c)							
1-Propanol							
71 GON/LEW	EX	753-833	6.80(5)	0	13265	1	
$k_a + k_b$.							
76 TSA1	ES	1080-1165	1.58(16)	0	41100	1	
k_c.							
$(CH_3)_2CHOH \rightarrow (CH_3)_2CO + H_2$ (a)							
$\rightarrow CH_3CH{=}CH_2 + H_2O$ (b)							
$\rightarrow CH_3 + CH_3CHOH$ (c)							
2-Propanol							
71 GON/LEW	EX	753-833	1.05(5)	0	12582	1	
$k_a + k_b$.							
75 TRE	EX	721-801	1.0(14)	0	29039±1007	1	3.98
k_a.							
75 TRE	EX	721-801	1.26(13)	0	29290±1812	1	10.0
k_b.							
76 TSA1	ES	1080-1165	3.16(16)	0	41100	1	
k_c.							
 $\rightarrow HCHS + CH_2{=}CH_2$							
Thietane (Trimethylene sulfide) $\rightarrow$ Methanethial + Ethene							
73 JEF/DAS	EX	980-1040	1.0(13)	0	24258	1	
M = Ar.							
Thiethane thermolysis in a single-pulse shock-tube.							
P_o = (120-200) torr.							

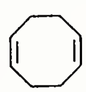
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3C(S)OCH_3 \rightarrow CH_3(O)SCH_3$							
Ethanethioic acid O-methyl ester							
72 OEL/TIN	ES		~2.00(13)	0	23402	1	
Thermal isomerization.							
T-range not given.							
75 BIG/GAB 1)	EX	629	8.97(-4)			2	
75 BIG/GAB 1)	EX	678-704	7.94(12)	0	23050	1	
1) Thermal isomerization.							
Flow reactor pyrolysis.							
							
Thietane, 1,1-dioxide- (Trimethylenesulfone)							
→ Cyclopropane + Sulfur dioxide							
75 COR/TSA	EX	638-678	1.26(16)	0	28100±500	1	2.0
Pyrolysis in a flow-tube reactor.							
$CH_2{=}CHCN + NH_2CH_2CH_2CN \rightarrow NH(CH_2CH_2CN)_2$							
2-Propenenitrile (Acrylonitrile)							
+ Propanenitrile, 3-amino- (β-Aminopropionitrile)							
→ Propanenitrile, 3,3'-iminobis-							
(β,β'-Iminodipropionitrile)							
82 SAI/MIC	EX	303-408	7.43(10)	0	6241	2	
Reaction of 2-Propenenitrile with β-Amino-propionitrile in an Autoclave.							
$CH_3CH_2CN \rightarrow CH_3 + CH_2CN$ (a)							
$\rightarrow CH_2{=}CH_2 + HCN$ (b)							
$\rightarrow CH_2{=}CHCN + H_2$ (c)							
Propanenitrile							
78 KIN/GOD 1)	EX	896-1020	1.77(15)	0	40764	1	
k_a.							
In presence of excess $C_6H_5NH_2$.							
73 DAS/EMO	EX	803-943	1.29(13)	0	34967±201	1	1.02
k_b.							
78 KIN/GOD 1)	EX	896-1020	2.00(14)	0	34125±806	1	2.51
k_b.							
In absence of additives.							

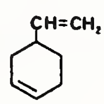
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
78 KIN/GOD [1])	EX	896-1020	1.26(12)	0	29746±710	1	2.0
k_c.							
In absence of additives.							
[1]) Pyrolysis in a flow-reactor.							
Gas-chromatography.							
$[CH_3CH_2CN] \sim 6.0\times10^{16}$ molec.cm^{-3}.							
P ~ 760 torr.							
 **→ ($CH_3CH{=}CHNH_2$ = $CH_3CH_2CH{=}NH$)**							
Cyclopropanamine							
→ (1-Propen-1-amine = 1-Propanimine)							
73 PAR/ROB	EX	629-698	1.15(15)	0	29109±313	1	2.57
Thermal isomerization in a silica reaction vessel with Pyrex vacuum-system. Gas-chromatography. The intermediate product reacts with another molecule of reactant to form one molecule of:							
							
(Cyclopropanamine, N-propylidene-).							
P_o = (15-60) torr.							
$(CH_3)_2CHONO$ → $(CH_3)_2CO$ + HNO (a)							
→ $CH_3CH{=}CH_2$ + HONO (b)							
→ $(CH_3)_2CHO$ + NO (c)							
Nitrous acid 1-methylethyl ester (Isopropyl nitrite)							
75 BAT/MCC	ES	393-473	1.26(9)	0	13437	1	
k_a.							
77 BAT/MIL1	ES	403-433	2.51(9)	0	13588	1	
k_a.							
78 BAT/ISL2 [1])	EX	433-473	2.00(14)	0	19577±503	1	3.16
k_a.							
78 BAT/ISL2 [1])	EX	433-473	5.01(12)	0	19074	1	
k_b.							
[1]) Pyrolysis in a static system.							
Gas-liquid chromatography.							
77 BAT/MIL1	ES	403-433	1.58(16)	0	20634±403	1	2.51
k_c.							
Same data given in 74 BAT/MIL and 75 BAT/MCC.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3NHC(O)OCH_3 \rightarrow CH_3NCO + CH_3OH$							
Carbamic acid, methyl-, methyl ester							
72 DAL/ZIO1	EX	643-695	2.45(12)	0	24187	1	
Thermolysis.							
$CH_3CH_2CH_2ONO_2 \rightarrow CH_3CH_2CH_2O + NO_2$							
Nitric acid propyl ester (n-Propyl nitrate)							
75 MEN/GOL	CO	300	3.15(16)	0	20131	1	
RRKM fit of experimental data.							
77 BAR/BEN2	EX	580-800	3.16(16)	0	20131	1	
VLP-pyrolysis.							
RRKM best-fit estimate.							
CH≡CC≡C → C≡CC≡C + H							
1,3-Butadiynyl							
80 FRA/JUS	ES	2100-2300	(1.35±0.85)(14)	0	58700	1	
Thermolysis of Ethyne and 1,3-Butadiyne in Ar, behind shock-waves.							
Data-fit on the basis of a proposed mechanism.							
Total Conc. = $(0.4-1.6)\times10^{19}$ molec.cm^{-3}.							
CH≡CC≡C + CH≡CC≡CH → CH≡CC≡CC≡CC≡CH + H							
1,3-Butadiynyl + 1,3-Butadiyne							
80 FRA/JUS	ES	1850-2300	(3.5±2.0)(13)	0	0	2	
Thermolysis of Ethyne and 1,3-Butadiyne in Ar, behind shock-waves.							
Data-fit on the basis of a proposed mechanism.							
Total Conc. = $(0.4-1.6)\times10^{19}$ molec.cm^{-3}.							
CH≡CC≡CH → CH≡CC≡C + H							
1,3-Butadiyne							
80 FRA/JUS	ES	1850-2300	(2.2±0.6)(14)	0	58700±700	1	
Thermolysis of Ethyne and 1,3-Butadiyne in Ar, behind shock-waves.							
Total Conc. = $(0.4-1.6)\times10^{19}$ molec.cm^{-3}.							

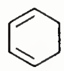
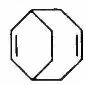
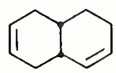
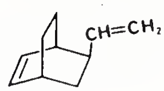
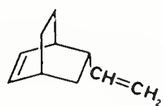
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3CH_2C\equiv CH \rightarrow CH_3 + CH_2C\equiv CH$							
1-Butyne							
78 KIN	EX	1052-1152	3.16(15)	0	37343±1007	1	2.0
VLP-pyrolysis.							
82 TRE/WRI	EX	652-731	1.58(17)	0	37645±1057	1	5.01
Pyrolysis of 1-Butyne in a cylindrical silica reaction vessel with static system. Gas-chromatography. P = (50-1200) torr.							
$CH_3CH_2C\equiv CH + CH_3CH_2C\equiv CH \rightarrow CH_3CH_2C=CH_2 + CH_3CHC\equiv CH$							
1-Butyne							
82 TRE/WRI	EX	652-731	2.00(14)	0	24056±302	2	1.58
Rate determining step. $CH_3CH_2C=CH_2$ decomposes further to give CH_3 and $CH_2=C=CH_2$. Pyrolysis of 1-Butyne in a cylindrical silica reaction vessel with static system. Gas-chromatography. P = (50-1200) torr.							

$CH_2=CHCH=CH_2 + CH_2=CHCH=CH_2$

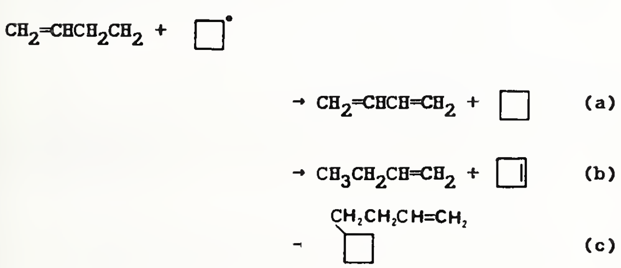
→  (a)

→  (b)

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
1,3-Butadiene							
77 HUY/LUY [1])	EX	464-557	4.47(10)	0	14313±50	2	1.10
k_a.							
77 HUY/LUY [1])	EX	464-557	8.91(9)	0	12345±60	2	1.12
k_b.							
[1]) Thermal reaction of 1,3-Butadiene in a static system. Gas-chromatography. P = (49-450) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
CH_2=CHCH=CH_2 + 							
→  (a)							
→  (b)							
→  (c)							
→  (d)							
1,3-Butadiene + 1,3-Cyclohexadiene							
→ Bicyclo[4.2.2]deca-3,7-diene (a)							
→ Naphthalene, 1,2,4a,5,8,8a-hexahydro-, cis- (b)							
→ Bicyclo[2.2.2]oct-2-ene, 5-ethenyl- (1α,4α,5α)- (exo form) (c)							
→ Bicyclo[2.2.2]oct-2-ene, 5-ethenyl- (1α,4α,5β)- (endo form) (d)							
82 HUY/HUB2 [1]	EX	437-526	4.07(9)	0	12849±25	2	1.05
k_a.							
82 HUY/HUB2 [1]	EX	437-526	1.05(10)	0	12768±35	2	1.07
k_b.							
82 HUY/HUB2 [1]	EX	437-526	1.055(10)	0	13468±25	2	1.05
k_c.							
82 HUY/HUB2 [1]	EX	437-526	3.80(9)	0	12501±25	2	1.05
k_d.							
[1]) Thermal Diels-Alder addition in a static system. Gas-chromatography. P(1,3-Cyclohexadiene) = (50-93) torr. P(1,3-Butadiene) = (61-397) torr.							
CH_3CH_2CH=$CH^{\dagger}$ → CH_2CH_2CH=$CH_2{}^{\dagger}$							
1-Butenyl → 3-Butenyl							
76 IBU/TSU [1]	EX	348	1.00(9)			1	
76 IBU/TSU [1]	EX	396	1.05(9)			1	
[1]) Photolysis of 3-Pentanone. CH_3CH_2CH=$CH^{\dagger}$ formed by CH_3CH_2 + CH≡CH.							

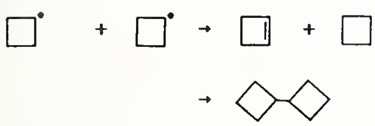
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3CH{=}CHCH_2 + H_2S \rightarrow CH_3CH_2CH{=}CH_2 + SH$							
2-Butenyl + Hydrogen sulfide							
80 RIC/BOI	ES	750-816	1.0(14)	0	4680	2	
Static system.							
cis/trans-Butenyl equilibrium.							
$CH_3CH{=}CHCH_2 + cis\text{-}CH_3CH{=}CHCH_3 \rightarrow CH_3CH_2CH{=}CH_2 + CH_3CH{=}CHCH_2$							
2-Butenyl + 2-Butene, (Z)-							
80 RIC/BOI 1)	RL	750-816	4.0(-1)	0	3271±503	2/2	
k_{ref}: $CH_3CH{=}CHCH_2 + H_2S \rightarrow CH_3CH_2CH{=}CH_2 + SH$							
80 RIC/BOI 1)	ES	750-816	≈3.98(13)	0	7952	2	
1) Static system.							
cis/trans-Butenyl equilibrium.							
$trans\text{-}CH_3CH{=}CHCH_2 \rightarrow cis\text{-}CH_3CH{=}CHCH_2$							
2-Butenyl, (E)-							
72 GOR/WAL	RL	363	(1.64±0.28)(-6)			1/2	
k_{ref}: $trans\text{-}CH_3CH{=}CHCH_2 + HI$							
$\rightarrow CH_3CH_2CH{=}CH_2 + I$ (a)							
$\rightarrow trans\text{-}CH_3CH{=}CHCH_3 + I$ (b)							
72 GOR/WAL	ES	363	5.01(4)			1	
$CH_2{=}CHCH_2CH_2^\dagger \rightarrow [CH_3CHCH{=}CH_2^\dagger = CH_3CH{=}CHCH_2^\dagger]$							
3-Butenyl → [2-Propenyl, 1-methyl- = 2-Butenyl]							
76 IBU/TSU 1)	EX	348	3.47(7)			1	
76 IBU/TSU 1)	EX	396	6.20(7)			1	
1) Photolysis of 3-Pentanone.							
$CH_2{=}CHCH_2CH_2^\dagger$ formed by isomerization of							
$CH_3CH_2CH{=}CH^\dagger$, which (in its turn) was							
formed by $CH_3CH_2 + CH{\equiv}CH$.							



3-Butenyl + Cyclobutyl							
75 STE/RAB 1)	RL	298	(1.3±0.5)(-1)			2/2	
k_a/k_c.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
75 STE/RAB [1])	RL	298	(3.0±0.9)(-1)			2/2	
k_b/k_c.							
75 STE/RAB [1])	RL	298	(4.3±0.7)(-1)			2/2	
$(k_a + k_b)/k_c$.							
[1]) Disproportionation-combination ratios.							
$CH_3C{=}CHCH_3^{\dagger} \rightarrow CH_3C{\equiv}CH + CH_3$ (a)							
$\rightarrow CH_3C{\equiv}CCH_3 + H$ (b)							
1-Propenyl, 1-methyl- → 1-Propyne + Methyl (a)							
→ 2-Butyne + Hydrogen atom (b)							
77 DIA/DOE [1])	RL	298	(3.70±1.02)			1/1	
k_a/k_{ref}.							
77 DIA/DOE [1])	RL	298	5.04			1/1	
k_b/k_{ref}.							
[1]) Study of the UV-photolysis of 1,2-Butadiene.							
$CH_3C{=}CHCH_3^{\dagger}$ formed by H + $CH_3{=}C{=}CH_2$.							
k_{ref}: $CH_2{=}CCH_2CH_3^{\dagger} \rightarrow CH_2{=}C{=}CH_2 + CH_3$							
$CH_2{=}CHCHCH_3^{\dagger} \rightarrow CH_2{=}CHCH{=}CH_2 + H$							
2-Propenyl, 1-methyl- (1-Methylallyl)							
→ 1,3-Butadiene + Hydrogen atom							
77 DIA/DOE	RL	298	(1.86±0.01)			1/1	
k/k_{ref}.							
Study of the UV-photolysis of 1,2-Butadiene.							
$CH_2{=}CHCHCH_3^{\dagger}$ formed by H + $CH_3{=}C{=}CH_2$.							
k_{ref}: $CH_2{=}CCH_2CH_3^{\dagger} \rightarrow CH_2{=}C{=}CH_2 + CH_3$							
trans-$CH_3CHCH{=}CH_2 \rightarrow$ cis-$CH_3CHCH{=}CH_2$							
2-Propenyl, 1-methyl-, (E)- (trans-1-Methylallyl)							
72 GOR/WAL	ES	363	5.0(4)			1	
$CH_2{=}CHCHCH_3 + CH_2{=}CHCHCH_3 \rightarrow CH_2{=}CHCH(CH_3)CH(CH_3)CH{=}CH_2$							
2-Propenyl, 1-methyl- (1-Methylallyl)							
78 BAY	EX	295	(3.5±0.4)(13)			2	
3-Methyl-1-butene, cis-2-Pentene, 1-Butene							
and trans-2-Butene Flash-photolysis.							
Kinetic Spectroscopy.							
Gas-chromatography.							
$CH_2C(CH_3){=}CH_2 \rightarrow CH_2{=}C{=}CH_2 + CH_3$							
2-Propenyl, 2-methyl- (2-Methylallyl)							
73 TSA2	EX	996-1180	2.14(13)	0	25200±400	1	1.58
1050 K given by the author as central-T.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_2{=}C(CH_3)CH_2 + CH_2{=}C(CH_3)CH_2$							
$\rightarrow CH_2{=}C(CH_3)CH_2CH_2C(CH_3){=}CH_2$							
2-Propenyl, 2-methyl- (2-Methylallyl)							
73 BAY/BRO	EX	295	(2.6±0.3)(13)			2	
73 TSA2	ES	996-1180	5.01(12)			2	3.98
1020 K given by the author as central-T.							
76 BAY	EX	295	(2.6±0.3)(13)			2	
2-methyl-1-butene and 2-methyl-1-propene							
Kinetic Spectroscopy.							
Flash-Photolysis.							



(a)

(b)

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
Cyclobutyl							
75 STE/RAB	RL	298	(1.33±0.10)			2/2	
k_a/k_b.							
Disproportionation-combination ratio.							
$CH_3CH_2CH{=}CH_2 \rightarrow CH_3 + CH_2CH{=}CH_2$ (a)							
$\rightarrow$ any other products (b)							
1-Butene							
81 AYR/BAC	RL	750	6.31(-1)	0	2214	1/2	
k_a/k_{ref}.							
Pyrolysis in a static system.							
k_{ref}: $CH_2{=}CH_2 + CH_2{=}CH_2 \rightarrow CH_2{=}CH + CH_3CH_2$							
73 SHI/KIN2	EX	829-1040	1.26(13)	0	29963	1	
$k_{overall}$.							
cis-$CH_3CH{=}CHCH_3$ (+ M) $\rightarrow CH_3CH{=}CHCH_2 + H$ (+ M) (a)							
$\rightarrow CH_2{=}CHCH{=}CH_2 + H_2$ (+ M) (b)							
$\rightarrow CH_2{=}CHCH_2 + CH_3$ (+ M) (c)							
$\rightarrow$ trans-$CH_3CH{=}CHCH_3$ (+ M) (d)							
2-Butene, (Z)-							
80 RIC/BOI	ES	750-816	≃3.16(15)	0	43030	1	
k_a.							
Conventional static system.							
Mass-spectrometry.							
73 ALF/GOL	DE	1100-1300	1.0(13)	0	32713±1007	1	3.98
k_b.							
RRKM fit of experimental data.							

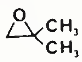
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
76 MAS/RIC	EX	480-550	1.0(13)	0	32964±1007	1	3.16
k_b. Static system.							
Same data given in 76 RIC/MAR.							
P_o ~ 50 torr.							
74 JEF/BAU	RN	1150-1325	1.0(16)	0	40262	1	
k_c. Average k.							
74 JEF	EX	990-1300	2.51(14)	0	33317	1	1.58
k_d. Shock-tube cis-trans isomerization.							
76 MAS/RIC	EX	753-823	3.98(13)	0	31203±503	1	2.0
k_d. Static system.							
Limiting high-pressure k.							
P_o = ~ 50 torr.							
Same data given in 76 RIC/MAR.							
73 COX	RN	296	(1.62±0.08)(14)			2	
k_d. M = $SO_2(^3B_1)$.							
59% trans isomer formed.							
74 SPR/AKI	EX	298-366	7.26(10)	0	5944±42	2	1.14
k_d. M = NO_2.							
cis-$CH_3CH{=}CHCH_3$ + H_2S → $CH_3CH_2CHCH_3$ + SH							
2-Butene, (Z)- + Hydrogen sulfide							
80 RIC/BOI [1])	ES	750-816	1.29(-2)	0	16004	2/1	
k_{ref}: cis-$CH_3CH{=}CHCH_3$ → $CH_3CH{=}CHCH_2$ + H							
80 RIC/BOI [1])	ES	750-816	3.98(13)	0	27026	2	
[1]) Static system. Mass-spectrometry.							
trans-$CH_3CH{=}CHCH_3$ (+ M) → CH_3 + $CH_2{=}CHCH_2$ (+ M) (a)							
→ cis-$CH_3CH{=}CHCH_3$ (+ M) (b)							
2-Butene, (E)-							
74 JEF/BAU	EX	1150-1325	1.0(16)	0	40262	1	
k_a. Average k.							
73 COX	EX	296	(1.42±0.09)(14)			2	
k_b. M = $SO_2(^3B_1)$.							
41% cis isomer formed.							
74 SPR/AKI	EX	297-370	4.49(10)	0	6135±59	2	1.21
k_b. M = NO_2.							
$(CH_3)_2C{=}CH_2$ → CH_3 + $CH_2CH{=}CH_2$ (a)							
→ any other products (b)							
1-Propene, 2-methyl-							
76 BRA/WES2	DE	1055-1325	1.82(18)	0	45107	1	1.23
k_a. Optimization by computer simulation on the basis of a proposed mechanism.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
74 BAK/NOV	EX	973-1123	1.14(16)	0	38752±1258	1	
$k_{overall}$.							
71 KOR/KAL	EX	1070-1200	1.89(16)	0	3976	1	1.2
$k_{overall}$. Pyrolysis in a quartz reactor.							
Gas-chromatography.							
P(Total) = 100 torr.							
$CH_2CH_2CH_2CH_2 \rightarrow CH_2{=}CH_2 + CH_2{=}CH_2$ (a)							
$\rightarrow$  (b)							
1,4-Butanediyl → Ethene + Ethene (a)							
→ Cyclobutane (b)							
72 BEA/GOL1 [1]	ES	969-1280	1.17(13)	0	4152	1	
k_a.							
72 BEA/GOL1 [1]	ES	969-1280	2.0(12)	0	3320	1	
k_b.							
[1]) Cyclobutane/Ar VLP-Pyrolysis.							
Mass-spectrometry.							
 $\rightarrow CH_2CH_2CH_2CH_2$ (a)							
$\rightarrow CH_2{=}CH_2 + CH_2{=}CH_2$ (overall) (b)							
Cyclobutane → 1,4-Butanediyl (a)							
→ Ethene + Ethene (b)							
72 BEA/GOL1 [1]	ES	969-1280	3.63(15)	0	31877	1	
k_a.							
72 BEA/GOL1 [1]	EX	969-1280	2.63(15)	0	31203	1	
k_b. Least squares treatment. RRKM data-fit.							
72 BEA/GOL1 [1]	SE	969-1280	3.16(16)	0	32969	1	
k_b. Best value based on the present experiments and all previously reported data.							
[1]) Cyclobutane/Ar VLP-Pyrolysis.							
Mass-spectrometry.							
Extrapolated limiting high-pressure k's.							
74 BAR/COC [2]	EX	891	6.03			1	
74 BAR/COC [2]	EX	955	6.13(1)			1	
74 BAR/COC [2]	EX	1000	1.26(2)			1	
74 BAR/COC [2]	EX	1231	4.38(3)			1	
74 BAR/COC [2]	EX	1400	1.13(4)			1	
[2]) k_b. M = Ar.							
Cyclobutane thermolysis behind reflected							
shock-waves in a single-pulse shock-tube.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
[Cyclobutane] = (0.2-1.0)%. Limiting high-pressure k.							
Other rate constants at various temperatures within the 891-1400 K range are tabulated.							
The Arrhenius plot shows a pronounced curvature in the vicinity of 1080 K.							
$CH_3CH_2CH_2CH_2 \rightarrow CH_3CH_2 + CH_2{=}CH_2$							
Butyl							
80 GAW/GIE [1])	EX	298	3.2(9)			1	
At 313 nm. Experimental data-fit by using the Stern-Volmer equation.							
80 GAW/GIE [1])	CO	298	3.1(9)			1	
At 313 nm. RRKM calculation.							
80 GAW/GIE [1])	EX	298	1.2(9)			1	
At 334 nm. Experimental data-fit by using the Stern-Volmer equation.							
80 GAW/GIE [1])	CO	298	1.05(9)			1	
At 334 nm. RRKM calculation.							
[1]) HI irradiation with UV-light. Reaction of hot H atoms with 1-Butene in a Pyrex vacuum-system. P = (0.4-400) torr.							
$CH_3CH_2CH_2CH_2 + O_2 \rightarrow CH_3CH_2CH{=}CH_2 + HO_2$ (a)							
$\rightarrow CH_3CH_2CH_2CH_2O_2$ (b)							
Butyl + Oxygen molecule							
71 BAK/BAL	ES	753	1.57(6)			2/1	
k_a/k_{ref}.							
k_{ref}: $CH_3CH_2CH_2CH_2 \rightarrow CH_3 + CH_3CH{=}CH_2$							
71 BAK/BAL	ES	753	2.8(11)			2	
k_a.							
80 LEN/MCD	EX	298	(4.52±0.84)(12)			2	
k_b. M = He. 1-Iodobutane flash-photolysis. Photoionization Mass-spectrometer. Limiting high-pressure k. P-independent for (1-4) Torr range.							
$CH_3CH_2CH_2CH_2 + CH_3CH_2CH_2CH_2$							
$\rightarrow CH_3CH_2CH{=}CH_2 + CH_3CH_2CH_2CH_3$ (a)							
$\rightarrow CH_3CH_2CH_2CH_2CH_2CH_2CH_2CH_3$ (b)							
Butyl							
71 FAL/SUN	RL	298	1.4(-1)			2/2	
k_a/k_b.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3CH_2CH_2CH_2$ + $CH_3CH_2CH)CH_3$							
→ $CH_3CH_2CH{=}CH_2$ + $CH_3CH_2CH_2CH_3$ (a)							
→ $CH_3CH_2CH(CH_3)CH_2CH_2CH_2CH_3$ (b)							
Butyl + Propyl, 1-methyl-							
71 FAL/SUN	RL	298	4.5(-1)				2/2
k_a/k_b.							
$CH_3CH_2CHCH_3$ → CH_3 + $CH_3CH{=}CH_2$							
Propyl, 1-methyl-							
80 GAW/GIE [1])	EX	298	2.5(9)			1	
At 313 nm. Stern-Volmer experimental data-fit.							
80 GAW/GIE [1])	CO	298	2.58(9)			1	
At 313 nm. RRKM calculation.							
80 GAW/GIE [1])	EX	298	1.05(9)			1	
At 334 nm. Experimental data-fit by using the Stern-Volmer eequation.							
80 GAW/GIE [1])	CO	298	9.14(8)			1	
At 334 nm. RRKM calculation.							
[1]) HI irradiation with UV-light. Reaction of hot H atoms with 1-Butene in a Pyrex vacuum system. P = (0.4-400) torr.							
$CH_3CH_2CHCH_3$ + O_2 → cis-$CH_3CH{=}CHCH_3$ + HO_2 (a)							
→ trans-$CH_3CH{=}CHCH_3$ + HO_2 (b)							
→ $CH_3CH_2C(O)CH_3$ + OH (c)							
→ $CH_3CH_2CH(OO\cdot)CH_3$ (d)							
Propyl, 1-methyl- + Oxygen molecule							
71 BAK/BAL [1])	RL	753	5.40(5)				2/1
k_a/k_{ref}.							
71 BAK/BAL [1])	RL	753	9.63(5)				2/1
k_b/k_{ref}.							
[1]) k_{ref}: $CH_3CH_2CHCH_3$ → CH_3 + $CH_3CH{=}CH_2$							
71 BAK/BAL	ES	753	1.2(11)			2	
k_a.							
71 BAK/BAL	ES	753	2.1(11)			2	
k_b.							
71 BAK/BAL	ES	753	2.3(11)			2	
k_c.							
80 LEN/MCD	EX	298	(1.00±0.13)(13)			2	
k_d. M = He. 2-Iodobutane flash-photolysis. Photoionization Mass-spectrometer. Limiting high-pressure k. P-independent for (1-4) torr.							

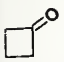
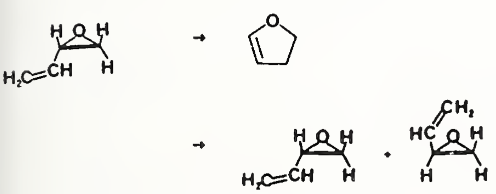
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3CH_2CHCH_3$ + $CH_3CH_2CHCH_3$							
→ $CH_3CH_2CH{=}CH_2$ + $CH_3CH_2CH_2CH_3$ (a)							
→ cis-$CH_3CH{=}CHCH_3$ + $CH_3CH_2CH_2CH_3$ (b)							
→ trans-$CH_3CH{=}CHCH_3$ + $CH_3CH_2CH_2CH_3$ (c)							
→ $CH_3CH2CH(CH_3)CH(CH_3)H_2CH_3$ (d)							
Propyl, 1-methyl-							
71 FAL/SUN	RL	298	(4.1±0.2)(-1)			2/2	
k_a/k_d.							
71 FAL/SUN	RL	298	(3.6±0.3)(-1)			2/2	
$(k_b + k_c)/k_d$.							
71 FAL/SUN	RL	298	(7.7±0.5)(-1)			2/2	
$(k_a + k_b + k_c)/k_d$.							
$(CH_3)_2CHCH_2$ + O_2 → $(CH_3)_2C{=}CH_2$ + HO_2 (a)							
→ $(CH_3)_2CHCHO$ + OH (b)							
Propyl, 2-methyl- + Oxygen molecule							
71 BAK/BAL [1])	ES	753	8.92(5)			2/1	
78 BAK/BAL [1]) [3])	RL	753	(7.75±1.00)(5)			2/1	
[1]) k_a/k_{ref}.							
k_{ref}: $(CH_3)_2CHCH_2$ → CH_3 + $CH_3CH{=}CH_2$							
71 BAK/BAL [2])	ES	753	2.3(10)			2	
78 BAK/BAL [2]) [3])	RN	753	(6.8±3.4)(10)			2	
78 BAK/BAL [2]) [3])	ES	313-753	4.7(12)	0	3200	2	
[2]) k_a.							
[3]) Oxidation in aged boric-acid-coted vessels.							
P(Total) = (490-505) torr.							
71 BAK/BAL	ES	753	2.3(9)			2	
k_b.							
$(CH_3)_3C$ → $(CH_3)_2C{=}CH_2$ + H (a)							
→ CH_3 + $CH_3CH{=}CH_2$ (b)							
→ $CH_2{=}CH_2$ + CH_3CH_2 (c)							
Ethyl, 1,1-dimethyl (t-Butyl)							
81 CAN/MAR2	EX	584-604	4.68(14)	0	19829	1	
k_a. Azomethane-sensitized pyrolysis of Isobutane in a static system.							
P(Total) = (53-270) torr.							
76 BRA/WES1 [1])	RL	1030-1300	7.2(3)	0	11078	1/1	1.32
76 BRA/WES2 [1])	RL	1055-1325	1.27(-2)	0	-5846	1	1.41
76 BRA/WES2 [1])	RL	1200	1.8			1/1	
[1]) k_b/k_c.							
Fit of experimental data to a proposed mechanism by computer optimization.							

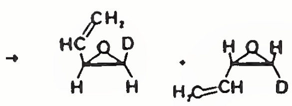
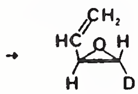
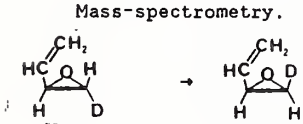
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$(CH_3)_3C + O_2 \rightarrow (CH_3)_2C{=}CH_2 + HO_2$ (a)							
$\rightarrow (CH_3)_2CO + CH_3 + O$ (b)							
$\rightarrow (CH_3)_3COO$ (c)							
Ethyl, 1,1-dimethyl- (t-Butyl) + Oxygen molecule							
78 ATR/BAL	EX	470-542	1.38(1)	0	-1564	2/2	
k_a. Oxidation in KCl-coated vessels.							
P = (60-500) torr.							
k_{ref}: $(CH_3)_3C + O_2 \rightarrow$  + OH							
79 EVA/WAL [1])	RL	713-813	(3.5±1.0)(-1)	0	-7446±241	2/2	
k_a/k_{ref}.							
k_{ref}: $(CH_3)_3 + H_2 \rightarrow (CH_3)_2C{=}CH_2 + H$							
79 EVA/WAL [1])	RN	713-813	8.0(11)	0	1095±1203	2	
k_a.							
[1]) Oxidation in KCl-coated reaction vessels.							
80 WAS/BAY	RL	297	(2.68±0.36)(-2)			2/2	
$(k_a + k_b)/k_{ref}$. Fast-flow reactor. Pohoionization Mass-spectrometer. k measurerments by Stern-Volmer plots. Channels (a) and (b) assumed to be not elementary, but to pass first through channel (c) to form the t-Butylperoxy radical which in its turn reacts with an O atom to form either Isobutene + O_2, or Acetone + Methyl + O_2.							
P(Isobutane) = (2.7-4.2) mtorr.							
P(Total) = (1.8-5.7) torr.							
$P(O)_o$ = (4.3-8.5) mtorr.							
k_{ref}: $(CH_3)_3C + O \rightarrow (CH_3)_2C{=}CH_2 + OH$ (c)							
$\rightarrow (CH_3)_2CO + CH_3$ (d)							
80 LEN/MCD	EX	298	(1.41±0.23)(13)			2	
k_c. M = He. 2-Iodo-2-methylpropane flash-photolysys. Photoionization Mass-spectrometry. P-independent for (1-4) torr. Limiting high-pressure k.							
$(CH_3)_3C + O_3 \rightarrow$ products							
Ethyl, 1,1-dimethyl- (t-Butyl) + Ozone							
82 PAL	EX	298	(3.28±0.29)(13)			2	
Photoionization mass-spectrometry. $(CH_3)_3C$ generated by photodissociation of 2,4,4-Trimethylpent-1-ene. P = 2 torr.							

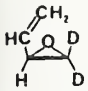
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$(CH_3)_3C + H_2 \rightarrow (CH_3)_3CH + H$							
Ethyl, 1,1-dimethyl- (t-Butyl) + Hydrogen molecule							
79 EVA/WAL	DE	713-813	2.3(12)	0	8540±720	2	
Reaction in KCl-coated vessels.							
$(CH_3)_3C + NO \rightarrow (CH_3)_2C{=}CH_2 + HNO$ (a)							
$\rightarrow (CH_3)_3CNO$ (b)							
Ethyl, 1,1-dimethyl- (t-Butyl) + Nitrogen oxide (NO)							
74 CHO/MEN	EX	600	≤3.16(10)			1	
k_a. Upper-limit k.							
74 CHO/MEN	EX	600	(3.5±1.7)(12)			1	
k_b.							
$(CH_3)_3C + (CH_3)_3C \rightarrow (CH_3)_2CH{=}CH_2 + (CH_3)_3CH$ (a)							
$\rightarrow (CH_3)_3CC(CH_3)_3$ (b)							
Ethyl, 1,1-dimethyl- (t-Butyl)							
71 FAL/SUN [1])	RL	298	3.1			2/2	
74 CHO/BEA [1])	RL	620-690	3.0	0	0	2/2	
76 PAR/QUI [1])	RL	298	(2.8±0.2)			2/2	
77 MCK/TUR [1])	RL	483-515	(2.6±0.04)	0	0	2/2	
Thermolysis in a vacuum system.							
Average ratio.							
77 MAR/MAC [1])	RL	483-533	(2.9±0.2)	0	0	2/2	
Thermolysis in a vacuum system.							
Average ratio.							
81 BET/LAN [1]) [4])	RL	298	(2.9±0.2)			2/2	2.0
[1]) $k_a/k_b = k_{dispr.}/k_{comb.}$							
74 CHO/BEA [2])	EX	620-690	1.5(12)	0	0	2	
81 BET/LAN [2]) [4])	EX	298	1.35(13)			2	2.0
[2]) k_a.							
72 MCM/GOL [3])	EX	462	3.98(8)			2	
73 HIA/BEN [3])	ES	373	2.51(8)			2	
73 KON/MAR [3])	ES	773	3.98(9)			2	
74 CHO/BEA [3])	EX	620-690	5.0(11)	0	0	2	2.0
75 PAR/QUI [3])	RN	298	(1.2±0.18)(12)			2	
81 BET/LAN [3]) [4])	EX	298	4.68(12)			2	2.0
[3]) k_b.							
81 BET/LAN [4])	EX	298	1.82(13)			2	2.0
$k_a + k_b$.							
[4]) Time-resolved Infrared Spectral Photography.							
Gas-chromatography. Mass-spectrometry.							
$P[(CH_3)_3NO]$ = (15-30) torr.							
P(NO) = (3-17.5) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 DEM/LDE	DE	298	6.5(12)			2	
$k_a + k_b$.							
Flash-photolysis. Laser-resonance-absorption.							
$(CH_3)_3C$ generated by flashing NH_3 in presence							
of Isobutene. Data-simulation. Best-fit.							
$CH_3CH_2CH_2CH_3 \rightarrow CH_3CH_2 + CH_3CH_2$ (a)							
$\rightarrow CH_3CH_2CH_2 + CH_3$ (b)							
Butane							
74 GOL/ALF [1])	DE	1100-1250	2.51(16)	0	40715	1	
RRKM calculation. Best fit of experimental data.							
74 HUG/MAR [1])	ES	895-981	2.0(15)	0	38852±2044	1	7.94
78 TSA4 [1])	EX	990-1100	2.51(16)	0	41300	1	
Single-pulse shock-tube.							
78 TSA4 [1])	EX	300-1100	1.58(17)	0	43800	1	
Extrapolation over the given T-range.							
Single-pulse shock-tube.							
79 PRA/ROG3 [1])	EX	1025	(3.8±0.6)(-2)			1	
M = Ar. Butane pyrolysis in a wall-less reactor.							
P(Ar) = 600 torr.							
[1]) k_a.							
74 HUG/MAR [2])	EX	895-981	2.57(15)	0	38853±1804	1	6.76
72 HAS/JOH [2])	EX	298	(7.3±0.6)(6)			1	
P = 0.35 torr. Butane vibrationally excited.							
72 HAS/JOH	EX	298	(2.3±0.2)(7)			1	
P = 1.06 torr. Butane vibrationally excited.							
80 SHE/IVA [2])	EX	973-1123	1.74(14)	0	31480±1384	1	3.80
Pyrolysis in a quartz reactor. Initial steps							
of a proposed mechanism. P = 100 torr.							
[2]) $k_a + k_b$.							
81 KOI/MOR2	EX	1290-1610	8.9(13)	0	36185	1	
k_b. M = Ar. Pyrolysis of Butane behind							
incident shock-waves. P = 20 torr.							
72 ILL [3])	EX	913-1063	5.82(12)	0	28430	1	
72 ILL/SZA [3])	EX	940-1075	2.45(13)	0	30201	1	1.1
74 BAK/NOV [3])	EX	973-1123	1.5(12)	0	26774±805	1	
[3]) $k_{overall}$.							
$(CH_3)_3CH \rightarrow (CH_3)_2CH + CH_3$ (a)							
$\rightarrow$ any other products (b)							
Propane, 2-methyl- (Isobutane)							
73 KON/MAR	RE	770-855	6.31(16)	0	41117	1	
k_a. Estimated k.							

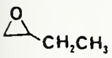
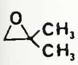
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
74 GOL/ALF	DE	1100-1280	2.51(16)	0	41671	1	
k_a. RRKM calculation. Best fit of data.							
80 PRA/ROG [1])	EX	1000	(1.8±0.5)(3)			1	
80 PRA/ROG [1])	DE	970-1031	8.4(15)	0	42985	1	
Determined on the basis of the experimental k at 1000 K and thermodynamic data.							
[1]) k_a. M = Ar. Isobutane pyrolysis in a wall-less reactor. P(Ar) = 600 torr.							
82 KOI/MOR2	EX	1300-1800	6.31(12)	0	30599±2315	1	3.16
k_a. M = Ar. Pyrolysis of Isobutane behind incident shock-waves. UV-Absorption spectroscopy. P(Total) = 380 torr.							
80 SHE/IVA	EX	973-1123	1.66(11)	0	24308±1158	1	3.02
k_a. Pyrolysis in a quartz reactor. Initial step of a proposed mechanism. P = 100 torr.							
72 ILL	EX	913-1063	1.10(15)	0	33644	1	
$k_{overall}$.							
78 VER/BEL	RL	985-1073	(9.25±0.95)(-1)			1/1	
$k_{overall}/k_{ref}$. Pyrolysis in a flow-reactor. k_{ref}: $CH_3CH_2CH_2CH_3$ → products. Average ratio.							
$(CH_3)_3CH^{\dagger}$ → $(CH_3)_2CH$ + CH_3							
Propane, 2-methyl- (Isobutane)							
71 LEX/MAR2	RL	290	<2.46(-9)			1/2	
Discharge flow. Upper-liit ratio. $(CH_3)_3CH^{\dagger}$ formed by H + $(CH_3)_3C$. The rate ratio given by the authors is: k/k_{ref} = (2±22)x10^{-10} mol.cm^{-3}. k_{ref}: $(CH_3)_3CH^{\dagger}$ + M → $(CH_3)_3CH$ + M. P(Ar) = (4-12) torr.							
CH≡CCH_2COOH → CH_2=C=CH_2 + CO_2							
3-Butynoic acid							
76 BIG/WEA1	EX	630	1.49(-2)			1	
76 BIG/WEA1	EX	500-648	2.21(11)	0	19106±758	1	
A and B recalculated from the reported data.							
CH≡CCH_2COOD → CHD=C=CH_2 + CO_2							
3-Butynoic acid-d							
76 BIG/WEA1	EX	630	5.08(-3)			1	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_2C(O)C(O)CH_3 \rightarrow CH_2{=}C{=}O + CH_3CO$							
Butyl, 2,3-dioxo-							
75 SCH/PLA	EX	822-905	2.00(15)	0	26170	1	
 $\rightarrow CH_2{=}CH_2 + CH_2{=}C{=}O$ (a)							
$\rightarrow$  + CO (b)							
Cyclobutanone							
72 MCG/SCH [1])	EX	633-679	3.6(14)	0	26120	1	
k_a.							
72 MCG/SCH [1])	EX	633-679	6.3(13)	0	28334	1	
k_b.							
[1]) Pyrolysis in a high-vacuum static system.							
Gas-chromatography.							
P_o = (1.5-38) torr.							
 (a) (b)							
(Racemic mixture)							
Oxirane, ethenyl-, (S)-							
$\rightarrow$ Furan, 2,3-tetrahydro- (a)							
$\rightarrow$ Oxirane, ethenyl-, (±)- (racemic) (b)							
76 CRA/LUT [1])	EX	543-583	2.00(14)	0	25466±604	1	7.94
k_a.							
Ring expansion.							
76 CRA/LUT [1])	EX	528-548	3.39(13)	0	22245±352	1	2.0
k_b.							
Racemization of the (+)-(S) form.							
P_o = 380 torr.							
76 CRA/LUT [1])	EX	543-583	1.26(14)	0	24056±554	1	6.31
$k_{overall}$.							
Thermolysis at 114 torr.							
76 CRA/LUT [1])	EX	580	(1.25±0.01)(-4)			1	
$k_{overall}$.							
[1]) Thermolysis in a static system.							
Mass-spectrometry.							

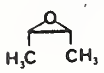
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
 (a)							
 (b)							
(Racemic mixture)							
 (c)							
Oxirane-d,3-ethenyl-, cis-, (S)-							
→ Furan-5-d, 2,3-dihydro- (a)							
→ Oxirane-d, 3-ethenyl-, cis-, (±)- (racemic) (b)							
→ Oxirane-d, 3-ethenyl-, trans- (c)							
76 CRA/LUT 1)	EX	580	1.58(-5)			1	
k_a.							
Ring expansion.							
76 CRA/LUT 1)	EX	580	7.24(-4)			1	
k_b.							
Racemization of the (+)-(S) form.							
76 CRA/LUT 1)	EX	580	1.7(-5)			1	
k_c.							
Cis-trans isomerization.							
76 CRA/LUT 1)	EX	580	(1.06±0.01)(-4)			1	
$k_{overall}$.							
Thermolysis at 114 torr.							
1) Thermolysis in a static system.							
Mass-spectrometry.							
 (a)							
→ any other products (b)							
Oxirane-d, 3-ethenyl-, trans-							
→ Oxirane-d, 3-ethenyl-, cis- (a)							
→ any other products (b)							
76 CRA/LUT 1)	EX	580	1.8(-5)			1	
k_a.							
Trans-cis isomerization.							
76 CRA/LUT 1)	EX	580	(1.07±0.01)(-4)			1	
$k_{overall}$.							
Thermolysis at 114 torr.							
1) Thermolysis. Static system. Mass-spectrometry.							

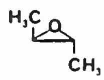
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
 → products							
Oxirane, 2,2-d_2, 3-ethenyl- → products							
76 CRA/LUT	EX	580	(9.8±0.1)(-5)			1	
Thermolysis. Static system. Mass=spectrometry.							
P = 114 torr.							
CH_2=$CHCH_2COOH$ → CH_3CH=CH_2 + CO_2							
3-Butenoic acid							
82 BIG/CLA [1])	EX	634	5.0(-3)			1	
$P(Total)_o$ = 60 torr.							
82 BIG/CLA [1])	EX	651	1.2(-2)			1	
$P(Total)_o$ = (43-161) torr.							
[1]) Pyrolysis in a flow-system.							
Other k's, at various pressures, with added							
Cyclohexane, also given.							
$CH_3C(O)C(O)CH_3$ → CH_3CO + CH_3CO (a)							
→ any other products (b)							
2,3-Butanedione							
73 KNO/SCH [1]) .	EX	240-277	3.16(16)	0	34071±2214	1	25.1
75 SCH/PLA [1])	EX	822-905	6.31(15)	0	33619±856	1	3.16
[1]) k_a.							
73 KNO/SCH [2])	EX	240-277	1.58(17)	0	33920±1158	1	5.01
75 SCH/PLA [2])	EX	822-905	3.98(13)	0	28083±2114	1	10.0
75 SCH/PLA [2])	EX	822-905	1.26(15)	0	31454±2365	1	12.59
Inhibited by Toluene.							
[2]) $k_{overall}$.							
$CH_3CH_2CH_2CO$ → $CH_3CH_2CH_2$ + CO							
Butyl, 1-oxo-							
79 FOE/BER	DE	273-426	1.0(15)	0	5291±302	1	2.51
Butanal photolysis.							
k estimated on the basis of							
a suggested reaction scheme.							
$CH_2CH_2C(O)CH_3$ → CH_2=CH_2 + CH_3CO							
Butyl, 3-oxo-							
75 KNO/SCH	RL	515-712	1.26(2)	0	8153±403	1/2	
k_{ref}: $CH_2CH_2COCH_3$ + $CH_3COCH_2CH_2COCH_3$							
→ $CH_3COCH_2CH_3$ + $CH_2COCH_2CH_2COCH_3$ (a)							
→ $CH_3COCH_2CH_3$ + $CH_3COCHCH_2COCH_3$ (b)							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3CH_2CHCHO \rightarrow CH_3 + CH_2{=}CHCHO$							
Propyl, 1-formyl-							
79 FOE/BER [1])	RL	426	1.26(-11)			1/2	
79 FOE/BER [1])	RL	529	2.51(-10)			1/2	
k_{ref}:							
$H_3CH_2CHCHO + CH_3CH_2CH_2$							
$\rightarrow CH_3CH_2CH_2CH(CH_2CH_3)CHO$							
k/k_{ref} ratios estimated on the basis of a suggested reaction scheme.							
$(CH_3)_2CCHO$ (+ M) $\rightarrow CH_3CH{=}CH_2 + CHO$ (+ M)							
Ethyl, 1,1-dimethyl-2-oxo-							
79 BAL/CLE	RL	713	(1.4±0.2)(-2)			2/2	
Oxidation in an aged boric-acid-coated vessel.							
P(Total) = 60 torr.							
k_{ref}:							
$(CH_3)_2CCHO + O_2 \rightarrow (CH_3)_2CO + CO + OH$							
$CH_3CH(OH)CH{=}CH_2 \rightarrow CH_3 + CH(OH)CH{=}CH_2$ (a)							
$\rightarrow CH_2{=}CHCH{=}CH_2 + H_2O$ (b)							
3-Buten-2-ol							
73 TRE [1])	EX	773-834	1.82(16)	0	34826±302	1	3.16
k_a.							
73 TRE [1])	EX	773-834	7.94(12)	0	28032±805	1	3.16
k_b.							
[1]) Pyrolysis in a static reactor.							
$CH_3OCH_2CH{=}CH_2 \rightarrow HCHO + CH_3CH{=}CH_2$							
1-Propene, 3-methoxy-							
77 IBU/TAK	EX	287	1.11(8)			1	
$CH_3CH_2OCH{=}CH_2 \rightarrow CH_3CHO + CH_2CH_2$							
Ethene, ethoxy-							
79 ROS/GOL	EX	750-1050	2.95(11)	0	21842±503	1	1.78
VLP-Pyrolysis.							
RRKM best-fit.							
High-pressure k.							
$CH_3CH_2C(O)CH_3$ (+ M) $\rightarrow CH_3CH_2 + CH_3CO$ (+ M)							
2-Butanone							
75 ABU/LIS	EX	291-346	4.27(14)	0	6397±1082	1	30.9
M = $CH_3CH_2CH_3$.							
Limiting high-pressure k.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
 → cis-CH_3CH=$CHCH_2OH$ (a)							
→ trans-CH_3CH=$CHCH_2OH$ (b)							
→ $CH_3CH_2CH_2CHO$ (c)							
→ $CH_3CH_2COCH_3$ (d)							
→ cis-CH_3OCH=$CHCH_3$ (e)							
→ trans-CH_3OCH=$CHCH_3$ (f)							
Oxirane, ethyl- → 2-Buten-1-ol, (Z)- (a)							
→ 2-Buten-1-ol, (E)- (b)							
→ Butanal (c)							
→ 2-Butanone (d)							
→ 1-Propene, 1-methoxy, (Z)- (e)							
→ 1-Propene, 1-methoxy, (E)- (f)							
75 FLO/PEN [1])	EX	674-730	7.76(10)	0	25741±5028	1	
$k_a + k_b$.							
Uncertainty of A is 1318.							
75 FLO/PEN [1])	EX	674-730	8.91(13)	0	28676±662	1	2.57
k_c.							
75 FLO/PEN [1])	EX	674-730	1.32(14)	0	29915±1263	1	6.03
k_d.							
75 FLO/PEN [1])	EX	674-730	1.62(12)	0	27317±1202	1	5.62
$k_e + k_f$.							
[1]) Thermolysis.							
Static system.							
Gas-chromatography.							
Mass-spectrometry.							
P = (5-70) torr.							
 → $(CH_3)_2CHCHO$ (a)							
→ CH_2=$C(CH_3)OCH_3$ (b)							
→ CH_2=$C(CH_3)CH_2OH$ (c)							
Oxirane, 2,2-dimethyl- → 2-Propanal, 2-methyl- (a)							
→ 1-Propene, 2-methoxy- (b)							
→ 2-Propen-1-ol, 2-methyl- (c)							
71 FLO/PAR1 [1])	EX	647-705	2.09(13)	0	26532±287	1	1.51
k_a.							
71 FLO/PAR1 [1])	EX	647-705	3.55(13)	0	28254±735	1	2.75
k_b.							
71 FLO/PAR1 [1])	EX	647-705	3.39(11)	0	25003±1047	1	4.68
k_c.							
[1]) Pyrolysis in a static system.							
Gas-chromatography.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor

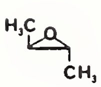


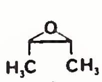
→ $CH_3CH(OH)CH{=}CH_2$ (a)
→ $CH_3CH_2COCH_3$ (b)
→ $(CH_3)_2CHCHO$ (c)
→ $CH_3CH_2OCH{=}CH_2$ (d)
→  (e)

Oxirane, 2,3-dimethyl- cis- (cis-2,3-Epoxybutane)
→ 3-Buten-2-ol (a)
→ 2-Butanone (b)
→ 2-Propanal, 2-methyl- Isobutyraldehyde) (c)
→ Ethene, ethoxy- (Ethyl vinyl ether) (d)
→ Oxirane, 2,3-dimethyl-, trans- (trans-2,3-Epoxybutane) (e)

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
71 FLO/PAR2 [1]) k_a. Decyclization.	EX	668-740	1.51(12)	0	27172±1505	1	8.71
71 FLO/PAR2 [1]) k_b. Decyclization.	EX	668-740	3.98(13)	0	28344±332	1	1.62
71 FLO/PAR2 [1]) k_c. Decyclization.	EX	668-740	9.77(12)	0	28168±991	1	4.17
71 FLO/PAR2 [1]) k_d. Decyclization.	EX	668-740	8.71(12)	0	27796±1530	1	9.12
71 FLO/PAR2 [1]) k_e. Cis-trans isomerization.	EX	668-740	3.89(14)	0	31117±846	1	3.39

[1]) Thermolysis. Static system.
Gas-chromatography. Mass-spectrometry.
P_o = 22 torr.

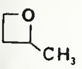


→ $CH_3CH(OH)CH{=}CH_2$ (a)
→ $CH_3CH_2C(O)CH_3$ (b)
→ $CH_3CH_2OCH{=}CH_2$ (c)
→  (d)

Oxirane, 2,3-dimethyl- trans- (trans-2,3-Epoxybutane)
→ 3-Buten-2-ol (a)
→ 2-Butanone (b)
→ Ethene, ethoxy- (Ethyl vinyl ether) (c)
→ Oxirane, 2,3-dimethyl-, cis- (cis-2,3-Epoxybutane) (d)

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
71 FLO/PAR2 [1]) k_a. Decyclization.	EX	668-740	5.37(12)	0	28007±1309	1	6.45

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
71 FLO/PAR2 [1])	EX	668-740	1.74(14)	0	29839±1067	1	4.47
k_b. Decyclization.							
71 FLO/PAR2 [1])	EX	668-740	1.70(14)	0	31595±1228	1	5.62
k_c. Decyclization.							
71 FLO/PAR2 [1])	EX	668-740	4.68(14)	0	31711±8800	1	3.09
k_d. Trans-cis isomerization.							
[1]) Thermolysis. Static system. Gas-chromatography. Mass-spectrometry. Mass-spectrometry. P_o = 22 torr.							



→ HCHO + $CH_3CH{=}CH_2$ (a)

→ CH_3CHO + $CH_2{=}CH_2$ (b)

Oxetane, 2-methyl-

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 HAM/HOL	EX	703-756	7.76(14)	0	30047±565	1	2.29
$k_a + k_b$. Pyrolysis in a cylindrical Pyrex vessel with vacuum system. Gas-chromatography. P = (6.0-1.42) torr.							

$CH_3C(O)OCH_2CH_3$ → $CH_3C(O)OH$ + $CH_2{=}CH_2$

Acetic acid ethyl ester (Ethyl acetate)

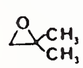
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
72 BEA/GOL2	EX	772-1156	3.98(12)	0	24157	1	
VLPP of Ethyl acetate in Ar, in a triple aperture quartz reactor. Gas-chromatography. Mass-spectrometry. The data agree well with the high-P Arrhenius expression determined by Blades and Gilderson, Can. J. Chem. 38, 1407 (1960).							
75 TAY	EX	650-700	3.16(12)	0	24056±503	1	2.0
Pyrolysis. Acetic acid decomposes further into CO_2 + CH_4 in a fast reaction.							
76 DEB/TAY	EX	650-700	3.16(12)	0	24006	1	
82 KEL/FET	EX	940-1050	3.92(12)	0	24538	1	
Thermolysis in a flow-reactor. P = 750 torr.							
82 MCM/LEW [1])	RN	950-1000	5.0(12)	0	24912	1	
k detrermined versus Isobutyl bromide.							
82 MCM/LEW [1])	RN	950-1000	6.31(12)	0	24660	1	
k determined versus Isopropyl acetate.							
[1]) Laser-powered homogeneous pyrolysis of an Ethyl acetate/Isopropyl acetate/Isobutyl bromide/SF_6/CO_2 mixture. Gas-chromatography. P(Acetate, or Bromide) ~ 1.0 torr. P(SF_6) = 4 torr. P(CO_2) = 93 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3OC(O)OCH_2CH_3 \rightarrow CH_3OH + CO_2 + CH_2{=}CH_2$							
Carbonic acid ethyl methyl ester							
76 CRO/HUN	EX	581-667	5.25(11)	0	21892	1	
$CH_3CH(OH)CHCH_3 + O_2 \rightarrow CH_3CH(OH)CH(O_2)CH_3$							
Propyl, 2-hydroxy-1-methyl- + Oxygen molecule							
80 LEN/MCD	EX	298	(1.69±1.08)(13)			2	
M = He. 3-Iodo-2-butanol flash-photolysis.							
Photoionization Mass-spectrometer.							
Limiting high-pressure k.							
P-independent for (1-4) torr.							
$CH_3CH_2CH_2CH_2O \rightarrow CH_2CH_2CH_2CH_2OH$							
Butoxy							
80 ROS	RL	298	(2.8±0.5)(-8)			1/2	
Butyl nitrite/NO_2 photolysis at 366 nm.							
k_{ref}: $CH_3CH_2CH_2CH_2O + NO_2 \rightarrow CH_3CH_2CH_2CH_2ONO_2$							
81 COX/PAT	RL	296	(2.49±0.83)(-5)			1/2	
HONO/N_2/O_2/Butane photolysis. P = 760 torr.							
k_{ref}: $CH_3CH_2CH_2CH_2O + O_2 \rightarrow CH_3CH_2CH_2CHO + HO_2$							
$CH_3CH_2CH(O^\cdot)CH_3 \rightarrow CH_3CH_2 + CH_3CHO$ (a)							
$\rightarrow CH_3CH_2CHO + CH_3$ (b)							
Propoxy, 1-methyl-							
75 BAT/MCC [1])	ES	393-473	1.0(16)	0	8807	1	
76 BAT/MCC2 [1])	ES	403-433	6.31(14)	0	7700	1	
79 BAT [1])	ES	403-433	7.94(14)	0	7700±503	1	3.16
Static system.							
81 COX/PAT [1])	RL	296	(4.32±0.58)(-6)			1/2	
HONO/N_2/O_2/Butane photolysis. P = 760 torr.							
k_{ref}: $CH_3CH_2CH(O^\cdot)CH_3 + O_2 \rightarrow CH_3CH_2C(O)CH_3 + HO_2$							
[1]) k_a.							
79 BAT	ES	403-433	7.9(14)	0	9562	1	
k_b. Static system.							
$CH_3CH_2CH(O^\cdot)CH_3 + NO \rightarrow CH_3CH_2C(O)CH_3 + HNO$ (a)							
$\rightarrow CH_3CH_2CH(CH_3)ONO$ (b)							
Propoxy, 1-methyl- + Nitrogen oxide (NO)							
75 BAT/MCC [1])	ES	393-473	3.98(12)	0	0±503	2	3.16
76 BAT/MCC2 [1])	ES	403-433	6.31(12)	0	0±503	2	2.51
[1]) k_a.							
76 BAT/MCC2	ES	403-433	2.51(13)	0	0±503	2	2.51
k_b. Same data given in 75 BAT/MCC.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3CH_2CH(O\cdot)CH_3 + NO_2 \rightarrow CH_3CH_2C(O)CH_3 + HONO$ (a)							
$\rightarrow CH_3CH_2CH(CH_3)ONO_2$ (b)							
Propoxy, 1-methyl- + Nitrogen oxide (NO_2)							
80 ROS	RL	298	(8.0±8.0)(-2)			2/2	
k_a/k_b. sec-Butyl nitrite/NO_2 photolysis at 366 nm. Gas-chromatography.							
$(CH_3)_3CO \rightarrow (CH_3)_2CO + CH_3$							
Ethoxy, 1,1-dimethyl- (t-Butoxy)							
71 CAD/TRO	EX	373-423	2.34(13)	0	8444±746	1	6.61
Limiting high-pressure k.							
75 BAT/MCC	ES	393-473	3.98(15)	0	8606	1	
76 BAT/MIL	ES	393-433	4.0(15)	0	8556	1	
79 BAT	ES	393-433	3.16(15)	0	8556±503	1	3.16
Static system.							
81 CHO/BEN	RE	248-450	1.26(14)	0	7700	1	
Recommended by the authors. Critical evaluation.							
81 KIR/PAR [1])	RL	298	5.0(14)			1/2	
81 KIR/PAR [1])	RL	333	1.0(16)			1/2	
[1]) Azo-t-butane/O_2 photolysis. Gas-chromatography. Approximate rate ratios.							
k_{ref}: $(CH_3)_3CO + (CH_3)_3COOH \rightarrow (CH_3)_3COH + (CH_3)_3CO_2$							
82 BAT/ROB [2])	EX	403-443	3.98(14)	0	8002±604	1	3.98
82 BAT/ROB [2])	CO	403-443	7.94(14)	0	8354	1	
RRKM best-fit.							
[2]) M = CF_4, SF_6, N_2, Ar. Limiting high-pressure k. Static system. $(CH_3)_3C$ decomposition in presence of NO and an inert gas. $(CH_3)_3C$ generated by decomposition of di-t-Butyl peroxide. P[inert gas] = (25-1500) torr.							
$(CH_3)_3CO + NO \rightarrow (CH_3)_3CONO$							
Ethoxy, 1,1-dimethyl- (t-Butoxy) + Nitrogen oxide (NO)							
74 BAT/MIL	ES	393-473	2.51(13)	0	0±503	2	2.51
75 BAT/MCC	ES	393-473	2.51(13)	0	0±503	2	2.51
75 MEN/GOL	DE	300	6.31(12)	0	0	2	
B ~ 0 assumed. Estimated k.							
77 BAR/BEN2	ES	650-800	6.31(12)			2	
VLP-Pyrolysis. RRKM best-fit estimate.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$(CH_3)_3CO + HCHO \rightarrow (CH_3)_3COH + CHO$							
Ethoxy, 1,1-dimethyl- (t-Butoxy) + Formaldehyde							
81 ALA/SEL [1])	RN	399-434	7.94(12)	0	2322±277	2	1.58
Calculated by using: $\log A_{ref} = 17.5(c^3mol^{-1}s^{-1})$.							
81 ALA/SEL [1])	RN	399-434	1.58(13)	0	1985±265	2	1.58
Calculated by using: $\log A_{ref} = 18.5(c^3mol^{-1}s^{-1})$.							
[1]) Cylindrical Pyrex vessel. Static system. $(CH_3)_3CO$ generated by thermolysis of Di-t-butyl peroxide. Mass-spectrometry. P(Total) = (20-200) torr. k_{ref}: $(CH_3)_3O + M \rightarrow CH_3 + (CH_3)_2CO + M$.							
$(CH_3)_3CO + CH_3CHO \rightarrow (CH_3)_3COH + CH_2CHO$ (a)							
$\rightarrow (CH_3)_3COH + CH_3CO$ (b)							
Ethoxy, 1,1-dimethyl- (t-Butoxy) + Acetaldehyde							
81 ALA/SEL [1])	RN	399	(1.1±0.1)(10)			2	
$k_a + k_b$. Sum of rate constants determined relative to the reaction: $(CH_3)_3CO + M \rightarrow CH_3 + (CH_3)_2CO + M$							
81 ALA/SEL [1])	RN	434	(1.6±0.1)(10)			2	
$k_a + k_b$. Sum of rate constants determined relative to the reaction: $(CH_3)_3CO + M \rightarrow CH_3 + (CH_3)_2CO + M$							
81 ALA/SEL [1])	RL	399	(4.7±0.8)(-2)			2/2	
k_a/k_b. Estimated ratio.							
81 ALA/SEL [1])	ES	399	(4.9±1.5)(8)			2	
k_a.							
81 ALA/SEL [1])	ES	434	(7.2±0.2)(8)			2	
k_a.							
81 ALA/SEL [1])	ES	399	(1.0±0.7)(10)			2	
k_b.							
81 ALA/SEL [1])	ES	434	(1.5±0.6)(10)			2	
k_b.							
[1]) Cylindrical Pyrex vessel. Static system. $(CH_3)_3CO$ generated by thermolysis of Di-t-butyl peroxide. Mass-spectrometry.							
$(CH_3)_3CO + CD_3CHO \rightarrow (CH_3)_3COD + CD_2CHO$ (a)							
$\rightarrow (CH_3)_3COH + CD_3CO$ (b)							
Ethoxy, 1,1-dimethyl- (t-Butoxy) + Acetaldehyde-2,2,2-d_3							
81 ALA/SEL [1])	RL	399	(1.0±0.2)(-2)			2/2	
k_a/k_b.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 ALA/SEL [1])	RN	399	(1.1±0.3)(8)			2	
k_a. Estimated k.							
[1]) Pyrex vessel with vacuum system. $(CH_3)_3CO$ generated by thermolysis of Di-t-butyl peroxide. Mass-spectrometry.							
$(CH_3)_3CO + (CH_3)_2CO \rightarrow (CH_3)_3COH + CH_2C(O)CH_3$							
Ethoxy, 1,1-dimethyl- (t-Butoxy) + 2-Propanone							
81 ALA/SEL [1])	RN	399-434	1.26(13)	0	3091±156	2	1.26
Calculated by using: $\log A_{ref} = 17.5(c^3 mol^{-1} s^{-1})$.							
81 ALA/SEL [1])	RN	399-434	3.16(13)	0	2874±397	2	2.0
Calculated by using: $\log A_{ref} = 18.5(c^3 mol^{-1} s^{-1})$.							
[1]) Di-tert-butyl peroxide thermolysis in a Pyrex vessel with vacuum system. Mass-spectrometry.							
k_{ref}: $(CH_3)_3CO + M \rightarrow CH_3 + (CH_3)_2CO + M$.							
$(CH_3)_3CO + (CD_3)_2CO \rightarrow (CH_3)_3COD + CD_2C(O)CD_3$							
Ethoxy, 1,1-dimethyl- (t-Butoxy) + 2-Propanone-1,1,1,3,3,3-d_6							
81 ALA/SEL [1])	RN	399-434	1.58(13)	0	3801±361	2	1.58
Calculated by using: $\log A_{ref} = 17.5(c^3 mol^{-1} s^{-1})$.							
81 ALA/SEL [1])	RN	399-434	2.00(13)	0	3271±337	2	2.0
Calculated by using: $\log A_{ref} = 18.5(c^3 mol^{-1} s^{-1})$.							
[1]) Di-tert-butyl peroxide thermolysis in a Pyrex vessel with vacuum system. Mass-spectrometry.							
k_{ref}: $(CH_3)_3O + M \rightarrow CH_3 + (CH_3)_2CO + M$.							
$(CH_3)_3CO + (CH_3)_3CH \rightarrow (CH_3)_3COH + (CH_3)_3C$							
Ethoxy, 1,1-dimethyl- (t-Butoxy) + Propane, 2-methyl- (Isobutane)							
82 PAR/SON	RN	316-338	2.51(11)	0	2164	2	3.16
Reaction in a static-photolysis reactor. $(CH_3)_3CO$ generated by UV-photolysis of Di-t-butyl peroxide. k determined relative to the reaction: $(CH_3)_3CO \rightarrow CH_3 + (CH_3)_2CO$							
$(CH_3)_3CO_2 + NO \rightarrow$ products							
Ethyldioxy, 1,1-dimethyl- + Nitrogen oxide (NO)							
78 ANA/SMI2	EX	298	>6.02(11)			2	
Azoisobutane/O_2/NO_2 flash-photolysis. [Azoisobutane] = $(1.0-3.0)\times10^{17}$ molec.cm^{-3}. [NO] = $(0.1-1.0)\times10^{16}$ molec.cm^{-3}. Lower-limit k.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$(CH_3)_3CO_2 + NO_2 \rightarrow$ products							
Ethyldioxy, 1,1-dimethyl- + Nitrogen oxide (NO_2)							
78 ANA/SMI2	EX	298	>3.01(11)			2	
Azoisobutane/O_2/NO_2 flash-photolysis.							
[Azoisobutane] = (1-3)x10^{17} molec.cm^{-3}.							
Lower-limit k.							
$(CH_3)_3CO_2 + (CH_3)_3CO_2 \rightarrow (CH_3)_3CO + (CH_3)_3CO + O_2$ (a)							
$\rightarrow (CH_3)_3COOC(CH_3)_3 + O_2$ (b)							
Ethyldioxy, 1,1-dimethyl-							
75 PAR	EX	298	(2.17±0.48)(6)			2	
k_a. Unreported T assumed to be 298 K.							
81 KIR/PAR [1])	RL	298	1.4(-1)			2/2	
81 KIR/PAR [1])	RL	333	5.0(-2)			2/2	
[1]) k_b/k_a. Azo-t-butane/O_2 photolysis.							
Approximate rate ratios.							
Gas-chromatography.							
78 ANA/SMI2	EX	298	(1.57±0.47)(7)			2	
$k_{overall}$. Azoisobutane/O_2 flash-photolysis.							
[Azoisobutane] = (1-3)x10^{17} molec.cm^3.							
$(CH_3)_2CCH_2OOH \rightarrow CH_2{=}C(CH_3)CH_2OH + OH$ (a)							
$\rightarrow CH_2{=}C(CH_3)CHO + OH + H_2$ (b)							
$\rightarrow (CH_3)_2CHCHO + OH$ (c)							
$\rightarrow$  + OH (d)							
Ethyl, 1-(hydroperoxymethyl)-1-methyl-							
→ 2-Propen-1-ol, 2-methyl- + Hydroxyl (a)							
→ 2-Propenal, 2-methyl- (Methacrolein) + Hydroxyl + Hydrogen molecule (b)							
→ Propanal, 2-methyl- + Hydroxyl (c)							
→ Oxirane, 2,2-dimethyl- + Hydroxyl (d)							
78 BAK/BAL [1])	ES	753	1.3(5)			1	2.0
k_a.							
78 BAK/BAL [1])	ES	753	1.3(5)			1	2.0
k_b.							
78 BAK/BAL [1])	ES	753	4.2(5)			1	2.0
k_c.							
78 BAK/BAL [1])	ES	753	1.8(6)			1	2.0
k_d.							
[1]) Aged boric-acid-coated vessels.							
P(Total) = (490-505) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$(CH_3)_2CHCH_2O_2 \rightarrow (CH_3)_2CCH_2OOH$ (a)							
$\rightarrow CH_3CH(CH_2OOH)CH_2$ (b)							
Propyldioxy, 2-methyl-							
78 BAK/BAL [1])	RL	753	(4.08±0.41)			1/1	
k_a/k_b.							
78 BAK/BAL [1])	RN	753	1.8(5)			1	
k_a.							
78 BAK/BAL [1])	RN	753	4.5(4)			1	
k_b.							
[1]) Aged boric-acid-coated vessels. Rate constants computed by Benson's group additivity method. P(Total) = (490-505) torr.							
$(CH_3)_2C(OO\cdot)CH_2OOH \rightarrow (CH_3)_2CO + HCHO + HO_2$							
Ethyldioxy, 1-(hydroperoxymethyl)-1-methyl-							
78 BAK/BAL	ES	753	2.5(6)			1	2.0
Aged boric-acid-coated vessels. P(Total) = (490-505) torr.							
$(CH_3)_3COH \rightarrow (CH_3)_2C{=}CH_2 + H_2O$ (a)							
$\rightarrow CH_3 + (CH_3)_2C)OH$ (b)							
2-Propanol, 2-methyl- (t-Butanol)							
71 GON/LEW [1])	EX	753-833	2.50(5)	0	15136	1	
71 DOR/MCG [1])	EX	935-1397	2.24(13)	0	30448±50	1	1.58
Pyrolysis. M = He + Ar. Reflected shock-waves.							
74 LEW/KEI [1])	EX	920-1175	3.98(14)	0	33317±503	1	1.58
Pyrolysis. M = He + Ar. Reflected shock-waves. P = (370-1560) torr.							
[1]) k_a.							
76 TSA1	ES	1080-1165	6.31(16)	0	40900	1	
k_b.							
$(CH_3CH_2)_2O \rightarrow CH_3CH_2 + CH_3CH_2O$							
Ethane, 1,1'-oxybis- (Diethyl ether)							
77 SER/LAB	ES	763-823	5.0(15)	0	40765	1	
Thermolysis.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3SCH_2CH{=}CH_2 \rightarrow HCHS + CH_3CH{=}CH_2$							
1-Propene, 3-(methylthio)- → Methanethial + 1-Propene							
82 MAR/ROP2	EX	588-691	1.70(11)	0	19426±361	1	1.78
Pyrolysis in a stirred-flow system.							
Gas-chromatography. Mass-spectrometry.							
P = (2-15) torr.							
HCHS polymerizes, to give probably							
the cyclic trimer 1,3,5-Trithiane.							
$CH_3C(S)SCH_2CH_3 \rightarrow CH_4 + CS_2 + CH_2{=}CH_2$							
Ethane(dithioic) acid ethyl ester							
78 ALA/BIG [1])	EX	629	1.80(-3)			1	
78 ALA/BIG [1])	EX	651-716	8.83(12)	0	22725	1	
A and B recalculated from the reported data.							
[1]) Pyrolysis in a flow-reactor.							
Gas-chromatography.							
IR-, and NMR-spectrometry.							
$CH_3C(O)SCH_2CH_3 \rightarrow CH_4 + COS + CH_2{=}CH_2$							
Ethanethioic acid S-ethyl ester							
72 OEL/TIN	EX	763-841	2.51(12)	0	25365	1	
Elimination by thermolysis.							
$CH_3C(S)OCH_2CH_3 \rightarrow CH_4 + COS + CH_2{=}CH_2$ (a)							
$\rightarrow CH_3C(O)SCH_2CH_3$ (b)							
Ethanethioic acid O-ethyl ester							
72 OEL/TIN	EX	763-841	3.16(12)	0	20735	1	
k_a.							
Elimination by thermolysis.							
Channel (a) is predominant.							
T-range assumed to be the same as that of							
Ethanedithioic acid S-ethyl ester (see above).							
75 BIG/GAB [1])	EX	629	1.15(-2)			1	
k_a. Elimination.							
75 BIG/GAB [1])	EX	629	1.73(-3)			1	
k_b. Isomerization.							
75 BIG/GAB [1])	EX	635	1.78(-2)			1	
$k_a + k_b$.							
Overall reaction.							
75 BIG/GAB [1])	EX	625-653	3.55(12)	0	20886	1	
$k_a + k_b$.							
Overall reaction.							
[1]) Flow reactor pyrolysis.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3OC(S)OCH_2CH_3 \rightarrow CH_3OH + COS + CH_2{=}CH_2$							
Carbonothioic acid O-ethyl O-methyl ester							
82 ALA/BIG [1])	EX	629	1.3(-2)			1	
82 ALA/BIG [1])	EX	570-660	3.22(10)	0	17950	1	
A and B recalculated from the reported data.							
[1]) Pyrolysis in a flow reactor.							
IR-spectrometry.							
P = (2-800) torr.							
$CH_3OC(O)SCH_2CH_3 \rightarrow CH_3OH + COS + CH_2{=}CH_2$							
Carbonothioic acid S-ethyl O-methyl ester							
79 ALA/BIG [1])	EX	629	7.75(-7)			1	
79 ALA/BIG [1])	EX	763-823	1.24(13)	0	27813±722	1	
A and B recalculated from the reported data.							
[1]) Pyrolysis in a flow-reactor.							
Flow-tube method.							
IR-spectrometry.							
$CH_3CH_2OC(O)SCH_3 \rightarrow CH_2{=}CH_2 + CO_2 + CH_3SH$							
Carbonothioic acid O-ethyl S-methyl ester							
79 ALA/BIG [1])	EX	7629	1.0(-4)			1	
79 ALA/BIG [1])	EX	763-823	1.64(12)	0	23483±721	1	
A and B recalculated from the reported data.							
[1]) Pyrolysis in a flow-reactor.							
Flow-tube method.							
IR-spectrometry.							
$CH_3SC(S)OCH_2CH_3 \rightarrow CH_3SH + COS + CH_2{=}CH_2$							
Carbonodithioic acid O-ethyl S-methyl ester							
82 ALA/BIG [1])	EX	629	1.4(-2)			1	
82 ALA/BIG [1])	EX	590-620	8.95(11)	0	19995	1	
A and B recalculated from the reported data.							
[1]) Pyrolysis in a flow reactor.							
IR-spectrometry.							
P = (2-800) torr.							
$CH_2{=}CHCH_2NC \rightarrow CH_2{=}CHCH_2CN$							
1-Propene, 3-isocyano-							
79 GLI/PRI	EX	403-493	5.89(14)	0	20533±302	1	2.0
Thermal isomerization in a Pyrex bulb.							
Gas-chromatography.							
P = 20 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
cis-CH_3CH=CHCN → trans-CH_3CH=CHCN							
2-Butenenitrile, (Z)- (cis-Crotononitrile)							
→ 2-Butenenitrile, (E)-							
75 MAR/JEF	EX	1060-1380	1.58(13)	0	29190±1007	1	2.0
M = Ar. Single-pulse shock-tube isomerization.							
Limiting high-pressure k.							
P(Ar) = (200-340) torr.							
 → cis-CH_3CH=CHCN (a)							
→ trans-CH_3CH=CHCN (b)							
→ CH_2=$CHCH_2CN$ (c)							
Cyclopropanecarbonitrile (Cyclopropyl cyanide)							
→ 2-Butenenitrile, (Z)- (cis-Crotononitrile) (a)							
→ 2-Butenenitrile, (E)- (trans-Crotononitrile) (b)							
→ 3-Butenenitrile (Allyl cyanide) (c)							
73 LUC/ROB [1])	EX	660-760	1.02(14)	0	28580±168	1	1.29
k_a.							
73 LUC/ROB [1])	EX	660-760	1.23(14)	0	29313±108	1	1.17
k_b.							
73 LUC/ROB [1])	EX	660-760	3.89(14)	0	30372±217	1	1.35
k_c.							
73 LUC/ROB [1])	EX	660-760	3.80(14)	0	29109±144	1	1.20
$k_a + k_b + k_c$.							
[1]) Thermal isomerization in a silica reaction vessel with Pyrex vacuum system. Gas-chromatography.							
$CH_3CH_2CH_2CN$ → CH_3CH_2 + CH_2CN							
Butanenitrile							
75 KIN/GOD2	EX	1090-2050	2.51(15)	0	38601±856	1	2.0
$(CH_3)_2CHCN$ → CH_3CH=CH_2 + HCN (a)							
→ CH_3CHCN + CH_3 (b)							
Propanenitrile, 2-methyl-							
73 DAS/EMO	EX	820-928	1.58(12)	0	32280±523	1	1.12
k_a.							
75 KIN/GOD1	EX	1074-1253	7.94(13)	0	38349±1007	1	2.0
k_a.							
75 KIN/GOD1	EX	1074-1250	5.01(15)	0	39758±1007	1	2.0
k_b.							

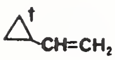
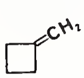
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
CH_2=$CHCH_2NHCH_3$ → CH_3CH=CH_2 + CH_2=NH							
2-Propen-1-amine, N-methyl- (N-Allyl-N-methylamine)- → 1-Propene + Methanimine							
74 VIT/EGG2	EX	602-694	2.34(11)	0	21832±815	1	3.63
Pyrolysis in a static system. Gas-chromatography. $P(CH_2$=$CHCH_2NHCH_3)$ = (9-71) torr.							
CH_3N=NCH_2CH=CH_2 → CH_3 + CH_2CH=CH_2 + N_2							
Diazene, methyl-(2-propenyl)-							
72 CRA/TAK [1])	RL	399	(1.28±0.05)			1/1	
k_{ref}: CH_3N=NCD_2CH=CH_2 → CH_3 + CD_2CH=CH_2 + N_2							
72 CRA/TAK [1])	EX	436-456	3.24(14)	0	17816±352	1	2.09
Uninhibited k.							
72 CRA/TAK [1])	EX	383-403	2.29(14)	0	17866±352	1	2.40
In presence of ^{15}NO.							
[1]) Thermolysis. Mass-spectrometry. Gas-chromatography. P(Total) = (50-60) torr.							
CH_3CH_2N=NCH_2CH_3 → CH_3CH_2 +CH_3CH_2 + N_2							
Diazene, diethyl- (Azoethane)							
73 PER/BEA	EX	700-950	2.51(16)	0	25013±503	1	
RRKM fit of experimental data.							
77 MAR/MAC [1])	EX	553-673	1.58(14)	0	22373±241	1	1.58
80 ACS/PET [1])	EX	523-623	6.31(15)	0	24670±180	1	1.26
[1]) Azoethane thermolysis in a vacuum system.							
CH_3CH_2N=$NCH_2CH_3^*$ → CH_3CH_2 +CH_3CH_2 + N_2							
Diazene, diethyl- (Azoethane)							
77 CHE/ORE	EX	298	6.0(9)			1	
High-pressure photolysis of Azoethane in He. RRKM data fit on the basis of a proposed mechanism. Azoethane is assumed to be in a vibrationally excited T_1 electronic state. Lower-limit k. P(He) = (0-150) atm. $P(CO_2)$ = (0-45) atm.							
$(CH_3)_2NN(CH_3)_2$ → $(CH_3)_2N$ + $(CH_3)_2N$							
Hydrazine, tetramethyl-							
72 GOL/SOL	EX	720-930	2.51(17)	0	27177	1	
RRKM fit of experimental data.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$NCC(O)OCH_2CH_3 \rightarrow HCN + CO_2 + CH_2{=}CH_2$							
Carbonocyanidic acid ethyl ester (Ethyl cyanoformate)							
74 BAR/DES	EX	613-678	2.75(11)	0	21439±307	1	1.78
Thermolysis.							
$(CH_3)_3CNO \rightarrow (CH_3)C + NO$							
Propane, 2-methyl-2-nitroso-							
74 CHO/MEN	EX	550-850	3.98(15)	0	18118±503	1	3.2
$CH_3CH_2CH_2CH_2ONO \rightarrow CH_3CH_2CH_2CH_2O + NO$							
Nitrous acid butyl ester (n-Butyl nitrite)							
78 BAL/GOL	EX	590-750	3.16(16)	0	20634	1	
VLP-Pyrolysis.							
Best RRKM data-fit.							
$CH_3CH_2CH(CH_3)ONO \rightarrow CH_3CH_2COCH_3 + HONO$ (a)							
$\rightarrow CH_3CH_2CH(O^\cdot)CH_3 + NO$ (b)							
Nitrous acid 1-methylpropyl ester (s-Butyl nitrite)							
76 BAT/MCC2	EX	403-433	6.31(12)	0	18017±403	1	3.16
k_a.							
75 BAT/MCC	EX	393-473	1.26(16)	0	20735±403	1	2.51
k_b.							
76 BAT/MCC2	EX	403-433	1.58(16)	0	20584±403	1	2.51
k_b.							
76 BAT/MCC2	EX	403-433	5.01(15)	0	19926±403	1	3.16
$k_a + k_b$.							
$(CH_3)_3CONO \rightarrow (CH_3)_2C{=}CH_2 + HONO$ (a)							
$\rightarrow (CH_3)_3CO + NO$ (b)							
Nitrous acid 1,1-dimethylethyl ester (t-Butyl nitrite)							
76 BAT/MIL	EX	393-433	7.9(12)	0	16910±403	1	2.51
k_a.							
Same data given in 74 BAT/MIL and 75 BAT/MCC.							
75 MEN/GOL	CO	300	6.31(15)	0	19779	1	
k_b.							
RRKM fit of experimental data.							
76 BAT/MIL	EX	393-433	2.0(16)	0	20282±403	1	2.51
k_b.							
Same data given in 74 BAT/MIL and 75 BAT/MCC.							

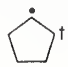
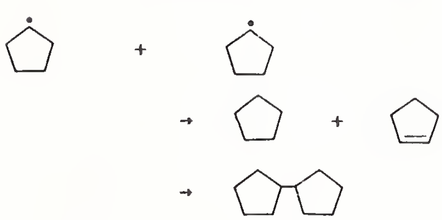
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
77 BAR/BEN2	ES	650-800	6.31(15)	0	19779	1	
k_b. VLP-Pyrolysis.							
RRKM best-fit estimate.							
76 BAT/MIL	EX	393-433	5.0(14)	0	18218±403	1	2.51
k_a + k_b.							
Same data given in 74 BAT/MIL and 75BAT/MCC.							
$(CH_3)_3CONO_2$ → $(CH_3)_3CO$ + NO_2							
Nitric acid 1,1-dimethylethyl ester (t-Butyl nitrate)							
76 BAT/MIL	ES	393-433	7.9(15)	0	20232	1	
$(CH_3CH_2)_2NO$ + NO_2 → $CH_3CH_2N(\uparrow O)$=$CHCH_3$ + HONO							
Nitroxide, diethyl- + Nitrogen oxide (NO_2)							
82 GLE/HEI	ES	298	≈1.51(6)			2	
Oxidation of Diethylhydroxylamine by NO_2							
in a variable path-length IR gas-cell.							
IR-Spectrometry.							
[$(CH_3CH_2)_2NOH$] = (25-45) mtorr.							
[CH_3CHO] = (0-32) mtorr.							
[NO_2] = (15-236) mtorr.							
[HONO] = (11-15) mtorr.							
$(CH_3CH_2)_2NOH$ + NO_2 → $(CH_3CH_2)_2NO$ + HONO (a)							
Ethanamine, N-ethyl-N-hydroxy- + Nitrogen oxide (NO_2)							
82 GLE/HEI	ES	298	(3.31±0.60)(6)			2	
k_a. Oxidation of Diethylhydroxylamine by NO_2							
in a variable path-length IR gas-cell.							
IR-Spectrometry.							
[$(CH_3CH_2)_2NOH$] = (25-45) mtorr.							
[CH_3CHO] = (0-32) mtorr.							
[NO_2] = (15-236) mtorr.							
[HONO] = (11-15) mtorr.							
74 JAY/SIM	EX	298	2.71(6)			2	
$k_{overall}$. Dark reaction of $(CH_3CH_2)_2NOH$							
(diluted in CO_2) with NO_2 (diluted in O_2),							
in a cylindrical vessel with conventional							
high-vacuum system.							
P(Diethylhydroxylamine) = 2.2 mtorr.							
P(NO_2) = 19.3 mtorr.							
$(CH_3CH_2NO)_2$ → CH_3CH_2NO + CH_3CH_2NO							
Diazene, diethyl-, 1,2-dioxide- (Nitrosoethane dimer)							
72 TAN/LAM	RN	314	(4.1±0.6)(03(			1	

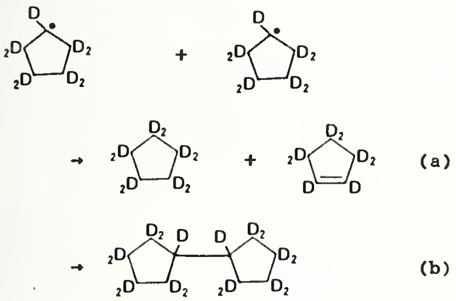
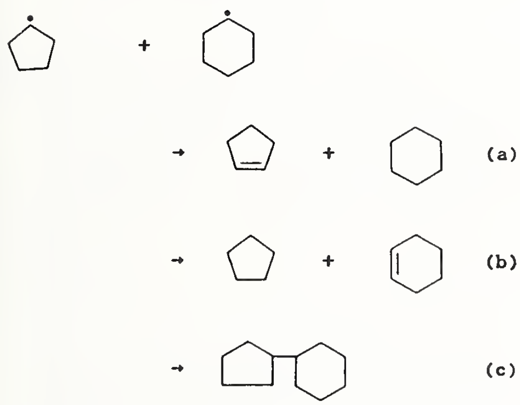
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3CH_2CH_2C{\equiv}CH \rightarrow CH_2{=}CH_2 + CH_2{=}C{=}CH_2$							
1-Pentyne							
81 KIN1	EX	923-1154	6.31(12)	0	28686±1007	1	2.51
1-Pentyne thermolysis. VLP-Pyrolysis system. Mass-spectrometry.							
$CH_3CH_2C{\equiv}CCH_3 \rightarrow CH_3 + CH_2C{\equiv}CCH_3$							
2-Pentyne							
82 NGU/KIN1	EX	988-1234	1)	1)	1)	1	
2-Pentyne thermolysis. VLP-Pyrolysis system. Mass-spectrometry. High-pressure k. 1) Curved Arrhenius plot. For 1100 K the authors give: $k = 1.0 \times 10^{16} exp(-36537 \pm 1007)\ s^{-1}$.							
$(CH_3)_2CHC{\equiv}CH \rightarrow CH_3CHC{\equiv}CH + CH_3$ (a)							
$\rightarrow (CH_3)_2C{=}C{=}CH_2$ (b)							
1-Butyne, 3-methyl-							
81 NGU/KIN 1)	EX	940-1222	2.00(16)	0	36034±503	1	2.0
k_a. Thermolysis.							
81 NGU/KIN 1)	EX	940-1222	1.58(13)	0	30448±503	1	3.98
k_b. Thermal isomerization. 1) Thermolysis of 3-Methyl-1-butyne in a VLP-Pyrolysis system. Mass-spectrometry.							
cis-$CH_3CH{=}CHCH{=}CH_2 \rightarrow CH_2{=}CHCH{=}C{=}CH_2 + H_2$ (a)							
$\rightarrow$ trans-$CH_3CH{=}CHCH{=}CH_2$ (b)							
1,3-Pentadiene, (Z)-							
82 NGU/KIN2	EX	1002-1235	1)	1)	1)	1	
k_a. cis-1,3-Pentadiene unimolecular thermolysis. VLP-Pyrolysis system. Mass-spectrometry. 1) Curved Arrhenius plot. For 1100 K the authors give: $k = 1.0 \times 10^{13} exp(-32461 \pm 1007)\ s^{-1}$.							
71 FRE/LAM	DE	473-517	3.09(13)	0	26210±301	1	1.55
k_b. Thermal isomerization in a static system. Gas-chromatography. k is P-independent between 0.75 and 75 torr. Determined from the Equilibrium constant and the sum of k_b and k_{-b}.							
75 MAR/JEF	EX	1060-1280	3.98(13)	0	26673±1007	1	2.0
k_b. M = Ar. Single-pulse shock-tube Isomerization. Limiting high-pressure k. P(Ar) = (200-340) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
cis-CH_2=CHCH=$CHCH_3$† → trans-CH_2=CHCH=$CHCH_3$†							
1,3-Pentadiene, (Z)-							
75 CRA/ROS	RL	298	(1.3±0.1)			1/1	
cis-CH_2=CHCH=$CHCH_3$† formed by:							
$^1CH_2$ + CH_2=CHCH=CH_2							
k_{ref}:							
trans-CH_2=CHCH=$CHCH_3$† → cis-CH_2=CHCH=$CHCH_3$†							
trans-CH_3CH=CHCH=CH_2 → CH_2=CHCH=C=CH_2 + H_2 (a)							
→ cis-CH_3CH=CHCH=CH_2 (b)							
1,3-Pentadiene, (E)-							
82 NGU/KIN2	EX	1002-1235	[1])	[1])	[1])	1	
k_a. Unimolecular thermolysis. VLPP-technique.							
Mass-spectrometry.							
[1]) Curved Arrhenius plot.							
For 1100 K the authors give:							
$k = 1.0x10^{13}exp(-32461±1007)\ s^{-1}$.							
71 FRE/LAM	RN	473-517	2.00(13)	0	26487±301	1	1.55
k_b. Thermal isomerization in a static system.							
Gas-chromatography.							
k is P-independent between 0.75 nd 7.5 torr.							
Determined from the Equilibrium constant and							
the sum of k_b and k_{-b}.							
$(CH_3)_2$C=C=CH_2 → CH_3C≡C=CH_2 + CH_3 (a)							
→ $(CH_3)_2$CHC≡CH (b)							
1,2-Butadiene, 3-methyl-							
81 NGU/KIN [1])	EX	940-1222	2.00(16)	0	37896±53	1	2.0
k_a. Thermolysis.							
81 NGU/KIN [1])	EX	940-1222	1.58(13)	0	32109±503	1	3.98
k_b.Thermal isomerization.							
[1]) 3-Methylbuta-1,2-diene pyrolysis in a							
VLP-Pyrolysis system. Mass-spectrometry.							
 **+ H_2**							
Cyclopentene							
74 LEW/SAR	EX	1020-1189	2.24(13)	0	30196±679	1	1.86
M = Ar. Thermolysis behind reflected							
shock-waves in a single-pulse shock-tube.							
[Cyclopentene] = (0.25-1.0)% in Ar.							
P = 760 torr.							
75 CRA/ROS	EX	298	(1.52±0.12)(8)			2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
 → CH_2=$CHCH_2CH$=CH_2 (a)							
→ cis-CH_2=CHCH=$CHCH_3$ (b)							
→ trans-CH_2=CHCH=$CHCH_3$ (c)							
→ CH_2=C(CH_3)CH=CH_2 (d)							
→  (e)							
Cyclopropane, ethenyl- (Vinylcyclopropane)							
75 CRA/ROS	EX	298	(4.7±0.1)(8)			2	
k_a.							
75 CRA/ROS	EX	298	(3.1±0.4)(8)			2	
k_b.							
75 CRA/ROS	EX	298	(4.2±0.5)(8)			2	
k_c.							
75 CRA/ROS	EX	298	≤4.0(-2)			2	
k_d. Upper-limit k.							
75 CRA/ROS	EX	298	(3.3±0.6)(8)			2	
k_e.							
75 CRA/ROS	EX	298	(1.52±0.07)(9)			2	
$k_a + k_b + k_c + k_d + k_e$. Vibrationally excited Vinylcyclopropane formed by: $^1CH_2 + CH_2$=CHCH=CH_2.							
 → CH_2=CH_2 + CH_2=C=CH_2 (a)							
→  (b)							
Spiropentane → Ethene + 1,2-Propadiene (a)							
→ Cyclobutane, methylene- (b)							
72 FLO/GIB [1])	EX	664	2.41(-4)			1	
k_a. P = 0.9 torr. Decomposition.							
72 FLO/GIB [1])	EX	664	4.58(-5)			1	
k_a. P = 335 torr. Decomposition.							
72 FLO/GIB [1])	CO	643-703	7.94(13)	0	27932	1	
k_a. Decomposition. RRKM Calculation.							
72 FLO/GIB [1])	EX	664	3.98(-4)			1	
k_b. P = 0.9 torr. Isomerisation.							
72 FLO/GIB [1])	EX	664	7.01(-4)			1	
k_b. P = 335 torr. Isomerisation.							

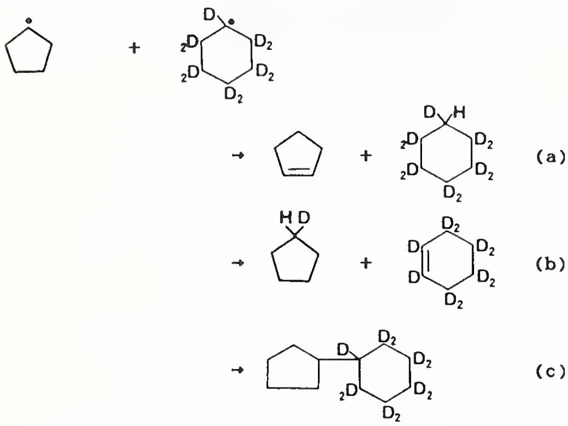
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
[1]) Pyrolysis in a static system. Gas-chromatography.							
Other k's, at various pressures in the (0.9-335)							
torr. range, with or without added CF_2ClCF_2Cl,							
added as inert gas, are tabulated for both,							
channel (a) and (b).							
$[CH_2CH{=}CHCH_2CH_3 = CH_2{=}CHCHCH_2CH_3]$							
$\rightarrow CH_2{=}CHCH{=}CH_2 + CH_3$							
[2-Pentenyl = 2-Propenyl, 1-ethyl]							
81 BAL/WAL1	ES	753	3.6(3)			1	
Oxidation of 1-Pentene in H_2/O_2 mixtures							
in aged boric-acid-coated vessels.							
$[CH_2CH{=}CHCH_2CH_3 = CH_2{=}CHCHCH_2CH_3] + O_2$							
$\rightarrow CH_2{=}CHCH{=}CHCH_3 + HO_2$							
[2-Pentenyl = 2-Propenyl, 1-ethyl-] + Oxygen molecule							
80 BAL/BEN2	ES	753	2.1(9)			2	
Oxidation of 1-Pentene and cis-2-Pentene							
in aged boric-acid-coated vessels. Gas-chromatography.							
Gas-chromatography.							
P(Total) = 500 torr.							
Same data in 81 BAL/WAL1.							
$CH_2CH{=}CHCH_2CH_3 + CH_3CHO$							
$\rightarrow CH_3CH_2CH_2CH{=}CH_2 + CH_3CO$ (a)							
$\rightarrow$ cis-$CH_3CH_2CH{=}CHCH_3 + CH_3CO$ (b)							
$\rightarrow$ trans-$CH_3CH_2CH{=}CHCH_3 + CH_3CO$ (c)							
2-Pentenyl + Acetaldehyde							
80 RIC/MAR [1])	ES	768	5.01(8)			2	
80 RIC/MAR [1])	ES	768	≃1.0(12)	0	6039	2	
[1]) $k_a + k_b + k_c$.							
Acetaldehyde pyrolysis in presence of							
1,3-Butadiene, in a static system. The							
k's estimated by combining the present							
data with data found in the literature.							
P(1,3-Butadiene) = 20 torr.							
P(Acetaldehyde) = 100 torr.							
$CH_3CH{=}CHCH_2CH_2 \rightarrow CH_3CH_2CH{=}CHCH_2$ (a)							
$\rightarrow CH_3CH_2CHCH{=}CH_2$ (b)							
3-Pentenyl							
75 STE/RAB	ES	298	2.0(9)			1	
$k_a + k_b$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_2CH_2CH_2CH{=}CH_2^{\dagger} \rightarrow CH_2{=}CH_2 + CH_2CH{=}CH_2$ (a)							
→  (b)							
4-Pentenyl → Ethene + 2-Propenyl (Allyl) (a)							
→ Cyclopentyl (b)							
72 WAT/OLS [1])	EX	319	2.2(9)			1	
k_a. Decomposition.							
72 WAT/OLS [1])	EX	319	2.4(8)			1	
k_b. Cyclization. (Intramolecular addition.)							
[1]) Azo-n-propane Photolysis. $CH_2CH_2CH_2CH{=}CH_2^{\dagger}$ formed from cis-$CH_3CH_2CH_2CH{=}CH^{\dagger}$ by isomerization, with an average excess vibrational energy of 46 kcal.mol^{-1}. In its turn, cis-$CH_3CH_2CH_2CH{=}CH^{\dagger}$ formed by $CH_3CH_2CH_2$ + $CH{\equiv}CH$. P = (90-480) torr.							
$CH_3CHCH_2CH{=}CH_2^{\dagger} \rightarrow CH_3 + CH_2{=}CHCH{=}CH_2$							
3-Butenyl, 1-methyl-							
74 CAR/TAR	ES	298	(3.60±0.36)(6)			1	
$CH_3CHCH_2CH{=}CH_2^{\dagger}$ formed by H + $CH_2CHCH_2CH{=}CH_2$.							
$CH_2CH(CH_3)CH{=}CH_2^{\dagger} \rightarrow CH_3 + CH_2{=}CHCH{=}CH_2$							
3-Butenyl, 2-methyl-							
74 CAR/TAR	ES	298	(3.60±0.36)(6)			1	
$CH_2CH(CH_3)CH{=}CH_2^{\dagger}$ formed by isomerization from 8$CHCH_2CH{=}CH_2^{\dagger}$, in its turn formed by H + $CH_2{=}CHCH_2CH{=}CH_2$.							
 (a) (b)							
Cyclopentyl + Cyclopentyl							
→ Cyclopentane + Cyclopentene (a)							
→ 1,1'-Bicylopentyl (b)							
82 FUJ/GAE	RL	398-443	7.3(-1)	0	<500	2/2	
k_a/k_b. H_2O/Cyclopentane gas-phase radiolysis, in a cylindrical Pyrex vessel. Gas-chromatography.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
							
Cyclopentyl-d_9 + Cyclopentyl-d_9							
→ Cyclopentane-d_{10} + Cyclopentene-d_8 (a)							
→ 1,1'-Bicyclopentyl-d_{18} (b)							
82 FUJ/GAE	RL	398-443	5.8(-1)	0	<500	2/2	
k_a/k_b.							
H_2O/Cyclopentane-d_{10} gas-phase pyrolysis, in a cylindrical Pyrex vessel. Gas-chromatography.							
							
Cyclopentyl + Cyclohexyl							
→ Cyclopentene + Cyclohexane (a)							
→ Cyclopentane + Cyclohexene (b)							
→ Cyclohexane, cyclopentyl- (c)							
82 FUJ/GAE [1]	RL	398-443	3.3(-1)	0	<500	2/2	
k_a/k_c.							
82 FUJ/GAE [1]	RL	398-443	2.8(-1)	0	<500	2/2	
k_b/k_c.							

[1]) H_2O/Cyclopentane/Cyclohexane gas-phase pyrolysis, in a cylindrical Pyrex vessel. Gas-chromatography.

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units k err. factor



Cyclopentyl + Cyclohexyl-d_{11}

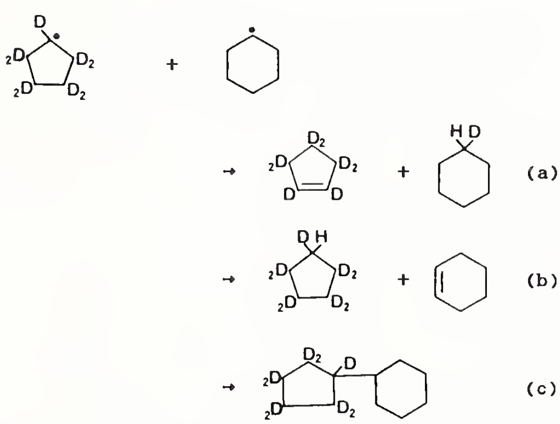
→ Cyclopentene + Cyclohexane-d_{11} (a)

→ Cyclopentane-d + Cyclohexene-d_{10} (b)

→ Cyclohexane-d_{11}, cyclopentyl- (c)

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units k err. factor
82 FUJ/GAE [1]) k_a/k_c.	RL	398-443	3.5(-1)	0	<500	2/2
82 FUJ/GAE [1]) k_b/k_c.	RL	398-443	2.4(-1)	0	<500	2/2

[1]) H_2O/Cyclopentane/Cyclohexane-d_{12} gas-phase radiolysis, in a cylindrical Pyrex vessel. Gas-chromatography.



Cyclopentyl-d_9 + Cyclohexyl

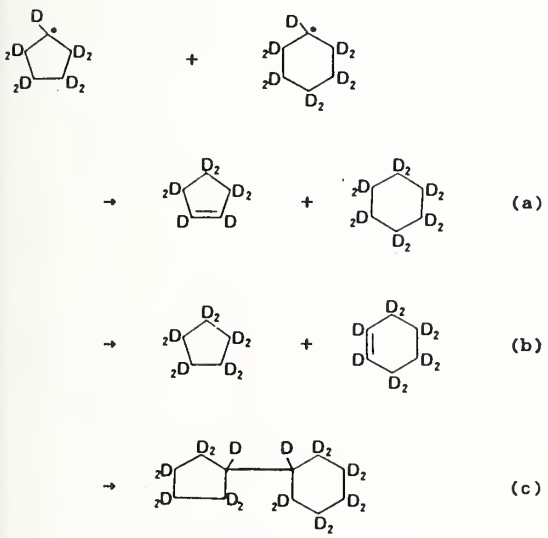
→ Cyclopentene-d_8 + Cyclohexane-d (a)

→ Cyclopentane-d_9 + Cyclohexene (b)

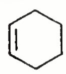
→ Cyclohexane, cyclopentyl-d_9- (c)

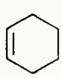
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units k err. factor
82 FUJ/GAE [1]) k_a/k_c.	RL	398-443	2.5(-1)	0	<500	2/2

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 FUJ/GAE [1])	RE	398-443	2.8(-1)	0	<500	2/2	
k_b/k_c.							
[1]) H_2O/Cyclopentane-d_{10}/Cyclohexane							
gas-phase radiolysis, in a cylindrical							
Pyrex vessel.							
Gas-chromatography.							



Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
Cyclopentyl-d_9 + Cyclohexyl-d_{11}							
→ Cyclopentene-d_8 + Cyclohexane-d_{12} (a)							
→ Cyclopentane-d_{10} + Cyclohexene-d_{10} (b)							
→ Cyclohexane-d_{11}, cyclopentyl-d-$_9$- (c)							
82 FUJ/GAE [1])	RL	398-443	2.8(-1)	0	<500	2/2	
k_a/k_c.							
82 FUJ/GAE [1])	RL	398-443	2.4(-1)	0	<500	2/2	
k_b/k_c.							
[1]) H_2O/Cyclopentane-d_{10}/Cyclohexane-d_{12}							
gas-phase radiolysis, in a cylindrical							
Pyrex vessel.							
Gas-chromatography.							
$CH_3CH_2CH_2CH{=}CH_2$ → CH_3CH_2 + $CH_2CH{=}CH_2$ (a)							
→ $CH_2{=}CH_2$ + $CH_3CH{=}CH_2$ (b)							
1-Pentene							
73 SHI/KIN1	ES	753-1023	3.16(15)	0	35732	1	
k_a.							
78 TSA2 [1])	EX	1000-1200	(1.0±0.1)(16)	0	35900	1	
k_a.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
78 TSA2 [1])	EX	1000-1200	(3.16±0.95)(12)	0	28900	1	
k_b.							
[1]) 1-Pentene/Cyclohexene/Toluene/Ar thermolysis in in a shock-tube.							
k determined relative to the reaction:							
 → CH_2=CHCH=CH_2 + CH_3CH_3							
P(Ar) ~(1.7-5) atm. [1-Pentene] = 0.01%.							
[Cyclohexene] = 0.005%. [Toluene] = 1%.							
73 SHI/KIN1	EX	753-1023	1.58(12)	0	26170	1	
$k_{overall}$.							
CH_3CH_2CH=$CHCH_3$ → CH_3CH=$CHCH_2$ + CH_3 (a)							
→ any other products (b)							
2-Pentene (cis-trans mixture)							
72 SHI/AMA	ES	753-1003	3.16(15)	0	36236	1	
k_a.							
72 SHI/AMA	EX	753-1003	2.0(12)	0	26673	1	
$k_{overall}$.							
cis-CH_3CH_2CH=$CHCH_3$ (+ M) → trans-CH_3CH_2CH=$CHCH_3$ (+ M)							
2-Pentene, (Z)-							
74 SPR/AKI	EX	298-381	3.12(10)	0	5652±46	2	1.15
M = NO_2.							
trans-CH_3CH_2CH=$CHCH_3$ (+ M) → cis-CH_3CH_2CH=$CHCH_3$ (+ M)							
2-Pentene, (E)-							
74 SPR/AKI	EX	298-382	5.25(10)	0	6281±44	2	1.15
$CH_3CH_2C(CH_3)$=CH_2 → CH_3 + $CH_2C(CH_3)$=CH_2							
1-Butene, 2-methyl-							
77 TRE/WRI	EX	671-722	3.98(16)	0	35732±403	1	2.51
Limiting high-pressure k.							
$CH_3CH_2C(CH_3)$=$CH_2^{\dagger}$ → CH_3 + $CH_2C(CH_3)$=CH_2							
1-Butene, 2-methyl-							
71 TAY/SIM [1])	EX	298	(5.94±0.59)(7)			1	
A7 366 nm.							
71 TAY/SIM [1])	EX	298	(3.42±0.34)(7)			1	
At 435.8 nm.							
[1]) $CH_3CH_2C(CH_3)$=$CH_2^{\dagger}$ formed by $^1CH_2$ + $(CH_3)_2C$=CH_2.							
Unreported T assumed to be 287 K.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$(CH_3)_2CHCH{=}CH_2^{\dagger} \rightarrow CH_3 + CH_3CHCH{=}CH_2$							
1-Butene, 3-methyl-							
71 TAY/SIM [1]	EX	298	(1.74±0.44)(8)			1	
At 366 nm.							
71 TAY/SIM [1]	EX	298	(1.01±0.25)(8)			1	
At 435.8 nm.							
[1]) $(CH_3)_2$ formed by isomerization from 1,1-dimethylcyclopropane which, in its turn, was formed by $^1CH_2 + (CH_3)_2C{=}CH_2$. Unreported T assumed to be 298 K.							
 $\rightarrow CH_3CH_2CH_2CH{=}CH_2$ (a)							
$\rightarrow CH_2{=}CH_2 +$  (b)							
Cyclopentane							
78 TSA2 [1]	RN	1000-1200	1.26(16)	0	42700	1	
k_a. Thermal isomerization.							
78 TSA2 [1]	CO	1000-1200	6.31(15)	0	42000	1	1.58
k_a. Thermal isomerization. k unaffected by 1-Pentene decomposition.							
78 TSA2 [1]	EX	1000-1200	1.78(16)	0	47840±200	1	1.26
k_b. Minor channel. Thermolysis.							
[1]) Cyclopentane/Cyclohexene/Ar thermolysis in a single-pulse shock-tube. k determined relative to the reaction:  $\rightarrow CH_2{=}CHCH{=}CH_2 + CH_3CH_3$ [Cyclohexene] = (0.005-0.01)% [Cyclopentane] = (0.5-2.0)%. P(Ar) ~ (1.7-6) atm.							
79 KAL/NAM [2]	RL	1128-1151	(5.3±1.2)			1/1	
k_{ref}: $CH_3CH_3 \rightarrow$ products.							
79 KAL/NAM [2]	RL	1023-1103	(6.7±1.8)(-1)			1/1	
k_{ref}: $CH_3CH_2CH_2CH_2CH_3 \rightarrow$ products.							
[2]) $k_{overall}/k_{ref}$. Cyclopentane/Ethane (or Pentane) pyrolysis in a tubular reactor. Average ratios.							

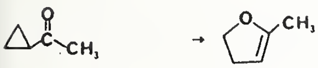
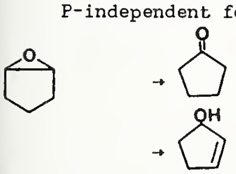
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
 (a)							
→ cis-$CH_3CH{=}CHCH_2CH_3$† (b)							
→ trans-$CH_3CH{=}CHCH_2CH_3$† (c)							
→ $CH_3CH_2C(CH_3){=}CH_2$† (d)							
→ $CH_3CH{=}C(CH_3)_2$† (e)							
Cyclopropane, 1,2-dimethyl-, cis-							
72 GRO/HAS [1])	EX	298	(5.74±0.18)(8)			1	
k_a.							
72 GRO/HAS [1])	RL	298	5.03			1/1	
$k_a/(k_b + k_c + k_d + k_e)$.							
72 GRO/HAS [1])	EX	298	(1.14±0.11)(8)			1	
$k_b + k_c + k_d + k_e$.							
[1]) cis-1,2-Dimethylcyclopropropane (Vibrationally excited) formed by $^1CH_2$ + cis-$CH_2CH{=}CHCH_3$.							
$CH_3CH_2CH_2CH_2CH_2$ → $CH_3CH_2CH_2CHCH_3$							
Pentyl							
71 WAT	ES	297-435	3.3(8)	0	7599	1	
$CH_3CH_2CH_2CH_2CH_2$† → $CH_3CH_2CH_2CHCH_3$†							
Pentyl							
71 WAT [1])	RL	298	8.2			1/1	
k_{ref}: $CH_3CH_2CH_2CHCH_3$ → CH_3CH_2 + $CH_2{=}CHCH_3$							
Estimated ratio.							
71 WAT/LAW [1])	EX	330	3.3(6)			1	
71 WAT/LAW [1])	EX	373	8.8(6)			1	
[1]) $CH_3CH_2CH_2CH_2$† formed by the Azo-n-propane Photolysis.							
$CH_3CH_2CH_2CH_2CH_2$ + O_2 → $CH_3CH_2CH_2CH{=}CH_2$ + HO_2							
Pentyl + Oxygen molecule							
80 BAL/BEN1	ES	753	2.9(11)			2	
Pentane oxidation in aged boric-acid-coated vessels.							
Gas-chromatography.							
P(Total) ~ 500 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3CH_2CH_2CH_2CH_2$ + $CH_3CH_2CH_2CH_2CH_2$							
→ $CH_3CH_2CH_2CH{=}CH_2$ + $CH_3CH_2CH_2CH_2CH_3$ (a)							
→ $CH_3(CH_2)_8CH_3$ (b)							
Pentyl							
71 WAT [1])	RL	298	1.4(-1)			2/2	
71 WAT/LAW [1])	RL	330	1.5(-1)			2/2	
[1]) k_a/k_b. Azo-n-propane Photolysis.							
$CH_3CH_2CH_2CH_2CH_2$ + $CH_3CH_2CH_2CH_2CH_2N{=}NCH_3$							
→ $CH_3CH_2CH_2CH_2CH_3$ + $(\cdot C_5H_{10})N{=}NCH_3$							
Pentyl + Diazene, methylpentyl-							
71 WAT	ES	297-435	4.2(11)	0	3926	2	
$CH_3CH_2CH_2CHCH_3$ → CH_3CH_2 + $CH_3CH{=}CH_2$							
Butyl, 1-methyl-							
80 BAL/BEN1	ES	753	2.3(5)			1	
Pentane oxidation in aged boric-acid-coated vessels. Gas-chromatography. P(Total) ~500 torr.							
$CH_3CH_2CH_2CHCH_3^{\dagger}$ → CH_3CH_2 + $CH_3CH{=}CH_2$							
Butyl, 1-methyl-							
71 WAT/LAW	ES	330	3.0(6)			1	
Azo-n-propane Photolysis. $CH_3CH_2CH_2CHCH_3^{\dagger}$ formed by isomerization from $CH_3CH_2CH_2CH_2CH_2^{\dagger}$, in its turn formed by $CH_3CH_2CH_2$ + $CH_2{=}CH_2$.							
78 WIE/COL [1])	EX	298	(4.4±0.5)(6)			1	
At 7 1. eV.							
78 WIE/COL [1])	EX	298	(1.1±0.1)(7)			1	
At 7.6 eV.							
[1]) Photolysis in a static system. $CH_3CH_2CH_2CHCH_3^{\dagger}$ formed by H + $CH_3CH_2CH_2CH{=}CH_2$. Gas-chromatography.							
$CD_3CD_2CD_2CDCD_3^{\dagger}$ → CD_3CD_2 + $CD_3CD{=}CD_2$							
Butyl-1,2,2,3,3,4,4,4-d_8, 1-methyl-d_3							
78 WIE/COL [1])	EX	298	(1.2±0.2)(6)			1	
At 7.1 eV.							
78 WIE/COL [1])	EX	298	(2.9±0.3)(6)			1	
At 7.6 eV.							
[1]) Photolysis in a static system. $CD_3CD_2CD_2CDCD_3^{\dagger}$ formed by D + $CD_3CD_2CD_2CD{=}CD_2$. Gas-chromatography.							

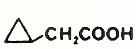
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3CH_2CH_2CHCH_3 + O_2$							
→ $CH_3CH_2CH_2CH{=}CH_2 + HO_2$ (a)							
→ cis-$CH_3CH_2CH{=}CHCH_3 + HO_2$ (b)							
→ trans-$CH_3CH_2CH{=}CHCH_3 + HO_2$ (c)							
Butyl, 1-methyl- + Oxygen molecule							
80 BAL/BEN1	RL	753	2.3			2/2	
$(k_b + k_c)/k_a$. Oxidation in aged boric-acid-coated Gas-chromatography. Estimated ratio. P(Total) ~ 500 torr.							
$CH_3CH_2CH_2CHCH_3 + CH_3CH_2CH_2CH_2CH_2$							
→ $CH_3(CH_2)_2CH(CH_3)(CH_2)_4CH_3$ (a)							
→ $CH_3CH_2CH_2CH_2CH_3 + CH_3CH_2CH_2CH{=}CH_2$ (b)							
→ $CH_3CH_2CH_2CH_2CH_3 + CH_3CH_2CH{=}CHCH_3$ (c)							
Butyl, 1-methyl- + Pentyl							
71 WAT	RL	298	1.41			2/2	
$(k_a + k_b + k_c)/k_a$.							
$CH_3CH_2CHCH_2CH_3$ → $CH_3CH_2CH{=}CH_2 + CH_3$							
Propyl, 1-ethyl-							
80 BAL/BEN1	ES	753	1.57(5)			1	
Pentane oxidation in aged boric-acid-coated vessels. Gas-chromatography. P(Total) ~ 500 torr.							
$CH_3CH_2CHCH_2CH_3 + O_2$ → cis-$CH_3CH_2CH{=}CHCH_3 + HO_2$ (a)							
→ trans-$CH_3CH_2CH{=}CHCH_3 + HO_2$ (b)							
Propyl, 1-ethyl- + Oxygen molecule							
80 BAL/BEN1 [1])	RL	753	(1.55±0.09)(6)			2/1	
$(k_a + k_b)/k_{ref}$. k_{ref}: $CH_3CH_2CHCH_2CH_3$ → $CH_3CH_2CH{=}CH_2 + CH_3$							
80 BAL/BEN1 [1])	ES	753	2.42(11)			2	
[1]) Oxidation in aged boric-acid-coated vessels. Gas-chromatography. P(Total) ~ 500 torr.							
$(CH_3)_3CCH_2$ (+ M) → $(CH_3)_2C{=}CH_2 + CH_3$ (+ M)							
Propyl, 2,2-dimethyl-							
75 SZI/MAR1	ES	512-571	2.0(13)	0	14997±1007	1	6.31
77 MUL/BAR	ES	~753	≈1.0(13)	0	15098	1	
Pyrolysis in a static reactor.							
79 SZI/MAR	RN	512-571	2.51(13)	0	14915±962	1	6.31
Pyrolysis of Neopentane in presence of Azoisopropane. P(Total) = (15-300) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
72 FUR/LAI2 1)	RN	503-608	2.5(13)	0	14595±252	1	
Limiting high-pressure k.							
72 FUR/LAI2 1)	RN	503-608	5.8(10)	0	8606±252	2	
Limiting low-pressure k.							
1) Hg-photosensitized decomposition of Neopentane. P = (10-280) torr.							
$CH_3CH_2CH_2CH_2CH_3$ → products							
Pentane							
79 KAL/NAM	RL	1103	6.2			1/1	
Pyrolysis of mixtures of Cyclopentane with Ethane and Pentane. k_{ref}: CH_3CH_3 → products.							
79 ZYC/BAC	EX	1000-1120	6.2(11)	0	26875±201	1	
Pyrolysis in a tubular reactor. P = 1 atm.							
$CH_3CH_2CH_2CH_2CH_3^{\dagger}$ → CH_3 + $CH_3CH_2CH_2CH_2$ (a) → CH_3CH_2 + $CH_3CH_2CH_2$ (b)							
Pentane							
72 HAS/JOH 1)	EX	298	(1.5±0.1)(6)			1	
$k_a + k_b$. P = 0.066 torr.							
72 HAS/JOH 1)	EX	298	(1.8±0.1)(6)			1	
$k_a + k_b$. P = 0.079 torr.							
1) $CH_3CH_2CH_2CH_2CH_3^{\dagger}$ formed by $^1CH_2$ + $CH_3CH_2CH_2CH_3$.							
$(CH_3)_2CHCH_2CH_3^{\dagger}$ → CH_3 + $CH_3CH_2CHCH_3$ (a) → CH_3 + $(CH_3)_2CHCH_2$ (b) → CH_3CH_2 + $(CH_3)_2CH$ (c)							
Butane, 2-methyl- (Isopentane)							
72 HAS/JOH 1)	EX	298	(3.1±0.2)(6)			1	
$k_a + k_b + k_c$. At 366 nm.							
72 HAS/JOH 1)	EX	298	(1.6±0.1)(6)			1	
$k_a + k_b + k_c$. At 435.8 nm.							
1) $(CH_3)_2CHCH_2CH_3^{\dagger}$ formed by $^1CH_2$ + $(CH_3)_3CH$.							
72 HAS/JOH 2)	EX	298	(2.8±0.1)(6)			1	
$k_a + k_b + k_c$. At 366 nm.							
72 HAS/JOH 2)	EX	298	(2.2±0.1)(6)			1	
$k_a + k_b + k_c$. At 435.8 nm.							
2) $(CH_3)_2CHCH_2CH_3^{\dagger}$ formed by $^1CH_2$ + $CH_3CH_2CH_2CH_3$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$(CH_3)_4C \rightarrow (CH_3)_3C + CH_3$							
Propane, 2,2-dimethyl- (Neopentane)							
71 BAR/DZI	ES	723-803	6.31(16)	0	41268	1	
73 PAC	EX	793-953	5.01(17)	0	42821±722	1	2.0
76 BRA/WES1	DE	1030-1300	3.3(16)	0	40416	1	1.29
Computer-fit of experimental data.							
76 MAR/PUR	EX	756-845	1.26(16)	0	39694±1804	1	10.0
78 MAR/COM	EX	703-743	3.98(17)	0	42275	1	
Stirred flow-reactor pyrolysis.							
P(Neopentane) = 50 torr.							
78 PAC/WIM	EX	821	(2.4±0.1)(-5)			1	
Neopentane flow-pyrolysis.							
P = 7.6 torr.							
79 BAL/LEW2	EX	1000-1260	2.00(17)	0	40664	1	
VLP-Pyrolysis. Mass spectrometry.							
80 PAC/WIM1	EX	823	(1.7±0.1)(-5)			1	
Pyrolysis of Neopentane in a flow reactor.							
Gas-chromatography.							
P = (4-335) torr.							
81 PRA/ROG	EX	945-1016	1.38(15)	0	40051	1	
Pyrolysis in a wall-less reactor, in Ar.							
P(Ar) = 600 torr.							
$CH_3C{\equiv}CCH_2COOH \rightarrow CH_3CH{=}C{=}CH_2 + CO_2$							
3-Pentynoic acid							
76 BIG/WEA1	EX	500	3.36(-6)			1	
76 BIG/WEA1	EX	662	4.43(-2)			1	
76 BIG/WEA1	EX	500-663	2.47(11)	0	19438±758	1	
A and B recalculated from the reported data.							
$CH_3C{\equiv}CCH_2COOD \rightarrow CH_3CD{=}C{=}CH_2 + CO_2$							
3-Pentynoic acid-d							
76 BIG/WEA1	EX	630	3.30(-3)			1	
$CH_2{=}C{=}CHCH_2COOH \rightarrow CH_2{=}CHCH{=}CH_2 + CO_2$							
3,4-Pentadienoic acid							
76 BIG/WEA2	EX	500	3.35(-7)			1	
76 BIG/WEA2	EX	630	1.35(-3)			1	
76 BIG/WEA2	EX	500-715	1.05(11)	0	20152±758	1	2.6
A and B recalculated from the reported data.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
							
Furan, 2,3-dihydro-5-methyl- → Ethanone, 1-cyclopropyl-							
73 COC/EGG	EX	672-731	7.07(14)	0	28989±349	1	1.66
Pyrolysis. P-independent for P > 4 torr.							
 (a)							
→ cis-$CH_3C(O)CH{=}CHCH_3$ (b)							
→ trans$CH_3C(O)CH{=}CHCH_3$ (c)							
→ $CH_3C(O)CH_2CH{=}CH_2$ (d)							
Ethanone, 1-cyclopropyl- → Furan, 2,3-dihyrdo-5-methyl- (a) → 3-Penten-2-one, (Z)- (b) → 3-Penten-2-one, (E)- (c) → 4-Penten-2-one (d)							
73 COC/EGG [1]) k_a.	EX	672-731	7.76(13)	0	27810±349	1	1.7
73 COC/EGG [1]) k_b.	ES	672-731	6.31(13)	0	28989	1	
73 COC/EGG [1]) k_c.	ES	672-731	1.58(13)	0	28989	1	
73 COC/EGG [1]) k_d.	ES	672-731	3.98(14)	0	30071	1	
73 COC/EGG [1]) $k_b + k_c + k_d$.	EX	672-731	2.51(14)	0	29289±505	1	2.14
[1]) Thermal isomerization. P-independent for P > 4 torr.							
 (a) (b)							
→ $CH_2{=}CHCHO$ + $CH_2{=}CH_2$ (c)							
→ other products (d)							
6-Oxabicyclo[3.1.0]hexane → Cyclopentanone (a) → 2-Cyclopenten-1-ol (b) → 2-Propenal (Acrolein) + Ethene (c) → other products (d)							
74 FLO/PEN1 [1]) k_a.	EX	670-742	1.45(14)	0	28916±180	1	1.29

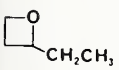
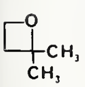
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
74 FLO/PEN1 [1])	EX	670-742	3.63(13)	0	29133±265	1	1.45
k_b.							
74 FLO/PEN1 [1])	EX	670-742	4.07(14)	0	32296±433	1	1.82
k_c. The reactant might isomerize to Cyclobutanecarboxaldehyde before decomposing.							
74 FLO/PEN1 [1])	EX	670-742	2.00(14)	0	28989±108	1	1.17
$k_a + k_b + k_c + k_d$.							
[1]) Thermolysis.							
P = (1-28) torr.							
$CH_3CH{=}CHCH_2COOH \rightarrow CH_3CH{=}CHCH_3 + CO_2$							
3-Pentenoic acid							
76 BIG/WEA1	EX	500	2.01(-7)			1	
76 BIG/WEA1	EX	693	1.05(-3)			1	
76 BIG/WEA1	EX	500-720	2.34(11)	0	20814±782	1	
A and B recalculated from the reported data.							
$CH_3C(O)C(O)CH_2CH_3 \rightarrow CH_3CO + CH_3CH_2CO$ (a)							
$\rightarrow$ any other products (b)							
2,3-Pentanedione							
74 SCH/KNO	EX	362-398	≃7.94(16)	0	33971±1459	1	10.0
k_a. Order of magnitude estimate: $k_a \sim 0.1k_b$.							
74 SCH/KNO	EX	362-398	7.94(17)	0	33971±1459	1	10.0
$k_{overall}$.							
$CH_2{=}C(CH_3)CH_2COOH \rightarrow (CH_3)_2C{=}CH_2 + CO_2$							
3-Butenoic acid, 3-methyl-							
$\rightarrow$ 1-Propene, 2-methyl- + Carbon dioxide							
77 BIG/WEA [1])	RL	500	2.03(1)			1/1	
k/k_{ref}.							
k_{ref}: $CH_2{=}C(CH_3)CH_2COOH \rightarrow CH_2{=}C(CH_3)_2 + CO_2$							
77 BIG/WEA [1])	EX	500	3.05(-5)			1	
[1]) Pyrolysis in a flow-reactor.							
Gas-chromatography.							

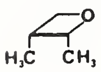
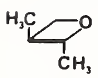
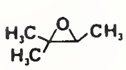


$\rightarrow CH_3CH_2CH{=}CH_2 + CO_2$ (a) = (b)

$\rightarrow (CH_3)_2C{=}CH_2 + CO_2$ (c)

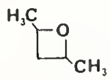
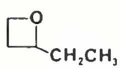
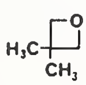
Cyclopropaneacetic acid							
$\rightarrow$ 1-Butene + Carbon dioxide (a) = (b)							
$\rightarrow$ 1-Propene, 2-methyl- + Carbon dioxide (c)							
80 BIG/FET [1])	EX	725	1.0(-3)			1	
$k_a = k_b$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
80 BIG/FET [1]	EX	725	<4.0(-5)			1	
k_c.							
Upper-limit k.							
80 BIG/FET [1]	EX	725	2.0(-3)			1	
$k_a + k_b + k_c$.							
80 BIG/FET [1]	EX	750-820	2.18(11)	0	23434±722	1	
$k_a + k_b + k_c$.							
A and B recalculated from the reported data.							
[1]). Pyrolysis in a flow-reactor.							
NMR-spectrometry.							
$CH_3CH_2OCH_2CH{=}CH_2 \rightarrow CH_3CHO + CH_3CH{=}CH_2$							
1-Propene, 3-ethoxy-							
74 EGG/VIT2	EX	560-648	6.92(11)	0	21928±388	1	1.95
$CH_3CH_2CH_2OCH{=}CH_2 \rightarrow CH_3CH{=}CH_2 + CH_3CHO$							
Propane, 1-(ethenyloxy)-							
74 BAM	EX	653-708	1.32(11)	0	21399±204	1	1.35
Pyrolysis in a static system.							
Gas-chromatography.							
 $\rightarrow HCHO + CH_3CH_2CH{=}CH_2$ (a)							
$\rightarrow CH_3CH_2CHO + CH_2CH_2$ (b)							
Oxetane, 2-ethyl- → Formaldehyde + 1-Butene (a)							
→ Propanal + Ethene (b)							
77 CLA/HOL	EX	699-752	2.95(14)	0	29652±437	1	1.91
$k_a + k_b$. Pyrolysis.							
P = (0.45-32) torr.							
 $\rightarrow HCHO + (CH_3)_2C{=}CH_2$ (a)							
$\rightarrow (CH_3)_2CO + CH_2{=}CH_2$ (b)							
Oxetane, 2,2-dimethyl-							
82 HAM/HOL [1]	EX	675-744	3.02(13)	0	26715±349	1	1.78
k_a.							
82 HAM/HOL [1]	EX	675-744	3.63(15)	0	32549±529	1	2.19
k_b.							
82 HAM/HOL [1]	EX	675-744	6.03(13)	0	27184±325	1	1.74
$k_a + k_b$.							
[1]) Pyrolysis.							
Vacuum-system.							
P = (7.2-9.2) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
 → $CH_3CH{=}CH_2$ + CH_3CHO (a) → cis-$CH_3CH{=}CHCH_3$ + HCHO (b) → trans-$CH_3CH{=}CHCH_3$ + HCHO (c)							
Oxetane, 2,3-dimethyl-, cis- → 1-Propene + Acetaldehyde (a) → 2-Butene, (Z)- + Formaldehyde (b) → 2-Butene, (E)- + Formaldehyde (c)							
74 HOL/SCO [1]) k_a.	EX	688-756	5.01(15)	0	31815±312	1	1.69
74 HOL/SCO [1]) k_b + k_c. [1]) Pyrolysis. High-vacuum system. P_o = (2-32) torr.	EX	688-756	1.74(15)	0	31451±360	1	1.78
 → $CH_3CH{=}CH_2$ + CH_3CHO (a) → cis-$CH_3CH{=}CHCH_3$ + HCHO (b) → trans-$CH_3CH{=}CHCH_3$ + HCHO (c)							
Oxetane, 2,3-dimethyl-, trans- → 1-Propene + Acetaldehyde (a) → 2-Butene, (Z)- + Formaldehyde (b) → 2-Butene, (E)- + Formaldehyde (c)							
74 HOL/SCO k_a.	EX	688-756	8.13(15)	0	32537±334	1	1.78
74 HOL/SCO k_b + k_c. [1]) Pyrolysis. High-vacuum system. P_o = (2-32) torr.	EX	688-756	3.09(15)	0	32046±375	1	1.82
 → $(CH_3)_3CCHO$ (a) → $(CH_3)_2CHC(O)CH_3$ (b) → $CH_2{=}C(CH_3)OCH_2CH_3$ (c) → $(CH_3)_2C(OH)CH{=}CH_2$ (d) → $CH_2{=}C(CH_3)CH(OH)CH_3$ (e)							
Oxirane, trimethyl- → Propanal, 2,2-dimethyl- (a) → 2-Butanone, 3-methyl- (b) → 1-Propene, 2-ethoxy- (c) → 3-Buten-2-ol, 2-methyl- (d) → 3-Buten-2-ol, 3-methyl- (e)							
75 FLO/OEZ [1]) k_a.	EX	665-715	1.07(13)	0	27208±421	1	1.82
75 FLO/OEZ [1]) k_b.	EX	665-715	1.12(13)	0	27052±601	1	2.40

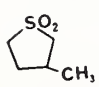
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
75 FLO/OEZ [1]	EX	665-715	1.51(13)	0	27738±457	1	1.95
k_c.							
75 FLO/OEZ [1]	EX	665-715	1.02(12)	0	27533±373	1	1.70
k_d.							
75 FLO/OEZ [1]	EX	665-715	8.71(11)	0	25681±986	1	4.17
k_e.							
75 FLO/OEZ [1]	EX	665-715	6.31(13)	0	27473±505	1	2.09
$k_a + k_b + k_c + k_d + k_e$.							
[1]) Thermolysis. Static system.							
P = (1.5-27) torr.							
$CH_3OCH_2CH_2OCH{=}CH_2 \rightarrow CH_3OCH{=}CH_2 + CH_3CHO$							
Ethene, (2-methoxyethoxy)-							
74 BAM	EX	653-708	1.38(11)	0	22241±144	1	1.23
Pyrolysis in a static system.							
Gas-chromatography.							
$CH_3C(O)OCH_2CH_2CH_3 \rightarrow CH_3COOH + CH_3CH{=}CH_2$							
Acetic acid propyl ester (n-Propyl acetate)							
76 DEB/TAY	EX	650-700	4.47(12)	0	24409	1	
$CH_3C(O)OCH(CH_3)_2 \rightarrow CH_3COOH + CH_3CH{=}CH_2$							
Acetic acid 1-methylethyl ester (i-Propyl acetate)							
75 TAY	EX	609-657	1.58(13)	0	23020±302	1	1.58
Pyrolysis.							
CH_3COOH decomposes fast to $CO_2 + CH_4$.							
77 SMI/MUT	EX	651	(5.93±0.17)(-3)			1	
78 TAY	EX	609-668	1.62(13)	0	22994	1	
Pyrolysis in a stainless-steel reactor.							
82 MCM/LEW	EX	950-1000	5.01(12)	0	22496	1	
Ethyl acetate/Isopropyl acetate/Isobutyl bromide/SF_6/CO_2 laser-powered homogeneous pyrolysis.							
P(Acetate, or Bromide) ~1.0 torr.							
$P(SF_6)$ = 4 torr.							
$P(CO_2)$ = 93 torr.							
$CH_3CH_2C(O)OH_2CH_3 \rightarrow CH_3CH_2COOH + CH_2{=}CH_2$							
Propanoic acid ethyl ester							
76 BAR/COC	EX	919-1220	5.25(12)	0	24418	1	
Reflected shock-waves in single-pulse shock-tubes.							
Curved Arrhenius plot above 1100 K.							

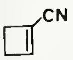
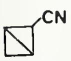
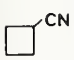
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3CH_2OC(O)OCH_2CH_3 \rightarrow CH_2{=}CH_2 + CO_2 + CH_3CH_2OH$							
Carbonic acid diethyl ester (Diethyl carbonate)							
72 BIG/WRE1 [1])	EX	554-594	1.43(13)	0	23352	1	
Sealed-tube pyrolysis.							
72 BIG/WRE1 [1])	EX	700	(7.40±0.22)(-2)			1	
Flow-tube pyrolysis.							
72 BIG/WRE1 [1])	EX	663-708	(4.05±0.12)(13)	0	23754	1	
Flow-tube pyrolysis. The A-factor recalculated from reported data.							
[1]) Diethyl carbonate pyrolysis.							
76 CRO/HUN	EX	584-663	1.15(13)	0	23456	1	
$CH_3C(O)OCH_2CH_2OCH_3 \rightarrow CH_3COOH + CH_2{=}CHOCH_3$							
Ethanol, 2-(methoxy)-, acetate							
76 DEB/TAY	EX	650-700	7.94(12)	0	25767	1	
80 CHU/MAR	EX	592-723	1.09(12)	0	24502±352	1	1.74
Gas phase pyrolysis in a static system. Gas-chromatography. P = (63-207) torr.							
$HOCH_2C(O)OCH(CH_3)_2 \rightarrow HOCH_2COOH + CH_3CH{=}CH_2$							
Acetic acid, hydroxy-, 1-methylethyl ester							
77 CHU/MAR	EX	563-623	3.63(12)	0	21641±352	1	1.91
$CH_3CH_2C(CH_3)_2O \rightarrow CH_3CH_2 + (CH_3)_2CO$ (a)							
$\rightarrow CH_3CH_2COCH_3 + CH_3$ (b)							
Propoxy, 1,1-dimethyl-							
78 BAT/ISL1 [1])	EX	433-463	5.01(14)	0	7197±503	1	1.58
k_a.							
78 BAT/ISL1 [1])	RL	433	(8.0±0.5)(1)			1/1	
k_a/k_b.							
79 BAT [1])	EX	393-433	6.31(14)	0	6945±500	1	3.16
k_a.							
78 BAT/ISL1 [1])	RN	433	1.0(15)	0	9411	1	
k_b.							
[1]) Pyrolysis in a static system. Gas-chromatography.							
$CH_3CH_2C(CH_3)_2O + NO \rightarrow CH_3CH_2C(CH_3)_2ONO$							
Propoxy, 1,1-dimethyl- + Nitrogen oxide (NO)							
78 BAT/ISL1	DE	393-428	3.16(13)	0	0	2	1.58
Pyrolysis in a static system. Gas-chromatography. Calculated from $k_1 = k_{-1}K$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$(CH_3)_3CCH_2OO \rightarrow (CH_3)_2C(CH_2OOH)CH_2$ (a)							
$\rightarrow (CH_3)_2CCH_2(O)OCH_3$ (b)							
Propyldioxy, 2,2-dimethyl-							
75 BAK/BAL1	ES	753	1.85(4)			1	
k_a.							
75 BAK/BAL1	ES	298-753	1.26(12)	0	13588	1	
k_a.							
75 BAK/BAL1	ES	753	≤1.6(3)			1	
k_b. Upper-limit k.							
$CH_3CH(OOH)CH_2CHCH_3 \rightarrow$  + OH							
Butyl, 3-hydroperoxy-1-methyl-							
→ Oxetane, 2,4-dimethyl- + Hydroxyl							
80 BAL/BEN1	ES	753	1.0(6)			1	
Pentane oxidation in aged boric-acid-coated vessels.							
Gas-chromatography.							
P(Total) ~ 500 torr.							
$HOOCH_2CH_2CHCH_2CH_3 \rightarrow$  + OH							
Propyl, 3-hydroperoxy-1-ethyl,							
→ Oxetane, 2-ethyl- + Hydroxyl							
80 BAL/BEN1	ES	753	1.0(6)			1	
Pentane oxidation in aged boric-acid-coated vessels.							
Gas-chromatography.							
P(Total) ~ 500 torr.							
$(CH_3)_2C(CH_2OOH)CH_2 \rightarrow$  + OH							
Propyl, 2-methyl-2-hydroperoxymethyl-							
→ Oxetane, 3,3-dimethyl-							
75 BAK/BAL1	ES	753	1.0(6)			1	2.0
75 BAK/BAL1	ES	298-753	6.31(11)	0	10065	1	2.0
$CH_3CH_2CH_2CH_2CH_2OO \rightarrow CH_2CH_2CH_2CH_2CH_2OOH$ (a)							
$\rightarrow CH_3CHCH_2CH_2CH_2OOH$ (b)							
$\rightarrow CH_3CH_2CHCH_2CH2OOH$ (c)							
Pentyldioxy							
80 BAL/BEN1 [1])	RL	753	(3.1±0.4)(-1)			1/1	
k_a/k_c.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
80 BAL/BEN1 [1])	RN	753	9.3(4)			1	
k_a.							
80 BAL/BEN1 [1])	RL	753	(2.2±0.3)			1/1	
k_b/k_c.							
80 BAL/BEN1 [1])	RN	753	6.6(5)			1	
k_b.							
80 BAL/BEN1 [1])	ES	753	3.0(5)			1	
k_c.							
$CH_3CH_2CH_2CH(OO\cdot)CH_3 \rightarrow CH_3CH_2CHCH(OOH)CH_3$ (a)							
$\rightarrow CH_3CHCH_2CH(OOH)CH_3$ (b)							
Butyldioxy, 1-methyl-							
80 BAL/BEN1 [1])	RL	753	(6.3±2.5)			1/1	
k_a/k_b.							
80 BAL/BEN1 [1])	RN	753	4.7(5)			1	
k_a.							
80 BAL/BEN1 [1])	ES	753	3.0(5)			1	
k_b.							
[1]) Pentane oxidation in aged boric-acid-coated vessels. Gas-chromatography. P(Total) ~ 500 torr.							
$CH_3CH(OOH)CH_2CH(OO\cdot)CH_3 \rightarrow CH_3CHO + CH_3CHO + HCHO + OH$							
Butyldioxy, 3-hydroperoxy-1-methyl-							
80 BAL/BEN1	ES	753	5.0(5)			1	
Pentane oxidation in aged boric-acid-coated vessels. Gas-chromatography. P(Total) ~ 500 torr.							
$CH_3CH_2CH(OO\cdot)CH_2CH_2OOH \rightarrow CH_3CH_2CHO + HCHO + HCHO + OH$							
Propyldioxy, 3-hydroperoxy-1-ethyl-							
80 BAL/BEN1	ES	753	8.0(5)			1	
Pentane oxidation in aged boric-acid-coated vessels. Gas-chromatography. P(Total) = ~ 500 torr.							
$(CH_3)_2C(CH_2OOH)CH_2OO \rightarrow (CH_3)_2CO + 2HCHO + OH$							
Propyldioxy, 2-hydroperoxymethyl-2-methyl-							
75 BAK/BAL1	ES	753	1.5(6)			1	2.0
75 BAK/BAL1	ES	298-753	6.31(11)	0	9562	1	2.0
$(CH_3)_3COCH_3 \rightarrow (CH_3)_2C{=}CH_2 + CH_3OH$							
Propane, 2-methoxy-2-methyl-							
74 CHO/GOL	EX	780-917	7.94(13)	0	29693±503	1	
The A and B factors are recommended for T = 800 K.							

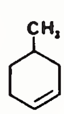
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3COSCH(CH_3)_2 \rightarrow CH_4 + COS + CH_3CH{=}CH_2$							
Ethanethioic acid S-(1-methylethyl) ester							
72 OEL/TIN	EX	723-799	1.58(13)	0	24761	1	
Elimination by thermolysis.							
$CH_3C(S)OCH(CH_3)_2 \rightarrow CH_4 + COS + CH_3CH{=}CH_2$ (a)							
$\rightarrow CH_3COSCH(CH_3)_2$ (b)							
Ethanethioic acid O-(1-methylethyl) ester							
75 BIG/GAB [1])	EX	629	5.12(-1)			1	
k_a.							
Elimination.							
75 BIG/GAB [1])	EX	563-583	7.94(12)	0	19099	1	
k_a.							
Elimination.							
75 BIG/GAB [1])	EX	559	1.01(-2)			1	
$k_a + k_b$.							
Overall reaction.							
75 BIG/GAB [1])	EX	563-583	7.08(12)	0	19099	1	
$k_a + k_b$.							
Overall reaction.							
[1]) Flow reactor pyrolysis.							
$CH_3C(O)OCH_2CH_2SCH_3 \rightarrow CH_3COOH + CH_2{=}CHSCH_3$							
Ethanol, 2-(methylthio)-, acetate							
80 CHU/MAR	EX	592-723	1.86(11)	0	21531±553	1	2.45
Pyrolysis. Static system.							
P = (63-207) torr.							
$CH_3C(O)SCH(CH_3)OCH_3 \rightarrow CH_3C(S)OH + CH_2{=}CHOCH_3$ (a)							
$\rightarrow CH_3COSH + CH_2{=}CHOCH_3$ (b)							
Ethanethioic acid S-(1-methoxyethyl) ester							
72 OEL/TIN	EX	583-633	1.00(13)	0	19930	1	
$k_a + k_b$.							
Thermolysis.							
$CH_3OC(S)OCH(CH_3)_2 \rightarrow CH_3OH + COS + CH_3CH{=}CH_2$							
Carbonothioic acid O-methyl O-(1-methylethyl) ester							
82 ALA/BIG [1])	EX	629	1.5			1	
82 ALA/BIG [1])	EX	500-560	1.19(11)	0	15785	1	
A and B recalculated from the reported data.							
[1]) Pyrolysis in a flow reactor.							
IR-spectrometry.							
P = (2-800) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3OC(O)SCH(CH_3)_2 \rightarrow CH_3OH + COS + CH_3CH{=}CH_2$							
Carbonothioic acid O-methyl S-(1-methylethyl) ester							
79 ALA/BIG [1])	EX	629	4.6(-5)			1	
79 ALA/BIG [1])	EX	713-753	9.04(12)	0	25047±722	1	
A and B recalculated from the reported data.							
[1]) Pyrolysis in a flow-reactor.							
IR-spectrometry.							
$(CH_3)_2CHOC(O)SCH_3 \rightarrow CH_3CH{=}CH_2 + CO_2 + CH_3SH$							
Carbonothioic acid S-methyl O-(1-methylethyl) ester							
79 ALA/BIG [1])	EX	629	9.4(-3)			1	
79 ALA/BIG [1])	EX	820-857	7.27(11)	0	20115±1203	1	
A and B recalculated from the reported data.							
[1]) Pyrolysis in a Flow-reactor.							
IR-spectrometry.							
 $\rightarrow CH_3CH{=}CH_2 + CH_2{=}CH_2 + SO_2$							
Thiophene, tetrahydro-3-methyl-1,1-dioxide- (3-Methylsulfolane) → 1-Propene + Ethene + Sulfur dioxide							
75 COR/TSA	EX	733-798	1.3(16)	0	33200±750	1	2.51
Pyrolysis in a flow-tube reactor.							
$CH_3SC(S)OCH(CH_3)_2 \rightarrow CH_3SH + COS + CH_3CH{=}CH_2$							
Carbonodithioic acid S-methyl O-(1-methylethyl) ester							
82 ALA/BIG [1])	EX	629	5.6(-1)			1	
82 ALA/BIG [1])	EX	500-550	1.39(12)	0	17950	1	
A and B recalculated from the reported data.							
[1]) Pyrolysis in a flow reactor.							
IR-spectrometry.							
P = (2-800) torr.							
$CH_3OC(S)SCH(CH_3)_2 \rightarrow CH_3OH + CS_2 + CH_3CH{=}CH_2$							
Carbonodithioic acid O-methyl S-(1-methylethyl) ester							
82 ALA/BIG [1])	EX	629	7.9(-1)			1	
82 ALA/BIG [1])	EX	580-630	7.40(11)	0	20235	1	
A and B recalculated from the reported data.							
[1]) Pyrolysis in a flow reactor.							
IR-spectrometry.							
P = (2-800) torr.							

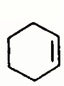
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
 → $CH_2CHC(CN)=CH_2$							
1-Cyclobutene-1-carbonitrile → 3-Butenenitrile, 2-methylene-							
72 SAR/GAL [1])	EX	463-498	2.51(13)	0	16910	1	
72 SAR/GAL [1]) Average value of previous and present data.	SE	463-498	2.39(13)	0	16910	1	
[1]) Thermal isomerization in a flow-reactor. Gas-chromatography.							
 → $CH_3=CHC(CN)=CH_3$							
Bicyclo[1.1.0]butane-1-carbonitrile → 3-Butenenitrile, 2-methylene-							
72 SAR/GAL [1])	EX	726-783	7.94(13)	0	20181	1	
72 SAR/GAL [1]) Average value of previous and present data.	SE	726-783	8.43(13)	0	20181	1	
[1]) Thermal isomerization in a flow-reactor. Gas-chromatography.							
 → $CH_2=CH_2$ + $CH_2=CHCN$							
Cyclobutanecarbonitrile → Ethene + 2-Propenenitrile							
72 SAR/GAL [1])	EX	726-783	2.03(15)	0	28535	1	
72 SAR/GAL [1]) Average value of previous and present data.	SE	726-783	3.16(15)	0	28535	1	
[1]) Thermal isomerization in a flow-reactor. Gas-chromatography.							
75 KIN/GOD3 [2]) Based on the present VLPP results and previous high-pressure data.	EX	833-1203	1.0(15)	0	28686±503	1	
75 KIN/GOD3 [2]) Based on combination of present and previous VLPP data.	EX	833-1203	7.94(15)	0	29743±503	1	
[2]) VLP-Pyrolysis system. P = (0.1-1.0) mtorr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$(CH_3)_2CHCH_2CN \rightarrow (CH_3)_2CH + CH_2CN$							
Butanenitrile, 3-methyl-							
75 KIN/GOD2	EX	1011-1123	2.51(15)	0	36789±856	1	2.0
$(CH_3)_3CCN \rightarrow (CH_3)_2C{=}CH_2 + HCN$ (a)							
$\rightarrow (CH_3)_2CCN + CH_3$ (b)							
Propanenitrile, 2,2-dimethyl-							
73 DAS/EMO	EX	838-927	1.58(12)	0	32053±247	1	1.02
k_a.							
76 KIN/GOD	EX	1023-1254	1.26(14)	0	37292±805	1	2.0
k_a.							
76 KIN/GOD	EX	1023-1254	7.94(15)	0	37695±805	1	2.0
k_b.							
$CH_3CH_2N{=}NCH(CH_3)_2 \rightarrow CH_3CH_2 + (CH_3)_2CH + N_2$							
Diazene, ethyl-(1-methylethyl)-							
77 MAR/MAC	EX	533-593	3.16(16)	0	24779±361	1	3.16
Thermolysis in a vacuum system.							
$CH_3CH_2C(CH_3)_2NH_2 \rightarrow CH_3CH_2C(CH_3)_2 + NH_2$ (a)							
$\rightarrow CH_3CH_2 + (CH_3)_2CNH_2$ (b)							
$\rightarrow (CH_3)_2C{=}CHCH_3 + NH_3$ (c)							
2-Butanamine, 2-methyl- (t-Amylamine)							
78 TSA1 [1])	EX	990-1200	7.94(15)	0	39700±500	1	2.0
k_a.							
78 TSA1 [1])	EX	990-1200	3.16(16)	0	38500±500	1	2.0
k_b.							
78 TSA1 [1])	EX	990-1200	<3.16(14)	0	37200	1	
k_c. Upper-limit k.							

[1]) t-Amylamine/4-Methylcyclohexene (or Hexene)/
Toluene/Ar thermolysis in a shock-tube.
k's deterative to either of
the two reactions:



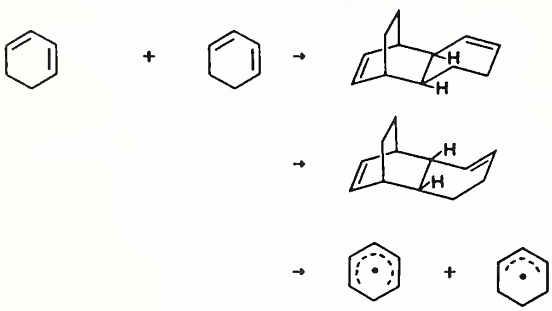
$\rightarrow CH_2{=}CHCH{=}CH_2 + CH_3CH{=}CH_2$.



$\rightarrow CH_2{=}CHCH{=}CH_2 + CH_2{=}CH_2$

[t-Amylamine] = (0.1-0.4)%. [Cyclohexene = 1%, or
[4-Methylcyclohexene] = 0.025%.
[Toluene + Argon] = 1%.

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3C(O)OCH_2CH_2CN \rightarrow CH_3COOH + CH_2{=}CHCN$							
Propanenitrile, 3-(acetyloxy)-							
80 CHU/MAR	EX	592-723	3.24(11)	0	20677±204	1	1.35
Gas phase pyrolysis in a static system.							
Gas-chromatography.							
P = (63-207) torr.							
$CH_3CH_2C(CH_3)_2ONO \rightarrow CH_3CH_2C(CH_3)O + NO$							
Nitrous acid 1,1-dimethylpropyl ester (1,1-dimethyl-propyl nitrite)							
78 BAT/ISL1	EX	393-428	2.00(16)	0	20280±50	1	1.26
Pyrolysis in a static system.							
Gas-liquid chromatography.							
$(CH_3)_2NC(O)OCH_2CH_3 \rightarrow (CH_3)_2NH + CO_2 + CH_2{=}CH_2$							
Carbamic acid, dimethyl-, ethyl ester							
72 DAL/ZIO2	EX	323-333	1.26(12)	0	22315±201	1	
Thermolysis in a conventional static system.							
trans-$CH_2{=}CHCH{=}CHCH{=}CH_2 \rightarrow$ 							
1,3,5-Hexatriene, (E)- → 1-3-Cyclohexadiene							
73 DOE/BEA	EX	533-573	8.13(12)	0	22295±604	1	2.95
Thermal isomerization in a 12 liter Pyrex flask, or in a 3.5 liter corning lead-potash flask.							
Gas-chromatography.							
81 GRI/SCH	EX	555-606	(2.77±0.53)(13)	0	22914±111	1	
Thermal isomerization in an air thermostat.							
P = (2-3) torr.							
cis-$CH_3CH{=}C{=}C{=}CHCH_3 \rightarrow$ trans-$CH_3CH{=}C{=}C{=}CHCH_3$							
2,3,4-Hexatriene, (Z)-							
76 ROT/EXN	EX	373-423	1.1(13)	0	16004±151	1	
 + H_2							
1,3-Cyclohexadiene → Benzene + Hydrogen molecule							
73 ALF/BEN	EX	943-1073	2.51(13)	0	29693±503	1	
VLPP in a triple-apperture quartz reactor.							
[1,3-Cyclohexadiene] = $(0.01\text{-}2.0)\times10^{16}$ molec.cm^{-3}.							

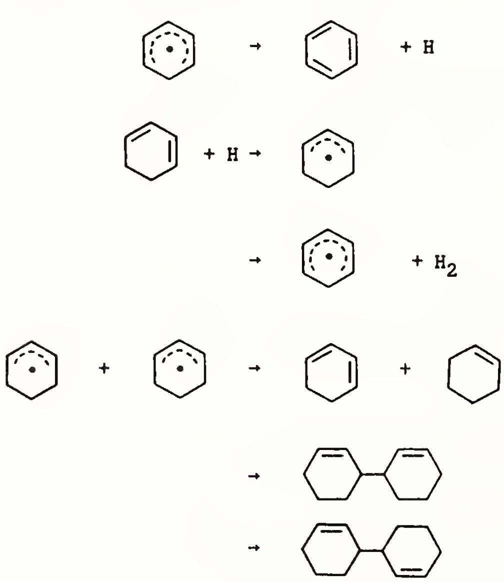


(a)

(b)

(c)

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
1,3-Cyclohexadiene + 1,3-Cyclohexadiene							
→ exo-Tricyclo[6.2.2.0$^{2.7}$]dodeca-3,9-diene (a)							
→ endo-Tricyclo[6.2.2.0$^{2.7}$]dodeca-3,9-diene (b)							
→ Cyclohexadienyl + 2-Cyclohexen-1-yl (c)							
71 DEM/HUY [1])	EX	471-639	1.82(6)	0	12280±136	2	1.29
$k_a + k_b$.							
71 DEM/HUY [1])	RL	471-639	1.29	0	-428±91	2/2	1.17
k_b/k_a.							
71 DEM/HUY [1])	RN	471-639	9.33(8)	0	12632±252	2	1.78
k_a.							
71 DEM/HUY [1])	RN	471-639	1.20(9)	0	12229±252	2	1.78
k_b.							
[1]) Thermal dimerization in Pyrex reaction vessel. P = (25-630) torr.							
72 DEM/HUY [2])	ES	512-673	2.51(13)	0	17866±503	2	2.51
k_c. Secondary reactions for channel (c) are:							



(1)

(2)

(3)

(4)

(5)

(6)

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor

Cyclohexadienyl

→ Benzene + Hydrogen atom (1)

1,3-Cyclohexadiene + Hydrogen atom

→ 2-Cyclohexen-1-yl (2)

→ Cyclohexadienyl + Hydrogen molecule (3)

2-Cyclohexen-1-yl + 2-Cyclohexen-1-yl

→ 1,3-Cyclohexadiene + Cyclohexene (4)

→ Bi-2-cyclohexen-1-yl (5)

→ Cyclohexene, 3-(4-cyclohexen-1-yl (6)

Reported rate constant ratios for the 512-673 K T-range (all in $cm_3mol^{-1}s^{-1}$ units) are:

$k_ck_3/k_2 = 2.04x10^{12}exp(-17866±503)/T$ (F = 2.51)

$k_c(1 + k_3/k_2)$

$= 1.35x10^{13}exp(-17866±50)/T$ (F = 1.10)

based on $[C_6H_6]$, or

$= 1.35x10^{13}exp(17866±503)/T$ (F = 2.51)

by computation.

$k_ck_4/(k_4 + k_5 + k_6)$

$= 1.78x10^{13}exp(18319±554)/T$ (F = 2.51)

based on [Cyclohexene], or

$= 8.32x10^{12}exp(17866±503)/T$ (F = 2.51)

by computation.

$k_c(k_5 + k_6)/(k_4 + k_5 + k_6)$

$= 3.31x10^{12}exp(17916±906)/T$ (F = 4.68)

based on $[C_{12}H_{18}]$, or

$= 3.02x10^{12}exp(17866±50)/T$ (F = 2.51)

by computation.

$C_{12}H_{18}$ is probably Bi-2-cyclohexen1-yl, or 3-(4-Cyclohexen-1-yl)-cyclohexene.

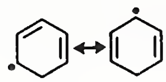
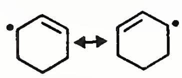
2) Pyrolysis in a cylindrical Pyrex reaction vessel. Gas-chromatography. Mass-spectrometry.

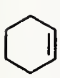
P = (10-500) torr.

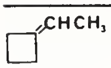
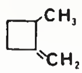
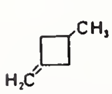
All the estimated and computed rate constant ratios are based on steady-state treatment.

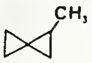
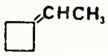
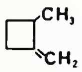
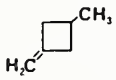
The Cyclohexadienyl radical,

formed in the channel (c) by abstraction of a H atom from a Methylene group of 1,3-Cyclohexadiene, is resonant between two forms:

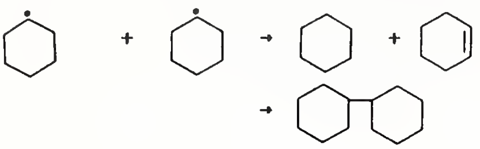
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
							
1,4-, and 1,5-Cyclohexadien-1-yl respectively. The 2-Cyclohexen-1-yl radical,							
							
also formed in the channel (c) by addition of a H atom to Methylidyne group adjacent to a Methylene group of 1,3-Cyclohexadiene, is resonant with its own mirror image:							
							
$CH\equiv CCH_2CH_2CH_2CH_3 \rightarrow CH\equiv CCH_2 + CH_3CH_2CH_2$ (a)							
$\rightarrow CH_2{=}C{=}CH_2 + CH_2{=}CHCH_3$ (b)							
1-Hexyne							
78 TSA3 [1])	EX	990-1200	7.94(15)	0	36300±500	1	1.58
k_a. Bond-breaking reaction.							
78 TSA3 [1])	EX	990-1200	5.01(12)	0	28400±1000	1	2.51
k_b. Molecular reaction.							
[1]) 1-Hexyne/5-Methyl-1-hexyne/Toluene/Ar thermolysis in a single-pulse shock-tube. k's determined relative to 5-Methyl-1-hexyne decomposition. [1-Hexyne] = 0.04%. [5-Methyl-1-hexyne] = 0.02%. P(Ar) ~ (2-6) atm. [Toluene] = 1%.							
81 KIN2 [2])	EX	903-1153	7.94(15)	0	35581±1007	1	2.0
k_a. Bond-breaking reaction.							
81 KIN2 [2])	EX	903-1153	5.01(12)	0	28385±503	1	2.51
k_b. Molecular reaction.							
[2]) 1-Hexyne thermolysis in A VLPP system.							
$CH_3C\equiv CCH(CH_3)_2 \rightarrow CH_3C\equiv CCH()CH_3 + CH_3$							
2-Pentyne, 4-methyl-							
81 KIN/NGU	EX	903-1246	1.58(16)	0	37443±755	1	2.0
4-Methyl-2-pentyne thermolysis in a VLPP system.							
$(CH_3)_3CC\equiv CH \rightarrow (CH_3)_2CC\equiv CH + CH_3$							
1-Butyne, 3,3-dimethyl-							
77 KIN	EX	933-1182	6.31(15)	0	35632±755	1	2.0

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3CH_2CH{=}CHCH{=}CH_2 \rightarrow CH_3 + CH_2CH{=}CHCH{=}CH_2$							
1,3-Hexadiene							
80 TRE	EX	694-759	8.32(15)	0	33412±423	1	1.48
1,3-Hexadiene pyrolysis in a static system. Gas-chromatography. P = (25-200) torr.							
$CH_2{=}CHCH_2CH_2CH{=}CH_2 \rightarrow CH_2{=}CHCH_2 + CH_2{=}CHCH_2$ (a)							
$\rightarrow$ any other products (b)							
1,5-Hexadiene → 2-Propenyl (Allyl)							
71 DOE/TOS	EX	694-759	1.07(12)	0	25667±403	1	1.82
k_a. Pyrolysis in a Pyrex flask, in excess Toluene (as trapping agent for Allyl.) Gas-chromatography.							
76 SAK/NOH	EX	773-893	7.94(12)	0	27680	1	
$k_{overall}$. Flow-reactor pyrolysis. Channel (a) proposed as first step of the overall reaction.							
$CH_2{=}CHCH_2CH_2CH{=}CD_2 \rightarrow CH_2{=}CHCH_2CD_2CH{=}CH_2$							
1,5-Hexadiene-1,1-d_2 → 1,5-Hexadiene-3,3-d_2							
71 DOE/TOS	EX	480-531	2.29(10)	0	17262	1	
Thermal isomerization in sealed ampoules. (Cope degenerated rearrangement.) Gas-chromatography.							
cis-$CH_3CH{=}C(CH_3)CH{=}CH_2 \rightarrow$ trans-$CH_3CH{=}C(CH_3)CH{=}CH_2$							
1,3-Pentadiene, 3-methyl-, (Z)- → 1,3-Pentadiene, 3-methyl-, (E)-							
75 MAR/JEF	EX	955-1160	1.0(14)	0	27680±1007	1	2.0
Single-pulse shock-tube cis-trans isomerization in excess Ar. P(Ar) = (200-340) torr.							
$CH_2{=}CHCH(CH_3)CH{=}CH_2 \rightarrow CH_2CHCHCH{=}CH_2 + CH_3$							
1,4-Pentadiene, 3-methyl-							
82 TRE	EX	653-716	2.29(15)	0	32733±151	1	1.26
Pyrolysis in a static system. Gas-chromatography. P = (15-200) torr.							
 $\rightarrow CH_2{=}CHCH{=}CH_2 + CH_2{=}CH_2$							
Cyclohexene							
73 TSA1	EX	1050	1.41(15)	0	33500	1	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
 → CH_3=$CHCH_2$ + CH_2=C=CH_2 (a)							
→ CH_3CH=C=CH_2 + CH_2=CH_2 (b)							
→ CH_3CH_2C(=CH_2)CH=CH_2 (c)							
→  (d)							
Cyclobutane, ethylidene-							
→ 1-Propene + 1,2-Propadiene (Allene) (a)							
→ 1,2-Butadiene + Ethene (b)							
→ 1-Pentene, 3-methylene- (c)							
→ Cyclobutane, 1-methyl-2-methylene- (d)							
71 FLO/GIB1	EX	583-697	4.90(14)	0	31520±1432	1	8.51
k_a. Decyclization and decomposition.							
71 FLO/GIB1	EX	583-697	1.78(15)	0	31042±488	1	21.4
k_b. Decyclization and decomposition.							
71 FLO/GIB1	EX	583-697	1.20(13)	0	27504±2406	1	43.7
k_c. Isomerization by decyclization.							
71 FLO/GIB1	EX	583-697	8.32(13)	0	24801±503	1	2.29
k_d. Reversible rearrangement.							
Thermolysis in a static system.							
Gas-chromatography.							
Mass-spectrometry.							
							
Cyclobutane, 1-methyl-2-methylene-							
→ Cyclobutane, ethylidene-							
71 FLO/GIB1	EX	583-497	4.79(13)	0	24605±503	1	2.29
Thermolysis in a static system.							
Reversible rearrangement.							
Gas-chromatography.							
Mass-spectrometry.							
 → CH_2=C(CH_3)CH_2CH=CH_2							
Cyclobutane, 1-methyl-3-methylene-							
→ 1,4-Pentadiene, 2-methyl-							
71 FLO/GIB2	EX	591-664	1.45(14)	0	26628±1661	1	14.1
Isomerization by decyclization.							
Thermolysis in a vacuum-system.							
Gas-chromatogrpahy.							
Mass-spectrometry.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
							
→ $CH_2{=}CH_2$ + $CH_3CH{=}C{=}CH_2$ (a)							
→ $CH_3CH{=}CH_2$ + $CH_2{=}C{=}CH_2$ (b)							
→  (c)							
→  (d)							
→  (e)							
Spiropentane, methyl-							
→ Ethene + 1,2-Butadiene (a)							
→ 1-Propene + 1,2-Propadiene (Allene) (b)							
→ Cyclobutane, ethylidene- (c)							
→ Cyclobutane, 1-methyl-2-methylene- (d)							
→ Cyclobutane, 1-methyl-3-methylene- (e)							
71 FLO/GIB2 [1])	EX	591-664	3.02(15)	0	30003±608	1	2.63
k_a. Decyclization and decomposition.							
71 FLO/GIB2 [1])	EX	591-664	2.09(15)	0	30093±841	1	3.89
k_b. Decyclization and decomposition.							
71 FLO/GIB2 [1])	EX	591-664	1.38(14)	0	27084±209	1	1.41
k_c. Isomerization.							
71 FLO/GIB2 [1])	EX	591-664	3.31(14)	0	27085±207	1	1.38
k_d. Isomerization.							
71 FLO/GIB2 [1])	EX	591-664	2.40(14)	0	27085±209	1	1.41
k_e. Isomerization.							
71 FLO/GIB2 [1])	EX	591-664	7.59(14)	0	27084±473	1	1.41
$k_a + k_b + k_c + k_d + k_e$. (Overall)							
[1]) Thermolysis in a static system.							
Gas-chromatography.							
Mass-spectrometry.							
$CH_2CH_2CH_2CH_2CH{=}CH_2^{\dagger}$ → $CH_2CH{=}CH_2$ + $CH_3CH{=}CH_2$							
5-Hexenyl							
75 TAR [1])	RL	298	8.95			1/1	
k_{ref}:							
$(CH_3)_2CCH_2CH_3^{\dagger}$ → $(CH_3)_2C{=}CH_2$ + CH_3							
75 TAR [1])	RN	298	3.2(7)			1	
[1]) $CH_2CH_2CH_2CH_2CH{=}CH_2^{\dagger}$ formed by:							
H + $CH_2{=}CHCH_2CH_2CH{=}CH_2$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor



(a)

(b)

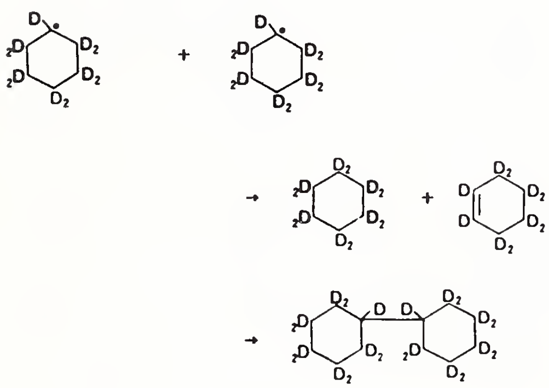
Cyclohexyl + Cyclohexyl

→ Cyclohexane + Cyclohexene (a)

→ 1,1'-Bicyclohexyl (b)

74 CUR/SID	RL	360-460	(9.9±1.0)(-1)	0	0	2/2	
k_a/k_b. Azocyclohexane photolysis in a vacuum system. Average ratio.							
79 FUJ/GAE [1]	RL	343-443	(5.6±0.1)(-1)	0	0	2/2	
k_a/k_b. Assumed to be T-independent.							
82 FUJ/GAE [1]	RL	398-443	5.9(-1)	0	<500	2/2	
k_a/k_b..							

[1]) H_2O/Cyclohexane gas-phase radiolysis in a Pyrex vessel. P(Total) = (50-2400) torr.



(a)

(b)

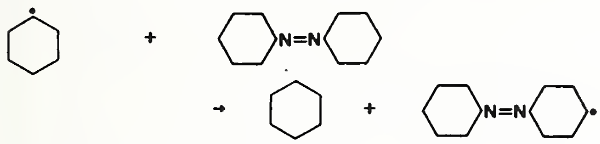
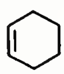
Cyclohexyl-d_{11} + Cyclohexyl-d_{11}

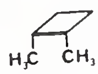
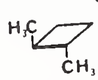
→ Cyclohexane-d_{12} + Cyclohexene-d_{10} (a)

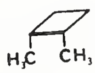
→ 1,1'-Bicyclohexyl-d_{22} (b)

79 FUJ/GAE [1]	RL	343-473	(3.8±0.1)(-1)	0	0	2/2	
k_a/k_b. Assumed to be T-independent.							
82 FUJ/GAE [1]	RL	398-443	4.6(-1)	0	<500	2/2	
k_a/k_b.							

[1]) H_2O/Cyclohexane-d_{12} gas-phase radiolysis in a Pyrex vessel. P(Total) = (50-2400) torr.

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
							
Cyclohexyl + Diazene, dicyclohexyl- (Azocyclohexane)							
74 CUR/SID	EX	360-460	3.98(8)	0	3322±503	2	1.26
Photolysis in a vacuum-system. Abstracted H assumed to be in position para to N=N group.							
$CH_2{=}CH(CH_2)_3CH_3 \rightarrow CH_2{=}CHCH_2 + CH_3CH_2CH_2$ (a)							
$\rightarrow CH_2{=}CHCH_3 + CH_2{=}CHCH_3$ (b)							
1-Hexene							
78 TSA5 [1])	EX	990-1100	7.94(15)	0	35600±150	1	1.41
k_a. Bond-breaking reaction.							
78 TSA5 [1])	EX	990-1100	3.98(12)	0	28900±200	1	1.58
k_b. Molecular reaction.							
[1]) 1-Hexene/Cyclohexene/Toluene/Ar thermolysis in asingle-pulse shock-tube. k's determined relative to the reaction:							
 $\rightarrow CH_2{=}CHCH{=}CH_2 + CH_2CH_2$							
[1-Hexene] = 0.01%. [Toluene] = 1%. [Cyclohexene] = 0.01%. P(Ar) = 1.8 atm.							
79 KIN [2])	EX	915-1153	7.94(15)	0	35632±503	1	1.58
k_a. Bond-breaking reaction.							
79 KIN [2])	EX	915-1153	3.98(12)	0	29039±755	1	1.58
k_b. Molecular reaction.							
[2]) Thermolysis using a VLPP technique.							
71 MAG/IOA	EX	823-923	2.0(12)	0	25667	1	
$k_{overall}$.							
cis-$CH_3CH_2CH_2CH{=}CHCH_3 \rightarrow$ trans-$CH_3CH_2CH_2CH{=}CHCH_3$							
2-Hexene, (Z)-							
74 BAU/YAD	RL	1000-1150	1.0	0	0	1/1	
Rate-ratio assumed to be T-independent. k_{ref}: cis-$CH_3CH{=}CHCH_3 \rightarrow$ trans-$CH_3CH{=}CHCH_3$							
$(CH_3)_2CHC(CH_3){=}CH_2 \rightarrow CH_3 + CH_3CHC(CH_3){=}CH_2$							
1-Butene, 2,3-dimethyl-							
76 TSA1	ES	1080-1165	1.0(16)	0	35700	1	

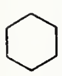
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$(CH_3)_3CCH{=}CH_2 \rightarrow CH_3 + (CH_3)_2CCH{=}CH_2$							
1-Butene, 3,3-dimethyl-							
76 TSA1	ES	1080-1165	1.58(16)	0	35500	1	
cis-$CH(CH_3)CH(CH_3)CH_2CH_2$							
$\rightarrow$ cis-$CH_3CH{=}CHCH_3 + CH_2{=}CH_2$ (a)							
$\rightarrow$  (b)							
$\rightarrow$ trans-$CH(CH_3)CH(CH_3)CH_2CH_2$ (c)							
1,4-Butanediyl, 1,2-dimethyl-, (Z)-							
$\rightarrow$ 2-Butene, (Z)- + Ethene (a)							
$\rightarrow$ Cyclobutane, 1,2-dimethyl, cis- (b)							
$\rightarrow$ 1,4-Butanediyl, 1,2-dimethyl, (E)- (c)							
76 DER/UYE [1])	RL	579-712	1.8	0	0	1/1	
k_a/k_b. Assumed to be T-independent.							
77 SCA/BAC [2])	RL	663-703	(8.73±0.73)(-1)	0	0	1/1	
k_b/k_a. Average ratio.							
77 SCA/RIC [3])	RL	693	9.35(-1)			1/1	
k_b/k_a.							
76 DER/UYE [1])	RL	579-712	7.0(-1)	0	0	1/1	
k_b/k_c. Assumed to be T-independent.							
77 SCA/BAC [2])	RL	663-703	(2.9±0.3)(-1)	0	0	1/1	
$k_b/(k_a + k_b + k_c)$. Average ratio.							
77 SCA/BAC [2])	RL	663-703	(1.36±0.10)	0	0	1/1	
k_c/k_b. Average ratio.							
77 SCA/RIC [3])	RL	693	1.38			1/1	
k_c/k_b.							
[1]) Thermolysis.							
[2]) Average of four rate ratios in the given T-range.							
[3]) Calculated ratio. Static system.							
P = 12 atm.							
trans-$CH(CH_3)CH(CH_3)CH_2CH_2$							
$\rightarrow$ trans-$CH_3CH{=}CH_3 + CH_2{=}CH_2$ (a)							
$\rightarrow$  (b)							
$\rightarrow$ cis-$CH(CH_3)CH(CH_3)CH_2CH_2$ (c)							
1,4-Butanediyl, 1,2-dimethyl-, (E)-							
$\rightarrow$ 2-Butene, (E)- + Ethene (a)							
$\rightarrow$ Cyclobutane, 1,2-dimethyl, trans- (b)							
$\rightarrow$ 1,4-Butanediyl, 1,2-dimethyl, (Z)- (c)							
76 DER/UYE [1])	RL	579-712	1.4	0	0	1/1	
k_a/k_b. Assumed to be T-independent.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
77 SCA/RIC 2)	RL	693	(1.66±0.1)			1/1	
k_a/k_{ref}.							
k_{ref}: cis-$CH(CH_3)CH(CH_3)CH_2CH_2$ → cis-$CH_3CH{=}CHCH_3$ + $CH_2{=}CH_2$							
77 SCA/BAC 3)	RL	663-703	(7.15±0.75)(-1)	0	0	1/1	
k_b/k_a. Average ratio.							
77 SCA/RIC 2)	RL	693	6.6(-1)			1/1	
k_b/k_a.							
77 SCA/BAC 3)	RL	663-703	(3.23±0.15)(-1)	0	0	1/1	
$k_b/(k_a + k_b + k_c)$. Average ratio.							
77 SCA/RIC 2)	RL	693	(1.0±.01)			1/1	
k_b/k_{ref}. k_{ref}: cis-$CH(CH_3)CH(CH_3)CH_2CH_2$ → 							
76 DER/UYE 1)	RL	579-712	1.9	0	0	1/1	
k_b/k_c. Assumed to be T-independent.							
77 SCA/BAC 3)	RL	663-703	(7.00±0.25)(-1)	0	0	1/1	
k_c/k_b. Average ratio.							
77 SCA/RIC 2)	RL	693	7.15(-1)			1/1	
k_c/k_b. Average ratio.							
77 SCA/BAC 3)	RL	663-703	(1.61±0.75)(-1)	0	0	1/1	
k_c/k_{ref}. Average ratio. k_{ref}: cis-$CH_3CHCH(CH_3)CH_2CH_2$ → cis-$CH_3CH{=}CHCH_3$ + $CH_2{=}CH_2$							

1) Thermolysis.

2) Calculated ratios. Static system. P = 12 atm.

3) Average of four rate ratios in the given T-range.

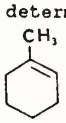
 → $CH_2{=}CHCH_2CH_2CH_2CH_3$ (a)

→ **any other products** (b)

Cyclohexane

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
78 TSA5	EX	990-1100	5.01(16)	0	44400±100	1	1.26

k_a. Cyclohexane/1-Methylcyclohexane/Ar thermolysis in a single-pulse shock-tube.
k's determined relative to the reaction:

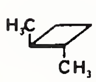
 → $CH_2{=}C(CH_3)CH{=}CH_2$ + $CH_2{=}CH_2$

[1-Methylcyclohexene] = (0.002-0.005)%.

[Cyclohexane] = (0.4-1.0)%.

P(Ar) = (1.8-5.0) atm.

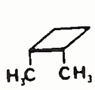
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
73 ILL/WEL	EX	825-1005	(2.15±0.12)(14)	0	32481	1	
$k_{overall}$.							
78 KAL/AND [1])	RN	980	(2.5±0.5)(-1)			1	
78 KAL/AND [1])	RN	1028	(2.1±0.1)			1	
[1]) $k_{overall}$. Cyclohexane/Hexane pyrolysis in a tubular reactor. In Hexane/Cyclohexane mixtures, the k of Cyclohexane decomposition increases when the initial [Hexane] decreases.							
79 KAL/NAM [2])	RL	1033-1123	(8.4±1.3)	0	0	1/1	
$k_{overall}/k_{ref}$. Average ratio. k_{ref}: CH_3CH_3 → products.							
79 KAL/NAM [2])	RL	983-1133	(9.7±2.2)(-1)	0	0	1/1	
$k_{overall}/k_{ref}$. Average ratio. k_{ref}: $CH_3(CH_2)_4CH_3$ → products.							
79 KAL/NAM [2])	RL	1153	1.9			1/1	
$k_{overall}/k_{ref}$.							
k_{ref}:  → products.							
Rate ratio calculated from the ratio of other rate constants.							
[2]) Cyclohexane/Ethane pyrolysis in a tubular reactor.							



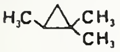
→ trans-$CH(CH_3)CH(CH_3)CH_2CH_2$

Cyclobutane, 1,2-dimethyl-, trans-
→ 1,4-Butanediyl, 1,2-dimethyl-, (E)-

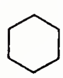
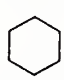
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
77 SCA/BAC [1])	RL	663-703	(5.83±0.38)(-1)	0	0	1/1	
Average ratio.							
77 SCA/RIC [1])	RL	693	(6.0±1.0)(-1)			1/1	
Calculated ratio. Static system. P = 12 atm.							

[1]) k_{ref}: 

→ cis-$CH(CH_3)CH(CH_3)CH_2CH_2$

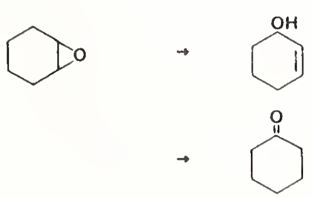
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
 → CH_2=$C(CH_3)CH_2CH_2CH_3$ (a)							
→ CH_2=$CHCH_2CH(CH_3)_2$ (b)							
→ $(CH_3)_2C$=$CHCH_2CH_3$ (c)							
→ cis-CH_3CH=$CHCH(CH_3)_2$ (d)							
→ trans-CH_3CH=$CHCH(CH_3)_2$ (e)							
→ CH_2=$C(CH_3)CH(CH_3)_2$ (f)							
→ $(CH_3)_2C$=$C(CH_3)_2$ (g)							
→ other minor products (h)							
Cyclopropane, 1,1,2-trimethyl-							
→ 1-Pentene, 2-methyl- (a)							
→ 4-Pentene, 2-methyl- (b)							
→ 2-Pentene, 2-methyl- (c)							
→ 2-Pentene, 4-methyl-, (Z)- (d)							
→ 2-Pentene, 4-methyl-, (E)- (e)							
→ 1-Butene, 2,3-dimethyl- (f)							
→ 2-Butene, 2,3-dimethyl- (g)							
→ other minor products (h)							
72 O'N/HEN [1]	EX	700-755	2.95(14)	0	30740±257	1	
$k_a + k_b + k_c + k_d + k_e + k_f + k_g + k_h$. Overall rate constant expression.							
72 O'N/HEN [1]	ES	700-755	7.76(13)	0	29693	1	
k_c.							
72 O'N/HEN [1]	ES	700-755	5.75(13)	0	30700	1	
k_d.							
72 O'N/HEN [1]	ES	700-755	1.35(14)	0	29693	1	
k_e.							
72 O'N/HEN [1]	ES	700-755	2.75(14)	0	29894	1	
$k_c + k_d + k_e$.							
72 O'N/HEN [1]	ES	700-755	1.26(14)	0	31002	1	
k_f.							
72 O'N/HEN [1]	ES	700-755	1.26(14)	0	31002	1	
k_g.							
72 O'N/HEN [1]	ES	700-755	2.51(14)	0	31002	1	
$k_f + k_g$.							

[1]) Thermolysis in a pyrex reaction-cell. Gas-chromatography. Overal rate constant determined experimentally. Rate constants for channels (a) through (g), or any combination of them, computed assuming a biradical mechanism and using transition state estimates of Arrhenius parameters (68 O'N BEN.)

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3CHCH_2CH_2CH_2CH_3^{\dagger} \rightarrow CH_3CH{=}CH_2 + CH_3CH_2CH_2$							
Pentyl, 1-methyl-							
75 TAR [1])	RL	298	4.9(-1)			1/1	
k_{ref}: $(CH_3)_2CCH_2CH_3^{\dagger} \rightarrow (CH_3)_2C{=}CH_2 + CH_3$							
75 TAR [1])	RN	298	1.8(6)			1	
[1]) $CH_3CHCH_2CH_2CH_2CH_3$ formed by: $H + CH_2{=}CHCH_2CH_2CH_2CH_3$.							
$(CH_3)_2CHCH(CH_3)CH_2 \rightarrow (CH_3)_2CH + CH_3CH{=}CH_2$ (a)							
$\rightarrow CH_3 + CH_3CH_2C(CH_3){=}CH_2$ (b)							
Butyl, 2,3-dimethyl-							
75 BUL/MAR	RL	667-770	(5.56±0.11)(1)	0	0	1/1	
k_a/k_b. Static system pyrolysis. Average ratio.							
$CH_3(CH_2)_4CH_3 \rightarrow$ products (overall)							
Hexane							
73 ILL/WEL	EX	870-1025	(2.34±0.05)(12)	0	26522	1	
P = 760 torr.							
76 RYB/YAM	EX	973-1083	3.63(10)	0	23150	1	
M = Ar.							
76 RYB/YAM	EX	973-1083	1.58(10)	0	22144	1	
M = D_2.							
78 KAL/AVD [1])	RL	980	(2.0±0.4)(1)			1/1	
k_{ref}:  → products.							
78 KAL/AVD [1])	RL	1028	(2.05±0.20)(1)			1/1	
k_{ref}:  → products.							
78 KAL/AVD [1])	RN	980	(5.0±1.0)			1	
78 KAL/AVD [1])	RN	1028	(4.3±0.2)(1)			1	
[1]) Pyrolysis in a tubular reactor. In Hexane/Cyclohexane mixtures, the k of Cyclohexane decomposition increases when the initial [Hexane] decreases.							
79 KAL/NAM [2])	RL	1153	7.3			1/1	
k_{ref}: $CH_3CH_3 \rightarrow$ products.							
79 KAL/NAM [2])	RL	1153	1.29			1/1	
k_{ref}: $CH_3(CH_2)_3CH_3 \rightarrow$ products.							
[2]) Pyrolysis of hydrocarbon mixtures in a tubular reactor. Calculated rate ratios.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
80 RUM/SHE	EX	883-993	3.31(13)	0	30216±1311	1	3.89
Pyrolysis in a quartz reactor. P = 760 torr.							
$(CH_3)_2CHCH_2CH_2CH_3 \rightarrow$ products							
Pentane, 2-methyl-							
73 ILL/WEL	EX	853-1053	(1.03±0.03)(14)	0	29909	1	
P = 760 torr.							
$(CH_3)_3CCH_2CH_3 \rightarrow$ products							
Butane, 2,2-dimethyl-							
73 ILL/WEL	EX	898-1053	(4.57±0.07)(13)	0	30191	1	
P = 760 torr.							
82 BIL/BAR	EX	703-743	≈1.0(11)	0	25767	1	
Pyrolysis of 2,2-Dimethylbutane in a Pyrex vessel. Gas-chromatography. P = (50-150) torr.							
$(CH_3)_3CCH_2CH_3^{\dagger} \rightarrow CH_3 + (CH_3)_3CCH_2$ (a)							
$\rightarrow CH_3 + (CH_3)_2CCH_2CH_2$ (b)							
$\rightarrow CH_3CH_2 + (CH_3)_3C$ (c)							
Butane, 2,2-dimethyl-							
72 HAS/JOH [1])	EX	298	(4.6±0.8)(5)			1	
$k_a + k_b + k_c$. P = 0.017 torr.							
72 HAS/JOH [1])	EX	298	(8.7±1.2)(5)			1	
$k_a + k_b + k_c$. P = 0.033 torr.							
[1]) $(CH_3)_3CCH_2CH_3^{\dagger}$ formed by $^1CH_2 + (CH_3)_4C$.							
$(CH_3)_2CHCH(CH_3)_2 \rightarrow (CH_3)_2CH + (CH_3)_2CH$ (a)							
$\rightarrow CH_3 \rightarrow (CH_3)_2CHCHCH_3$ (b)							
Butane, 2,3-dimethyl-							
74 GOL/ALF	DE	990-1250	2.51(16)	0	37544	1	
k_a. Best fit to experimental data to logA = 16.4 for each C-C fission.							
75 BUL/MAR	ES	667-770	1.58(16)	0	37649	1	
k_a. Static system pyrolysis.							
78 TSA4 [1])	EX	990-1100	1.58(16)	0	38100	1	
78 TSA4 [1])	EX	300-1100	1.82(17)	0	40800	1	
Extrapolation over the given T-range.							
[1]) k_a. Single-pulse shock-tube.							
75 BUL/MAR	ES	667-770	1.0(17)	0	40416	1	
k_b. Static system pyrolysis.							
75 BUL/MAR	ES	667-770	5.01(16)	0	38732	1	
$k_a + k_b$. Static system pyrolysis.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH{\equiv}CC(CH_3)_2COOH \rightarrow CH_2{=}C{=}C(CH_3)_2 + CO_2$							
3-Butynoic acid, 2,2-dimethyl-							
76 BIG/WEA1	EX	500	2.44(-5)			1	
76 BIG/WEA1	EX	500-630	1.79(11)	0	18266±758	1	
A and B recalculated from the reported data.							
$CH_3C(O)OCH_2CH_2C{\equiv}CH \rightarrow CH_3COOH + CH_2{=}CHC{\equiv}CH$							
3-Butyn-1-ol acetate							
79 HER/CHU	EX	613-658	1.352(13)	0	23732±192	1	1.35
Pyrolysis in a static system. P = (53-180) torr.							
$(CH_2{=}CHCH_2)_2O \rightarrow CH_2{=}CHCHO + CH_3CH{=}CH_2$							
1-Propene, 3,3'-oxybis- (Diallylether) → 2-Propenal (Acrolein) + 1-Propene							
74 VIT/EGG3	EX	545-627	6.76(11)	0	20584±176	1	1.35
Pyrolysis in a static system. P = (4-84) torr.							



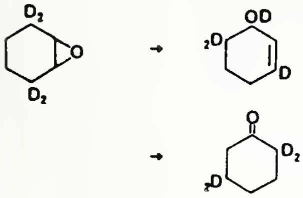
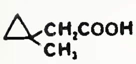
(a)

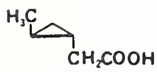
(b)

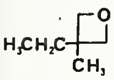
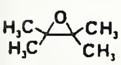
→ other products (c)

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
7-Oxabicyclo[4.1.0]heptane (1,2-Epoxycyclohexane) → 2-Cyclohexen-1-ol (a) → Cyclohexanone (b) → other products (c)							
73 FLO/PEN1 [1])	EX	680-740	1.29(13)	0	28082±654	1	2.57
k_a. P = (1.6-6) torr.							
74 FLO/PEN2 [1])	EX	677-746	1.86(13)	0	28420±755	1	2.88
k_a. P = 4 torr.							
73 FLO/PEN1 [1])	EX	680-740	3.80(14)	0	30347±554	1	2.24
k_b. P = (1.6-6) torr.							
74 FLO/PEN2 [1])	EX	677-746	6.31(14)	0	30820±710	1	2.69
k_b. P = 4 torr.							
73 FLO/PEN1 [1])	EX	677-736	1.38(14)	0	29190±554	1	2.19
$k_a + k_b + k_c$. P = (1.6-6) torr.							
74 FLO/PEN2 [1])	EX	677-746	2.29(14)	0	29653±846	1	3.31
$k_a + k_b + k_c$. P = 4 torr.							

[1]) Thermolysis in a static system.

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
 (a) (b)							
other products (c)							
7-Oxabicyclo[4.1.0]heptane-2,2,5,5-d_4							
(1,2-Epoxycyclohexane-2,2,5,5-d_4)							
→ 2-Cyclohexen-3,6,6-d_3-ol-d (a)							
→ Cyclohexanone-2,2,5,5-d_4 (b)							
→ other products (c)							
74 FLO/PEN2 [1])	EX	677-746	2.19(13)	0	29225±493	1	2.0
k_a. P = 4 torr.							
74 FLO/PEN2 [1])	EX	677-746	7.24(14)	0	30951±523	1	2.09
k_b. P = 4 torr.							
74 FLO/PEN2 [1])	EX	677-746	4.47(14)	0	30398±760	1	2.88
$k_a + k_b + k_c$.							
P = 4 torr.							
[1]) Thermolysis in a static system.							
CH_2=CHC$(CH_3)_2$COOH → CH_2=CHCH$(CH_3)_2$ + CO_2							
3-Butenoic acid, 2,2-dimethyl-							
82 ALB/BIG [1])	EX	577	9.7(-4)			1	
82 ALB/BIG [1])	EX	~577	1.03(11)	0	18619	1	
A and B recalculated from the reported data.							
[1]) Pyrolysis in a flow-reactor.							
NMR-spectrometry.							
CH_3C(O)OCH_2CH_2CH=CH_2 → CH_3COOH + CH_2=CHCH=CH_2							
3-Buten-1-ol acetate							
79 MAR/HER	EX	513-693	1.58(13)	0	24153±253	1	1.48
Pyrolysis in a static system.							
Gas-chromatography.							
P = (44-282) torr.							
 → $CH_3CH_2C(CH_3)$=CH_2 + CO_2							
Cyclopropaneacetic acid, 1-methyl-							
→ 1-Propene, 2-methyl- + Carbon dioxide							
79 BIG/FET [1])	EX	725	(8.24±0.35)(-2)			1	
79 BIG/FET [1])	EX	690-740	(4.62±0.20)(11)	0	21282±1311	1	
A and B recalculated from the reported data.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
[1]) Pyrolysis in a Flow-reactor with evacuated sealed tubes. Gas-chromatography. NMR-spectroscopy.							
 → $(CH_3)_2CHCH{=}CH_2 + CO_2$ (a) → $CH_3CH_2CH_2CH{=}CH_2 + CO_2$ (b) → $CH_3CH_2C(CH_3){=}CH_2 + CO_2$ (c)							
Cyclopropaneacetic acid, 2-methyl-, trans- → 1-Butene, 3-methyl- + Carbon dioxide (a) → 1-Pentene + Carbon dioxide (b) → 1-Butene, 2-methyl- + Carbon dioxide (c)							
80 BIG/FET [1]) k_a.	EX	725	1.13(-3)			1	
80 BIG/FET [1]) k_b.	EX	725	5.7(-4)			1	
80 BIG/FET [1]) k_c. Upper-limit k.	EX	725	<4.0(-5)			1	
80 BIG/FET [1]) $k_a + k_b + k_c$.	EX	725	1.7(-3)			1	
80 BIG/FET [1]) $k_a + k_b + k_c$. A and B recalculated from the reported data. [1]) Pyrolysis in a flow-reactor with evacuated sealed tubes. Gas-chromatography. NMR-spectrometry.	EX	750-820	3.31(11)	0	23855±601	1	
$CH_3C(O)OCH_2CH_2C(O)CH_3 \rightarrow CH_3COOH + CH_3C(O)CH{=}CH_2$							
2-Butanone, 4-(acetyloxy)-							
72 TIN/KOO Thermolysis.	EX	587-636	7.94(12)	0	18520±503	1	2.51
$(CH_3)_2CHCH_2OCH{=}CH_2 \rightarrow (CH_3)_2C{=}CH_2 + CH_3CHO$							
Propane, 1-(ethenyloxy)-2-methyl-							
74 BAM Thermolysis in a static system. Gas-chromatography.	EX	653-708	3.80(10)	0	20990±120	1	1.20
$(CH_3)_2CHOC(CH_3){=}CH_2 \rightarrow (CH_3)_2CO + CH_3CH{=}CH_2$							
1-Propene, 2-(1-methylethoxy)-							
81 FLO/HON Thermolysis in a static system.	EX	554-613	9.55(11)	0	20220±613	1	2.88

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$(CH_3)_3COCH{=}CH_2 \rightarrow CH_3CHO + (CH_3)_2C{=}CH_2$							
Propane, 2-(ethenyloxy)-2-methyl-							
79 ROS/GOL	EX	625-925	1.0(12)	0	19326±503	1	1.86
VLP-Pyrolysis.							
High-pressure k.							
RRKM best data-fit.							
 $\rightarrow HCHO + CH_3CH_2C(CH_3){=}CH_2$							
Oxetane, 3-ethyl-3-methyl-							
75 CLE/FRE	EX	680-721	2.28(15)	0	30219±243	1	1.42
Thermolysis in a static system.							
 $\rightarrow CH_3COC(CH_3)_3$ (a)							
$\rightarrow CH_2{=}C(CH_3)C(CH_3)_2OH$ (b)							
$\rightarrow CH_3CH{=}CH_2 + (CH_3)_2CO$ (c)							
Oxirane, tetramethyl-							
→ 2-Butanone, 3,3-dimethyl- (a)							
→ 1-Buten-3-ol, 2,3-dimethyl- (b)							
→ 1-Propene + 2-Propanone (c)							
81 FLO/HON [1])	EX	642-733	3.72(13)	0	28074±746	1	2.88
k_a.							
81 FLO/HON [1])	EX	642-733	6.46(11)	0	25236±1504	1	8.71
k_b.							
81 FLO/HON [1])	EX	642-733	3.55(13)	0	28267±541	1	2.19
k_c.							
[1]) Thermolysis in a static system.							
$CH_3C(O)OCH_2CH_2CH_2CH_3 \rightarrow CH_3COOH + CH_3CH_2CH{=}CH_2$							
Acetic acid butyl ester (n-Butyl acetate)							
72 TIN/KOO	EX	668-741	2.51(12)	0	23805±252	1	1.58
Thermolysis.							
76 DEB/TAY	EX	650-700	3.98(12)	0	24207	1	
$CH_3CH_2C(O)OCH(CH_3)_2 \rightarrow CH_3CH_2COOH + CH_3CH{=}CH_2$							
Propanoic acid 1-methylethyl ester							
77 CHU/MAR	EX	563-623	1.15(13)	0	22849±101	1	1.23
77 SMI/MUT	EX	651	(6.10±0.20)(-3)			1	

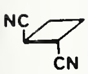
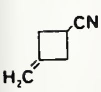
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3C(O)OC(CH_3)_3 \rightarrow CH_3COOH + (CH_3)_2C{=}CH_2$							
Acetic acid 1,1-dimethylethyl ester (t-Butyl acetate)							
75 TAY [1])	EX	557-609	2.0(13)	0	20282±176	1	1.26
78 AMI/TAY1 [1])	EX	518-609	1.15(13)	0	199975	1	
[1]) Pyrolysis in a stainless-steel reactor.							
$CH_3C(O)OC(CD_3)_3 \rightarrow CH_3COOD + (CD_3)_2C{=}CD_2$							
Acetic acid 1,1-dimethylethyl-d_9 ester (t-Butyl-d_9 acetate)							
78 AMI/TAY1	EX	558-608	2.4(13)	0	20921	1	
Pyrolysis in a stainless-steel reactor.							
$CH_3C(O)OCH_2CH_2CH_2OCH_3 \rightarrow CH_3COOH + CH_2{=}CHCH_2OCH_3$							
1-Propanol, 3-methoxy-, acetate							
76 DEB/TAY	EX	650-700	4.47(12)	0	24409	1	
$CH_3OCH_2C(O)OCH(CH_3)_2 \rightarrow CH_3OCH_2COOH + CH_3CH{=}CH_2$							
Acetic acid, methoxy-, 1-methylethyl ester							
77 SMI/MUT	EX	651	(6.87±0.27)(-3)			1	
78 CHU/MAR [1])	EX	603	5.89(-4)			1	
78 CHU/MAR [1])	EX	583-633	1.10(13)	0	22597±151	1	1.35
[1]) Pyrolysis in a static system.							
$CH_3CH_2OC(O)OCH_2CH_2CH_3$							
$\rightarrow CH_2{=}CH_2 + CO_2 + CH_3CH_2CH_2OH$ (a)							
$\rightarrow CH_3CH_2OH + CO_2 + CH_3CH{=}CH_2$ (b)							
Carbonic acid ethyl propyl ester (Ethyl propyl carbonate)							
76 CRO/HUN	EX	581-664	7.76(11)	0	21843	1	
$k_a + k_b$.							
$(CH_3)_2CHC(O\cdot)(CH_3)_2 \rightarrow (CH_3)_2CH + (CH_3)_2CO$ (a)							
$\rightarrow (CH_3)_2CHCOCH_3 + CH_3$ (b)							
Propoxy, 1,1,2-trimethyl-							
75 ALC/MIL	ES	373	4.7(6)			1	
k_a.							
75 ALC/MIL	ES	373	1.5(8)			1	
k_b.							
$(CH_3)_2CHC(O\cdot)(CH_3)_2 + O_2 \rightarrow$ products							
Propoxy, 1,1,2-trimethyl- + Oxygen molecule							
75 ALC/MIL	ES	373	1.2(9)			2	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$(CH_3)_2CHC(O^\cdot)(CH_3)_2$ + $(CH_3)_2CHCH(CH_3)_2$							
→ $(CH_3)_2CHCH(OH)(CH_3)_2$ + $(CH_3)_2CHC(CH_3)_2$							
Propoxy, 1,1,2-trimethyl- + Butane, 2,3-dimethyl-							
75 ALC/MIL	ES	373	4.0(8)			2	
$(CH_3)_2CHC(OO^\cdot)(CH_3)_2$ + $(CH_3)_2CHCH(CH_3)_2$							
→ $(CH_3)_2CHC(OOH)(CH_3)_2$ + $(CH_3)_2CHC(CH_3)_2$							
Propyldioxy, 1,1,2-trimethyl- + Butane, 2,3-dimethyl							
75 ALC/MIL	ES	373	1.6(5)			2	
$(CH_3)_2CHC(OO^\cdot)(CH_3)_2$ + $(CH_3)_2CHC(OO^\cdot)(CH_3)_2$							
→ $(CH_3)_2CHC(O^\cdot)(CH_3)_2$							
+ $(CH_3)_2CHC(O^\cdot)(CH_3)_2$ + O_2 (a)							
→ Fragmentation products (b)							
Propyldioxy, 1,1,2-trimethyl-							
75 ALC/MIL	ES	373	2.3(11)			2	
k_a.							
75 ALC/MIL	ES	373	2.4(11)			2	
k_b.							
$(CH_3)_2CHC(OO^\cdot)(CH_3)_2$ → $(CH_3)_2CHC(O)CH_3$ + CH_3 (a)							
→ $(CH_3)_2CH$ + $(CH_3)_2CO$ (b)							
Propyldioxy, 1,1,2-trimethyl-							
77 ALC/MIL [1])	RN	373	1.5(8)			1	
k_a. (α-scission). Estimated k.							
77 ALC/MIL [1])	RN	373	4.7(6)			1	
k_b. (β-scission). Estimated k.							
[1]) Azomethane photolysis.							
$(CH_3)_2CHC(CH_3)_2OH$ → $(CH_3)_2CH$ + $C(CH_3)_2OH$ (a)							
→ $(CH_3)_2CHC(CH_3){=}CH_2$ + H_2O (b)							
→ $(CH_3)_2C{=}C(CH_3)_2$ + H_2O (c)							
2-Butanol, 2,3-dimethyl-							
76 TSA1	EX	1080-1165	1.74(16)	0	37400	1	
k_a.							
76 TSA1	EX	1080-1165	1.48(14)	0	32300	1	
k_b.							
76 TSA1	EX	1080-1165	4.57(13)	0	32700	1	
k_c.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$(CH_3)_3CCH(CH_3)OH \rightarrow (CH_3)_3C + CH_3CHOH$ (a)							
$\rightarrow (CH_3)_3CCH{=}CH_2 + H_2O$ (b)							
2-Butanol, 3,3-dimethyl-							
76 TSA1	EX	990-1125	2.14(16)	0	37500	1	
k_a.							
76 TSA1	EX	990-1125	<1.0(14)	0	34200	1	
k_b.							
Upper-limit k.							
$CH_2{=}CHCH_2SCH_2CH{=}CH_2 \rightarrow CH_2{=}CHCHS + CH_3CH{=}CH_2$							
1-Propene, 3,3'-thiobis- (Diallyl sulfide)							
→ 2-Propenethial + 1-Propene							
82 MAR/ROP2	EX	588-691	1.02(11)	0	16960±84	1	1.15
Pyrolysis in a stirred-flow system. 2-Propenethial (Thioacrolein) polymerizes into a film. Mass-spectrometry. P = (2-15) torr.							
$CH_3CH_2CH_2SCH_2CH{=}CH_2 \rightarrow CH_3CH_2CHS + CH_3CH{=}CH_2$							
1-Propene, 3-(propenylthio)-							
→ Propanethial + 1-Propene							
82 MAR/ROP1 [1])	EX	543-673	3.31(11)	0	18885±241	1	1.45
82 MAR/ROP1 [1])	SE	535-680	1.15(11)	0	18355±352	1	1.15
Alternate expression, including the previous (static) and the present (flow) measurements.							
[1]) Pyrolysis in a static system. Mass- and NMR-spectrometry. Propanethial trimerizes into the cyclic compound: 2,4,6-Triethyl-1,3,5-trithiane. P(Total) =(2-18) torr.							
$CH_3C(S)OCH_2CH_2CH_2CH_3 \rightarrow CH_4 + COS + CH_3CH_2CH{=}CH_2$ (a)							
$\rightarrow CH_3C(O)SCH_2CH_2CH_2CH_3$ (b)							
Ethanethioic acid O-butyl ester							
75 BIG/GAB [1])	EX	635	2.16(-2)			1	
k_a. Elimination.							
75 BIG/GAB [1])	EX	613-641	2.51(12)	0	20382	1	
k_a. Elimination.							
75 BIG/GAB [1])	EX	629	2.86(-3)			1	
k_b. Isomerization.							
75 BIG/GAB [1])	EX	613-641	7.94(11)	0	20886	1	
k_b. Isomerization.							
75 BIG/GAB [1])	EX	633	2.97(-2)			1	
$k_a + k_b$. Overall reaction.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
75 BIG/GAB	EX	613-641	1.26(12)	0	19829	1	
$k_a + k_b$. Overall reaction.							
1) Flow-reactor pyrolysis.							
$CH_3C(S)OCH(CH_3)CH_2CH_3$							
→ CH_4 + COS + cis-$CH_3CH{=}CHCH_3$ (a)							
→ CH_4 + COS + trans-$CH_3CH{=}CHCH_3$ (b)							
→ CH_4 + COS + $CH_2{=}CHCH_2CH_3$ (c)							
Ethanethioic acid O-(1-methylpropyl) ester							
75 BIG/GAB [1]	EX	571	3.4(-2)			1	
75 BIG/GAB [1]	EX	629	7.33(-1)			1	
75 BIG/GAB [1]	EX	545-575	2.51(12)	0	18218	1	
1) $k_a + k_b + k_c$. Elimination. Flow-reactor pyrolysis. Probably isomerization not occuring.							
$CH_3C(S)OCH_2CH(CH_3)_2$ → CH_4 + COS + $(CH_3)_2C{=}CH_2$ (a)							
→ $CH_3C(O)SH_2CH(CH_3)_2$ (b)							
Ethanethioic acid O-(2-methylpropyl) ester							
75 BIG/GAB [1]	EX	629	1.30(-2)			1	
k_a. Elimination.							
75 BIG/GAB [1]	EX	623-657	3.55(12)	0	20936	1	
k_a. Elimination.							
75 BIG/GAB [1]	EX	629	2.49(-3)			1	
k_b. Isomerization.							
75 BIG/GAB [1]	EX	649	4.38(-2)			1	
$k_a + k_b$. Overall reaction.							
75 BIG/GAB [1]	EX	623-657	1.58(12)	0	20232	1	
$k_a + k_b$. Overall reaction.							
1) Flow-reactor pyrolysis.							
$CH_3C(O)SCH_2CH_2CH_2CH_3$ → CH_4 + COS + $CH_2{=}CHCH_2CH_3$							
Ethanethioic acid S-butyl ester							
73 BIG/GAB [1]	EX	790	3.0(-2)			1	
73 BIG/GAB [1]	EX	780-810	3.98(11)	0	23402±453	1	
1) Elimination. Flow-reactor pyrolysis.							
$CH_3C(O)SCH_2CH(CH_3)_2$ → CH_4 + COS + $(CH_3)_2C{=}CH_2$							
Ethanethioic acid S-(2-methylpropyl) ester							
73 BIG/GAB [1]	EX	804	3.3(-2)			1	
73 BIG/GAB [1]	EX	790-825	6.31(11)	0	24660±755	1	
1) Elimination. Flow-reactor pyrolysis.							

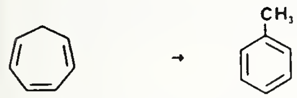
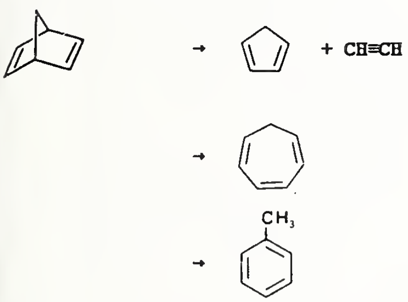
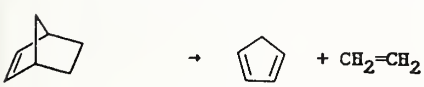
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3C(O)SCH(CH_3)CH_2CH_3$							
→ CH_4 + COS + cis-$CH_3CH{=}CHCH_3$ (a)							
→ CH_4 + COS + trans-$CH_3CH{=}CHCH_3$ (b)							
→ CH_4 + COS + $CH_2{=}CHCH_2CH_3$ (c)							
Ethanethioic acid S-(1-methylpropyl) ester							
73 BIG/GAB [1])	EX	730	3.2(-2)			1	
73 BIG/GAB [1])	EX	714-743	5.01(11)	0	22144±604	1	
[1]) $k_a + k_b + k_c$.							
Elimination.							
Flow-reactor pyrolysis.							
$CH_3C(O)SC(CH_3)_3$ → CH_4 + COS + $(CH_3)_2C{=}CH_2$							
Ethanethioic acid S-(1,1-dimethylethyl) ester							
72 OEL/TIN	EX	653-705	6.31(13)	0	23000	1	
Elimination by thermolysis.							
73 BIG/GAB [1])	EX	652	1.8(-2)			1	
73 BIG/GAB [1])	EX	650-680	1.58(12)	0	20936±201	1	
[1]) Elimination.							
Flow-reactor pyrolysis.							
$CH_3OC(O)SC(CH_3)_3$ → CH_3OH + C(O)S + $CH_2{=}C(CH_3)_2$							
Carbonothioic acid S-(1,1-dimethylethyl) O-methyl ester							
79 ALA/BIG [1])	EX	629	1.2(-3)			1	
79 ALA/BIG [1])	EX	643-693	1.35(12)	0	21799±722	1	
A and B recalculated from the reported data.							
[1]) Flow-reactor pyrolysis. (Flow-tube method.)							
$(CH_3)_3COC(O)SCH_3$ → $(CH_3)_2C{=}CH_2$ + CO_2 + CH_3SH							
Carbonothioic acid O-(1,1-dimethylethyl) S-methyl ester							
79 ALA/BIG [1])	EX	629	4.2(-4)			1	
79 ALA/BIG [1])	EX	752-775	4.88(10)	0	16025±203	1	
A and B recalculated from the reported data.							
[1]) Flow-reactor pyrolysis. (Inhibited tube method.)							
$CH_3C(S)SCH_2CH_2CH_2CH_3$ → CH_4 + CS_2 + $CH_2{=}CHCH_2CH_3$							
Ethane(dithioic) acid butyl ester							
78 ALA/BIG [1])	EX	629	3.3(-3)			1	
78 ALA/BIG [1])	EX	651-716	1.08(13)	0	22473	1	
A and B recalculated from the reported data.							
[1]) Flow-reactor pyrolysis.							

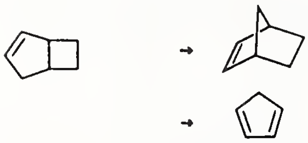
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3C(S)SCH(CH_3)CH_2CH_3 \rightarrow$ cis-$CH_3CH{=}CHCH_3$ (a)							
$\rightarrow$ trans-$CH_3CH{=}CHCH_3$ (b)							
$\rightarrow CH_2{=}CHCH_2CH_3$ (c)							
Ethane(dithioic) acid 1-methylpropyl ester							
78 ALA/BIG [1])	EX	629	7.4(-2)			1	
78 ALA/BIG [1])	EX	584-639	6.67(12)	0	22211	1	
A and B recalculated from the reported data.							
[1]) $k_a + k_b + k_c$.							
Pyrolysis in a flow-reactor.							
$CH_3C(S)SC(CH_3)_3 \rightarrow CH_4 + CS_2 + CH_2{=}C(CH_3)_2$							
Ethane(dithioic) acid 1,1-dimethylethyl ester							
78 ALA/BIG [1])	EX	629	3.1(-1)			1	
78 ALA/BIG [1])	EX	448-502	1.05(13)	0	19598	1	
A and B recalculated from the reported data.							
[1]) Pyrolysis in a flow-reactor.							
$CH_3OC(S)SC(CH_3)_3 \rightarrow CH_3OH + CS_2 + (CH_3)_2C{=}CH_2$							
Carbonodithioic acid S-(1,1-dimethylethyl) O-methyl ester							
82 ALA/BIG [1])	EX	629	4.3(-1)			1	
82 ALA/BIG [1])	EX	540-570	1.90(11)	0	16867	1	
A and B recalculated from the reported data.							
[1]) Pyrolysis in a flow reactor.							
IR-spectrometry.							
P = (2-800) torr.							
 $\rightarrow CH_2{=}CHCN + CH_2{=}CHCN$							
1,2-Cyclobutanedicarbonitrile, trans-							
72 SAR/GAL	EX	726-783	2.51(12)	0	20735	1	
Thermolysis in a flow-reactor.							
Gas-chromatography.							
 $\rightarrow CH_2{=}C{=}CH_2 + CH_2{=}CHCN$							
1-Cyclobutanecarbonitrile, 3-methylene-							
72 SAR/GAL [1])	EX	726-783	5.01(12)	0	24711	1	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
72 SAR/GAL [1])	SE	726-783	5.27(12)	0	24711	1	
Average between the previous and present data.							
[1]) Thermal isomerization in a flow-reactor.							
Gas-chromatography.							
							
Cyclopropanamine, N-propylidene-							
→ 2H-Pyrrole, 2-ethyl-3,4-dihydro-							
(5-Ethyl-1-pyrroline)							
72 COC/EGG1	EX	573-635	1.12(14)	0	24041±81	1	1.15
Thermolysis in a static system.							
Gas-chromatography.							
P-independent k from 2.5 to 55 torr.							
							
2H-Pyrrole, 2-ethyl-3,4-dehydro-							
(5-Ethyl-1-pyrroline)							
→ 3H-Pyrrole, 2-ethyl- + Hydrogen molecule							
72 COC/EGG2	EX	721-786	3.16(12)	0	27932±700	1	2.51
Pyrolysis in a static system.							
Gas-chromatography.							
P = (12-60) torr.							
CH_2=$CHCH_2NHCH_2CH$=CH_2 → CH_3CH=CH_2 + CH_2=CHCH=NH							
2-Propen-1-amine, N-(2-propenyl)-							
74 EGG/VIT1	EX	533-616	1.10(11)	0	18676±166	1	1.35
$(CH_3)_2$CHN=NCH_2CH=CH_2 → $(CH_3)_2CH$ + CH_2CH=CH_2 + N_2							
Diazene, (1-methylethyl)-2-propenyl-							
72 CRA/TAK	EX	374-399	6.31(14)	0	17916±252	1	1.91
Thermolysis.							
Gas-chromatography.							
Mass-spectrometry.							
In presence of ^{15}NO.							
P(Total) = (50-60) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3CH_2CH_2N{=}NCH_2CH_2CH_3^* \rightarrow CH_3CH_2CH_2 + CH_3CH_2CH_2 + N_2$							
Diazene, dipropyl- (Azo-n-propane)							
77 CHE/ORE	EX	298	4.0(7)			1	
Azo-n-propane/He high-pressure photolysis. RRKM data-fit on the basis of a proposed mechanism. Azon-propane assumed to be in vibrationally excited T_1 electronic state. Lower-limit k. $P(CO_2)$ = (0-45) atm. P(He) = (0-50) atm.							
81 ADA/BAS1	EX	298	(6.6±1.3)(7)			1	
Flash-photolysis in N_2. Kinetic spectroscopy.							
$(CH_3)_2CHN{=}NCH(CH_3)_2 \rightarrow (CH_3)_2CH + (CH_3)_2CH + N_2$							
Diazene, bis(1-methylethyl)- (Azoisopropane)							
73 PER/BEA	EX	625-830	3.98(16)	0	24107±503	1	
RRKM fit of experimental data.							
77 MCK/TUR [1])	EX	503-544	2.04(16)	0	23956±849	1	4.90
Series A Pyrolysis.							
77 MCK/TUR [1])	EX	518-573	2.14(17)	0	25437±309	1	1.74
Series B Pyrolysis.							
[1]) Static system thermolysis.							
79 SZI	EX	494-446	3.98(14)	0	21411±481	1	2.51
Static system thermolysis.							
80 ACS/PET	EX	523-623	1.58(16)	0	23672±313	1	2.0
Thermolysis in a high-vacuum system.							
82 MCM/LEW [2])	EX	780-1025	3.24(13)	0	19930±503	1	1.12
Experimental rate expression.							
82 MCM/LEW [2])	SE	780-1025	7.94(13)	0	20735	1	
Best fit to present and previous data.							
[2]) Laser-powered homogeous pyrolysis in excess Toluene, or Cumene as scavengers.							
$(CH_3)_2CHN{=}NCH(CH_3)_2^* \rightarrow (CH_3)_2CH + (CH_3)_2CH + N_2$							
Diazene, bis(1-methylethyl)- (Azoisopropane)							
77 CHE/ORE	EX	298	5.0(8)			1	
Azoisopropane/He high-pressure photolysis. RRKM data-fit on the basis of a proposed mechanism. Azoisopropane is assumed to be be in a vibrationally excited T_1 electronic state. Lower-limit k. $P(CO_2)$ = (0-45) atm. P(He) = (0-100) atm.							
81 ADA/BAS1	EX	298	(1.6±0.4)(8)			1	
Flash-photolysis in N_2. Kinetic spectroscopy.							

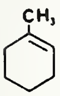
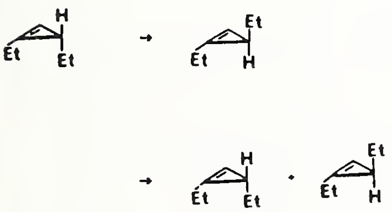
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3CONHC(CH_3)_3$ (+ M) → CH_3CONH_2 + $(CH_3)_2{=}CH_2$ (+ M) (a)							
→ $CH_2{=}C{=}O$ + $(CH_3)_3CNH_2$ (+ M) (b)							
Acetamide, N-(1,1-dimethylethyl)-							
→ Acetamide + 1-Propene, 2-methyl- (a)							
→ Ethenone + 2-Propanamine, 2-methyl- (b)							
73 MAC/NAG [1])	EX	658-738	2.63(12)	0	25939±533	1	2.14
k_a. Six-centered transition state assumed.							
73 MAC/NAG [1])	EX	673-725	3.63(13)	0	17589±644	2	2.51
k_b. M = CH_3COOH.							
[1]) Vacuum-system pyrolysis.							
P-independent k within the given P-range.							
Acetic acid catalysis.							
P = (52-412) torr.							
$CH_3C(O)OC(CH_3)_2CN$ → CH_3COOH + $CH_2{=}C(CH_3)CN$							
Propanenitrile, 2-(acetylóxy)-2-methyl-							
80 MAR/CHU	EX	503-613	2.82(14)	0	23901±1059	1	6.61
Static system pyrolysis. Mass-spectrometry.							
IR-, and NMR-spectroscopy.							
P = (56-210) torr.							
$CH_3C(O)OCH_2CH_2N(CH_3)_2$ → CH_3COOH + $CH_2{=}CHN(CH_3)_2$							
Acetic acid 2-(dimethylamino)ethyl ester							
80 CHU/MAR	EX	592-723	7.94(13)	0	6511±457	1	2.0
Pyrolysis in a static system.							
Gas-chromatography.							
P = (63-207) torr.							
$(CH_3)_2NC(O)OCH(CH_3)_2$ → $(CH_3)_2NH$ + CO_2 + $CH_3CH{=}CH_2$							
Carbamic acid, dimethyl-, 1-methylethyl ester							
72 DAL/ZIO2	EX	323-333	1.10(13)	0	21797±201	1	
Pyrolysis in a conventional static system.							
$CH{\equiv}CCH_2CH_2CH_2C{\equiv}CH$ → $CH_2{=}C{=}CH_2$ + $CH_2{=}CHC{\equiv}CH$							
1,6-Heptadiyne							
80 KIN	EX	794-1225	3.98(12)	0	26019±503	1	2.51
VLP-Pyrolysis.							
High-pressure k extrapolated from							
VLPP data by means of RRKM theory.							
$CH_2{=}C{=}CHCH(CH_3)C{\equiv}CH$ → $CH{\equiv}CCH_2CH{=}C{=}CHCH_3$							
1,2-Hexadien-5-yne, 4-methyl-							
72 HOP	EX	423-473	6.92(10)	0	15501±151	1	1.35

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
							
1,3,5-Cycloheptatriene → Benzene, methyl- (Toluene)							
75 LUU/GLA [1]	EX	900-1300	3.16(13)	0	25140±722	1	1.58
75 LUU/GLA [1]	SE	600-1300	6.31(13)	0	26222±120	1	1.12
Extended Arrhenius expression over the low and high T-range, by combining the previous and the present data.							
[1] M = Ar. Thermal isomerization behind incident and reflected shock-waves. Total Conc. = $(0.6\text{-}6.0)\times10^{18}$ molec.cm^{-3}. [Cycloheptatriene] = (0.01-1.0)% P-independent k.							
 (a) (b) (c)							
Bicyclo[2.2.1]hepta-2,5-diene (2,5-Norbornadiene) → 1,3-Cyclopentadiene + Ethyne (a) → 1,3,5-Cycloheptatriene (b) → Benzene, methyl- (Toluene) (c)							
75 WAL/WEL [1]	EX	584-630	6.03(14)	0	25853±146	1	1.26
k_a. Decomposition.							
75 WAL/WEL [1]	EX	584-630	7.94(14)	0	25848±151	1	1.29
$k_b + k_c$. Isomerization by ring expansion and by rearrangement.							
[1] Decomposition in a static vacuum system.							
							
Bicyclo[2.2.1]hept-2-ene (Norbornene) → 1,3-Cyclopentadiene + Ethene							
76 WAL/WEL	EX	521-570	1.8(14)	0	22420±360	1	1.9
Decomposition of Norbornene in a static system.							

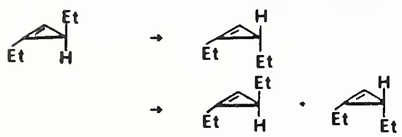
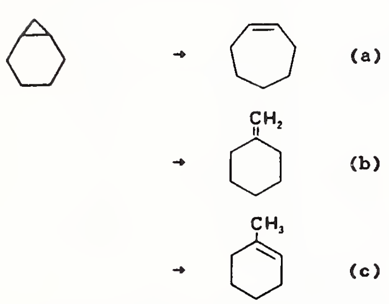
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
 (a)							
+ CH_2=CH_2 (b)							
→ cis-CH_2=CHCH=CHCH=$CHCH_3$ → products (c)							
Bicyclo[3.2.0]hept-2-ene							
→ -Bicyclo[2.2.1]hept-2-ene (Norbornene) (a)							
→ 1,3-Cyclopentadiene + Ethene (b)							
→ 1,3,6-Heptatriene, (Z)- → products (c)							
71 COC/FRE2 [1])	ES	580-626	2.24(11)	0	21062±528	1	2.40
k_a. Isomerization.							
71 COC/FRE2 [1])	ES	580-626	7.94(15)	0	26850±453	1	2.14
k_b. Decomposition.							
71 COC/FRE2 [1])	ES	580-626	3.16(12)	0	23150±1812	1	2.0
$k_{overall}$. Isomerization by decyclization. The products formed by further isomerization are believed to be: 1-Methyl-1,3-Cyclohexadiene, 2-Methyl-1,3-Cyclohexadiene, 5-Methyl-1,3-Cyclohexadiene, 1,3,5-Heptatriene, (E,E)- (trans,trans) 1,3,5-Heptatriene, (Z,Z)- (cis,cis).							
71 COC/FRE2 [1])	EX	580-626	7.08(14)	0	25174±302	1	1.62
$k_a + k_b$.							
71 COC/FRE2 [1])	EX	580-626	5.75(14)	0	24979±121	1	1.23
$k_{overall}$.							
[1]) Pyrolysis in a conventional static system. Gas-chromatography. The k's for the channels (a), (b) and (c), subject to errors, are given with caution. P = torr.							
 → CH_2=C=$CHCH_2CH_2$CH=CH_2 (a)							
→ CH_2=CHC(=CH_2)CH_2CH=CH_2 (b)							
Tricyclo[4.1.0.0[1,3]]heptane							
→ 1,2,6-Heptatriene (a)							
→ 1,5-Hexadiene, 3-methylene- (b)							
71 FRE/HOP [1])	EX	423-463	1.2(14)	0	18740±332	1	2.14
k_a.							

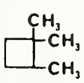
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
71 FRE/HOP [1]	EX	423-463	1.62(14)	0	17898±126	1	1.32
k_b.							
[1]) Thermal isomerization in a static system. k is P-independent within the (0.2-2.3) torr. range. Gas-chromatography.							
$CH{\equiv}CCH_2CH(CH_3)CH_2CH_3 \rightarrow CH{\equiv}CCH_2 + CH_3CHCH_2CH_3$ (a)							
$\rightarrow CH_2{=}C{=}CH_2 + CH_2{=}CHCH_2CH_3$ (b)							
1-Hexyne, 4-methyl-							
78 TSA3 [1]	EX	990-1200	7.94(15)	0	35000±500	1	1.58
k_a. Bond-breaking reaction.							
78 TSA3 [1]	EX	990-1200	7.94(12)	0	28000±1000	1	2.51
k_b. Molecular reaction.							
[1]) 4-Methyl-1-hexyne/Cyclohexene/Toluene/Ar thermolysis in a single-pulse shock-tube. k's determined relative to the decomposition of Cyclohexane. Similar data given 76 TSA2. [4-Methyl-1-hexyne] = 0.02%. [Cyclohexene] = 0.01%. P(Ar) ~ (2-6) atm. [Toluene] = 1%.							
$CH{\equiv}CCH_2CH_2CH(CH_3)_2 \rightarrow CH{\equiv}CCH_2 + CH_2CH(CH_3)_2$ (a)							
$\rightarrow CH_2{=}C{=}CH_2 + CH_2{=}C(CH_3)_2$ (b)							
1-Hexyne, 5-methyl-							
78 TSA3 [1]	EX	990-1200	1.26(16)	0	36700±500	1	1.58
k_a. Bond-breaking reaction.							
78 TSA3 [1]	EX	990-1200	2.00(12)	0	27500±1000	1	2.51
k_b. Molecular reaction.							
[1]) 5-Methyl-1-hexyne/Cyclohexene/Toluene/Ar thermolysis in a single-pulse shock-tube. k's determined relative to the decomposition of Cyclohexane. Similar data given in 76 TSA2. [5-Methyl-1-hexyne] = 0.02%. [Cyclohexene] = 0.01%. P(Ar) ~(2-6) atm. [Toluene] = 1%.							
$CH_3C{\equiv}CC(CH_3)_3 \rightarrow CH_3C{\equiv}C(CH_3)_2 + CH_3$							
2-Pentyne, 4,4-dimethyl-							
81 KIN/NGU	EX	903-1246	2.51(16)	0	35934±755	1	2.0
Thermolysis in a VLPP system. Mass-spectrometry.							

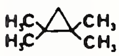
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_2=CHCH_2CH_2CH_2CH=CH_2 \rightarrow CH_2=CHCH=CH_2 + CH_3CH=CH_2$							
1,6-Heptadiene							
74 EGG/VIT3	EX	628-744	2.04(11)	0	23654±367	1	2.75
Thermolysis in a static system.							
80 KIN	EX	794-1225	2.00(11)	0	23704±503	1	2.51
VLP-Pyrolysis. RRKM extrapolation of VLPP data.							
cis-$CH_2=C(CH_3)C(CH_3)=CHCH_3$							
$\rightarrow$ trans-$CH_2=C(CH_3)C(CH_3)=CHCH_3$ (a)							
$\rightarrow CH_2=CHC(CH_3)=C(CH_3)_2$ (b)							
1,3-Pentadiene, 2,3-dimethyl- (Z)-							
$\rightarrow$ 1,3-Pentadiene, 2,3-dimethyl-, (E)- (a)							
$\rightarrow$ 1,3-Pentadiene, 3,4-dimethyl- (b)							
71 FRE/LAM [1])	RN	473-517	1.78(12)	0	22096±192	1	1.35
k_a.							
71 FRE/LAM [1])	DE	473-517	9.33(10)	0	16732±108	1	1.26
k_b.							
[1]) Thermal isomerization in static system. Gas-chromatography. k is P-independent between 0.75 and 7.5 torr. k's determined from Equilibrium constants and the sums $(k_a + k_{-a})$ and $(k_b + k_{-b})$.							
trans-$CH_2=C(CH_3)C(CH_3)=CHCH_3$							
$\rightarrow$ cis-$CH_2=C(CH_3)C(CH_3)=CHCH_3$							
1,3-Pentadiene, 2,3-dimethyl-, (E)-							
$\rightarrow$ 1,3-Pentadiene, 2,3-dimethyl-, (Z)-							
71 FRE/LAM	DE	473-517	2.29(12)	0	22770±192	1	1.35
Thermal isomerization in a static system. Gas-chromatography. k is P-independent between 0.75 and 7.5 torr. k determined from Equilibrium constant and the sum $(k_f + k_r)$.							
$CH_2=CHC(CH_3)=C(CH_3)_2 \rightarrow$ cis-$CH_2=C(CH_3)C(CH_3)=CHCH_3$							
1,3-Pentadiene, 3,4-dimethyl-							
$\rightarrow$ 1,3-Pentadiene, 2,3-dimethyl-, (Z)-							
71 FRE/LAM	DE	473-517	1.35(11)	0	17032±108	1	1.26
Thermal isomerization in a static system. Gas-chromatography. k is P-independent between 0.75 and 7.5 torr. k determined from Equilibrium constant and the sum $(k_f + k_r)$.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
 → $CH_2{=}C(CH_3)CH{=}CH_2 + CH_2{=}CH_2$							
Cyclohexene, 1-methyl-							
78 SIM	EX	1000-1180	3.72(15)	0	35000	1	
Single-pulse shock-tube.							
 (a) (b)							
(racemic mixture)							
→ trans,trans-$CH_3CH{=}CHCH{=}CHCH_2CH_3$ (c)							
→ trans,cis-$CH_3CH{=}CHCH{=}CHCH_2CH_3$ (d)							
→ cis,trans-$CH_3CH{=}CHCH{=}CHCH_2CH_3$ (e)							
→ $CH_3CH_2C{\equiv}CCH_2CH_2CH_3$ (f)							
Cyclopropene, 1,3-diethyl-, (-)-							
→ Cyclopropene, 1,3-diethyl-, (+)- (a)							
→ Cyclopropene, 1,3-diethyl-, (±)- (b)							
→ 2,4-Heptadiene- (E,E)- (c)							
→ 2,4-Heptadiene- (E,Z)- (d)							
→ 2,4-Heptadiene- (Z,E)- (e)							
→ 3-Heptyne (f)							
73 YOR/DIT [1])	EX	434-463	3.16(11)	0	16457±755	1	10.0
k_a.							
Isomerization to the enantiomer.							
73 YOR/DIT [1])	EX	434-463	6.31(11)	0	16407±755	1	10.0
k_b.							
Racemization.							
(Loss of optical activity.)							
73 YOR/DIT [1])	EX	434-463	2.51(10)	0	16205±755	1	10.0
$k_c + k_d + k_e + k_f$, or $k_c + k_d + k_e$, according to the mechanism proposed in scheme V, or VI, respectively.							
Isomerization by decyclization.							

[1]) Static reactor pyrolysis.

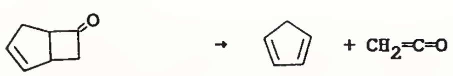
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
 (a) (b) (racemic mixture)							
→ trans,trans-$CH_3CH{=}CHCH{=}CHCH_2CH_3$ (c)							
→ trans,cis-$CH_3CH{=}CHCH{=}CHCH_2CH_3$ (d)							
→ cis,trans-$CH_3CH{=}CHCH{=}CHCH_2CH_3$ (e)							
→ $CH_3CH_2C{\equiv}CCH_2CH_2CH_3$ (f)							
Cyclopropene, 1,3-diethyl-, (+)-							
→ Cyclopropene, 1,3-diethyl-, (-)- (a)							
→ Cyclopropene, 1,3-diethyl-, (±)- (b)							
→ 2,4-Heptadiene- (E,E)- (c)							
→ 2,4-Heptadiene- (E,Z)- (d)							
→ 2,4-Heptadiene- (Z,E)- (e)							
→ 3-Heptyne (f)							
73 YOR/DIT [1] k_a. Isomerization to the enantiomer.	EX	434-463	3.16(11)	0	16457±755	1	10.0
73 YOR/DIT [1] k_b. Racemization.	EX	434-463	6.31(11)	0	16407±755	1	10.0
73 YOR/DIT [1] $k_c + k_d + k_e + k_f$, or $k_c + k_d + k_e$, according to the mechanism proposed in scheme V, or VI, respectively. Isomerization by decyclization.	EX	434-463	2.51(10)	0	16205±755	1	10.0
[1]) Static reactor pyrolysis.							
 (a) (b) (c)							
Bicyclo[4.1.0]heptane → Cycloheptene (a)							
→ Cyclohexane, methylene- (b)							
→ Cyclohexene, 1-methyl- (c)							
73 FLO/PEN2 [1] k_a. Isomerization.	EX	708-769	6.61(14)	0	32662±503	1	1.91

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
73 FLO/PEN2 [1])	EX	708-769	1.20(15)	0	33166±705	1	2.69
k_b. Isomerization.							
73 FLO/PEN2 [1])	EX	708-769	9.5(14)	0	32511±856	1	3.16
k_c. Isomerization.							
[1]) Thermolysis in a static system.							
P ~ 4.5 torr.							
$CH_3CH_2CH_2CH_2CH_2CH{=}CH_2$ → products							
1-Heptene							
74 MAG/IOA	EX	823-923	3.55(13)	0	28334	1	
cis-$CH_3CH_2CH_2CH_2CH{=}CHCH_3$ → trans-$CH_3CH_2CH_2CH_2CH{=}CHCH_3$							
2-Heptene, (Z)-							
74 BAU/YAD	RL	1000-1150	1.0	0	0	1/1	
Rate-ratio assumed to be T-independent.							
k_{ref}: cis-$CH_3CH{=}CHCH_3$ → trans-$CH_3CH{=}CHCH_3$							
$(CH_3)_2CHCH{=}C(CH_3)_2$ → $(CH_3)_2CCH{=}CHCH_3$ + CH_3 (a)							
→ $(CH_3)_2C{=}CHCHCH_3$ + CH_3 (b)							
2-Pentene, 2,4-dimethyl-							
73 TSA1	EX	1077-1151	~1.0(16)	0	35050	1	
1,1,2,2-Tetramethylcyclopropane/Cyclohexene/ Toluene/Ar thermolysis in a single-pulse shock-tube. k's determined relative to the decomposition of Cyclohexene. [Tetramethylcyclopropane] = 0.02%. [Cyclohexene] = 0.01%. [Toluene + Ar] = 1%.							
 **→ $CH_2{=}CH_2$ + $CH_3CH{=}C(CH_3)_2$ (a)**							
→ $CH_3CH{=}CH_2$ + $(CH_3)_2C{=}CH_2$ (b)							
Cyclobutane, 1,1,2-trimethyl-							
→ Ethene + 2-Butene, 2-methyl- (a)							
→ 1-Propene + 1-Propene, 2-methyl- (b)							
71 COC/FRE3 [1])	EX	660-728	8.51(15)	0	32149±97	1	1.15
k_a.							
71 COC/FRE3 [1])	EX	660-728	5.62(15)	0	30282±116	1	1.17
k_b.							
[1]) Pyrolysis in a static system.							
k is P-independent within this P-range.							
P > 5 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
 → $(CH_3)_2CHCH{=}C(CH_3)_2$							
Cyclopropane, 1,1,2,2-tetramethyl- → 2-Pentene, 2,4-dimethyl-							
73 TSA1	EX	1077-1151	6.61(14)	0	31320	1	
1,1,2,2-tetramethylcyclopropane/Cyclohexene/ Toluene/Ar thermolysis in a single-pulse shock-tube. k's determined relative to the decomposition of Cyclohexene. [Tetramethylcyclopropane] = 0.02%. [Toluene + Ar] = 1 %. [Cyclohexene] = 0.01%.							
$(CH_3)_2CHCH_2C(CH_3)_2^{\dagger}$ → $(CH_3)_2C{=}CH_2$ + $(CH_3)_2CH$							
Butyl, 1,1,3-trimethyl-							
71 GEO/RAB	EX	298	2.11(7)			1	
$(CH_3)_2CHCH_2C(CH_3)_2^{\dagger}$ formed by: H + $(CH_3)_2CHCH_2C(CH_3){=}CH_2$							
$(CH_3)_3CCH_2CHCH_3^{\dagger}$ → $(CH_3)_3C$ + $CH_3CH{=}CH_2$							
Butyl, 1,3,3-trimethyl-							
71 GEO/RAB	EX	298	1.70(8)			1	
$(CH_3)_3CCH_2CHCH_3^{\dagger}$ formed by: H + $(CH_3)_3CCH_2CH{=}CH_2$							
$(CH_3)_2CHC(CH_3)_2CH_2$ → $(CH_3)_2CH$ + $(CH_3)_2C{=}CH_2$ (a) → $(CH_3)_2CHC(CH_3){=}CH_2$ + CH_3 (b)							
Butyl, 2,2,3-trimethyl-							
81 BAL/WAL2 [1]) [3])	ES	753	(2.4±0.6)(6)			1	
81 BAL/WAL2 [1]) [3])	EX	298-753	6.31(13)	0	12870±842	1	3.16
[1]) k_a.							
81 BAL/WAL2 [2]) [3])	RN	753	(2.4±0.6)(5)			1	
81 BAL/WAL2 [2]) [3])	RN	298-753	6.3(13)	0	14554±842	1	3.16
[2]) k_b.							
[3]) Oxidation of 2,2,3-Trimethylbutane in H_2/O_2 mixtures, in aged boric-acid-coated reaction vessels. Estimations based on a proposed mechanism. P(Total) = 500 torr. P(2,2,3-Trimethylbutane) = 5 torr.							
$(CH_3)_3CCH(CH_3)CH_2$ → $(CH_3)_3C$ + $CH_3CH{=}CH_2$ (a) → $(CH_3)_3CCH{=}CH_2$ + CH_3 (b)							
Butyl, 2,3,3-trimethyl-							
81 BAL/WAL2 [1]) [3])	ES	753	1.3(6)			1	

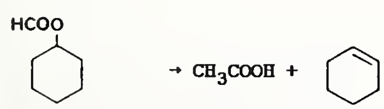
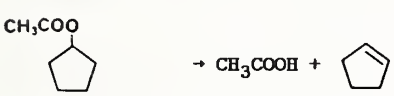
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
81 BAL/WAL2 1) 3)	ES	298-753	6.31(13)	0	13352±842	1	3.16
1) k_a.							
81 BAL/WAL2 2) 3)	RN	753	(6.2±3.1)(4)			1	
81 BAL/WAL2 2) 3)	RN	298-753	6.31(13)	0	15637±842	1	3.16
2) k_b.							
3) Oxidation of 2,2,3-Trimethylbutane in H_2/O_2 mixtures, in aged boric-acid-coated reaction vessels. Estimations based on a proposed mechanism. P(Total) = 500 torr. P(2,2,3-Trimethylbutane) = 5 torr.							
$(CH_3)_3CC(CH_3)_2 \rightarrow (CH_3)_2C{=}CH_2 + (CH_3)_2CH$ (a)							
$\rightarrow (CH_3)_2C{=}C(CH_3)_2 + CH_3$ (b)							
Propyl, 1,1,2,2-tetramethyl-							
81 BAL/WAL2 1) 2)	RN	753	(7.4±2.5)(5)			1	
81 BAL/WAL2 1) 2)	RN	298-753	6.31(13)	0	13712±842	1	3.16
1) k_a.							
2) Oxidation of 2,2,3-Trimethylbutane in H_2/O_2 mixtures, in aged boric-acid-coated reaction vessels. Estimations based on a proposed mechanism. P(Total) = 500 torr. P(2,2,3-Trimethylbutane) = 5 torr.							
80 BAL/WAL	RN	953	1.4(3)			1	
k_b. Decomposition of 2,2,3-Trimethylbutane in presence of O_2. P = (60-500) torr.							
$(CH_3)_3CC(CH_3)_2 + O_2 \rightarrow (CH_3)_3CC(CH_3){=}CH_2 + HO_2$							
Propyl, 1,1,2,2-tetramethyl- + Oxygen molecule							
80 BAL/WAL	RL	773	(9.4±1.8)(7)			2/1	
k_{ref}: $(CH_3)_3CC(CH_3)_2 \rightarrow (CH_3)_2C{=}C(CH_3)_2 + CH_3$ Decomposition of 2,2,3-Trimethylbutane in presence of O_2. P = (60-500) torr.							
81 BAL/WAL2 1)	RL	753	(1.75±0.20)(5)			2/1	
k_{ref}: $(CH_3)_3CC(CH_3)_2 \rightarrow (CH_3)_2C{=}CH_2 + (CH_3)_2CH$							
81 BAL/WAL2 1)	RN	753	(1.3±0.2)(11)			2	
1) Oxidation of 2,2,3-Trimethylbutane in H_2/O_2 mixtures, in aged boric-acid-coated reaction vessels. Estimation based on a proposed mechanism. P(Total) = 500 torr. P(2,2,3-Trimethylbutane) = 5 torr.							

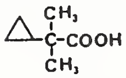
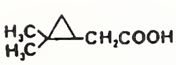
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3(CH_2)_5CH_3$ → products							
Heptane							
73 ILL/WEL	EX	873-1073	(1.89±0.03)(12)	0	26447	1	
75 TAN/KRA	EX	763-813	1.58(10)	0	24660	1	
75 TAN/KRA	EX	763-813	1.6(10)	0	24660	1	
Thermolysis in a static reactor.							
P = (75-150) torr.							
79 BAJ/VES	EX	953-1033	1.3(11)	0	23516	1	
Thermolysis in a tubular flow-reactor.							
P ~ 1 atm.							
$(CH_3)_2CHCH_2CH(CH_3)_2$ → products							
Pentane, 2,4-dimethyl-							
73 ILL/WEL	EX	873-1073	(4.48±0.12)(14)	0	31228	1	
$(CH_3)_3CCH(CH_3)_2$ → $(CH_3)_3C$ + $(CH_3)_2CH$							
Butane, 2,2,3-trimethyl-							
80 BAL/WAL	EX	953-1198	2.88(16)	0	36687±180	1	1.32
Decomposition of 2,2,3-Trimethylbutane in presence of O_2.							
P = (60-500) torr.							

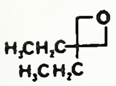


Bicyclo[3.2.0]hept-2-en-6-one → 1,3-Cyclopentadiene + Ethenone							
72 EGG/COC	EX	471-534	1.45(13)	0	18888±126	1	1.29
Pyrolysis in a static system.							
P_o = (15-485) torr.							

Bicyclo[3.2.0]heptan-6-one → Cyclopentene + Ethenone							
72 COC/EGG4	EX	546-652	1.62(14)	0	24434±146	1	1.26
Pyrolysis in a static system.							
P_o = (3.8-40) torr.							
CH_2=C=CHC$(CH_3)_2$COOH → CH_2=CHCH=C$(CH_3)_2$ + CO_2							
3,4-Pentadienoic acid, 2,2-dimethyl-							
76 BIG/WEA2	EX	500	2.16(-6)			1	
76 BIG/WEA2	EX	630	6.49(-3)			1	
76 BIG/WEA2	EX	500-695	1.67(11)	0	19455±758	1	2.6
A and B recalculated from the reported data.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_2{=}C(CH_3)C(CH_3)_2COOH \rightarrow CH_2{=}C(CH_3)CH(CH_3)_2 + CO_2$							
3-Butenoic acid, 2,2,3-trimethyl-							
82 ALB/BIG [1])	EX	577	1.2(-2)			1	
82 ALB/BIG [1])	EX	~577	1.04(11)	0	17176	1	
A and B recalculated from the reported data.							
[1]) Pyrolysis in a flow-reactor.							
NMR-spectrometry.							
$CH_3C(O)OCH_2CH_2CH_2CH{=}CH_2 \rightarrow CH_3COOH + CH_2{=}CHCH_2CH{=}CH_2$							
4-Penten-1-ol acetate							
79 MAR/HER	EX	513-693	6.46(12)	0	24538±541	1	2.29
Pyrolysis in a static system.							
P = (44-282) torr.							
$CH_3C(O)OCH(CH_3)CH_2CH{=}CH_2$							
$\rightarrow CH_3COOH + CH_2{=}CHCH_2CH{=}CH_2$ (a)							
$\rightarrow CH_3COOH + CH_3CH{=}CHCH{=}CH_2$ (b)							
4-Penten-2-ol acetate							
79 MAR/HER	EX	513-693	2.19(12)	0	21435±349	1	1.78
$k_a + k_b$.							
Pyrolysis in a static system.							
P = (44-282) torr.							
trans-$CH_3CH{=}CHC(O)OCH(CH_3)_2$							
$\rightarrow$ trans-$CH_3CH{=}CHCOOH + CH_3CH{=}CH_2$							
2-Butenoic acid, (E)-, 1-methylethyl ester							
77 SMI/MUT	EX	651	(7.10±0.20)(-3)			1	
							
Formic acid cyclohexyl ester (Cyclohexyl formate) → Formic acid + Cyclohexene							
72 TIN/KOO	EX	623-673	1.26(12)	0	21641±1007	1	3.98
Thermolysis.							
							
Cyclopentanol acetate → Acetic acid + Cyclopentene							
72 TIN/KOO	EX	588-663	1.58(12)	0	20835±503	1	3.98
Thermolysis.							

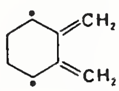
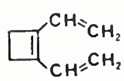
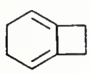
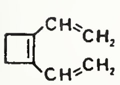
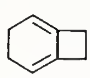
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
 → $CH_3CH_2CH{=}C(CH_3)_2$ + CO_2 (a) = (b)							
→ $(CH_3)_2C{=}C(CH_3)_2$ + CO_2 (c)							
Cyclopropaneacetic acid, α,α-dimethyl-							
→ 2-Pentene, 2-methyl- + Carbon dioxide (a) = (b)							
→ 2-Butene, 2,3-dimethyl- + Carbon dioxide (c)							
79 BIG/FET [2])	EX	725	1.31(-3)			1	
$k_a = k_b$.							
79 BIG/FET [2])	EX	725	<5.0(-5			1	
k_c. Upper-limit k.							
79 BIG/FET [1]) [2])	EX	725	2.62(-3)			1	
79 BIG/FET [1]) [2])	EX	690-740	(1.74±0.07)(11)	0	23074±349	1	
A and B recalculated from the reported data.							
[1]) $k_a + k_b + k_c$.							
[2]) Pyrolysis in a Flow-reactor with evacuated sealed tubes.							
Gas-chromatography. NMR-spectroscopy.							
 → $(CH_3)_3CCH{=}CH_2$ + CO_2 (a)							
→ $(CH_3)_2CHCH_2CH{=}CH_2$ + CO_2 (b)							
→ $(CH_3)_2CHC(CH_3){=}CH_2$ + CO_2(c)							
Cyclopropaneacetic acid, 2,2-dimethyl-							
→ 1-Butene, 3,3-dimethyl- + Carbon dioxide (a)							
→ 1-Pentene, 4-methyl- + Carbon dioxide (b)							
→ 1-Butene, 2,3-dimethyl- + Carbon dioxide (c)							
80 BIG/FET [2])	EX	725	8.2(-4)			1	
k_a.							
80 BIG/FET [2])	EX	725	4.8(-4)			1	
k_b.							
80 BIG/FET [2])	EX	725	1.0(-4)			1	
k_c.							
80 BIG/FET [1]) [2])	EX	725	1.4(-3)			1	
80 BIG/FET [1]) [2])	EX	750-820	4.49(11)	0	24215±722	1	
A and B recalculated from the reported data.							
[1]) $k_a + k_b + k_c$.							
[2]) Pyrolysis in a flow-reactor with evacuated sealed tubes.							
Gas-chromatography. NMR-spectrometry.							
$CH_3C(O)OCH_2CH_2CH_2C(O)CH_3$ → CH_3COOH + $CH_2{=}CHCH_2C(O)CH_3$							
2-Pentanone, 5-acetyloxy-							
76 DEB/TAY	EX	650-700	6.31(12)	0	23905	1	

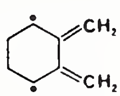
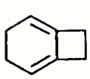
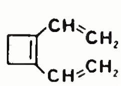
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3C(O)OC(CH_3)_2C(O)CH_3 \rightarrow CH_3COOH + CH_2{=}C(CH_3)C(O)CH_3$							
2-Butanone, 3-(acetyloxy)-3-methyl-							
76 CHU/MAR [1])	EX	573	9.54(-4)			1	
76 CHU/MAR [1])	EX	543-593	2.88(13)	0	21741±201	1	1.48
[1]) Thermolysis in a clean or seasoned Pyrex vessel. P = (69-222) torr.							
$CH_3C(O)OC(CH_3)_2C(O)OCH_3 \rightarrow CH_3COOH + CH_2{=}C(CH_3)C(O)OCH_3$							
Propanoic acid, 2-(acetyloxy)-2-methyl-, methyl ester							
80 MAR/CHU	EX	503-613	3.39(12)	0	21182±433	1	2.09
Pyrolysis in a static system. Mass-spectrometry. IR-, and NMR-spectroscopy. P = (56-210) torr.							
 $\rightarrow HCHO + (CH_3CH_2)_2C{=}CH_2$							
Oxetane, 3,3-diethyl- → Formaldehyde + Pentane, 3-methylene-							
75 CLE/FRE	EX	675-736	1.98(15)	0	30053±101	1	1.16
Thermolysis in a static system.							
$CH_3C(O)OCH_2CH_2CH(CH_3)_2 \rightarrow CH_3COOH + CH_2{=}CHCH(CH_3)_2$							
1-Butanol, 3-methyl-, acetate							
79 CHU/MAR	EX	633-693	5.37(12)	0	24358±457	1	1.95
Pyrolysis in a static system. P = (63-250) torr.							
79 TAY	EX	660-712	6.61(12)	0	24509	1	
Pyrolysis in a stainless-steel reactor.							
$CH_3C(O)OCH_2CH_2CH(CH_3)_2 + O_2(a^1\Delta_g) \rightarrow$ products							
1-Butanol, 3-methyl-, acetate + Oxygen molecule							
79 DAT/RAO	EX	298	(5.2±1.1)(6)			2	
Microwave discharge flow system.							
$CH_3C(O)OC(CH_3)_2CH_2CH_3 \rightarrow CH_3COOH + (CH_3)_2C{=}CHCH_3$ (a)							
$\rightarrow CH_3COOH + CH_3CH_2C(CH_3){=}CH_2$ (b)							
2-Butanol, 2-methyl-, acetate							
72 TIN/KOO	EX	535-596	1.58(12)	0	19376±503	1	2.51
k_a. Thermolysis.							
72 TIN/KOO	EX	535-596	5.01(12)	0	19376±503	1	2.51
k_b. Thermolysis.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3C(O)OCH(CH_3)CH(CH_3)_2$							
$\rightarrow CH_3COOH + CH_2{=}CHCH(CH_3)_2$ (a)							
$\rightarrow CH_3COOH + CH_3CH{=}C(CH_3)_2$ (b)							
2-Butanol, 3-methyl-, acetate							
73 CHU/MAR	EX	583-643	1.33(13)	0	22934±242	1	1.01
$k_a + k_b$.							
Pyrolysis in a static system.							
Channel (a) is predominant.							
P = (30-300) torr.							
$(CH_3)_2CHC(O)OCH(CH_3)_2 \rightarrow (CH_3)_2CHCOOH + CH_3CH{=}CH_2$							
Propanoic acid, 2-methyl-, 1-methylethyl ester							
77 SMI/MUT	EX	651	(6.80±0.20)(-3)			1	
$CH_3CH_2C(O)OC(CH_3)_3 \rightarrow CH_3CH_2COOH + (CH_3)_2C{=}CH_2$							
Propanoic acid 1,1-dimethylethyl ester							
78 TAY	EX	543-620	3.63(12)	0	19341	1	
Pyrolysis in a stainless-steel reactor.							
$CH_3CH_2CH_2C(O)OCH(CH_3)_2 \rightarrow CH_3CH_2CH_2COOH + CH_3CH{=}CH_2$							
Butanoic acid 1-methylethyl ester							
77 SMI/MUT	EX	651	(5.93±0.27)(-3)			1	
78 CHU/MAR [1])	EX	603	4.07(-4)			1	
78 CHU/MAR [1])	EX	583-622	2.45(13)	0	23301±252	1	1.58
[1]) Pyrolysis in a static system.							
$CH_3CH_2CH_2OC(O)OCH_2CH_2CH_3$							
$\rightarrow CH_3CH{=}CH_2 + CO_2 + CH_3CH_2CH_2OH$							
Carbonic acid dipropyl ester (Di-n-propyl carbonate)							
72 BIG/WRE1 [1])	EX	700	(7.35±0.22)(-2)			1	
72 BIG/WRE1 [1])	EX	663-708	(4.02±0.12)(13)	0	23754	1	
The A-factor recalculated from the reported experimental data.							
[1]) Pyrolysis in the Kooyman flow-tube.							
72 BIG/WRE3	EX	629	1.42(-3)			1	
Flow-tube method.							
76 CRO/HUN	EX	583-667	9.33(11)	0	21892	1	
$(CH_3)_2CHOC(O)OCH(CH_3)_2 \rightarrow CH_3CH{=}CH_2 + CO_2 + (CH_3)_2CHOH$							
Carbonic acid bis(1-methylethyl) ester (Di-i-propyl carbonate)							
72 BIG/WRE2 [1])	EX	629	3.99(-2)			1	

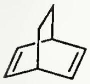
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
72 BIG/WRE2 [1])	EX	593-648	2.20(14)	0	22798	1	
The A-factor recalculated from the reported data.							
[1]) Flow-tube pyrolysis.							
$(CD_3)_2CHOC(O)OCH(CD_3)_2 \rightarrow CD_3CH{=}CD_2 + CO_2 + (CD_3)_2CHOD$							
Carbonic acid bis(1-methyl-d_3-ethyl-2,2,2-d_3) ester							
72 BIG/WRE2 [1])	EX	629	1.66(-2)			1	
72 BIG/WRE2 [1])	EX	593-648	2.39(14)	0	23402	1	
The A-factor recalculated from the reported data.							
[1]) Flow-tube pyrolysis.							
$CH_3OCH_2C(O)OC(CH_3)_3 \rightarrow CH_3OCH_2COOH + (CH_3)_2C{=}CH_2$							
Acetic acid, methoxy-, 1,1-dimethylethyl ester							
78 TAY	EX	528-587	3.09(13)	0	20232	1	
Pyrolysis in a stainless-steel reactor.							
Gas-chromatography.							
$CH_3OC(O)OC(CH_3)_2CH_2CH_3$							
$\rightarrow CH_3OH + CO_2 + CH_2{=}C(CH_3)CH_2CH_3$ (a)							
$\rightarrow CH_3OH + CO_2 + (CH_3)_2C{=}CHCH_3$ (b)							
Carbonic acid 1,1-dimethylpropyl methyl ester							
72 BIG/WRE3	EX	629	3.48			1	
72 BIG/WRE3	EX	593-648	3.97(12)	0	17464	1	
$k_a + k_b$.							
Flow-tube method.							
Assumed T-range, omitted in text.							
The A-factor recalculated from the reported data.							
$CH_3(CH_2)_5CH_2OOH \rightarrow CH_3(CH_2)_5CH_2O + OH$							
Hydroperoxide, heptyl- → Heptoxy + Hydroxyl							
80 SAH/HEI	EX	540-625	≈3.0(15)	0	21750±500	1	
Decomposition in a Pyrex reactor with continuous flow.							
Gas-chromatography.							
P = 100 torr.							
82 SAH/HEI1	EX	523-633	(1.10±0.25)(16)	0	21892±503	1	
Decomposition in a flow system, in a mixture containing O_2, H_2 and CO_2. Thin-layer and liquid-phase Gas-chromatography.							
[Hydroperoxide] = 1.23×10^{18} molec.cm^{-3}.							
P = 100 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3(CH_2)_4CH(OOH)CH_3 \rightarrow CH_3(CH_2)_4CH(O^{\cdot})CH_3 + OH$							
Hydroperoxide, 1-methylhexyl-							
82 SAN/HEI1	EX	523-633	(7.0±2.0)(15)	0	20886±503	1	
Decomposition in a flow system, in a $O_2/H_2/CO_2$ mixture.							
Thin-layer and liquid-phase Gas-chromatography.							
[Hydroperoxide] = $1.23x10^{18}$ molec.cm^{-3}.							
P = 100 torr.							
$CH_3CH_2CH_2CH_2SCH_2CH{=}CH_2 \rightarrow CH_3CH_2CH_2CHS + CH_3CH{=}CH_2$							
Butane, 1-(2-propenylthio)- → Butanethial + 1-Propene							
82 MAR/DRA	EX	535-566	2.63(11)	0	18644±361	1	1.91
Pyrolysis in a static system.							
Gas-chromatography.							
NMR-, and Mass-spectrometry.							
Butanethial trimerizes to the cyclic compound 2,4,6-Tripropyl-1,3,5-trithiane.							
P_o = (87-685) torr.							
$(CH_3)_3CN{=}NCH_2CH{=}CH_2 \rightarrow (CH_3)_3C + CH_2CH{=}CH_2 + N_2$							
Diazene, (1,1-dimethylethyl)-2-propenyl-							
72 CRA/TAK	EX	354-399	5.37(12)	0	14997±151	1	1.82
Thermolysis.							
Mass-spectrometry.							
Gas-chromatography.							
In presence of ^{15}NO.							
P(Total) = (50-60) torr.							
$(CH_3)_2NC(O)OC(CH_3)_3 \rightarrow (CH_3)_2NH + CO_2 + (CH_3)_2C{=}CH_2$							
Carbamic acid, dimethyl-, 1,1-dimethylethyl ester							
72 DAL/ZIO2	EX	323-333	7.41(12)	0	18993±201	1	
Thermolysis in a conventional static system.							
72 KWA/SLU	EX	575-636	1.86(13)	0	19628±50	1	1.07
Thermolysis in a conventional static system.							
$(CH_3)_2NC(O)OC(CD_3)_3 \rightarrow (CH_3)_2ND + CO_2 + (CD_3)_2{=}CD_2$							
Carbamic acid, dimethyl-, (1,1-dimethyl-d_9) ester							
72 KWA/SLU	EX	584-647	2.34(13)	0	20282±50	1	1.12
Thermolysis in a conventional static system.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
							
1,3-Cyclohexadiene, 5,6-bis(methylene)-							
→ Bicyclo[4.2.0]octa-1,3,5-triene							
81 ROT/SCH	EX	594-757	(2.1±1.1)(12)	0	13538±352	1	
Thermal isomerization behind incident shock-waves in N_2, or He as carrier gas. UV-spectrometry.							
CH_2=C=CHCH_2CH_2CH=C=CH_2 → 							
1,2,6,7-Octatetraene							
→ 1,4-Cyclohexanediyl, 2,3-bis(methylene)-							
82 ROT/SCH2	EX	369-455	(6.1±0.8)(9)	0	12380±50	1	
Thermal rearrangement in an air thermostat. P = (5.3-585) torr.							
CH_2=CHC(=CH_2)C(=CH_2)CH=CH_2 →  (a)							
→  (b)							
1,5-Hexadiene, 3,4-bis(methylene)-							
→ Cyclobutene, 1,2-diethenyl- (a)							
→ Bicyclo[4.2.0]octa-1,5-diene (b)							
82 ROT/SCH2 [1] k_a.	EX	495-549	(2.5±1.3)(11)	0	17967±252	1	
82 ROT/SCH2 [1] k_b.	EX	495-549	(2.4±1.0)(10)	0	16960±201	1	
[1]) Thermal rearrangement in an air thermostat. P = (5.3-585) torr.							
 → CH_2=CHC(=CH_2)C(=CH_2)CH=CH_2 (a)							
→  (b)							
Cyclobutene, 1,2-diethenyl-							
→ 1,4-Hexadiene, 3,4-bis(methylene)- (a)							
→ Bicyclo[4.2.0]octa-1,5-diene (b)							
82 ROT/SCH2 k_a.	EX	424-479	(4.8±0.7)(13)	0	17967±5 0	1	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 ROT/SCH2 k_b. Thermal rearrangement in an air thermostat. P = 5.3-585) torr.	EX	424-479	(3.0±0.8)(11)	0	14947±101	1	
 + CH_2=CHC(=CH_2)C(=CH_2)CH=CH_2 1,4-Cyclohexanediyl, 2,3-bis(methylene)- → Bicyclo[4.2.0]octa-1,5-diene + 1,5-Hexadiene, 3,4-bis(methylene)-							
82 ROT/SCH1 Thermal rearrangement in an air thermostat. k_{ref}:  + CH_2=CHCH=CH_2 → products	RL	318-356	(7.4±8.9)(2)	0	5788±403	1/2	
 → CH_2=CHC(=CH_2)C(=CH_2)CH=CH_2 (a) →  (b) Bicyclo[4.2.0]octa-1,5-diene → 1,5-Hexadiene, 3,4-bis(methylene)- (a) → Cyclobutene, 1,2-diethenyl- (b)							
82 ROT/SCH2 [1]) k_a.	EX	486-518	(2.4±1.3)(14)	0	21087±252	1	
82 ROT/SCH2 [1]) k_b. [1]) Thermal rearrangement in an air thermostat. P = (5.3-585) torr.	EX	495-549	(1.6±0.3)(13)	0	19124±50	1	
 Bicyclo[2.2.0]hexane, 2,3-bis(methylene)- → 1,4-Cyclohexanediyl, 2,3-bis(methylene)-							
82 ROT/SCH1 Thermal rearrangement in an air thermostat.	EX	318-368	(8.8±2.1)(12)	0	12984±101	1	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor

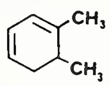
 →  + CH≡CH

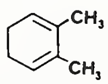
Bicyclo[2.2.2]octa-2,5-diene →
1,3-Cyclohexadiene + Ethyne

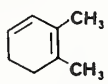
82 HUY/LEE	EX	354-435	1.14(14)	0	16366±20	1	1.05

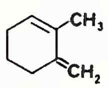
Thermolysis. Static system.
P = (0.5-6.0) torr.

trans,trans,trans-$CH_3CH=CHCH=CHCH=CHCH_3$

→  (a)

→  (b)

→  (c)

→  (d)

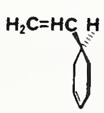
→ any other products (e)

2,4,6-Octatriene, (E,E,E)-
→ 1,3-Cyclohexadiene, 1-6-dimethyl- (a)
→ 1,3-Cyclohexadiene, 2,3-dimethyl- (b)
→ 1,3-Cyclohexadiene, 1,2-dimethyl- (c)
→ Cyclohexene, 1-methyl-6-methylene- (d)
→ other products (e)

73 DOE/BEA	EX	533-583	2.89(13)	0	22748±327	1	1.78

$k_{overall}$. Thermal isomerization.

 → $CH_2=CHCH=CH_2$ + $CH_2=CHCH=CH_2$ (a)

→  (b)

1,5-Cyclooctadiene, (Z,Z)-
→ 1,3-Butadiene (a)
→ Cyclohexene, 4-ethenyl- (b)

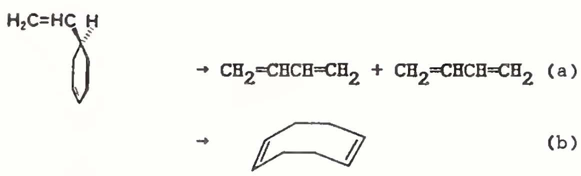
72 DOE/FRA [1])	EX	575-630	2.00(16)	0	28148±468	1	1.86

k_a. Thermal dissociation.

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
77 HUY/LUY [2])	EX	505-586	2.88(16)	0	28374±50	1	1.10
k_a. Thermal dissociation.							
72 DOE/FRA [1])	EX	575-630	3.55(15)	0	26371±574	1	2.19
k_b. Thermal rearrangement.							
77 HUY/LUY [2])	EX	505-586	2.19(15)	0	26059±60	1	1.12
k_b. Thermal rearrangement.							
72 DOE/FRA [1])	EX	575-630	9.77(15)	0	26819±382	1	1.70
$k_a + k_b$. Overall reaction.							

[1]) Pyrolysis in a 3.5 l. lead-potash glass vessel.

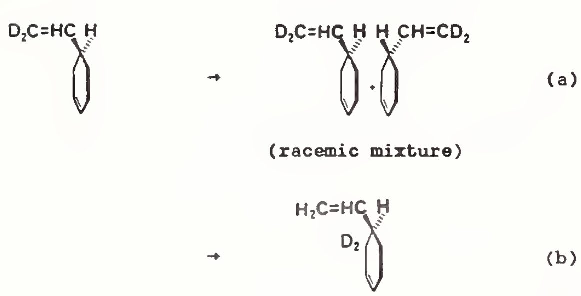
[2]) Thermal reaction. Static system.
P = (15-51) torr.



Cyclohexene, 4-ethenyl-
→ 1,3 Butadiene (a)
→ 1,5-Cyclooctadiene, (Z,Z)- (b)

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
77 HUY/LUY [1])	DE	464-557	2.51(14)	0	30297±252	1	3.16
k_a. ($k_a = k_{-a}K$.)							
77 HUY/LUY [1])	DE	464-557	7.94(13)	0	29995±352	1	3.16
k_b. ($k_b = k_{-b}K$.)							

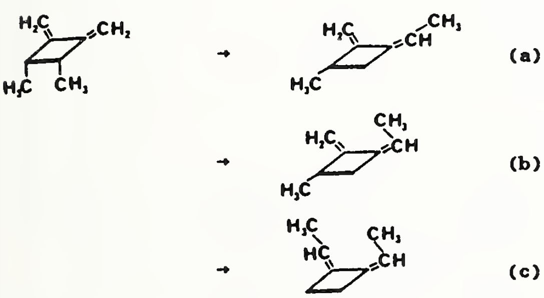
[1]) Thermal reaction of 1,3-Butadiene
and 1,5-Cyclooctadiene. Static system.

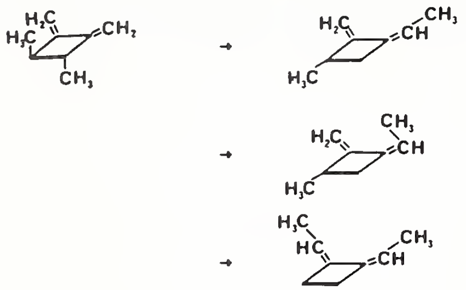
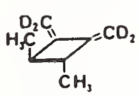
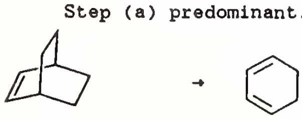


Cyclohexene, 4-(ethenyl-2,2-d_2)-, (R)-
→ Cyclohexene, 4-(ethenyl-2,2-d_2)-, (±)- (a)
→ Cyclohexene-3,3-d_2, 4-ethenyl- (b)

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
72 DOE/FRA [1])	EX	575-630	1.23(12)	0	24987±400	1	1.82
k_a. Thermal racemization.							
72 DOE/FRA [1])	EX	575-630	1.23(13)	0	26241±896	1	4.17
k_b. Thermal rearrangement.							

[1]) Pyrolysis in a 12 liter Pyrex vessel.

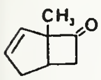
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
							
1,4-Cyclohexadiene, 1-ethyl- → Benzene, ethyl- + Hydrogen molecule							
72 COC/FRE	EX	589-652	1.32(13)	0	23085±126	1	1.23
Pyrolysis in a static system. P_o = 10 torr.							
							
1,4-Cyclohexadiene, 1,2-dimethyl- → Benzene, 1,2-dimethyl- (o-Xylene) + Hydrogen molecule							
72 COC/FRE	EX	572-627	3.47(12)	0	22003±40	1	1.07
Pyrolysis in a static system. P_o = (3-4) torr.							
							
Cyclobutane, 1,2-diethenyl-, trans- → products							
81 GRI/SCH	EX	448-503	(1.93±0.31)(13)	0	17861±75	1	
Thermal rearrangement in an air thermostat. P = (2-3) torr.							
							
Cyclobutane, 1,2-dimethyl-3,4-bis(methylene)-, cis- → Cyclobutane, 1-ethylidene-3-methyl-2-methylene-, (E)- (a) → Cyclobutane, 1-ethylidene-3-methyl-2-methylene-, (Z)- (b) → Cyclobutane, 1,2-diethylidene-, (E,Z)- (c)							
82 GAJ/BEN	EX	588-648	5.01(13)	0	21238	1	
$k_a + k_b + k_c$. Thermal isomerization in a flow-reactor. Channel (b) predominant.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
 (a), (b), (c)							
Cyclobutane, 1,2-dimethyl-3,4-bis(methylene)-, trans-							
→ Cyclobutane, 1-ethylidene-3-methyl-2-methylene-, (E)- (a)							
→ Cyclobutane, 1-ethylidene-3-methyl-2-methylene-, (Z)- (b)							
→ Cyclobutane, 1,2-diethylidene-, (E,E)- (c)							
82 GAJ/BEN [1] [2]	EX	588-648	3.98(13)	0	21087	1	
82 GAJ/BEN [1] [2]	EX	503	2.31(-5)			1	
[1] $k_a + k_b + k_c$.							
82 GAJ/BEN [2]	EX	503	(1.08±0.01)			1/1	
$(k_a + k_b + k_c)/k_{ref}$.							
k_{ref}:  → products.							
(Isotope effect)							
[2] Thermal isomerization in a flow-reactor.							
Step (a) predominant.							
 + CH_2=CH_2							
Bicyclo[2.2.2]oct-2-ene → 1,3-Cyclohexadiene + Ethene							
71 COC/FRE1	EX	649-718	2.88(15)	0	29398±81	1	1.12
Retrodiene thermolysis in a static system.							
Gas. chromatography. P-independent above 4 torr.							
80 HUY/RIG	EX	548-632	1.32(15)	0	28837±50	1	1.10
Retro-Diels-Alder pyrolysis of							
Bicyclo[2.2.2]oct-2-ene in a static system.							
Gas-chromatography.							
$CH_3C{\equiv}CCH_2CH_2CH(CH_3)_2 \rightarrow CH_3C{\equiv}CCH_2 + CH_2CH(CH_3)_2$ (a)							
$\rightarrow CH_3CH{=}C{=}CH_2 + CH_2{=}C(CH_3)_2$ (b)							
2-Heptyne, 6-methyl-							
78 TSA3 [1]	EX	990-1200	1.58(16)	0	36800±500	1	1.61
k_a. Bond-breaking reaction.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
78 TSA3 [1]	EX	990-1200	2.00(12)	0	28700±1000	1	2.51
k_b. Molecular reaction.							
[1]) 6-Methyl-2-heptyne/Cyclohexene/Toluene/Ar thermolysis in a single-pulse shock-tube. k's determined relative to the decomposition of Cyclohexene. Similar data given in 76 TSA2. [Cyclohexene] = 0.01%. [Toluene] = 1%. [6-Methyl-2-heptyne] = 0.02%. P(Ar) ~ (2-6) atm.							
$CH_3CH_2CH(CH_3)CH_2C(CH_3)=CH_2$ → $CH_3CH_2CH=CH_2$ + $(CH_3)_2C=CH_2$ (a) → $CH_3CH_2CHCH_3$ + $CH_2C(CH_3)=CH_2$ (b)							
1-Hexene, 2,4-dimethyl-							
73 TSA2 [1] [2]	EX	996-1180	2.82(12)	0	26900±250	1	1.38
78 TSA5 [1] [2]	EX	996-1180	3.16(12)	0	26900	1	
[1]) k_a. 1050 K given by the author as central-T.							
73 TSA2 [2]	EX	1050	4.27(15)	0	33200±150	1	1.17
k_b.							
[2]) Single-pulse shock-tube.							
$(CH_3)_3CC(CH_3)_2CH_2$ → $(CH_3)_3C$ + $(CH_3)_2=CH_2$ (a) → $(CH_3)_3CC(CH_3)=CH_2$ + CH_3 (b)							
Butyl, 2,2,3,3-tetramethyl-							
79 BAL/WAL2 [1]	RL	753	5.77(-3)			1/1	
k_b/k_a.							
79 BAL/WAL2 [1]	RN	753	1.88(6)			1	
k_a.							
79 BAL/WAL2 [1]	RN	753	1.08(4)			1	
k_b.							
[1]) Oxidation in aged boric-acid-coated vessels. Gas-chromatography. Absolute k's determined on the basis of Benson's additivity rules.							
$CH_3(CH_2)_6CH_3$ → products							
Octane							
73 ILL/WEL	EX	873-1073	(1.04±0.02)(12)	0	26336	1	
80 RUM/SHE	EX	893-993	4.07(13)	0	29867±1516	1	4.90
Pyrolysis in a quartz reactor. P = 760 torr.							
$(CH_3)_2CH(CH_2)_4CH_3$ → products							
Heptane, 2-methyl-							
73 ILL/WEL	EX	873-1046	(1.52±0.04)(13)	0	28143	1	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$(CH_3)_3CC(CH_3)_3 \rightarrow (CH_3)_3C + (CH_3)_3C$ (a)							
$\rightarrow (CH_3)_2C{=}CH_2 + (CH_3)_3CH$ (b)							
Butane, 2,2,3,3-tetramethyl- (Hexamethylethane)							
74 GOL/ALF	DE	850-1150	2.51(16)	0	34222	1	
k_a. Best fit of experimental data to logA = 16.4 for each C-C fission.							
78 ATR/BAL [1])	EX	985	2.37(1)			1	
k_a.							
78 ATR/BAL [1])	EX	1141	2.75(3)			1	
k_a.							
78 ATR/BAL [1])	SE	713-813	6.03(16)	0	34931±180	1	1.36
k_a. Based on the above data combined with those from 78 TSA4.							
[1]) Oxidation in KCl-coated vessels. P = (60-500) torr.							
78 TSA4 [2])	EX	990-1100	2.51(16)	0	34400	1	
k_a.							
78 TSA4 [2])	EX	300-1100	2.00(17)	0	36600	1	
k_a. Extrapolation over the given T-range.							
[2]) Single-pulse shock-tube.							
79 WAL/TSA	EX	700-900	2.51(17)	0	36300±200	1	1.58
k_a. Thermolysis of 6-Methyl-2-heptyne in a flow-system, in He, in presence of 1-Methyl-cyclohexene and Toluene. k's determined relative to the decomposition of 1-Methylcyclohexene. [1-Methylcyclohexene] = (0.08-0.12)%. [Hexamethylethane] = (0.003-0.04)%. [Toluene] = (2.0-13.6)%.							
82 BAL/HIS	EX	673-815	1.04(17)	0	35448±361	1	
k_a. Decomposition of Hexamethylethane in KCl-coated-, or Pyrex-aged-boric-acid-coated vessels. Gas-chromatography. P = (1.0-4.0) torr.							
78 BAL/EVA	EX	693-813	7.76(13)	0	33078±168	1	1.26
k_b. Decomposition in cylindrical KCl-coated Pyrex vessels. P = (60-500) torr.							
78 TAY/MIL	EX	750-950	5.01(10)	0	21741	1	
k_{total}. Pyrolysis in wal-less reactor. The products are: 2-Methylpropene, Hydrogen, 1-Propene, 2-Methyl-2-butene, Ethane, Methane, Neopentane and 2,3-Dimethyl-2-butene, in order of abundance.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor

 → products

Bicyclo[3.2.0]hept-3-en-6-one, 5-methyl-

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
72 COC/EGG3	EX	489-565	3.16(14)	0	22108±337	1	1.91
Pyrolysis in a static system.							
Gas-chromatography.							
P = (2.7-20) torr.							

$CH_2CH{=}CH_2OC(O)C(O)OCH_2CH{=}CH_2$ → $2CO_2$ + $2CH_2{=}CHCH_2$

Ethanedioic acid di-2-propenyl ester

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
76 SAK/NOH	EX	723-763	7.94(10)	0	21741	1	
Pyrolysis in a flow-reactor.							
80 NOH/SAK [1])	EX	703-783	2.00(10)	0	22610	1	
81 NOH/SAK [1])	EX	723-783	6.31(10)	0	21651	1	

[1]) Pyrolysis in a flow-reactor.
Gas-chromatography.
Mass-spectrometry.

$CH_2{=}CHCH{=}CHC(CH_3)_2COOH$ → $CH_2{=}CHCH_2CH{=}C(CH_3)_2$ + CO_2

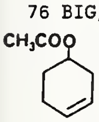
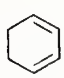
3,5-Hexanedioic acid, 2,2-dimethyl-

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
76 BIG/WEA2	EX	500	7.35(-8)			1	
76 BIG/WEA2	EX	692	2.90(-2)			1	
76 BIG/WEA2	EX	500-723	1.42(13)	0	23389±758	1	
A and B recalculated from the reported data.							

$CH_2{=}CHCH{=}CHC(CH_3)_2COOD$ → $CH_2{=}CHCHDCH{=}C(CH_3)_2$ + CO_2

3,5-Hexanedioic acid-d, 2,2-dimethyl-

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
76 BIG/WEA2	EX	692	1.34(-2)			1	

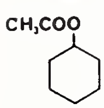
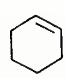
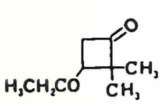
 → CH_3COOH +  (a)

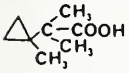
→ CH_3COOH +  (b)

3-Cyclohexen-1-ol acetate
→ Acetic acid + 1,3-Cyclohexadiene (a)
→ Acetic acid + 1,4-Cyclohexadiene (b)

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
72 TIN/KOO [1])	EX	578-653	3.98(11)	0	19527±503	1	2.0
$k_a + k_b$.							
72 TIN/KOO [1])	RL	637	1.3(1)			1/1	
k_b/k_a.							

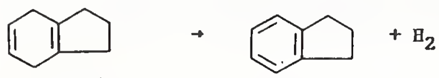
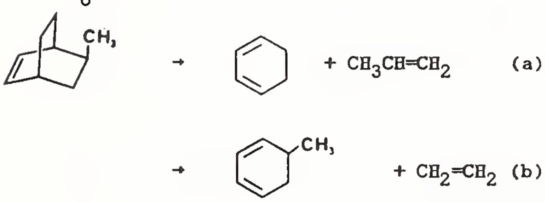
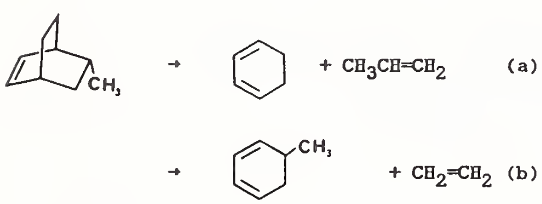
[1]) Thermolysis.

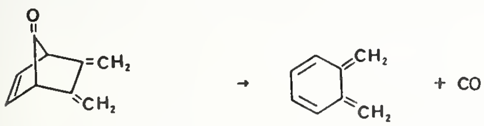
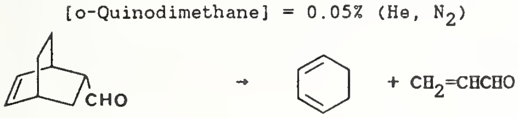
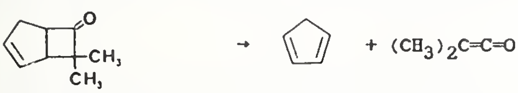
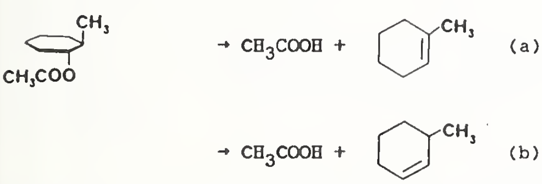
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3C(O)OCH_2CH_2CH_2CH_2CH{=}CH_2$							
→ $CH_3COOH + CH_2{=}CHCH_2CH_2CH{=}CH_2$							
5-Hexen-1-ol acetate							
79 MAR/HER	EX	513-693	2.69(12)	0	23756±217	1	1.38
Pyrolysis in a static system.							
P = (44-282) torr.							
$CH_3C(O)OCH_2CH_2CH{=}C(CH_3)_2$							
→ $CH_3COOH + CH_2{=}CHCH{=}C(CH_3)_2$ (a)							
→ CH_3COOH + cis-$CH_3CH{=}CHC(CH_3){=}CH_2$ (b)							
→ CH_3COOH + trans-$CH_3CH{=}CHC(CH_3){=}CH_2$ (c)							
→ $CH_3COOH + CH_2{=}CHCH_2C(CH_3){=}CH_2$ (d)							
3-Penten-1-ol, 4-methyl-, acetate							
81 CHU/MAR	EX	603-653	1.62(13)	0	24008±204	1	1.38
$k_a + k_b + k_c + k_d$. Pyrolysis. Static system.							
IR-, and NMR-spectrometry. P = (53-210) torr.							
$CH_3C(O)OC(CH_3)_2CH_2CH{=}CH_2$							
→ $CH_3COOH + CH_2{=}C(CH_3CH_2CH{=}CH_2$ (a)							
→ $CH_3C))H + (CH_3)_2C{=}CHCH{=}CH_2$ (b)							
4-Penten-2-ol, 2-methyl-, acetate							
79 MAR/HER	EX	513-693	3.89(13)	0	20436±349	1	2.0
$k_a + k_b$. Pyrolysis in a static system.							
P = (44-282) torr.							
 → CH_3COOH + 							
Acetic acid cyclohexyl ester (Dicyclohexyl acetate)							
→ Acetic acid + Cyclohexene							
72 TIN/KOO	EX	613-688	3.16(13)	0	23553±503	1	2.0
Thermolysis.							
 → $CH_3CH_2OCH{=}C(CH_3)_2 + CH_2{=}C{=}O$ (a)							
→ $CH_3CH_2OCH{=}CH_2 + (CH_3)_2C{=}C{=}O$ (b)							
Cyclobutanone, 3-ethoxy-2,2-dimethyl-							
73 EGG2 [1])	EX	464-558	3.80(13)	0	20267±342	1	1.95
$k_a + k_b$. Based on internal standard technique.							
73 EGG2 [1])	EX	464-558	4.07(13)	0	20292±257	1	1.66
$k_a + k_b$. Based on measurement of amounts of the ethers formed.							
[1]) Thermolysis in a static system. P-independent for: P_o = (5-50) torr. and P(Total) < 700 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
 → $CH_3CH_2C(CH_3)$=$C(CH_3)_2$ + CO_2							
Cyclopropaneacetic acid, α,α,1-trimethyl-							
→ 2-Pentene, 2,3-dimethyl-, + Carbon dioxide							
79 BIG/FET [1])	EX	725	(2.63±0.15)(-2)			1	
79 BIG/FET [1])	EX	690-740	(3.32±0.21)(11)	0	21871±505	1	
A and B recalculated from the reported data.							
[1]) Pyrolysis in a Flow-reactor with sealed tubes.							
							
Cyclopropanecarboxylic acid,2,3-dimethyl-, ethyl ester, (1α,2α,3α)-							
→ Cyclopropanecarboxylic acid, 2,3-dimethyl-, ethyl ester, (1α,2α,3β)							
77 GAJ/WEB	EX	503-548	7.24(11)	0	20081±352	1	
Thermal isomerization in a static reactor.							
							
Cyclopropanecarboxylic acid, 2,3-dimethyl-, ethyl ester, (1α,2α,3β)-							
→ Cyclopropanecarboxylic acid, 2,3-dimethyl-, ethyl ester, (1α,2α,3α)							
77 GAJ/WEB	EX	503-548	7.24(11)	0	21540±352	1	
Thermal isomerization in a static reactor.							
$CH_3C(O)OC(CH_3)_2CH_2C(O)CH_3$							
→ CH_3COOH + $CH_3C(O)CH_2C(CH_3)$=CH_2 (a)							
→ CH_3COOH + $(CH_3)_2C$=$CHC(O)CH_3$ (b)							
2-Pentanone, 4-(acetyloxy)-4-methyl-							
72 TIN/KOO	EX	498-563	2.00(12)	0	19326±755	1	3.98
k_a.							
Thermolysis.							
72 TIN/KOO	EX	498-563	1.58(11)	0	16205±503	1	2.51
k_b.							
Thermolysis.							
$CH_3CH_2CH_2CH_2C(O)OCH(CH_3)_2$							
→ $CH_3CH_2CH_2CH_2COOH$ + CH_3CH=CH_2							
Pentanoic acid 1-methylethyl ester							
77 SMI/MUT	EX	651	(5.97±0.07)(-3)			1	

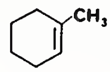
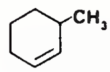
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3C(O)OCH_2CH_2C(CH_3)_3 \rightarrow CH_3COOH + CH_2{=}CHC(CH_3)_3$							
1-Butanol, 3,3-dimethyl-, acetate							
79 CHU/MAR	EX	633-693	2.19(12)	0	23347±505	1	2.24
Pyrolysis in a static system.							
P = (63-250) torr.							
79 TAY	EX	660-712	2.24(12)	0	23352	1	
Pyrolysis in a stainless-steel reactor.							
$CH_3C(O)OCH(CH_3)C(CH_3)_3 \rightarrow CH_3COOH + (CH_3)_3CCH{=}CH_2$							
2-Butanol, 3,3-dimethyl-, acetate							
72 CHU/MAR	EX	578-653	3.16(12)	0	22174±302	1	1.66
Static system pyrolysis.							
P = (25-300) torr.							
$(CH_3)_2CHCH_2C(O)OCH(CH_3)_2 \rightarrow (CH_3)_2CHCH_2COOH + CH_3CH{=}CH_2$							
Butanoic acid, 3-methyl-, 1-methylethyl ester							
78 CHU/MAR [1])	EX	603	3.95(-4)			1	
78 CHU/MAR [1])	EX	599-629	1.02(13)	0	22798±201	1	1.35
[1]) Pyrolysis in a static system.							
Gas-chromatography.							
$(CH_3)_3CC(O)OCH(CH_3)_2 \rightarrow (CH_3)_3CCOOH + CH_3CH{=}CH_2$							
Propanoic acid, 2,2-dimethyl-, 1-methylethyl ester							
77 SMI/MUT	EX	651	(7.68±0.32)(-3)			1	
78 TAY	EX	609-667	1.07(13)	0	22562	1	
Pyrolysis.							
$CH_3OCOO(CH_2)_5CH_3 \rightarrow CH_3OH + CO_2 + CH_2{=}CHCH_2CH_2CH_2CH_3$							
Carbonic acid hexyl methyl ester							
72 BIG/WRE3	EX	629	1.13			1	
72 BIG/WRE3	EX	593-648	7.91(15)	0	22949	1	
Flow-tube method.							
Assumed T-range, omitted in text.							
The A-factor recalculated from the reported experimental data.							
$CH_3OC(O)OCH(CH_3)CH_2CH_2CH_2CH_3$							
$\rightarrow CH_3OH + CO_2 + CH_2{=}CHCH_2CH_2CH_2CH_3$ (a)							
$\rightarrow CH_3OH + CO_2 +$ cis-$CH_3CH{=}CHCH_2CH_2CH_3$ (b)							
$\rightarrow CH_3OH + CO_2 +$ trans-$CH_3CH{=}CHCH_2CH_2CH_3$ (c)							
Carbonic acid methyl 1-methylpentyl ester							
72 BIG/WRE3	EX	629	3.53(-2)			1	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
72 BIG/WRE3	EX	598-648	1.91(13)	0	21339	1	
$k_a + k_b + k_c$.							
Flow-tube method.							
Assumed T-range, omitted in text.							
The A-factor recalculated from the reported experimental data.							
$(CH_3)_3C(O)OC(CH_3)_3$							
$\rightarrow (CH_3)_3CO + (CH_3)_3CO$ (a)							
$\rightarrow (CH_3)_2CO + (CH_3)_2CO + CH_3 + CH_3$ (b)							
Peroxide, bis(1,1-dimethylethyl)-							
71 CAD/TRO	EX	373-423	7.94(14)	0	17922±890	1	9.33
k_a.							
79 SEL/WAD	EX	410	(5.30±0.04)(-5)			1	
k_a. Thermolysis in a static system.							
80 KNO/RIC	EX	413	(8.9±1.0)(-5)			1	
k_a. Thermolysis of Azomethane and di-t-Butyl peroxide. Mass-spectrometry.							
81 ALA/SEL	EX	399-434	7.94(15)	0	19246±349	1	2.0
k_a. Thermolysis in a Pyrex vessel. Static system. Mass-spectrometry.							
73 PER/GOL	EX	500-660	3.98(15)	0	18822±503	1	
k_b. Limiting high-pressure k. RRKM data-fit.							
$(CH_3)_3CSC(CH_3)_3 \rightarrow$ products							
Propane, 2,2'-thiobis[2-methyl- (di-t-Butyl sulfide)							
80 MAR/BAR	EX	633-686	1.26(15)	0	27545±962	1	
Uninhibited pyrolysis in a static reactor.							
The products are: Isobutene, Hydrogen sulfide, Isobutane and t-Butylthiol.							
P = (26-206) torr.							
$(CH_3)_2CHCH_2N{=}NCH_2CH(CH_3)_2 \rightarrow$ products							
Diazene, bis(2-methylpropyl)-							
78 MCK/TUR	EX	553-602	9.12(15)	0	25043±265	1	1.58
1,1'-Azoisobutane pyrolysis.							
$(CH_3)_3CN{=}NC(CH_3)_3 \rightarrow (CH_3)_3C + (CH_3)_3C + N_2$							
Diazene, bis(1,1-dimethylethyl)-							
73 PER/BEA	EX	503-730	2.51(16)	0	21540±503	1	
RRKM fit of experimental data.							
77 MAR/MAC [1])	EX	483-533	3.98(15)	0	20448±361	1	2.0
77 MCK/TUR [1])	EX	471-531	8.71(15)	0	21086±355	1	2.09

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
							
1H-Indene, 2,3,4,7-tetrahydro-							
→ 1H-Indene, 2,3-dihydro- + Hydrogen molecule							
72 COC/FRE	EX	619-681	8.91(12)	0	24449±237	1	1.45
Pyrolysis in a static system.							
P_o < 0.8 torr.							
							
Bicyclo[2.2.2]oct-2-ene, 5-methyl-, (1α,4α,5α)- (exo form)							
→ 1,3-Cyclohexadiene + 1-Propene (a)							
→ 1,3-Cyclohexadiene, 5-methyl- + Ethene (b)							
75 HUY/NGO [1])	EX	608-679	5.37(14)	0	29265±40	1	1.07
k_a.							
75 HUY/NGO [1])	EX	608-679	1.20(15)	0	29774±40	1	1.07
k_b.							
[1]) Pyrolysis in a cylindrical Pyrex vessel.							
Gas-chromatography.							
P = (7-37) torr.							
							
Bicyclo[2.2.2]oct-2-ene, 5-methyl-, (1α,4α,5β)- (endo form)							
→ 1,3-Cyclohexadiene + 1-Propene (a)							
→ 1,3-Cyclohexadiene, 5-methyl-, + Ethene (b)							
75 HUY/NGO [1])	EX	608-679	1.74(14)	0	28163±30	1	1.05
k_a.							
75 HUY/NGO [1])	EX	608-679	1.20(14)	0	28138±40	1	1.07
k_b.							
[1]) Pyrolysis in a cylindrical Pyrex vessel.							
Gas-chromatography.							
P = (7-37) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
							
Bicyclo[2.2.1]hept-2-en-7-one, 5,6-bis(methylene)- (o-Quinodimethane)							
→ 1,3-Cyclohexadiene, 5,6-bis(methylene)- + Carbon monoxide							
81 ROT/SCH	EX	556-638	(3.1±2.9)(13)	0	12884±554	1	
M = N_2, or He. Thermolysis. Incident shock-waves.							
[o-Quinodimethane] = 0.05% (He, N_2)							
							
Bicyclo[2.2.2]oct-5-ene-2-carboxaldehyde, (1α,2β,4α)- (endo form)							
→ 1,3-Cyclohexadiene + 2-Propenal (Acrolein)							
76 HUY/PAT	EX	565-638	9.55(12)	0	23347±55	1	1.10
Retro-Diels-Alder decomposition in a Pyrex vessel.							
Gas-chromatography. P = (55-240) torr.							
							
Bicyclo[3.2.0]hept-2-en-6-one, 7,7-dimethyl-							
→ 1,3-Cyclopentadiene + 1-Propanone, 2-methyl-							
73 EGG1	EX	470-550	7.94(12)	0	18978±262	1	1.66
Thermolysis in a static system.							
Gas-chromatography. P_o = (7-68) torr.							
							
Cyclohexanol, 2-methyl-acetate, (1R-trans)-							
→ Acetic acid + Cyclohexene, 1-methyl- (a)							
→ Acetic acid + Cyclohexene, 3-methyl- (b)							
72 TIN/KOO [1]	EX	623-688	2.51(13)	0	23553±503	1	2.51
$k_a + k_b$.							
72 TIN/KOO [1]	RL	637	1.2			1/1	
k_a/k_b.							

[1]) Thermolysis.

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
 → CH_3COOH +  (a)							
→ CH_3COOH +  (b)							
Cyclohexanol, 2-methyl-acetate, (1S-cis)-							
→ Acetic acid + Cyclohexene, 1-methyl- (a)							
→ Acetic acid + Cyclohexene, 3-methyl- (b)							
72 TIN/KOO [1])	EX	623-688	6.31(13)	0	24157±503	1	3.98
$k_a + k_b$.							
72 TIN/KOO [1])	RL	637	8.6(-1)			1/1	
k_b/k_a.							
[1]) Thermolysis.							
$CH_3C(O)OC(CH_3)_2CH_2CH(CH_3)_2$							
→ $CH_3COOH + CH_2{=}C(CH_3)CH_2CH(CH_3)_2$ (a)							
→ CH_3COOH + cis-$(CH_3)_2C{=}CHCH(CH_3)_2$ (b)							
→ CH_3COOH + trans-$(CH_3)_2C{=}CHCH(CH_3)_2$ (c)							
2-Pentanol, 2,4-dimethyl-, acetate							
79 TAY	RL	673	1.85			1/1	
$k_a/(k_b + k_c)$. Pyrolysis in a stainless-steeel reactor. Gas-chromatography. The % of alkene-1 and alkene-2 reported in the text (61.5 and 38.5 respectively) give a ratio of only 1.60.							
$CH_3C(O)OCH(CH_3)CH_2C(CH_3)_3$							
→ $CH_3COOH + CH_2{=}CHCH_2C(CH_3)_3$ (a)							
→ CH_3COOH + cis-$CH_3CH{=}CHC(CH_3)_3$ (b)							
→ CH_3COOH + trans-$CH_3CH{=}CHC(CH_3)_3$ (c)							
2-Pentanol, 4,4-dimethyl-, acetate							
79 TAY	RL	668-778	4.9(-1)			1/1	
$k_a/(k_b + k_c)$. Pyrolysis in a stainless-steel reactor. Gas-chromatography.							
81 CHU/DOM	EX	573-623	7.41(14)	0	21796±409	1	2.04
$k_a + k_b + k_c$. Pyrolysis in a static system. NMR-spectroscopy. P = (48-211) torr.							
$CH_3C(O)OCH(CH_2CH_3)C(CH_3)_3 \rightarrow CH_3COOH + (CH_3)_3CCH{=}CHCH_3$							
3-Pentanol, 2,2-dimethyl-, acetate							
72 CHU/MAR	EX	578-653	1.15(13)	0	22572±393	1	1.23
Pyrolysis in a static system. P = (25-300) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3C(O)OC[CH(CH_3)_2](CH_3)CH_2CH_3$							
→ $CH_3COOH + (CH_3)_2C{=}C(CH_3)CH_2CH_3$ (a)							
→ CH_3COOH + cis-$CH_3CH{=}C[CH(CH_3)_2]CH_3$ (b)							
→ CH_3COOH + trans-$CH_3CH{=}C[CH(CH_3)_2]CH_3$ (c)							
3-Pentanol, 2,3-dimethyl-, acetate							
77 CUE/CHU	EX	485-533	1.66(14)	0	20433±252	1	1.69
$k_a + k_b + k_c$.							
$CH_3C(O)OC(CH_3)_2C(CH_3)_3 \rightarrow CH_3COOH + CH_2{=}C(CH_3)C(CH_3)_3$							
2-Butanol, 2,3,3-trimethyl-, acetate							
80 MAR/CHU	EX	503-513	2.51(14)	0	20629±553	1	3.09
Pyrolysis. Static system.							
P = (56-210) torr.							
$(CH_3)_3CC(O)OC(CH_3)_3 \rightarrow (CH_3)_3COOH + (CH_3)_2C{=}CH_2$							
Propanoic acid, 2,2-dimethyl-, 1,1-dimethylethyl ester							
78 TAY	EX	519-608	1.05(13)	0	19884	1	
Pyrolysis.							
$(CH_3CH_2)_2CHC(O)OCH(CH_3)_2 \rightarrow (CH_3CH_2)_2CHCOOH + CH_3CH{=}CH_2$							
Butanoic acid, 2-ethyl-, 1-methylethyl ester							
77 SMI/MUT	EX	651	(6.97±0.17)(-3)			1	
$(CH_3)_3CCH_2C(O)OCH(CH_3)_2 \rightarrow (CH_3)_3CCH_2COOH + CH_3CH{=}CH_2$							
Butanoic acid, 3,3-dimethyl-, 1-methylethyl ester							
77 SMI/MUT	EX	651	(5.95±0.19)(-3)			1	
78 CHU/MAR	EX	589-628	4.47(13)	0	23704±324	1	1.74
Pyrolysis in a static system.							
$CH_3CH_2CH_2CH(CH_3)C(O)OCH(CH_3)_2$							
→ $CH_3CH_2CH_2CH(CH_3)COOH + CH_3CH{=}CH_2$							
Pentanoic acid, 2-methyl-, 1-methylethyl ester							
77 SMI/MUT	EX	651	(6.88±0.24)(-3)			1	
$CH_3(CH_2)_4C(O)OCH(CH_3)_2 \rightarrow CH_3(CH_2)_4COOH + CH_3CH{=}CH_2$							
Hexanoic acid 1-methylethyl ester							
77 SMI/MUT	EX	651	(6.03±0.27)(-3)			1	
$CH_3CH_2CH_2CH_2OC(O)OCH_2CH_2CH_2CH_3$							
→ $CH_3CH_2CH{=}CH_2 + CO_2 + CH_3CH_2CH_2CH_2OH$							
Carbonic acid dibutyl ester (Di-n-butyl carbonate)							
72 BIG/WRE1 [1])	EX	554-594	1.32(12)	0	21892	1	
Sealed-tube pyrolysis.							

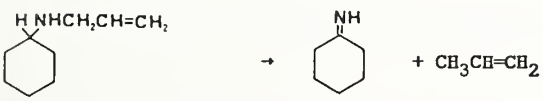
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
72 BIG/WRE1 [1])	EX	700	(9.70±0.29)(-2)			1	
72 BIG/WRE1 [1])	EX	663-708	(1.56±0.05)(13)	0	22899	1	
Flow-tube pyrolysis. The A-factor recalculted from the reported data.							
[1]) Pyrolysis in Kooyman, or break-seal tubes.							
$CH_3CH_2CH(CH_3)OC(O)OCH(CH_3)CH_2CH_3$ → $CH_3CH_2CH{=}CH_2 + CO_2 + CH_3CH(OH)CH_2CH_3$ (a) → cis-$CH_3CH{=}CHCH_3 + CO_2 + CH_3CH(OH)CH_2CH_3$ (b) → trans-$CH_3CH{=}CHCH_3 + CO_2 + CH_3CH(OH)CH_2CH_3$ (c)							
Carbonic acid bis(1-methylpropyl) ester (Di-s-butyl carbonate)							
72 BIG/WRE2 [1])	EX	629	5.25(-2)			1	
Flow-tube pyrolysis.							
72 BIG/WRE2 [1])	EX	593-648	1.50(13)	0	20936	1	
Flow-tube pyrolysis. The A-factor recalculated from the reported data.							
72 BIG/WRE2 [1])	EX	629	6.09(-2)			1	
Sealed-tube pyrolysis.							
72 BIG/WRE2 [1])	EX	489-540	9.07(12)	0	20533	1	
Sealed-tube pyrolysis.							
[1]) Pyrolysis in Kooyman, or break-seal tubes.							
$(CH_3)_2CHCH_2OC(O)OCH_2CH(CH_3)_2$ → $(CH_3)_2C{=}CH_2 + CO_2 + (CH_3)_2CHCH_2OH$							
Carbonic acid bis(2-methylpropyl) ester (Di-i-butyl carbonate)							
72 BIG/WRE1 [1])	EX	700	3.2(-1)			1	
72 BIG/WRE1 [1])	EX	663-708	(5.53±0.17)(13)	0	24560	1	
The A-factor recalculated from the repoprted data.							
[1]) Pyrolysis in the Kooyman flow-tube.							
$(CH_3)_3COC(O)OC(CH_3)_3$ → $(CH_3)_3COH + CO_2 + (CH_3)_2C{=}CH_2$							
Carbonic acid bis(1,1-dimethylethyl) ester (Di-t-butyl carbonate)							
72 BIG/WRE3	EX	453-498	2.4(13)	0	19124	1	
Sealed-tube.							
72 BIG/WRE3	EX	629	2.01			1	
72 BIG/WRE3	EX	593-648	1.31(12)	0	17111	1	
Flow-tube. Assumed T-range, omitted in text. A-factor recalculated from the reported data.							

$(CH_2{=}CHCH_2)_3N \rightarrow CH_2{=}CHCH_2N{=}CHCH{=}CH_2 + CH_3CH{=}CH_2$

2-Propen-1-amine, N,N-di-2-propenyl- (Triallylamine)

→ 2-Propen-1-amine, N-2-propenylidene- + 1-Propene

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
74 VIT/EGG1	EX	531-620	5.50(11)	0	19260±96	1	1.17
Thermolysis.							
Static system.							
N-2-Propenylidene-2-propen-1-amine undergoes cyclization to give 3-Methylpyridine.							
P(Triallylamine) = (3-36) torr.							
P(Total) = (23-178) torr.							



Cyclohexanamine, N-2-propenyl-

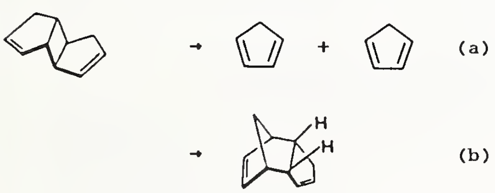
→ 1-Propene + Cyclohexanimine

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
73 EGG3	EX	562-652	2.75(11)	0	21228±287	1	1.62
Thermolysis in a static system.							
Gas-chromatography.							
k is P-independent within the given P-range.							
P = (15-150) torr.							

Cyclopentene, 3-(cyclopent-4-en-1-ylidene)-
(trans form)

→ Cyclopentene, 3-(cyclopent-2-en-1-ylidene)-
(cis form)

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
73 DOE/BEA	EX	526-576	1.07(12)	0	20986±403	1	2.09
Thermal isomerization in a 12 l. Pyrex flask, or in a 3.5 l. Corning lead-potash flask.							

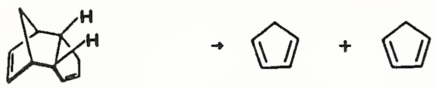
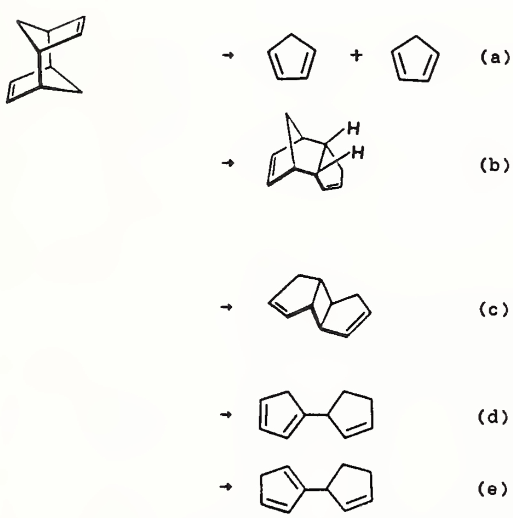


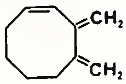
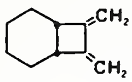
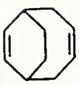
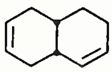
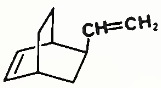
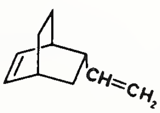
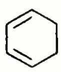
Tricyclo[5.3.0.0^{2,6}]deca-3,9-diene

(anti-cis-[2+2]-Dicyclopentadiene)

→ 1,3-Cyclopentadiene + 1,3-Cyclopentadiene (a)

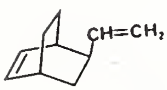
→ Tricyclo[5.2.1.0^{2,6}]deca-3,8-diene, endo-
(endo-[2+4]-Dicyclopentadiene) (b)

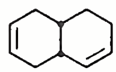
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
							
Tricyclo[5.2.1.0^{2,6}]deca-3,8-diene, endo- (endo-[2+4]-Dicyclopentadiene) → 1,3-Cyclopentadiene + 1,3-Cyclopentadiene							
81 GRI/SCH	EX	431-494	(2.0±0.4)(14)	0	18671±101	1	
Thermolysis. P = (2-3) torr.							
							
Tricyclo[5.2.1.0^{2,6}]deca-3,8-diene, exo- (exo-[2+4]-Dicyclopentadiene) → 1,3-Cyclopentadiene + 1,3-Cyclopentadiene							
81 GRI/SCH	EX	481-551	(5.6±0.4)(14)	0	21389±50	1	
Thermolysis. P = (2-3) torr.							
							
Tricyclo[4.2.1.1^{2,5}]deca-3,7-diene, (1α,2β,5β,6α)- (anti-[4+4]-Dicyclopentadiene) → 1,3-Cyclopentadiene + 1,3-Cyclopentadiene (a) → Tricyclo[5.2.1.0^{2,6}]deca-3,8-diene, endo- (b) → Tricyclo[5.3.0.0^{2,6}]deca-3,9-diene (c) → 1,3-Cyclopentadiene, 1-(2-cyclopenten-1-yl)- (d) → 1,3-Cyclopentadiene, 2-(2-cyclopenten-1-yl)- (e)							
81 GRI/SCH	EX	460-532	(5.0±0.9)(14)	0	20030±101	1	
$k_{overall}$. Thermolysis. P = (2-3) torr.							

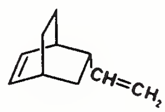
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_2{=}C{=}CHCH_2CH_2CH_2CH_2CH{=}C{=}CH_2$ →  (a)							
→  (b)							
1,2,8,9-Decatetraene							
→ Cyclooctene, 3,4-bis(methylene)- (a)							
→ Bicyclo[4.2.0]octane, 7,8-bis(methylene)-, cis- (b)							
82 GAJ/BEN	EX	633-693	2.5(9)	0	15501	1	
$k_a + k_b$. Pyrolysis.							
Flow-system. Intramolecular Allene addition.							
Major product given by (a).							
 →  (a)							
→  (b)							
→  (c)							
→ $CH_2{=}CHCH{=}CH_2$ +  (d)							
Bicyclo[4.2.2]deca-3,7-diene							
→ Naphthalene, 1,2,4a,5,8,8a- hexahydro-, cis- (a)							
→ Bicyclo[2.2.2]oct-2-ene, 5-ethenyl-, (1α,4α,5α)- (exo form) (b)							
→ Bicyclo[2.2.2]oct-2-ene, 5-ethenyl-, (1α,4α,5β)- (endo form) (c)							
→ 1,3-Butadiene + 1,3-Cyclohexadiene (d)							
82 HUY/HUB1 [1])	EX	456-526	4.37(14)	0	22662±35	1	1.07
k_a. Thermal isomerization.							
82 HUY/HUB1 [1])	EX	456-526	4.17(14)	0	23437±35	1	1.07
k_b. Thermal isomerization.							
82 HUY/HUB1 [1])	EX	456-526	1.41(14)	0	23342±45	1	1.10
k_c. Thermal isomerization.							
82 HUY/HUB1 [1])	EX	456-526	5.25(15)	0	24826±35	1	1.07
k_d. Thermolysis.							

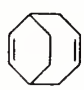
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor

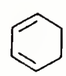
[1]) Thermal isomerization, or decomposition
in a static system with cylindrycal packed,
or unpacked Pyrex vessels. Gas-chromatography.
NMR-, IR-, and Mass-spectrometry.
P_o = (2-40) torr.



→  (a)

→  (b)

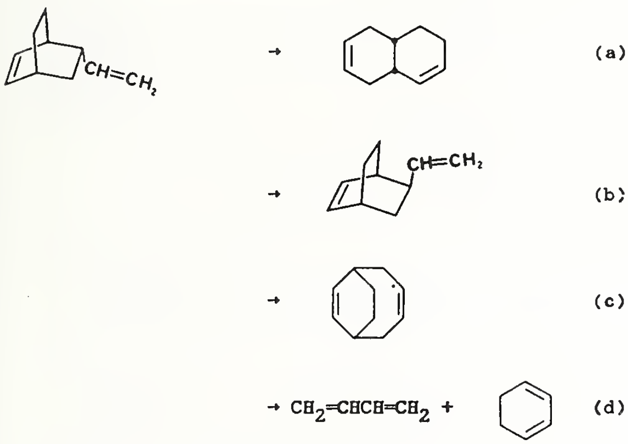
→  (c)

→ CH_2=CHCH=CH_2 +  (d)

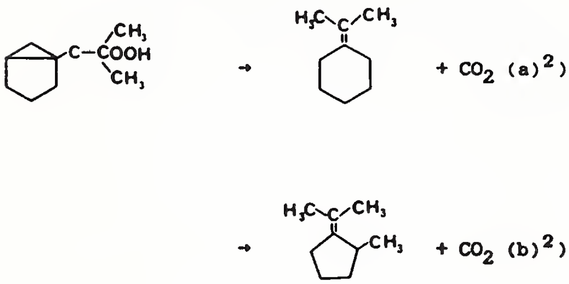
Bicyclo[2.2.2]oct-2-ene, 5-ethenyl-, (1α,4α,5α)-
(exo form)
→ Naphthalene, 1,2,4a,5,8,8a-hexahydro-, cis- (a)
→ Bicyclo[2.2.2]oct-2-ene, 5-ethenyl-,
(1α,4α,5β)- (endo form) (b)
→ Bicyclo[4.2.2]deca-3,7-diene (c)
→ 1,3-Butadiene + 1,3-Cyclohexadiene (d)

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
82 HUY/HUB1 [1]) k_a. Thermal isomerization.	EX	513-578	1.05(14)	0	25450±91	1	1.17
82 HUY/HUB1 [1]) k_b. Thermal isomerization.	EX	513-578	9.33(13)	0	25798±101	1	1.20
82 HUY/HUB1 [1]) k_c. Thermal isomerization.	EX	513-578	2.57(13)	0	24731±161	1	1.35
82 HUY/HUB1 [1]) k_d. Thermolysis. Calculated by combining several k's measured in this work with their respective equilibrium constants.	DE	513-578	8.91(14)	0	26694±50	1	1.10

[1]) Thermal isomerization, or decomposition
in a static system with cylindrical packed,
or unpacked Pyrex vessels. Gas-chromatography.
NMR-, IR-, and Mass-spectrometry.
P_o = (2-40) torr.

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
							
Bicyclo[2.2.2]oct-2-ene, 5-ethenyl-, (1α,4α,5β)- (endo form)							
→ Naphthalene, 1,2,4a,5,8,8a-hexahydro, cis- (a)							
→ Bicyclo[2.2.2]oct-2-ene, 5-ethenyl-, (1α,4α,5α)- (exo form) (b)							
→ Bicyclo[4.2.2]deca-3,7-diene (c)							
→ 1,3-Butadiene + 1,3-Cyclohexadiene (d)							
82 HUY/HUB1 [1])	EX	476-563	8.91(12)	0	22416±60	1	1.12
k_a. Thermal isomerization.							
82 HUY/HUB1 [1])	DE	476-563	8.91(13)	0	25949±292	1	1.70
k_b. Thermal isomerization. Calculated by combining several k's measured in this work with their respective equilibrium constants.							
82 HUY/HUB1 [1])	DE	476-563	8.13(12)	0	24791±232	1	1.51
k_c. Thermal isomerization. Calculated by combining several k's measured in this work with their respective equilibrium constants.							
82 HUY/HUB1 [1])	EX	476-563	2.88(14)	0	25908±101	1	1.20
k_d. Thermolysis.							
[1]) Thermolysis in a static system with cylindrical packed, or unpacked Pyrex vessels. Gas-chromatography. P_o = (2-40) torr.							
$CH_3(CH_2)_8CH_3$ → products							
Decane							
71 GON/LEW	EX	713-793	1.95(3)	0	13337	1	
80 RUM/SHE	EX	918-958	2.19(14)	0	31274±4126	1	11.22
Pyrolysis in a quartz reactor. P = 760 torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor

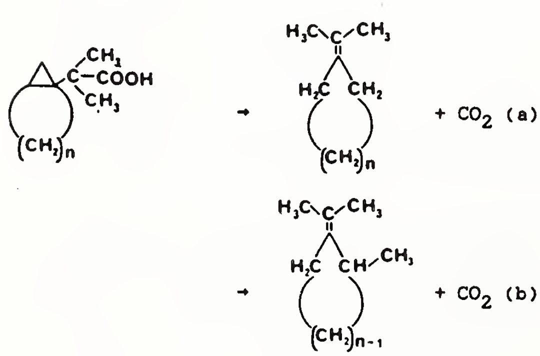


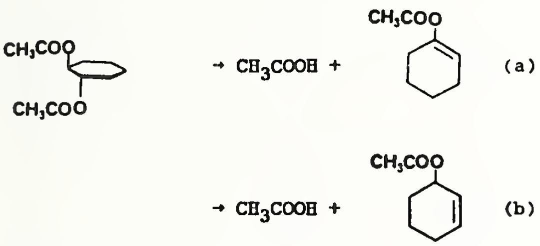
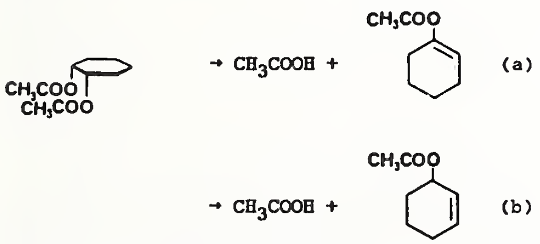
Bicyclo[3.1.0]hexane-1-acetic acid, α,α-dimethyl-
→ Cyclohexane, (1-methylethylidene)-
+ Carbon dioxide (a)
→ Cyclopentane, 1-methyl-2-(1-methylethylidene)-
+ Carbon dioxide (b)

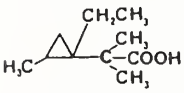
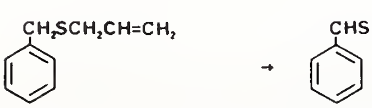
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
79 BIG/FET [1]) k_a.	EX	725*	1.56(-2)				1
79 BIG/FET [1]) k_b.	EX	725	9.7(3)				1
79 BIG/FET [1]) $k_a + k_b$.	EX	725	(2.53±0.10)(-2)				1
79 BIG/FET [1]) $k_a + k_b$. A and B recalculated from the reported experimental data.	EX	690-740	(9.21±0.36)(10)	0	20969±806		1

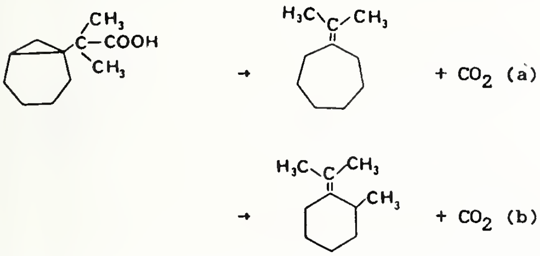
[1]) Pyrolysis in a Flow-reactor with evacuated sealed tubes.
Gas-chromatography.
NMR-spectroscopy.

[2]) The general mechanism of this type of reaction is:



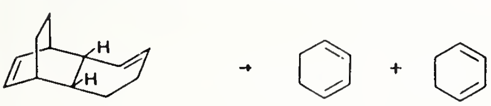
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
							
1,2-Cyclohexanediol diacetate, trans-							
→ Acetic acid + 1-Cyclohexen-1-ol acetate (a)							
→ Acetic acid + 2-Cyclohexen-1-ol acetate (b)							
72 TIN/KOO [1])	EX	643-733	3.16(12)	0	24006±503	1	2.0
$k_a + k_b$.							
72 TIN/KOO [1])	RL	637	4.0(-1)			1/1	
k_a/k_b.							
[1]) Thermolysis.							
							
1,2-Cyclohexanediol diacetate, cis-							
→ Acetic acid + 1-Cyclohexen-1-ol acetate (a)							
→ Acetic acid + 2-Cyclohexen-1-ol acetate (b)							
72 TIN/KOO [1])	EX	643-733	5.01(12)	0	24157±1510	1	3.16
$k_a + k_b$.							
72 TIN/KOO [1])	RL	637	1.46(-1)			1/1	
k_b/k_a.							
[1]) Thermolysis.							
$CH_3C(O)OCH[C(CH_3)_3]CH_2CH{=}CH_2$							
→ CH_3COOH + cis-$(CH_3)_3CCH{=}CHCH{=}CH_2$ (a)							
→ CH_3COOH + trans-$(CH_3)_3CCH{=}CHCH{=}CH_2$ (b)							
5-Hexen-3-ol, 2,2-dimethyl-, acetate							
→ 1,3-Hexadiene, 5,5-dimethyl-, (Z)- (a)							
→ 1,3-Hexadiene, 5,5-dimethyl-, (E)- (b)							
73 CHU/PIO	EX	573-623	1.38(14)	0	23352±302	1	1.02
$k_a + k_b$.							
Pyrolysis in a static system.							
P = (35-300) torr.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
							
→ $(CH_3)_2CHC(CH_2CH_3)=C(CH_3)_2 + CO_2$ (a)							
→ $CH_3CH_2CH_2C(CH_2CH_3)=C(CH_3)_2 + CO_2$ (b)							
Cyclopropaneacetic acid, 1-ethyl-α,α,2-trimethyl-							
→ 2-Pentene, 3-ethyl-2,4-dimethyl- + Carbon dioxide (a)							
→ 2-Hexene, 3-ethyl-2-methyl- + Carbon dioxide (b)							
79 BIG/FET [1])	EX	725	5.25(-3)			1	
$k_a = k_b$.							
79 BIG/FET [1])	EX	725	(1.05±0.10)(-2)			1	
$k_a + k_b$.							
79 BIG/FET [1])	EX	690-740	(1.41±0.13)(11)	0	21919±625	1	
$k_a + k_b$.							
A and B recalculated from the reported data.							
[1]) Pyrolysis in a Flow-reactor with evacuated sealed tubes. Gas-chromatography. NMR-spectroscopy.							
$CH_3C(O)OCH[CH(CH_3)_2]C(CH_3)_3$ → $CH_3COOH + (CH_3)_3CCH=C(CH_3)_2$							
3-Pentanol, 2,2,4-trimethyl-, acetate							
72 CHU/MAR	EX	578-653	1.32(13)	0	23452±116	1	1.20
Pyrolysis in a static system.							
P = (25-300) torr.							
$(CH_3)_3CCH_2C(O)OC(CH_3)_3$ → $(CH_3)_3CCH_2COOH$ + + $(CH_3)_2C=CH_2$							
Butanoic acid, 3,3-dimethyl-, 1,1-dimethylethyl ester							
78 TAY	EX	558-620	5.24(12)	0	19527	1	
Pyrolysis.							
 + $CH_3CH=CH_2$							
Benzene, [(2-propenylthio)methyl]- (Allyl benzyl sulfide) → Benzenecarbothioaldehyde + 1-Propene							
82 MAR/ROP2	EX	588-691	8.51(10)	0	16960±241	1	1.51
Pyrolysis. Stirred-flow. Benzene carbothio-aldehyde [Benzylthioaldehyde] polymerizes into into an amorphous solid. P = (2-15) torr.							

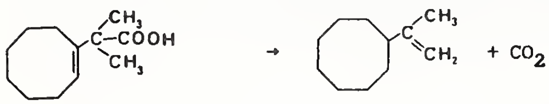
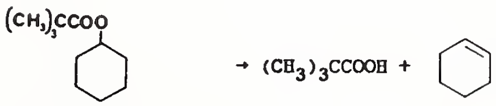


Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
Bicyclo[4.1.0]heptane-1-acetic acid, α,α-dimethyl- → Cycloheptane, (1-methylethylidene)- + Carbon dioxide (a) → Cyclohexane, 1-methyl-2-(1-methylethylidene)- + Carbon dioxide (b)							
79 BIG/FET [1]) k_a.	EX	725	3.09(-2)			1	
79 BIG/FET [1]) k_b.	EX	725	8.7(-3)			1	
79 BIG/FET [1]) $k_a + k_b$.	EX	725	(3.96±0.16)(-2)			1	
79 BIG/FET [1]) $k_a + k_b$. A and B recalculated from the reported data.	EX	690-740	(6.81±0.28)(9)	0	18756±854	1	

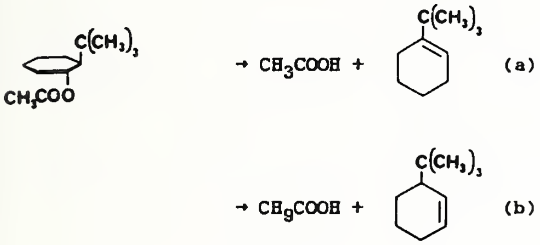
[1]) Pyrolysis in a Flow-reactor with evacuated sealed tubes. Gas-chromatography. NMR-spectroscopy. See footnote [2]) above for the general mechanism of this type of reaction.



Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
endo-Tricyclo[6.2.2.0^{2,7}]dodeca-3,9-diene → 1,3-Cyclohexadiene + 1,3-Cyclohexadiene							
71 DEM/HUY Thermolysis in a Pyrex vessel. P = (4-20) torr.	EX	471-739	2.51(14)	0	26170±956	1	5.01
$CH_3(CH_2)_{10}CH_3$ → products Dodecane							
80 RUM/SHE Pyrolysis in a quartz reactor. P = 760 torr.	EX	873-953	8.91(13)	0	30216±1010	1	3.02

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
							
1-Cyclooctene-1-acetic acid, α,α-dimethyl-							
→ Cyclooctane, (1-methylethenyl)- + Carbon dioxide							
77 BIG/WEA [1])	RL	500	1.9			1/1	
k/k_{ref}: k_{ref}: $CH_3CH{=}C(CH_2CH_3)C(CH_3)_2COOH$							
→ $CH_3CH{=}C(CH_3CH_3)CH(CH_3)_2$ + CO_2							
77 BIG/WEA [1])	EX	500	1.66(-4)			1	
[1]) Pyrolysis in a flow-reactor. Gas-chromatography.							
							
Propanoic acid, 2,2-dimethyl-, cyclohexyl ester (Cyclohexyl pivalate)							
→ Propanoic acid, 2,2-dimethyl- (Pivalic acid) + Cyclohexene							
72 TIN/KOO	EX	613-663	1.0(13)	0	22647±1007	1	5.01
Thermolysis.							
$CH_3CH_2C(CH_3)_2OOC(CH_3)_2CH_2CH_3$ → products							
Peroxide, bis(1,1-dimethylpropyl)-							
73 PER/GOL	EX	523-633	6.31(15)	0	18319±503	1	
A and B factors recommended for T = 300 K.							
Limiting high-pressure k. RRKM data-fit.							
$(CH_3CH_2CH_2)_2CHC(O)OCH(CH_3)_2$							
→ $(CH_3CH_2CH_2)_2CHCOOH$ + $CH_3CH{=}CH_2$							
Pentanoic acid, 2-propyl-, 1-methylethyl ester							
77 SMI/MUT	EX	651	(6.89±0.30)(-3)			1	
$CH_3CH_2C(CH_3)_2OC(O)OC(CH_3)_2CH_2CH_3$							
→ $CH_3CH_2C(CH_3)_2OH$ + CO_2 + $CH_2{=}C(CH_3)CH_2CH_3$ (a)							
→ $CH_3CH_2C(CH_3)_2OH$ + CO_2 + $(CH_3)_2C{=}CHCH_3$ (b)							
Carbonic acid bis(1,1-dimethylpropyl) ester							
72 BIG/WRE3	EX	629	4.05			1	
72 BIG/WRE3	EX	593-648	1.03(13)	0	17967	1	
$k_a + k_b$.							
Flow-tube method.							
Assumed T-range, omitted in text.							
A and B recalculated from the reported data.							

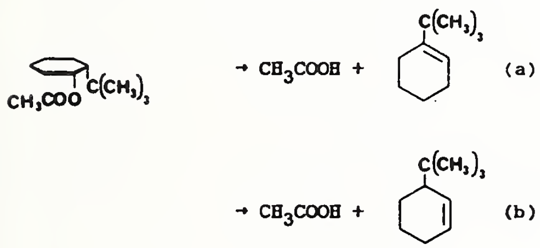
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor



Cyclohexanol, 2-(1,1-dimethylethyl)-acetate, trans-
→ Acetic acid + Cyclohexene,
1-(1,1-dimethylethyl)- (a)
→ Acetic acid + Cyclohexene,
3-(1,1-dimethylethyl)- (b)

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
72 TIN/KOO [1]) $k_a + k_b$.	EX	588-643	6.31(13)	0	22144±1510	1	10.0
72 TIN/KOO [1]) k_a/k_b.	RL	637	3.0			1/1	

[1]) Thermolysis.

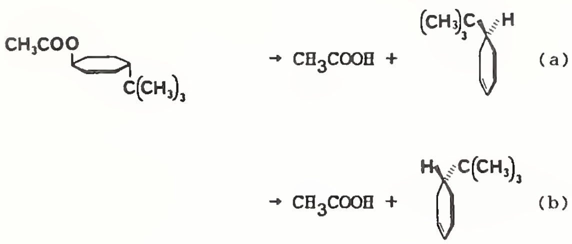


Cyclohexanol, 2-(1,1-dimethylethyl)-acetate, cis-
→ Acetic acid + Cyclohexene,
1-(1,1-dimethylethyl)- (a)
→ Acetic acid + Cyclohexene,
3-(1,1-dimethylethyl)- (b)

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
72 TIN/KOO [1]) $k_a + k_b$.	EX	618-688	1.26(13)	0	23654±1007	1	5.01
72 TIN/KOO [1]) k_b/k_a.	RL	637	1.20			1/1	

[1]) Thermolysis.

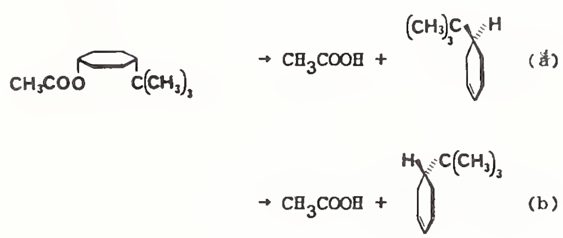
Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor



Cyclohexanol, 4-(1,1-dimethylethyl)-acetate, trans-
→ Acetic acid + Cyclohexene, 4-(1,1-dimethylethyl)- (R), (a)
→ Acetic acid + Cyclohexene, 4-(1,1-dimethylethyl)- (S), (b)

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
72 TIN/KOO [1]	EX	618-698	1.26(12)	0	21641±1510	1	10.0
$k_a + k_b$.							
72 TIN/KOO [1]	RL	637	1.0			1/1	
k_a/k_b.							

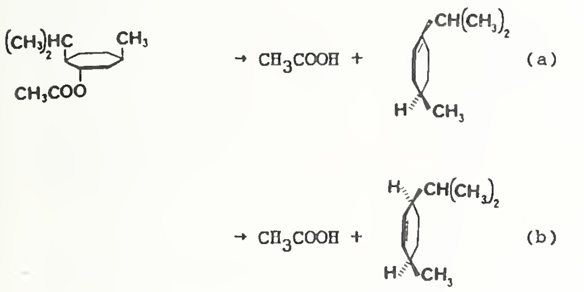
[1]) Thermolysis.



Cyclohexanol, 4-(1,1-dimethylethyl)-acetate, cis-
→ Acetic acid + Cyclohexene, 4-(1,1-dimethylethyl)-, (R)- (a)
→ Acetic acid + Cyclohexene, 4-(1,1-dimethylethyl)-, (S)- (b)

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
72 TIN/KOO [1]	EX	618-698	3.16(12)	0	21641±1510	1	10.0
$k_a + k_b$.							
72 TIN/KOO [1]	RL	637	1.0			1/1	
k_a/k_b.							

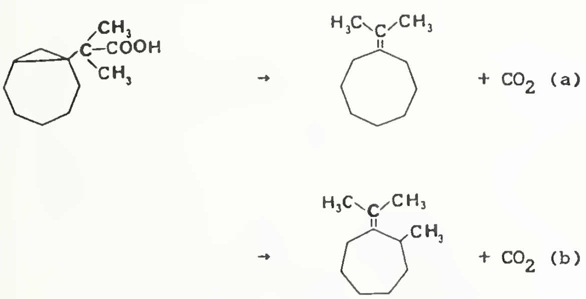
[1]) Thermolysis.



Cyclohexanol, 5-methyl-2-(1-methylethyl)-
acetate, (1α,2β,5β)-
(trans-2-Isopropyl-1-menthyl acetate)
→ Acetic acid + Cyclohexene, 4-methyl-
1-(1-methylethyl)- (a)
→ Acetic acid + Cyclohexene, 3-methyl-
6-(1-methylethyl)-, cis- (b)

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
72 TIN/KOO [1] $k_a + k_b$.	EX	598-673	5.01(12)	0	21943±503	1	2.0
72 TIN/KOO [1] k_a/k_b.	RL	637	1.8			1/1	

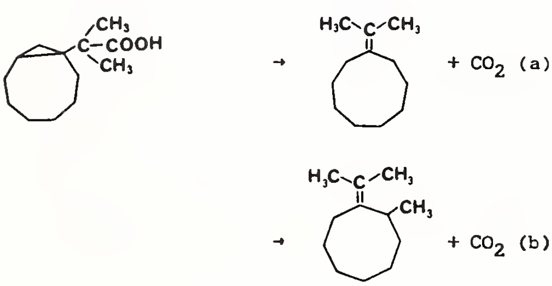
[1]) Thermolysis. The reactant exists in two forms: 5α and 5β, not specified in the text. Only the form 5β is given here.



Bicyclo[5.1.0]octane-1-acetic acid, α,α-dimethyl-
→ Cyclooctane, (1-methylethylidene)-
+ Carbon dioxide (a)
→ Cycloheptane, 1-methyl-2-(1-methylethylidene)-
+ Carbon dioxide (b)

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
79 BIG/FET [1] k_a.	EX	725	4.56(-2)			1	

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
79 BIG/FET [1])	EX	725	5.3(-3)			1	
k_b.							
79 BIG/FET [1])	EX	725	(5.09±0.21)(-2)			1	
$k_a + k_b$.							
79 BIG/FET [1])	EX	690-740	(3.82±0.16)(9)	0	18154±758	1	
$k_a + k_b$.							
A and B recalculated from the reported data.							
[1]) Pyrolysis in a Flow-reactor with evacuated sealed tubes.							
Gas-chromatography.							
NMR-spectroscopy.							
See footnote [2]) above for the general mechanism of this type of reaction.							



Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
Bicyclo[6.1.0]nonane-1-acetic acid, α,α-dimethyl-							
→ Cyclononane, (1-methylethylidene)- + Carbon dioxide (a)							
→ Cyclooctane, 1-methyl-2-(1-methylethylidene)- + Carbon dioxide (b)							
79 BIG/FET [1])	EX	725	5.67(-2)			1	
k_a.							
79 BIG/FET [1])	EX	725	4.8(-3)			1	
k_b.							
79 BIG/FET [1])	EX	725	(6.15±0.19)(-2)			1	
$k_a + k_b$.							
79 BIG/FET [1])	EX	690-740	(2.95±0.09)(9)	0	17829±1107	1	
$k_a + k_b$.							
A and B recalculated from the reported data.							
[1]) Pyrolysis in a Flow-reactor with evacuated sealed tubes.							
Gas-chromatography.							
NMR-spectroscopy.							
See footnote [2]) above for the general mechanism of this type of reaction.							

Reaction, Reference Code, Notes	Data type	T/K	k,k/k(ref), A,A/A(ref)	n	B, B-B(ref)	k,A units	k err. factor
$CH_3(CH_2)_5OC(O)O(CH_2)_5CH_3$							
→ $CH_3(CH_2)_5OH + CO_2 + CH_2{=}CH(CH_2)_3CH_3$							
Carbonic acid dihexyl ester (Di-n-hexyl carbonate)							
72 BIG/WRE1 [1])	EX	554-594	4.2(12)	0	22496	1	
Sealed-tube pyrolysis.							
72 BIG/WRE1 [1])	EX	700	(1.30±0.04)(-1)			1	
72 BIG/WRE1 [1])	EX	663-708	(7.65±0.23)(12	0	22194	1	
Flow-tube pyrolysis. The A-factor recalculated from the reported data.							
[1]) Pyrolysis in Kooyman or break-seal tubes.							
$CH_3(CH_2)_3CH(CH_3)OC(O)OCH(CH_3)(CH_2)_3CH_3$							
→ $CH_3(CH_2)_3CH{=}CH_2 + CO_2 + CH_3CH_2CH_2CH_2CH(OH)CH_3$ (a)							
→ cis-$CH_3CH_2CH_2CH{=}CHCH_3 + CO_2$ $+ CH_3CH_2CH_2CH_2CH(OH)CH_3$ (b)							
→ trans-$CH_3CH_2CH_2CH{=}CHCH_3 + CO_2$ $CH_3CH_2CH_2CH_2CH(OH)CH_3$ (c)							
Carbonic acid bis(1-methylpentyl) ester							
72 BIG/WRE2	EX	629	6.29(-2)			1	
$k_a + k_b + k_c$.							
72 BIG/WRE2	EX	593-648	6.34(12)	0	20282	1	
$k_a + k_b + k_c$. The A-factor recalculated from the reported data.							
[1]) Flow-tube pyrolysis.							
$CH_3(CH_2)_5CH_2OOCH_2(CH_2)_5CH_3$							
→ $CH_3(CH_2)_5CH_2O + CH_3(CH_2)_5CH_2O$							
Peroxide, diheptyl-							
82 SAH/RIG	EX	509	(6.7±1.4)(-1)			1	
Decomposition in a O_2/CO_2 mixture, in a quartz vessel. P(Total) = 180 torr.							
$CH_3(CH_2)_{13}CH_3$ → products							
Pentadecane							
80 RUM/SHE	EX	888-993	2.95(14)	0	31370±1612	1	6.03
Pyrolysis in a quartz reactor. P = 760 torr.							

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6. Conversion Factors for Rate Constants

Equivalent second order rate constants

A \ B	cm^3 mol^{-1} s^{-1}	dm^3 mol^{-1} s^{-1}	m^3 mol^{-1} s^{-1}	cm^3 $molecule^{-1}$ s^{-1}	$(mm\ Hg)^{-1}$ s^{-1}	atm^{-1} s^{-1}	ppm^{-1} min^{-1}	m^2 kN^{-1} s^{-1}
1 cm^3 mol^{-1} s^{-1} =	1	10^{-3}	10^{-6}	1.66×10^{-24}	$1.604 \times 10^{-5} T^{-1}$	$1.219 \times 10^{-2} T^{-1}$	2.453×10^{-9}	$1.203 \times 10^{-4} T^{-1}$
1 dm^3 mol^{-1} s^{-1} =	10^3	1	10^{-3}	1.66×10^{-21}	$1.604 \times 10^{-2} T^{-1}$	$12.19\, T^{-1}$	2.453×10^{-6}	$1.203 \times 10^{-1} T^{-1}$
1 m^3 mol^{-1} s^{-1} =	10^6	10^3	1	1.66×10^{-18}	$16.04\, T^{-1}$	$1.219 \times 10^{4} T^{-1}$	2.453×10^{-3}	$120.3\, T^{-1}$
1 cm^3 $molecule^{-1}$ s^{-1} =	6.023×10^{23}	6.023×10^{20}	6.023×10^{17}	1	$9.658 \times 10^{18} T^{-1}$	$7.34 \times 10^{21} T^{-1}$	1.478×10^{15}	$7.244 \times 10^{19} T^{-1}$
1 $(mm\ Hg)^{-1}$ s^{-1} =	$6.236 \times 10^{4} T$	$62.36\, T$	$6.236 \times 10^{-2} T$	$1.035 \times 10^{-19} T$	1	760	4.56×10^{-2}	7.500
1 atm^{-1} s^{-1}	$82.06\, T$	$8.206 \times 10^{-2} T$	$8.206 \times 10^{-5} T$	$1.362 \times 10^{-22} T$	1.316×10^{-3}	1	6×10^{-5}	9.869×10^{-3}
1 ppm^{-1} min^{-1} = at 298 K, 1 atm total pressure	4.077×10^{8}	4.077×10^{5}	407.7	6.76×10^{-16}	21.93	1.667×10^{4}	1	164.5
1 m^2 kN^{-1} s^{-1} =	$8314\, T$	$8.314\, T$	$8.314 \times 10^{-3} T$	$1.38 \times 10^{-20} T$	0.1333	101.325	6.079×10^{-3}	1

To convert a rate constant from one set of units A to a new set B find the conversion factor for the row A under column B and multiply the old value by it, e.g. to convert cm^3 $molecule^{-1}$ s^{-1} to m^3 mol^{-1} s^{-1} multiply by 6.023×10^{17}.

Table adapted from High Temperature Reaction Rate Data No. 5, The University, Leeds (1970).

Equivalent third order rate constants

A \ B	cm^6 mol^{-2} s^{-1}	dm^6 mol^{-2} s^{-1}	m^6 mol^{-2} s^{-1}	cm^6 $molecule^{-2}$ s^{-1}	$(mm\ Hg)^{-2}$ s^{-1}	atm^{-2} s^{-1}	ppm^{-2} min^{-1}	m^4 kN^{-2} s^{-1}
1 cm^6 mol^{-2} s^{-1} =	1	10^{-6}	10^{-12}	2.76×10^{-48}	$2.57 \times 10^{-10} T^{-2}$	$1.48 \times 10^{-4} T^{-2}$	1.003×10^{-19}	$1.447 \times 10^{-6} T^{-2}$
1 dm^6 mol^{-2} s^{-1} =	10^6	1	10^{-6}	2.76×10^{-42}	$2.57 \times 10^{-4} T^{-2}$	$148\, T^{-2}$	1.003×10^{-13}	$1.447 \times 10^{-2} T^{-2}$
1 m^6 mol^{-2} s^{-1} =	10^{12}	10^6	1	2.76×10^{-36}	$257\, T^{-2}$	$1.48 \times 10^{8} T^{-2}$	1.003×10^{-7}	$1.447 \times 10^{4} T^{-2}$
1 cm^6 $molecule^{-2}$ s^{-1} =	3.628×10^{47}	3.628×10^{41}	3.628×10^{35}	1	$9.328 \times 10^{37} T^{-2}$	$5.388 \times 10^{43} T^{-2}$	3.64×10^{28}	$5.248 \times 10^{39} T^{-2}$
1 $(mm\ Hg)^{-2}$ s^{-1} =	$3.89 \times 10^{9} T^2$	$3.89 \times 10^{3} T^2$	$3.89 \times 10^{-3} T^2$	$1.07 \times 10^{-38} T^2$	1	5.776×10^{5}	3.46×10^{-5}	56.25
1 atm^{-2} s^{-1} =	$6.733 \times 10^{3} T^2$	$6.733 \times 10^{-3} T^2$	$6.733 \times 10^{-9} T^2$	$1.86 \times 10^{-44} T^2$	1.73×10^{-6}	1	6×10^{-11}	9.74×10^{-5}
1 ppm^{-2} min^{-1} = at 298 K, 1 atm total pressure	9.97×10^{18}	9.97×10^{12}	9.97×10^{6}	2.75×10^{-29}	2.89×10^{4}	1.667×10^{10}	1	1.623×10^{6}
1 m^4 kN^{-2} s^{-1} =	$6.91 \times 10^{7} T^2$	$69.1\, T^2$	$6.91 \times 10^{-5} T^2$	$1.904 \times 10^{-40} T^2$	0.0178	1.027×10^{4}	6.16×10^{-7}	1

See note to table for second order rate constants.

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U.S. DEPT. OF COMM. **BIBLIOGRAPHIC DATA SHEET** *(See instructions)*	1. PUBLICATION OR REPORT NO. NBS/NSRDS-73/1	2. Performing Organ. Report No.	3. Publication Date August 1987

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Compilation of Chemical Kinetic Data for Combustion Chemistry. Part 1. Non-Aromatic C, H, O, N, and S Containing Compounds. (1971-1982)

5. AUTHOR(S)

Francis Westley, John T. Herron, and R. J. Cvetanović

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10. SUPPLEMENTARY NOTES

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☐ Document describes a computer program; SF-185, FIPS Software Summary, is attached.

11. ABSTRACT *(A 200-word or less factual summary of most significant information. If document includes a significant bibliography or literature survey, mention it here)*

Chemical kinetics data for reactions of importance in combustion chemistry are compiled. Experimental, theoretical, evaluated, or estimated rate constants are given for reactions of O, O_2, O_3, H, H_2, OH, HO_2, H_2O, H_2O_2, N, N_2, N_3, NO, NO_2, NO_3, N_2O, N_2O_5, NH, NH_2, NH_3, NH=NH, NH_2=NH, NH_2=NH_2, HN_3, HNO, HONO, $HONO_2$, HO_2NO_2, NH_2O, NH_2O_2, S, S_2, SO, SO_2, SH, H_2S, and the aliphatic, alicyclic, and heterocyclic saturated and unsaturated C_1 to C_{15} hydrocarbons, alcohols, aldehydes, ketones, thiols, ethers, peroxides, amines, amides, and their free radicals. The data were taken from the literature published between 1971 and 1982. Data previously issued in 1981 as NBSIR-81-2254, which covered the literature published from 1971 through 1977, are included. The data are reported as rate constants or in terms of the parameters A, n, and B of the extended Arrhenius expression $k = A(T/298)^n \times \exp(-B/T)$, where $B = E/R$. Data are given for 1931 reactions.

12. KEY WORDS *(Six to twelve entries; alphabetical order; capitalize only proper names; and separate key words by semicolons)*

Arrhenius parameters; carbon; chemical kinetics; combustion; compilation; free radicals; gas phase; hydrocarbons; hydrogen; nitrogen; oxygen; rate of reaction; sulfur.

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