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Tables of Experimental Rate Constants for Chemical Reactions Occurring in Combustion (1971-1977)

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Interim Report

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U.S. DEPARTMENT OF COMMERCE, Malcolm Baldrige, *Secretary*
NATIONAL BUREAU OF STANDARDS, Ernest Ambler, *Director*

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TABLE OF EXPERIMENTAL RATE CONSTANTS FOR CHEMICAL REACTIONS OCCURRING IN COMBUSTION (1971 - 1977)*

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A table of experimental rate constants for gas phase chemical reactions occurring in combustion is presented. Specifically, it gives in tabular form the values of the parameters for the modified Arrhenius equation $k = AT^{B}exp(-E/RT)$. The table covers reactions occurring in the combustion, oxidation and decomposition of aliphatic saturated or unsaturated C_1 to C_{10} hydrocarbons, alcohols, aldehydes, ketones, thiols, ethers, peroxides, amines, amides and their free radicals, as well as the reactions of O, O_2, H, H_2, OH, H_2O, H_2O_2, N, N_2, NO, N_2O, NO_2, N_2O_4, N_2O_5, S, S_2, SH, SO, SO_2, SOH, NS, with each other. The table includes 220 monomolecular, 1092 bimolecular, and 108 termolecular reactions totalling 1420 distinct chemical reactions. There are 2608 distinct entries, distributed as follows: 308 for first order reactions, 1984 for second order reactions and 316 for third order reactions. The kinetic data were compiled from 843 experimental papers published between 1971 and 1977.

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

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INTRODUCTION

This publication consists of a table of experimental reaction rate constants for the combustion, oxidation and decomposition reactions of aliphatic saturated and unsaturated hydrocarbons, their oxygenated sulfur and amino derivatives, as well as for the reactions of hydrogen, nitrogen oxygen, sulfur and their inorganic derivatives with each other. The table is a compilation of experimental rate constants given in 843 papers published between 1971 and 1977. Its purpose is to provide the kineticists and kinetic modelers with a comprehensive and easy-to-consult reference book on the kinetic data for combustion and oxidation processes. The table gives 2608 distinct reaction rate constants from these 843 experimental papers. A list of references including the 843 papers, arranged alphabetically by author for each separate year, is appended at the end of the table.

For each of reference the bimolecular and termolecular reactions included in the table are listed separately under each reactant, so that a grouping of the reactions according to the first reactant is obtained. As a result, the total number of tabulated entries is 4425, although the real number of distinct entries if 2608.

The presentation of kinetic data is standardized and simplified as much as possible. Rate constants are expressed in the modified Arrhenius equation $k = AT^{B}\exp(-E/RT)$. In general uncertainties are given only for the rate constant k itself and not for the individual parameters in this equation. Sometimes an uncertainty is given for the value of E/R. This uncertainty is only of secondary importance and has been included in the uncertainty stated for the value of the rate constant. Rate constants are expressed in units of s^{-1}, $cm^{3}mol^{-1}s^{-1}$, and $cm^{6}mol^{-2}s^{-1}$ for reactions of first, second and third order respectively.

For the readers who prefer other kinetic units than the standard ones, two conversion tables for equivalent second and - respectively - third order rate constant units are appended at the end of this publication.

The arrangement of the tables is described in detail below, in the "Guidelines for the User".

It is hoped that this table of kinetic data will serve as a handy and easy to use reference book for all the kineticists and kinetic modelers interested in combustion and oxidation processes.

This publication is not the result of the effort of a single person, but of the whole staff of Chemical Kinetics Information Center. My thanks to all of them.

In particular, I wish to thank Dr. David Garvin, Chief of the Chemical Thermodynamics Division, and Dr. Robert F. Hampson, Jr., Director of the Chemical Kinetics Information Center, for their more than helpful suggestions and constant guidance; Dr. Wing Tsang, Chief of the Chemical Kinetics Division, for his encouragement in having this table published; Mr. James G. Koch, Supervisor, for putting the tables into a printable computer form; Mrs. Bettijoyce Molino and Mrs. Carla G. Messina from the Office of Standard Reference Data for applying the OMNIDATA and GPSDIC programs to the present tables; Mrs. Geraldine Zumwalt, Miss Natalie C. Atkins, and Mrs. Janice L. Jones for punching and typing a difficult typescript, full of digits and numbers, with particular care.

GUIDELINES FOR THE USER

General

As pointed out above, the presentation of the kinetic data in this publication is an attempt to simplify and standardize them. In that respect, the choice of standard units for rate constants was easy; it was found that the most commonly used units for gas phase rate constants are

the cubic centimeter, the mole and the second. The choice of a standard form for uncertainty limits is somewhat more complicated, but when a series of recommended rate constants is to be presented in a tabular form, the uncertainty limits can not be omitted, for an uncertainty assigned to the recommended value of a rate constant is an estimate by the evaluator of the absolute accuracy of the preferred value. It is to be emphasized that in the present tables the concern is with the overall uncertainty of a reaction rate constant and not with the expression of precision of a set of experimental measurements. Most of the uncertainty limits included in this table are uniform within the respective temperature range indicated. However, for a limited number of reactions, the data warrant or require variable limits. In such cases, a note under the respective data indicates for which interval of the temperature range there is a change in the uncertainty limits.

It is thought that the uncertainty limits expressed in the form of lower and upper k factors - f and F, respectively - are the most suitable for tabulation. Thus, if k_o is the central value of a rate constant the limits of reliability for the rate constant k_o are defined by the relationship:

$$fk_o < k < Fk_o \qquad (1)$$

i.e. multiplication of the central value k_o by f and F gives respectively the lower and upper reliability limits of the rate constant. In this standardized formulation of uncertainty limits, the value of f is less than unity and the value of F is greater than unity.

However the k factors are not the only way to express the uncertainty limits of a rate constant and different authors use different forms to indicate the degree of reliability of a recommended rate constant. It follows that certain mathematical relationships are needed to translate

the different forms of uncertainty limits into the standard form used in this table (lower and upper k factors). The transformation formulas are given and discussed below.

In general there are two ways to state uncertainty limits: 1) by factors and 2) by algebraic addends

Uncertainty expressed by factors.

Beside the standard form of uncertainty limits expressed by the lower and upper factors f and F, as defined by the above given relationship (1), there is another form which expresses the uncertainty limits by a unique factor. Thus, if k_o is the central value of a rate constant, the statement that k_o is uncertain to a factor of F means that the uncertainty limits are defined by the relationship:

$$k_o/F < k < k_oF \qquad (2)$$

which shows that division and multiplication of the central value k_o by F gives, respectively, the lower and upper reliability limits of the rate constant. By comparing relationships (1) and (2), it is obvious that in the case of an uncertainty expressed by an unique F the upper factor is equal to the unique factor itself, while the lower factor f is the reciprocal of F:

$$f = 1/F \qquad (3)$$

Uncertainty expressed by algebraic addends.

There are three types of uncertainty limits for rate constants expressed as algebraic addends, which are currently used by kineticists: a). Uncertainty appended to one of the Arrhenius factors (A, B, or E/R); b). Uncertainty appended to $\log_{10} k_o$; and c). Uncertainty expressed as a percentage of k_o. With respect to the type a) uncertainties, the B factor

uncertainties have been eliminated as being unimportant, while the uncertainties for the E/R factor may be omitted because they are of secondary importance and are included in the k factors. Therefore, the only uncertainty of type a) considered below is the one appended to the coefficient of the A factor.

a). Uncertainty appended to the coefficient of A factor. In scientific notation, the A factor is of the form:

$$A = ax10^{n} \qquad (4)$$

where a is a numerical coefficient less than 10 and n is the power of 10. If an uncertainty $\pm a'$ is appended to the coefficient a, the A factor takes the form:

$$A = (a \pm a') \times 10^{n} \qquad (5)$$

If lower and upper factors (f and F) are wanted instead, the A factor takes the form:

$$A = fa \times 10^{n} \qquad (6)$$

or

$$A = Fa \times 10^{n} \qquad (7)$$

Comparison of (6) and (7) to (5) leads to the relationships: $fa = a - a'$ and $Fa = a + a'$ from which the following formulas are obtained:

$$f = 1 - a'/a \qquad (8)$$

and

$$F = 1 + a'/a \qquad (9)$$

Formulas (8) and (9) are the relationships needed to transform an uncertainty appended to the coefficient of the A factor into one using k factor. A numerical example follows:

$A = (2.0 \pm 0.5) \times 10^{14}$ therefore: $a = 2.0$ and $a' = 0.5$

$a'/a = 0.5/2.0 = 0.25$ and the k factors are: $f = 1 - 0.25 = 0.75$

and $F = 1 + 0.25 = 1.25$

b). Uncertainty appended to $\log_{10}k_o$. If k_o is the central value of a rate constant, C its logarithm to the base 10 and D the uncertainty expressed as an algebraic addend to C, then the following relationship is true:

$$\log_{10}k = C \pm D \tag{10}$$

where $C = \log_{10}k_o$. If D is put in logarithmic form, say:

$$D = \log_{10}F \tag{11}$$

then relationship (10) becomes:

$$\log_{10}k = \log_{10}k_o \pm \log_{10}F \tag{12}$$

which can take the form:

$$\log_{10}k_o/F < \log_{10}k < \log_{10}Fk_o$$

or

$$k_o/F < k < Fk_o \tag{13}$$

Replacing 1/F by f, relationship (1) is obtained. It is obvious that the k factors f and F are the antilogarithms of -D and D, respectively:

$$f = \text{antilog}(-D) = 10^{-D} \tag{14}$$

$$F = \text{antilog}D = 10^{D} \tag{15}$$

Formulas (14) and (15) are the relationships needed to transform the type b uncertainties into reliability limits expressed by k factors. A numerical example follows:

$\log_{10}k = 14.23 \pm 0.3$ therefore: $f = 10^{-0.3} = 0.5$ and $F = 10^{0.3} = 2.0$

c). Uncertainty expressed in percentage of k_o. Some kineticists prefer to use percentage for defining the uncertainty limits of a rate constant. Thus, the statement that a rate constant is $\pm$ p% uncertain means that the uncertainty limits of k_o are defined by the relationship:

$$k_o - (p/100)k_o < k < k_o + (p/100)k_o$$

$$\text{or} \quad (1 - p/100)k_o < k < (1 + p/100)k_o \qquad (16)$$

Replacing the percentage by the rate, defined as $r = p/100$, relationship (16) becomes:

$$(1 - r)k_o < k < (1 + r)k_o \qquad (17)$$

Comparison of relationships (17) and (1) leads to the following formulas:

$$f = 1 - r \qquad (18)$$

$$\text{and} \quad F = 1 + r \qquad (19)$$

which are the relationships needed to transform the type c uncertainties into reliability limits expressed by k factors. A numerical example follows:

$k = 3.7 \times 10^{12} \pm 20\%$ therefore $p = 20\%$ and $r = 0.2$

Thus: $f = 1 - 0.2 = 0.8$

and $F = 1 + 0.2 = 1.2$

When a percent error has been stated as > 100%, the F factor is determined first, according to relationship (19) then, instead of relationship (18), one simply sets: $f = 1/F$. E.g.: for a 150% error, $r = 1.5$, $F = 1 + r = 2.5$ and $f = 1/F = 0.4$.

The above given relationships: (3), (8) and (9), (14) and (15), (18) and (19) can be used in reverse by the reader who prefers other types of uncertainty limits than the standard k factors, f and F. However a word of caution is necessary. In contrast with the standard uncertainty limits, other types of uncertainties for rate constants using a unique factor or algebraic addend have a constraint imposed upon them. Thus, the uncertainties expressed by a unique algebraic addend are required to be symmetrical with

respect to the central value to which they are appended, while the uncertainty expressed by a unique factor, F, indicates in fact that the upper factor F and the lower factor f are required to be inverse to each other (f = 1/F). No such constraints are imposed on the standard uncertainty limits used here and for that reason this type of uncertainty has been found most suitable for tabulation purposes.

If the transformation of the standard uncertainty limits into uncertainties with constraints is desired, some adjustments may be necessary according to the case. The following examples, for transformation of standard uncertainty into a unique factor uncertainty, are an illustration of the necessary adjustments:

1). Standard factors: f = 0.5 and F = 2.0 It is obvious that f = 1/F and no adjustment is necessary.

2). Standard factors: f = 0.8 and F = 1.2 In this case, f and F are not inverse to each other. Indeed f' = 1/F = 0.83 while F' = 1/f = 1.25.

The two pairs of factors, (f' = 0.83; F = 1.2 and f = 0.8; F' = 1.25) are quite close. However, it is safer to choose the pair 0.8 and 1.25, by enlarging slightly the uncertainty range.

3). Standard factors: f = 0.6 and F = 1.4 In this case, not only are the factors not inverse to each other, but the difference is significant: f' = 1/F = 0.71 and F' = 1/f = 1.67.

The two pairs of factors, (f' = 0.71); F = 1.4 and f = 0.6; F' = 1.67) are significantly different. Again, it is safer to choose the pair 0.6

and 1.67, by enlarging the uncertainty range. And, since the concepts of uncertainty and reliability are opposite to each other, enlargement of the uncertainty range will result in a decrease in reliability.

The same adjustments may be necessary for transformation of k factors uncertainties into another type of uncertainties.

Arrangement of the table

This publication is in two parts:

Part I. The table, arranged in six columns including the chemical reactions, temperature range, the parameters A, B and E/R for the modified Arrhenius equation $k = AT^{B}exp(-E/RT)$ and the uncertainty limits expressed as k factors f and F.

Part II. The bibliography of part I, including the full references for the 843 experimental papers from which the present table was compiled. Following the bibliography, two conversion tables for equivalent second and - respectively - third order rate constant units are appended. The contents of part I are described in detail below:

Column 1 includes the chemical reactions indicating both the reactants and the products. In the same column, under each chemical reaction, the names of the reactants are given. The chemical nomenclature adopted is the one used in the Chemical Substance Indexes of Chemical Abstracts. Alternative names are not given. The chemical names of the products are not given. The line with chemical names is indented with respect to the line above it. Under the chemical names, the short reference of reviewer's book or article is given. It includes the last two digits of publication's year, followed by the first three letters of author's name. If two authors are given, a slash separates each author's three letters. Again, the short reference line is indented with respect to the line above it. E.g.:

74 HER/HUI indicates the review of rate constants for the reactions between aliphatic hydrocarbons and atomic oxygen, published by Herron and Huie in 1974.

In the same line with the short reference, but spaced out, the order of reaction is indicated by the words "Reaction order:" followed by one of the digits 1, 2, or 3. As pointed out in the introduction, the order of reaction indicates the units for the rate constants as follows:

1 for first order reactions .....s^{-1}

2 for second order reactions .....$cm^3 mol^{-1} s^{-1}$

3 for third order reactions .....$cm^6 mol^{-2} s^{-1}$

Following the reaction order, -on the same line-, the presence of an inert reaction partner ("third body") is indicated by the letter M: followed by its chemical formula. E.g.: M:Ar or M:CO_2. No indication is given if M is undefined, or if the reaction does not include M.

For a number of reactions, no Arrhenius parameters are indicated. Instead, for each of these reactions, the ratio of the rate constant with respect to the rate constant of a reference reaction is given. This information follows the reaction order information, on the same line, and is indicated by the symbol k/k_{ref}: followed by a number.

E.g.: k/k_{ref}: 0.59.

The last line of column 1, placed under the line including the short reference and reaction order information, begins with the heading NOTE: It is given only when necessary and might include information

about the dependence of k factors on temperature range, or the reaction taken as reference when the ratio k/k_{ref} is given in the previous line, or other information pertinent to the reaction indicated above. The rate constant, k_{ref}, for the reference reaction indicated in the note (by the same author) can be found in the table in the proper place. For a certain number of reactions the relationship $k_1 = K\, k_{-1}$ included in the note indicates that the respective rate constant was calculated from the equilibrium constant K and the rate constant k_{-1} of the reverse reaction. In such cases, the author usually gives the rate constant of the reverse reaction immediately after the data for the forward reaction. The arrangement of the present table (based on the standard order, as described below in the next section) does not allow the forward rate constant of a reaction to be followed immediately by its reverse reaction data. The reader will have to locate the rate constant of a reverse reaction (by the same author) in its proper place in the table.

Column 2, with the heading T/K, indicates in degrees Kelvin the temperature range of validity of the corresponding rate parameters. For some reactions only one temperature is given, meaning that the reaction was studied only at one temperature. The temperatures are alined with the short reference and the reaction order information.

Column 3, with the heading A, gives the value of A for the equation $k = AT^B \exp(-E/RT)$ in short scientific notation. In other words, it appears as a number less than 10, followed by a parenthesis including an integer preceded by the sign +, or -. The number less than 10 is the coefficient of the A factor, while the integer inside the parenthesis is the exponent of 10. Therefore, e.g., 3.5 (+ 14) should be read as $3.5 \times 10^{+14}$. The coefficient of the A factor has no more than one digit

after the decimal point. The units of the A factor are the same as for the rate constant k_1 according to the order of the respective reaction, as shown above. For those cases when the recommended value is only one temperature, the entry under this column is in fact the value of the rate constant k at this temperature. As for the temperatures, the data for the A factor are alined with the short reference and reaction order information. If a dash appears in this column, it means that no A factor value was reported by the evaluator for the corresponding reaction.

Column 4, with the heading B, gives the value of B for the equation $k = AT^B\exp(-E/RT)$. The value of B is usually low and varies from 0 to about 3 or 4. It may be negative, or positive. The negative values of B are preceded by the sign -, while the positive values are without sign. No more than one digit is given after the decimal point. If in this column a dash appears instead of a figure, it means that no B value was reported by the evaluator for the corresponding reaction. As for the temperature and A factor, the data for B are alined with the short reference and reaction order information.

Column 5, with the heading E/R, indicates the values of E/R for the equation $k = AT^B\exp(-E/RT)$. Since E is the activation energy in cal mol^{-1} and R the gas constant with a value of 1.987 cal mol^{-1} K^{-1}, it follows that the units of E/R are kelvins. The values given in column 5 for E/R may vary from 0 to over 100000 kelvins. The E/R values may be positive or negative. The negative values are preceded by -, while the positive values are without sign. Some of the E/R values included in the table are followed by an uncertainty with plus or minus sign. As pointed out in the introduction, these uncertainties may be ignored, as being included in the lower and upper k factors indicated in the right

column of the table. If in this column a dash appears instead of a figure, it means that no E/R value was reported by the evaluator. As for the data from the previous columns, the values for the E/R factor are alined with the short reference and reaction order information.

Column 6, with the heading "k factors" and two subheading, "f" and "F", indicates the two uncertainty k factors, the lower factor f in the left subcolumn and the upper factor F in the right subcolumn. To find the uncertainty limits of a reaction, its rate constant is to be multiplied by the two factors, as shown above in relation (1): $fk_o < k < Fk_o$. The values of both factors are always positive. If no uncertainty limits are indicated by the evaluator, both subcolumns of the column 6 are left blank. As for the data from the previous columns, the k factors are alined with the short reference and reaction order information.

Ordering of chemical reactions.

The general rule for ordering the chemical equations of the reactions listed in column 1 of the table is the standard order of arrangement as described in NBS Technical Note 270-3 pp. 5, 6, and 22*). This rule is applied to the first reactants of the reactions listed in the table, as well as to the reactants following the first. The first reactant of a reaction takes precedence over the following ones. The compounds listed as reactants may include the atoms O, H, S, N, and C, either each of them separately, or several, in any possible combination. The standard order

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*). Wagman, D. D., Evans, W. H. Parker, V. B. Halow, I., Bailey, S. M., and Schumm, R. H., "Selected Values of Chemical Thermodynamics Properties," NBS Tech. Note 270-3 pgs. 5, 16, 22 (1968).

of arrangement, when applied to these five atomic species, will result in the sequence O, H, S, N, C, each atom in it taking precedence over the following ones. When applied to the first reactants listed in the table, the standard order of arrangement will result in a sequence of five chemical systems, whose order of precedence is as follows:

1). O system, 2). H-O system, 3). S-O-H system, 4). N-O-H-S system, and 5). C-O-H-S-N system.

In each system, the first atom is underlined to show that the compounds containing this atom only, should be listed first. It is to be noted that the atomic species following the underlined atom are in standard order, while the underlined atom itself should be put at the end if the standard order were to be followed. As it will be shown below, this exception to the standard rule, which is apparent only but not real, is due to the fact that all the compounds containing the atoms of a system with the exception of the underlined atom, are already listed in the previous systems. In each of these five chemical systems, the order of the compounds listed in the table as first reactants is as follows:

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, SH_2, SOH.

4). N-O-H-S system: N, N_2, NO, NO_2, NO_3, N_2O, N_2O_4, N_2O_5, NH, NH_2, NH_3, N_2H_4, NH_3, HNO, HNO_3, NS.

5). C-O-H-S-N system: C_1 compounds: C, CO, CO_2, CH, CH_2, CH_3, CH_4, CHO, HCHO, CH_3O, CH_3OH, CH_3OOH, CS, CS_2, COS, CH_3S, CH_3SH, CN, $C(NO_2)_4$, CHN, CH_3NH_2, CH=N≡N, CH_3NHNH_2, CH_3NO, CH_3NO_2, CH_3NO_3, CH_3ONH_2.

C_2 compounds: C_2, C_2O, $CH{\equiv}CH$, $CH_2{=}CH_2$, $CH_3CH_2{\cdot}$, CH_3CH_3, $CH_2{=}C{=}O$, etc.

C_3 compounds, etc., up to C_{10} compounds follow, being ordered according to the same pattern.

It is clear now that, for instance, the compounds included in the S-O-H system contain at least one sulfur atom, while the compounds containing only H, or O atoms, or both, are already listed in the previous two system (O-system and H-O system). It is to be noted that for the C-O-H-S-N system the standard order is applied in a slightly different way: the compounds are first grouped according to the number of C atoms, then the rule for the standard order of arrangement is applied for each group apart. This is necessary as a result of the very large number of organic compounds.

The standard order is applied in the same way for the second, or third reactants of chemical reactions. Since the reactants of a chemical equation can be switched around, a number of bimolecular and termolecular reactions are inserted in the table in two and three places, respectively. E.g.: Reaction $CH_4 + O \rightarrow CH_3 + OH$, is inserted in the C-O-H-S-N system. This reaction may also be written as $O + CH_4 \rightarrow OH + CH_3$ and, as such, is listed in the O system. The advantage of such a procedure is obvious: referring to the example just given the reader will find the reaction between methane and oxygen listed with CH_4 as first reactant if he is interested in the reactions of methane, or listed with O as first reactant, if he is interested in the reactions of oxygen atom. The bimolecular reactions are the largest group of reactions included in the table. There are 1092 reactions listed in the table, having as reactants two distinct chemical compounds. Since each of these reactions is inserted twice,

the number of entries for them will amount to about 2000. Only a small number of termolecular reactions has three distinct reactants. As an example, one of them is $NO + NO_2 + O_2 \rightarrow N_2O_5$. This reaction will also be inserted under the forms: $NO_2 + NO + O_2 \rightarrow N_2O_5$ and $O_2 + NO + NO_2 \rightarrow N_2O_5$. A number of second and third order reactions includes a second and - respectively - third body M. For this group of reactions, M will always be placed after all the other reactants, which means that the second order reactions with M as reactant will be inserted in the table only once, while the third order reactions with M as reactant will be inserted only twice. E.g.: Reaction $O_3 + M \rightarrow O + O_2 + M$ is inserted in the table only once, while reaction $NO + O + M \rightarrow NO_2 + M$ is inserted as such, and also under the form $O + NO + M \rightarrow NO_2 + M$.

Most of the chemical reactions included in the table are balanced. A number of reactions are only apparently unbalanced. For instance, reaction

$$CH_3CH_2CH_2CH_3 + H \rightarrow CH_3CH_2CH_2CH_2\cdot + CH_3CH_2CH(\cdot)CH_3 + H_2 \qquad (20)$$

has a rate constant which is in fact the sum of the rate constants for the two reactions

$$CH_3CH_2CH_2CH_3 + H \rightarrow CH_3CH_2CH_2CH_2\cdot + H_2 \qquad (21)$$

and $$CH_3CH_2CH_2CH_3 + H \rightarrow CH_3CH_2CH(\cdot)CH_3 + H_2 \qquad (22)$$

Since the Arrhenius parameters listed in the table refer to the total rate constant, the reaction is listed in the table under the form (20) rather than in two separate forms. In some instances, a reaction is balanced, but the alkyl radicals formed as products are not specified. E.g.:

$$CH_3 + (CH_3)_2CHCH(CH_3)CH(CH_3)_2 \rightarrow CH_4 + [C_8H_{17}\cdot] \qquad (23)$$

The unspecified octyl radical inserted in square brackets as product in equation (23) represents all primary, secondary and tertiary octyl radicals that could be formed by abstraction of a H atom from the reactant 2,3,4-Trimethyl-pentane. There are a number of reactions with the products totally unspecified. In such a case, the word "products" appears after the arrow:

$$(CH_3)_2C = CHCH_3 + N \rightarrow \text{products} \qquad (24)$$

Display of Chemical Reactions and Formulae.

A chemical reaction equation should show as clearly as possible the formation of products from the reactants. For that reason, the reactions listed in the table are written on the basis of semi-structural formulas.

Straight chain hydrocarbons. All saturated normal hydrocarbons up to, and including n-pentane, are written so as to show separately each methyl and methylene group in the chain: CH_4, CH_3CH_3, $CH_3CH_2CH_3$, $CH_3CH_2CH_2CH_3$, $CH_3CH_2CH_2CH_2CH_3$.

The higher hydrocarbons, from n-hexane to n-decane, are written in a more condensed form to facilitate the counting of the number of methylene groups in the chain: $CH_3(CH_2)_4CH_3$, $CH_3(CH_2)_5CH_3$, $CH_3(CH_2)_6CH_3$, $CH_3(CH_2)_7CH_3$, $CH_3(CH_2)_8CH_3$.

The unsaturated hydrocarbons are written so as to show the position of each double or triple bond in the molecule. E.g.:

Ethyne (Acetylene)	$CH{\equiv}CH$
1,2-Propadiene (Allene)	$CH_2{=}C{=}CH_2$
1,3-Butadiyne	$CH{\equiv}CC{\equiv}CH$
cis-2-Pentene	cis-$CH_3CH_2CH{=}CHCH_3$
1-Heptene	$CH_3(CH_2)_4CH{=}CH_2$

Alkyl radicals. The unpaired electron of each alkyl radical is always indicated, with the exception of Methyl free radical. E.g.:

Methyl free radical	CH_3 (no dot)
Ethyl, 1-methyl-, free radical (Isopropyl)	$(CH_3)_2CH\cdot$
Methyl, hydroxy-, free radical	$\cdot CH_2OH$

If the unpaired electron of an alkyl radical belongs to a carbon in the middle of the chain, it is indicated inside a parenthesis following the carbon atom. E.g.:

Propyl, 1-methyl-, free radical (sec-Butyl)	$CH_3CH_2CH(\cdot)CH_3$
Butyl, 1,1-dimethyl-, free radical (2-Methyl-2-pentyl)	$CH_3CH_2CH_2C(\cdot)(CH_3)_2$
Methyl, oxo-, free radical (Formyl) (is written)	$\cdot CHO$

Oxy free radicals. If the oxygen atom of an oxy radical is attached to the terminal carbon atom, the radical is written in the usual manner: CH_3O. If the oxygen atom of the oxy radical is attached to a C atom in the middle of the chain, then the oxygen atom, together with the unpaired electron, are inside a parenthesis following the C atom: $(CH_3)_2C(O\cdot)CH_2CH_3$.

Peroxo, and other free radicals. The rules for writing peroxo, and other free radicals are the same as for the oxy free radicals: $CH_3O_2\cdot$, $CH_3S\cdot$.

Atoms, like O, H, S, N, and simple radicals like OH, HO_2, SH, NH, CH, CH_2, CH_3, CN are written without dot.

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
$O + O + M \rightarrow O_2 + M$						
OXYGEN ATOM						
72 TCH REACTION ORDER: 3	298	3.6(+15)	-	-		
NOTE: ROOM TEMPERATURE, ASSUMED TO BE 298K						
$O + O + M \rightarrow O_2 + M$						
OXYGEN ATOM						
73 CAM/GRA REACTION ORDER: 3	196-298	3.4(+14)	0	-484	0.9	1.1
NOTE: BASED ON EXPERIMENTAL VALUES $k(196)=(4.05\pm0.17)X10^{9}$ AND $k(298)=(1.74\pm0.13)X10^{9}$ $dm^{6}mol^{-2}s^{-1}$						
$O + O + M \rightarrow O_2 + M^{*}$						
OXYGEN ATOM						
76 SIA/BLAI REACTION ORDER: 3	200-300	5.1(+17)	0	655±300	0.4	2.1
NOTE: $M=O^{*}(^{1}S)$						
$O^{*}(^{1}D) + O_2 \rightarrow$ products						
OXYGEN ATOM + OXYGEN MOLECULE						
73 HEI/HUS1 REACTION ORDER: 2	300	4.2(+13)	-	-	0.9	1.1
$O + O_2 + M \rightarrow O_3 + M$						
OXYGEN ATOM + OXYGEN MOLECULE						
71 ELI/CAS REACTION ORDER: 3 k/k_{ref}: 0.006	298	-	-	-		
NOTE: $O + O_3 \rightarrow O_2 + O_2$: M = He, Ar, Xe, N_2 (AT 2537 Å)						
71 BIP/TRO REACTION ORDER: 2	298	1.0(+12)	-	-	0.8	1.2
NOTE: LIMITING HIGH-PRESSURE k						
71 BIP/TRO REACTION ORDER: 3	298	2.9(+14)	-	-	0.8	1.2
NOTE: k_0 (LOW PRESSURE)						
71 STU/NIK1 REACTION ORDER: 3	300	2.3(+14)	-	-	0.7	1.3
71 STU/NIK1 REACTION ORDER: 3	300	2.0(+14)	-	-	0.7	1.3
71 STU/NIK1 REACTION ORDER: 3	300	2.4(+14)	-	-	0.7	1.3
72 TCH REACTION ORDER: 3	298	4.4(+14)	-	-		
NOTE: ROOM TEMPERATURE, ASSUMED TO BE 298K						
72 CAS/SCH REACTION ORDER: 3 k/k_{ref}: 0.027	261	-	-	-		
72 CAS/SCH k/k_{ref}: 0.006	298	-	-	-		
NOTE: k_{ref}: $O + O_3 \rightarrow O_2 + O_2$; M = O_2, O_3, N_2 (AT 3340Å)						
72 HUI/HER1 M: Ar	200-346	2.4(+13)	0	-510±23	0.9	1.1
M: Ar	218	2.5(+14)	-	-	0.9	1.1
NOTE: M eff: Ar(1.0) M: N_2	218	4.0(+14)	-	-	0.9	1.1
NOTE: M eff: N_2(1.6) M: He	298	1.2(+14)	-	-	0.9	1.1
NOTE: M eff: He(0.92) M: Ar	298	1.3(+14)	-	-	0.9	1.1
NOTE: M eff: Ar(1.0) M: N_2	298	2.1(+14)				
NOTE: M eff: N_2(1.6)						
73 BAI/JAR M: O_2	295	2.2(+14)	-	-	0.8	1.2
M: Ar	295	1.5(+14)	-	-	0.6	1.4
M: N_2	295	2.0(+14)	-	-	0.8	1.2
73 STF/NIK1	298	-	-	-	0.9	1.1
NOTE: $k[M]/k_{ref}$: $1.0X10^{-3}$; k_{ref}: $O + NO_2 \rightarrow O_2 + NO$						
73 CAS/SCH k/k_{ref}: 0.006	298	-	-	-		
NOTE: k_{ref}: $O + O_3 \rightarrow O_2 + O_2$; M = O_2, N_2 (AT 3340Å)						
73 GAF/GLA REACTION ORDER: 2	300	6.0(+11)	-	-		
NOTE: LIMITING HIGH-PRESSURE k.						
74 SNE REACTION ORDER: 3	295	1.8(+14)	-	-	0.9	1.1
75 GAE/TRO REACTION ORDER: 2 M: N_2	290	1.7(+12)	-	-	0.6	1.4
NOTE: LIMITING HIGH-PRESSURE k (REEVALUATION) M: N_2	295	1.7(+12)	-	-	0.6	1.4
NOTE: LIMITING HIGH-PRESSURE k(REEVALUATION) REACTION ORDER: 3 M: N_2	295	2.3(+14)	-	-	0.6	1.4
NOTE: LIMITING LOW-PRESSURE k.(REEVALUATION)						
76 HOG/BUR M: O_2	300	2.3(+14)	-	-	0.8	1.2

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
$O + O_2 + M \rightarrow O_3 + M^*$						
OXYGEN ATOM + OXYGEN MOLECULE						
71 FIN/SNE REACTION ORDER: 3	283-321	3.2(+11)	0	1680		
NOTE: $M^* = O_2^*(^1\Delta_g)$						
$O + O_2 + M \rightarrow O_3^\ddagger + M$						
OXYGEN ATOM + OXYGEN MOLECULE						
73 DEV/JOH REACTION ORDER: 3 M: O_2	295	2.0(+14)	-	-	0.9	1.1
M: Ar	295	9.8(+13)	-	-	0.9	1.1
M: SF_6	295	1.1(+15)	-	-	0.9	1.1
M: N_2O	295	4.7(+14)	-	-	0.9	1.1
M: CO_2	295	4.8(+14)	-	-	0.9	1.1
$O + O_2 + M \rightarrow O_3^\ddagger(v1,v3) + M$						
OXYGEN ATOM + OXYGEN MOLECULE						
73 RCS/TRA REACTION ORDER: 3	300	-	-	-		
NOTE: k_{ref}: $O_3^\ddagger(v1,v3) + M \rightarrow O_3 + M$; k/k_{ref}: 1.5×10^{-20} cm^{-3}						
$O + O_2 + M \rightarrow O_3^\ddagger(v=n) + M$						
OXYGEN ATOM + OXYGEN MOLECULE						
74 RCS/TRA REACTION ORDER: 3	300	1.1(+4)	-	-	0.8	1.2
NOTE: M=O_2, OR N_2						
$O + O_3 \rightarrow O_2 + O_2$						
OXYGEN ATOM + OZONE						
71 KEE/SIM REACTION ORDER: 2	197-299	7.2(+12)	0	2165±100	0.8	1.2
72 BIS/KIR1	300	7.8(+9)	-	-	0.6	1.4
72 BAL/EGG	292-370	7.1(+12)	0	1935±85	0.8	1.3
72 MCC/KAU	269-409	6.3(+12)	0	2170±50	0.8	1.2
73 DAV/WON	220-353	1.2(+13)	0	2276±106	0.9	1.1
76 DAV	293	7.2(+9)	-	-	0.9	1.1
$O^*(^1D) + O_3 \rightarrow O_2 + O_2$						
OXYGEN ATOM + OZONE						
71 GOI/GRE REACTION ORDER: 2 k/k_{ref}: 4.1	298	-	-	-		
NOTE: k_{ref}: $O^*(^1D) + N_2O \rightarrow N_2 + O_2 + NO + NO$ (AT 2288Å)						
k/k_{ref}: 2.6	298	-	-	-		
NOTE: k_{ref}: $O^*(^1D) + N_2O \rightarrow N_2 + O_2 + NO + NO$ (AT 2537Å)						
73 HEI/HUS1	300	1.6(+14)	-	-	0.9	1.1
k/k_{ref}: 3.9	300	-	-	-		
NOTE: k_{ref}: $O^*(^1D) + O_2 \rightarrow$ products						
$O^*(^1D) + O_2 \rightarrow O_2 + O_2$ (OR $O + O + O_2$)						
OXYGEN ATOM + OZONE						
75 GAU/SNE REACTION ORDER: 2 k/k_{ref}: 8.0	300	-	-	-	0.7	1.3
NOTE: $O^*(^1D) + O_2 \rightarrow O + O_2^*(^1\Sigma_g^+)$						
	300	3.6(+14)	-	-		
NOTE: EVALUATION						
76 DAV/SAD	298	1.4(+14)	-	-	0.9	1.1
76 STR/HOW	103-393	1.4(+14)	0	0	0.9	1.1
$O + H \rightarrow OH(v=1)$						
OXYGEN ATOM + HYDROGEN ATOM						
76 TIC REACTION ORDER: 2	298	2.7(+1)	-	-		
$O + H + M \rightarrow OH + M$						
OXYGEN ATOM + HYDROGEN ATOM						
76 TIC M: H	298	5.8(+11)	-	-		
M: H_2	298	6.2(+9)	-	-		
$O + H + M \rightarrow OH(v=1) + M$						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	F
OXYGEN ATOM + HYDROGEN ATOM 76 TIC REACTION ORDER: 3 M: H	298	1.5(+10)	-	-		
$O + H + M \rightarrow OH^{*} + M$ OXYGEN ATOM + HYDROGEN ATOM 76 BEI/MAR REACTION ORDER: 3	1250-2000	1.0(+9)	0	5540		
$O + H_2 \rightarrow OH + H$ OXYGEN ATOM + HYDROGEN MOLECULE 71 BRA/BLI 72 SCH/GET REACTION ORDER: 2 k/k_{ref}: 4.0	1200-1600 1700-2000	3.0(+13) -	0 -	4930±650 -	0.8 0.7	1.2 1.3
NOTE: k_{ref}: $H + O_2 \rightarrow OH + O$	1700	4.5(+12)	-	-		
NOTE: EVALUATION 73 GET 74 RAM/TRO	1400-1900 339-924	3.2(+14) 7.2(+10)	0 -	7550 -	0.7	1.3
NOTE: E NOT DETERMINED. WITHIN THE GIVEN T RANGE, TOTAL k INCREASED FROM 7.2×10^{10} TO 1.3×10^{11} $cm^3 mol^{-1} s^{-1}$ 74 RAM/GAR	1200-2000	-	-	-		
NOTE: $OH + OH \rightarrow H_2O + O$; k/k_{ref}: $2.9\exp(-3250/T)$	1200-2000	1.6(+14)	0	6810		
NOTE: REEVALUATION 74 SCE/GET k/k_{ref}: 3.6	1400-1900	-	-	-	0.8	1.2
NOTE: k_{ref}: $O_2 + H \rightarrow O + OH$	1400-1900	2.2(+14)	0	6920	0.8	1.3
NOTE: EVALUATION 75 CAM/HAN2 75 DEB/MCK	363-490 347-832	3.1(+13) 5.3(+12)	0 0	4950±300 4200±240	0.8 0.4	1.2 1.6
NOTE: BY ALL AFTERGLOW	347-832	5.0(+12)	0	4330±240	0.5	1.5
NOTE: BY RESONANCE-FLUORESCENCE						
$O + D_2 \rightarrow OD + D$ OXYGEN ATOM + DEUTERIUM MOLECULE 75 APP/APP REACTION ORDER: 2	1700-3100	4.1(+10)	1.0	8255	0.5	2.0
$O + H_2(v=1) \rightarrow OH + H$ OXYGEN ATOM + HYDROGEN MOLECULE 75 BIR/KAS REACTION ORDER: 2	300	<6.0(+10)	-	-		
NOTE: UPPER LIMIT k						
$O^{*}(^1D) + H_2 \rightarrow OH + H$ OXYGEN ATOM + HYDROGEN MOLECULE 73 HEI/HUS2 73 HEI/HUS2 REACTION ORDER: 2 k/k_{ref}: 1.23	300 300	1.6(+14) -	- -	- -	0.9	1.1
NOTE: k_{ref}: $O^{*}(^1D) + N_2O \rightarrow$ products 75 GAU/SNE k/k_{ref}: 4.0	300	-	-	-	0.7	1.3
NOTE: k_{ref}: $O^{*}(^1D) + O_2 \rightarrow O + O_2^{*}(^1\Sigma_g^{+})$	300	1.8(+14)	-	-		
NOTE: EVALUATION 75 STI/PAY k/k_{ref}: 4.23	300	-	-	-	0.6	1.4
NOTE: k_{ref}: $O^{*}(^1D) + O_2 \rightarrow O(^3P) + O_2$	300	1.5(+14)	-	-	0.4	1.6
NOTE: EVALUATION 76 DAV/SAD 77 DAV/SCH	298 204-352	7.8(+13) 6.0(+13)	- 0	- 0	0.9 0.7	1.1 1.3
$O^{*}(^1D) + D_2 \rightarrow OD + D$ OXYGEN ATOM + DEUTERIUM MOLECULE 76 DAV/SAD 73 HEI/HUS2 REACTION ORDER: 2	298 300	7.8(+13) 1.1(+14)	- -	- -	0.9 0.9	1.1 1.1
$O + OH \rightarrow O_2 + H$ OXYGEN ATOM + HYDROXYL FREE RADICAL 77 CAM/HAN REACTION ORDER: 2 k/k_{ref}: 260.	425	-	-	-	0.9	1.1
NOTE: k_{ref}: $CO + OH \rightarrow CO_2 + H$ 77 CAM/HAN	425	2.7(+13)	-	-	0.8	1.2

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
NOTE: EVALUATION						
$O + OH(v=1) \rightarrow O_2 + H$						
OXYGEN ATOM + HYDROXYL FREE RADICAL						
77 SPE/LND REACTION ORDER: 2	295	5.4(+13)	-	-	0.7	1.3
77 SPE/GLA	295	6.3(+13)	-	-	0.5	1.5
$O + OH^{\dagger}(v=9) \rightarrow$ products						
OXYGEN ATOM + HYDROXYL FREE RADICAL						
76 KRI REACTION ORDER: 2	298	1.8(+13)	-	-		
$O + HO_2 \rightarrow OH + O_2$						
OXYGEN ATOM + HYDROPEROXYL FREE RADICAL						
73 PEE/WAR REACTION ORDER: 2	1600	5.0(+13)	-	-		
NOTE: TENTATIVE k						
77 BUK/HAR	293	2.1(+13)	-	-	0.7	1.3
$O + H_2O \rightarrow OH + OH$						
OXYGEN ATOM + WATER						
71 ALE/HOY REACTION ORDER: 2	753-1045	4.0(+13)	0	8700±250		
$O^*(^1D) + H_2O \rightarrow OH + OH$						
OXYGEN ATOM + WATER						
71 SCO/CVE REACTION ORDER: 2	296	-	-	-	0.9	1.1
NOTE: k_{ref}: $O^*(^1D) + N_2O \rightarrow N_2 + O_2 + NO + NO$						
72 FOR/SNE k/k_{ref}: 3.5	295	-	-	-		
NOTE: k_{ref}: $O^*(^1D) + N_2 \rightarrow O + N_2$						
72 SIM/HEI2	300-423	-	-	-		
NOTE: k_{ref}: $O^*(^1D) + CO \rightarrow O(^3P) + CO$						
k/k_{ref}: $3.8X10^{-1}\exp(624/T)$ (EVALUATION)						
73 HEI/HUS1	300	1.8(+14)	-	-	0.9	1.1
73 HEI/HUS1 k/k_{ref}: 4.4	300	-	-	-		
NOTE: k_{ref}: $O^*(^1D) + O_2 \rightarrow$ products						
73 SIM/HEI2	373	-	-	-	0.9	1.1
NOTE: k_{ref}: $O^*(^1D) + N_2O \rightarrow$ products						
75 GAU/SNE k/k_{ref}: 5.0	300	-	-	-	0.7	1.3
NOTE: k_{ref}: $O^*(^1D) + O_2 \rightarrow O + O_2^*(^1\Sigma_g^+)$						
75 GAU/SNE	300	2.2(+14)	-	-		
NOTE: EVALUATION						
76 DAV/SAD	298	1.3(+14)	-	-	0.5	1.5
76 STE/HOW	253-353	1.4(+14)	0	0	0.9	1.1
$O^*(^1D) + H_2O_2 \rightarrow OH + HO_2$						
OXYGEN ATOM + HYDROGEN PEROXIDE						
76 FLI/HUS REACTION ORDER: 2	300	3.1(+14)	-	-	0.9	1.1
$O + H_2O_2 \rightarrow OH + HO_2 + O_2 + H_2O$						
OXYGEN ATOM + HYDROGEN PEROXIDE						
71 ALE/FOY REACTION ORDER: 2	370-800	2.6(+13)	0	3220±300		
74 DAV/WON	283-368	1.7(+12)	0	2125±261	0.9	1.1
$O + SO + M \rightarrow SO_2 + M$						
OXYGEN ATOM + SULFUR MONOXIDE						
71 MIY/TAK1 REACTION ORDER: 3 M: Ar	298	7.3(+16)	-	-	0.9	1.1
$O + SO_2 + M \rightarrow SO_3 + M$						
OXYGEN ATOM + SULFUR DIOXIDE						
74 ATK/PIT3 REACTION ORDER: 3 M: N_2O	299-392	3.3(+16)	0	1000±200		
75 WES/DEH2 M: He	297	3.0(+14)	-	-	0.9	1.1
NOTE:M eff: He(1.0) M: SO_2	297	2.9(+15)	-	-	0.7	1.3
NOTE:M eff: SO_2(9.5)						
75 WES/DEH2 M: N_2	297	7.2(+14)	-	-	0.9	1.1

CHEMICAL REACTIONS		T/K	A	B	E/R (in °K)	k factors f	k factors F
NOTE: M eff: N_2(2.4)	M: He	248-415	3.9(+16)	0	1400±50	0.8	1.2
$O + SO_3 \rightarrow O_2 + SO_2$							
OXYGEN ATOM + SULFUR TRIOXIDE							
71 MER/LEV	REACTION ORDER: 2	1100-1400	6.5(+14)	0	5435		
NOTE: k DETERMINED IN H_2S FLAME		900-1600	2.8(+14)	0	6040		
NOTE: k DETERMINED IN COS FLAME							
$O + SO_3 \rightarrow O_2 + SO_2$							
OXYGEN ATOM + SULFUR TRIOXIDE							
72 JAC/WIN	REACTION ORDER: 2	300-500	1.5(+8)	0	500		
$O + SO_3 + M \rightarrow O_2 + SO_2 + M$							
OXYGEN ATOM + SULFUR TRIOXIDE							
75 WES/DEH1	REACTION ORDER: 3 M: He	298	7.3(+17)	-	-	0.9	1.1
NOTE: M eff: He(1.0)	M: SO_2	298	<7.3(+18)	-	-		
75 WES/DEH1							
NOTE: M eff: SO_2(<10.0); UPPER LIMIT RATIO	M: N_2	298	1.0(+18)	-	-	0.9	1.1
75 WES/DEH1							
NOTE: M eff: N_2(1.4)	M: He	298-507	5.0(+16)	0	-785	0.9	1.1
75 WES/DEH1							
$O + S_2O \rightarrow SO + SO$							
OXYGEN ATOM + SULFUR OXIDE (S_2O)							
74 STE/ALV	REACTION ORDER: 2	298	9.0(+11)	-	-	0.9	1.1
NOTE: EVALUATION							
$O + SH \rightarrow H + SO$							
OXYGEN ATOM + MERCEPTO FREE RADICAL							
75 CUP/GLA	REACTION ORDER: 2	295	9.6(+13)	-	-	0.7	1.3
$O + H_2S \rightarrow OH + SH$							
OXYGEN ATOM + HYDROGEN SULFIDE							
76 WHY/TIM	REACTION ORDER: 2	263-495	4.4(+12)	0	1660±50	0.9	1.1
$O + D_2S \rightarrow OD + SD$							
OXYGEN ATOM + HYDROGEN SULFIDE (D_2S)							
76 WHY/TIM	REACTION ORDER: 2	298-450	6.3(+12)	0	2145±155	0.5	1.5
$O + N \rightarrow NO^*(C,v=0)$							
OXYGEN ATOM + NITROGEN ATOM							
73 MAN/CAR	REACTION ORDER: 2	300	1.7(+6)	-	-	0.8	1.2
$O + N + M \rightarrow NO + M$							
OXYGEN ATOM + NITROGEN ATOM							
73 CAM/GRA	REACTION ORDER: 3 M: N_2	196-298	2.0(+15)	0	-155	0.9	1.1
NOTE: BASED ON EXPERIMENTAL VALUES k (196)=(4.38±0.38)X10^9 AND k(298)=(3.34±0.36)10^9 $dm^6 mol^{-2} s^{-1}$							
$O + N_2 \rightarrow NO + N$							
OXYGEN ATOM + NITROGEN MOLECULE							
73 BAC/EBE	REACTION ORDER: 2	1900-2250	5.0(+13)	0	37950	0.5	2.0
73 IVE/BAS		1900-2400	1.3(+14)	0	37950		
NOTE: EVALUATION							
76 BAR/NAS		2270-2629	9.1(+13)	0	38000	0.9	1.1
77 BIA/SME		1880-2350	7.5(+13)	0	38250	0.8	1.2
77 MON/HAN2		2384-3850	1.8(+14)	0	38375	0.7	1.4
$O + N_2 \rightarrow N_2O$							
OXYGEN ATOM + NITROGEN MOLECULE							
73 GAE/GLA	REACTION ORDER: 2	300	1.0(+12)	-	-		
NOTE: GIVEN WITH CAUTION. RATE CONSTANT EXPRESSED AS: $k=[N_2]\ 1.0X10^{12}\ cm^6 mol^{-2} s^{-1}$							
$O^*(^1D) + N_2 \rightarrow$ products							
OXYGEN ATOM + NITROGEN MOLECULE							

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
73 HEI/HUS1 REACTION ORDER: 2	300 300	4.2(+13) -	- -	- -	0.9	1.1
NOTE: k_{ref}: $O^*(^1D) + O_2 \rightarrow$ products						
$O + N_2 + M \rightarrow N_2O + M$						
OXYGEN ATOM + NITROGEN MOLECULE						
71 STU/NIK1 REACTION ORDER: 3 M: N_2	300	<1.8(+10)	-	-		
NOTE: UPPER LIMIT k						
$O^*(^1D) + N_2 + M \rightarrow N_2O + M$						
OXYGEN ATOM + NITROGEN MOLECULE						
72 SIM/LIS REACTION ORDER: 3	298	-	-	-		
NOTE: k_{ref}: $O^*(^1D) + N_2 \rightarrow O + N_2$ (RATIO IN cm^3mol^{-1} UNITS); M = N_2						
$O + NO \rightarrow O_2 + N$						
OXYGEN ATOM + NITROGEN OXIDE (NO)						
74 HAN/FLO REACTION ORDER: 2	2500-4100	2.4(+9)	1.0	19446		
76 MCC/KRU	1700-2300	1.7(+9)	0	19447	0.8	1.3
	1500-5000	3.7(+9)	1.0	20850		
NOTE: RECOMMENDED k						
$O^*(^1D) + NO \rightarrow O_2 + N$						
OXYGEN ATOM + NITROGEN OXIDE (NO)						
73 HEI/HUS2 REACTION ORDER: 2 k/k_{ref}: 0.43	300 300	5.1(+13) -	- -	- -	0.9	1.1
NOTE: k_{ref}: $O^*(^1D) + N_2O \rightarrow$ products						
$O + NO + M \rightarrow NO_2 + M$						
OXYGEN ATOM + NITROGEN OXIDE (NO)						
71 ATK/CVE REACTION ORDER: 3 M: N_2O	298	3.7(+16)	-	-	0.8	1.2
71 STU/NIK1 M: He	300	2.4(+16)	-	-	0.9	1.1
M: NO	300	5.4(+16)	-	-	0.9	1.1
72 ATK/CVE M: N_2O	298-473	2.6(+15)	0	-805±150	0.8	1.2
73 GAF/GLA REACTION ORDER: 2 M: N_2	300	8.0(+12)	-	-		
NOTE: LIMITING HIGH-PRESSURE k						
74 ATK/FIT1 REACTION ORDER: 3 M: N_2O	300-392	9.6(+15)	0	-450+100		
74 ATK/FIT2 M: N_2O	300	4.3(+16)	-	-	0.9	1.1
74 FLR/ATK M: N_2O	298	5.8(+16)	-	-	0.9	1.1
75 CAM/HAN2 REACTION ORDER: 3 M: Ar	285-432	1.1(+15)	0	-900±85	0.7	1.3
NOTE:M eff: Ar(1.0)						
M: N_2	285-432	1.8(+15)	0	-900±85	0.7	1.3
NOTE:M eff: N_2(1.62±0.14)						
75 GAB/TRO REACTION ORDER: 2 M: N_2	296	1.8(+13)	-	-	0.8	1.2
NOTE: LIMITING HIGH-PRESSURE k						
75 BIE/SCH M: N_2	295	1.8(+13)	-	-	0.8	1.2
NOTE: LIMITING HIGH PRESSURE k(REEVALUATION)						
M: N_2	295	2.7(+16)	-	-	0.8	1.2
NOTE:M eff: N_2(1.0) LIMITING LOW PRESSURE k (REEVALUATION)						
75 SIN/FUR M: N_2O	298-473	6.1(+15)	0	-620±28	0.9	1.1
76 MIC/PAY M: He	217-500	3.9(+15)	0	-523±30	0.9	1.1
NOTE:M eff: (He): 0.87 (217K); 0.95 (298K); 1.0(500K) M: Ne	217-500	3.4(+15)	0	-518±30	0.9	1.1
NOTE:M eff: (Ne): 0.74 (217K); 0.8 (298K); 0.9 (500K) M: Ar	217-500	3.3(+15)	0	-594±35	0.9	1.1
NOTE:M eff(Ar):1.0(217-500K) M: Kr	217-500	3.5(+15)	0	-574±35	0.9	1.1
NOTE:M eff(Kr): 0.97 (217K); 0.99 (298K); 1.0 (500K)						
76 WHY/MIC1 M: N_2	217-500	5.6(+15)	0	-584±35	0.9	1.1
76 WHY/MIC1 M: N_2	217-500	1.4(+21)	-1.82	0		
NOTE: ALTERNATIVE,T DEPENDENT k						
77 ATK/PER1 M: Ar	298-439	5.3(+15)	0	-473±100	0.9	1.1

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
$O + NO_2 \rightarrow O_2 + NO$						
OXYGEN ATOM + NITROGEN OXIDE (NO_2)						
72 CLY/CRU — REACTION ORDER: 2	298	3.6(+12)	-	-	0.9	1.1
72 GIE/DEM	298	4.0(+12)	-	-	0.8	1.3
73 LAV/BER	239-339	5.5(+12)	0	0	0.9	1.1
73 STA/WOO	249	6.3(+12)	-	-	0.8	1.2
73 STA/WOO	296	5.6(+12)	-	-	0.8	1.2
73 HAR/JOH	296	5.5(+12)	-	-		
NOTE: EVALUATION						
74 BEM/CLY	298	5.7(+12)	-	-	0.9	1.1
	298-1055	1.1(+14)	-0.52	0	0.7	1.4
74 STE/ALV — k/k_{ref}: 6.0	298	-	-	-	0.9	1.1
NOTE: k_{ref}: $O + S_2O \rightarrow SO + SO$						
$O^*(^1D) + NO_2 \rightarrow O_2 + NO$						
OXYGEN ATOM + NITROGEN OXIDE (NO_2)						
73 HEI/HUS2 — REACTION ORDER: 2	300	1.4(+14)	-	-	0.9	1.1
k/k_{ref}: 1.05	300	-	-	-		
NOTE: k_{ref}: $O^*(^1D) + N_2O \rightarrow$ products						
75 GAU/SNE — k/k_{ref}: ~4.0	300	-		-		
NOTE: k_{ref}: $O^*(^1D) + O_2 \rightarrow O + O_2^*(^1\Sigma_g^+)$ APPROXIMATE RATIO						
NOTE: EVALUATION (APPROXIMATE k)						
$O + NO_2 + M \rightarrow NO_3 + M$						
OXYGEN ATOM + NITROGEN OXIDE (NO_2)						
73 HUI — REACTION ORDER: 3 M: Ar	263	1.4(+17)	-	-	0.7	1.3
73 HEI — M: Ar	298	7.6(+16)	-	-	0.7	1.3
73 HAR/JOH — M: N_2	296	3.0(+16)	-	-		
NOTE: EVALUATION						
73 GAE/GLA — REACTION ORDER: 2 M: N_2	300	6.0(+12)	-	-		
NOTE: LIMITING HIGH PRESSURE k						
75 GAI/TRO — M: N_2	296	1.3(+13)	-	-	0.8	1.2
NOTE: LIMITING HIGH-PRESSURE k						
75 HIP/SCH — M: N_2	295	1.3(+13)	-	-	0.8	1.2
NOTE: LIMITING HIGH-PRESSURE k (REEVALUATION)						
M: N_2	295	2.9(+16)	-	-	0.9	1.1
NOTE: M eff: N_2(1.0) LIMITING LOW-PRESSURE k (REEVALUATION)						
$O + NO_3 \rightarrow O_2 + NO_2$						
OXYGEN ATOM + NITROGEN OXIDE (NO_3)						
75 GEA — REACTION ORDER: 2	298-329	6.0(+12)	0	0	0.8	1.2
$O + N_2O \rightarrow N_2 + O_2$						
OXYGEN ATOM + NITROGEN OXIDE (N_2O)						
72 SCL — REACTION ORDER: 2	1000-3000	4.5(+13)	0	12130		
76 MIL	1370-1659	-	-	-		
NOTE: k_{ref}: $O + N_2O \rightarrow NO + NO$; k/k_{ref}: $3.63 \times 10^4 cm^3 mol^{-1}$						
75 BAB/DEA	1850-2539	1.2(+13)	0	12630		
76 DEA	1950-3079	1.2(+13)	0	12630		
NOTE: EVALUATION						
$O^*(^1D) + N_2O \rightarrow N_2 + O_2$						
OXYGEN ATOM + NITROGEN OXIDE (N_2O)						
71 GOL/GRE — REACTION ORDER: 2 k/k_{ref}: 0.33	298	-	-	-		
NOTE: k_{ref}: $O^*(^1D) + N_2O \rightarrow N_2 + O_2 + NO + NO$ (AT 2288Å)						
k/k_{ref}: 0.37	298	-	-	-		
NOTE: k_{ref}: $O^*(^1D) + N_2O \rightarrow N_2 + O_2 + NO + NO$ (AT 2537Å)						
72 GRE — k/k_{ref}: 0.59	298	-	-	-	0.9	1.1
NOTE: k_{ref}: $O^*(^1D) + N_2O \rightarrow NO + NO$;						

CHEMICAL REACTIONS		T/K	A	B	E/R (in °K)	k factors f	F
FOR COMPLETELY THERMALIZED $O^*(^1D)$ k/k_{ref}=0.85±0.05							
72 SIM/GRE	k/k_{ref}: 0.65	298	-	-	-	0.9	1.1
NOTE: k_{ref}: $O^*(^1D) + N_2O \rightarrow NO + NO$ (RATE RATIO VALID FOR $O^*(^1D)$ ATOMS WITH TRANSLATIONAL ENERGY IN EXCESS OF 10 kcal/mole	k/k_{ref}: 0.90	300	-	-	-	0.9	1.1
NOTE: k_{ref}: $O^*(^1D) + N_2O \rightarrow NO + NO$ (RATE RATIO VALID FOR $O^*(^1D)$ ATOMS WITH NO EXCESS THERMAL ENERGY							
73 GHO/ELL	k/k_{ref}: 0.70	298	-	-	-		
NOTE: k_{ref}: $O^*(^1D) + N_2O \rightarrow NO + NO$							
74 WIE/PAR	k/k_{ref}: 1.0	298	-	-	-	0.8	1.2
NOTE: k_{ref}: $O^*(^1D) + N_2O \rightarrow NO + NO$							

$O + N_2O \rightarrow N_2 + O_2 + NO + NO$							
OXYGEN ATOM + NITROGEN OXIDE (N_2O)							
75 DOV/NIP REACTION ORDER: 2		2160-3400	5.2(+13)	0	12557	0.5	2.0

$O^*(^1D) + N_2O \rightarrow N_2 + O_2 + NO + NO$							
OXYGEN ATOM + NITROGEN OXIDE (N_2O)							
72 ICU/CVE REACTION ORDER: 2	k/k_{ref}: 1.25	298	-	-	-		
NOTE: k_{ref}: $O^*(^1D) + CO_2 \rightarrow O + CO_2$							
72 PAR/SYM	k/k_{ref}: 0.145	298	-	-	-		
NOTE: k_{ref}: $O^*(^1D) + (CH_3)_4C \rightarrow$ products							
73 GHO/ELL	k/k_{ref}: 3.23	298	-	-	-		
NOTE: k_{ref}: $O^*(^1D) + O_2 \rightarrow O + O_2$							
		298	1.2(+14)	-	-		
NOTE: EVALUATION		300	1.3(+14)	-	-	0.9	1.1
75 GAU/SNE	k/k_{ref}: 3.3	300	-	-	-	0.8	1.2
NOTE: k_{ref}: $O^*(^1D) + O_2 \rightarrow O + O_2{}^*(^1\Sigma_g{}^+)$							
		300	1.4(+14)	-	-		
NOTE: EVALUATION							
76 DAV/SAD		298	8.4(+13)	-	-	0.9	1.1
77 DAV/SCH		294-359	6.6(+13)	0	0	0.8	1.2
$O + N_2O \rightarrow NO + NO$							
OXYGEN ATOM + NITROGEN OXIDE (N_2O)							
72 SOL REACTION ORDER: 2		1000-3000	4.5(+13)	0	12130		
73 LIP/MIL REACTION ORDER: 2		1300-1950	-	-	-		
NOTE: k_{ref}: $O + N_2O \rightarrow N_2 + O_2$							
73 MII/MAT	k/k_{ref}: 0.32	1169-1650	-	-	-		
NOTE: k_{ref}: $O + N_2O \rightarrow N_2 + O_2$							
75 FAB/DEA		1850-2535	1.2(+13)	0	12630		
76 DEA		1950-3075	1.2(+13)	0	12630		
NOTE: EVALUATION							
76 MIL	k/k_{ref}: 0.252	1216-1655	-	-	-		
NOTE: k_{ref}: $O + N_2O \rightarrow N_2 + O_2$							
77 MON/HAN1		1815-3365	6.2(+13)	0	12350	0.6	1.7

$O^*(^1S) + N_2O \rightarrow$ products							
OXYGEN ATOM + NITROGEN OXIDE (N_2O)							
76 SLA/BLA2 REACTION ORDER: 2		200-368	2.3(+13)	0	432±75	0.7	1.3

$O + N_2O_5 \rightarrow$ products							
OXYGEN ATOM + NITROGEN OXIDE (N_2O_5)							
75 GRA REACTION ORDER: 2		298	<1.2(+10)	-	-		
NOTE: UPPER LIMIT k							

CHEMICAL REACTIONS		T/K	A	B	E/R (in °K)	k factors f	F
$O + NH_2 \rightarrow OH + NH + H + HNO$ (overall)							
OXYGEN ATOM + AMIDOGEN FREE RADICAL							
73 GEE/HOY	REACTION ORDER: 2	298	2.1(+12)	-	-		
$O + NH_3 \rightarrow OH + NH_2$							
OXYGEN ATOM + AMMONIA							
74 DOV/NIP	REACTION ORDER: 2	1620-1920	<1.0(+13)	0	3320		
NOTE: UPPER LIMIT k							
$O^*(^1D) + NH_3 \rightarrow OH + NH_2$							
OXYGEN ATOM + AMMONIA							
76 DAV/SAD	REACTION ORDER: 2	298	2.0(+14)	-	-	0.9	1.1
76 ELE/HUS		300	4.0(+14)	-	-	0.9	1.1
77 DAV/SCH	REACTION ORDER: 2	204-354	1.5(+14)	0	0	0.8	1.2
$O + HONO_2 \rightarrow OH + NO_3$							
OXYGEN ATOM + NITRIC ACID							
72 MCF/SMI	REACTION ORDER: 2	300	<7.8(+9)	-	-		
NOTE: UPPER LIMIT k							
74 CHA/WAY		300	<1.8(+7)	-	-		
NOTE: UPPER LIMIT k							
$O^*(^1D) + CO \rightarrow CO_2$							
OXYGEN ATOM + CARBON MONOXIDE							
73 HEI/HUSI	REACTION ORDER: 2	300	4.4(+13)	-	-	0.9	1.1
	REACTION ORDER: 2 k/k_{ref}: 1.05	300	-	-	-		
NOTE: k_{ref}: $O^*(^1D) + O_2 \rightarrow$ products							
$O + CO + M \rightarrow CO_2 + M$							
OXYGEN ATOM + CARBON MONOXIDE							
71 MIY/TAK1	REACTION ORDER: 3 M: Ar	298	2.1(+16)	-	-	0.7	1.3
71 STU/NIK1	M: He	300	6.2(+11)	-	-	0.7	1.3
	M: N_2	300	8.0(+11)	-	-	0.7	1.3
	M: CO	300	1.2(+12)	-	-	0.7	1.3
72 PAL/JAC	M: Ar	300-3500	3.0(+14)	0	1510		
NOTE: EVALUATION							
$C + CO + M \rightarrow CO_2 + M$							
OXYGEN ATOM + CARBON MONOXIDE							
72 DIM	REACTION ORDER: 2 M: CO_2	298	9.8(+7)	-	-		
NOTE: k INCREASING FROM 5.8×10^7 TO 3.5×10^8 $cm^3 mol^{-1} s^{-1}$ BETWEEN 0.74 AND 42 ATM. PRESSURE.							
	REACTION ORDER: 2 M: CO_2	298	5.2(+7)	-	-		
NOTE: k INCREASING FROM 5.2×10^7 TO 2.8×10^8 $cm^3 mol^{-1} s^{-1}$ BETWEEN 0.74 AND 42 ATM. PRESSURE.							
72 SIM/HEI1	REACTION ORDER: 2 M: N_2O	298-472	1.6(+10)	0	1460		
NOTE: LIMITING HIGH-PRESSURE k							
	REACTION ORDER: 3 M: N_2O	298-472	5.9(+15)	0	2065		
NOTE: LIMITING LOW-PRESSURE k							
72 SIA/WOO	M: N_2	296	8.3(+11)	-	-	0.8	1.2
	M: CO	250-370	2.4(+15)	0	2185±275	0.8	1.2
	M: CO_2	296	2.2(+12)	-	-	0.9	1.1
72 ZAB/BAR		1400-1500	<2.0(+14)	-	-		
NOTE: UPPER LIMIT k							
73 GAI/GLA	REACTION ORDER: 2 M: CO	300	<3.0(+8)	-	-		
NOTE: LIMITING HIGH PRESSURE UPPER LIMIT k							
73 INN	REACTION ORDER: 3 M: Ar	296	3.6(+12)	-	-	0.8	1.2
	M: CO	296	1.6(+12)	-	-	0.8	1.2
	M: CO_2	296	2.0(+12)	-	-	0.9	1.1
74 BAR/VAS	M: Ar	1500	<2.0(+14)	-	-		
NOTE: UPPER LIMIT k							
74 INN	M: CO_2	257-277	8.0(+14)	0	1780±410		
74 KEN	M: O_2	400-500	2.4(+12)	0	-1860		
NOTE: REEVALUATION							
74 WAG/ZAB	M: Ar	298-4000	1.0(+19)	-1.5	2520		
NOTE: LIMITING LOW-PRESSURE k							
76 WEI		2500-2900	3.0(+18)	-1.0	2000		

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
$O + CO_2 \rightarrow O_2 + CO$						
OXYGEN ATOM + CARBON DIOXIDE						
74 BAU/DEA REACTION ORDER: 2	3015-4675	4.8(+12)	0	18170±1460	0.6	1.6
$O^*(^1D) + CO_2 \rightarrow O_2^* + CO$						
OXYGEN ATOM + CARBON DIOXIDE						
73 HLI/HUS1 REACTION ORDER: 2	300	1.3(+14)	-	-	0.9	1.1
k/k_{ref}: 3.1	300	-	-	-		
NOTE: k_{ref}: $O^*(^1D) + O_2 \rightarrow$ products						
$O + CO_2 + M \rightarrow CO_3 + M$						
OXYGEN ATOM + CARBON DIOXIDE						
71 STU/NIK$_1$ REACTION ORDER: 3	300	<3.3(+12)	-	-		
NOTE: UPPER LIMIT k						
$O + CH_2: \rightarrow CO + H + H$						
OXYGEN ATOM + METHYLENE FREE RADICAL						
73 JON/BAY1 REACTION ORDER: 2 k/k_{ref}: 3.1	298	-	-	-		
NOTE: k_{ref}: CH≡CH + CH_2: → products						
$O + CH_3 \rightarrow H + HCHO$						
OXYGEN ATOM + METHYL FREE RADICAL						
72 NIK/MCR2 REACTION ORDER: 2	300	5.4(+13)	-	-		
$O + CH_3 \rightarrow H + HCHO$						
73 MCF/NIK$_1$	298	>1.8(+13)	-	-		
NOTE: UNREPORTED T ASSUMED TO BE 298K LOWER LIMIT k						
73 PEE/MAH1	1100-1900	1.3(+14)	0	1000		
73 WAS/BAY	297	7.4(+13)	-	-		
74 SLA/PRU	300	1.1(+14)	-	-	0.8	1.2
75 EIG/LAZ	1550-1725	1.1(+14)	0	0		
76 TSU	1500-2000	6.0(+13)	0	0		
76 WAS/BAY	254-341	6.0(+13)	0	0	0.8	1.2
75 BEW	1900-2400	1.0(+14)	0	0		
NOTE: INDIRECT MEASUREMENT						
$O^*(^1D) + CH_4 \rightarrow H_2 + HCHO$						
OXYGEN ATOM + METHANE						
76 JAY/SIN REACTION ORDER: 2 k/k_{ref}: 0.11	298	-	-	-	0.8	1.2
NOTE: k_{ref}: $O^*(^1D) + CH_4 \rightarrow OH + CH_3$						
$O + CH_4 \rightarrow OH + CH_3$						
OXYGEN ATOM + METHANE						
71 AVK/KOL1 REACTION ORDER: 2	373-583	4.2(+13)	0	4630±350	0.5	1.5
75 BRA/BRO	1300-2000	1.9(+14)	0	5900		
77 KOT/JUS	1500-2250	4.1(+14)	0	7030		
$O^*(^1D) + CH_4 \rightarrow OH + CH_3$						
OXYGEN ATOM + METHANE						
72 GRE/HEI REACTION ORDER: 2 k/k_{ref}: 2.28	298	-	-	-	0.9	1.1
NOTE: KREF = k_2, k_3, WHERE k_2: $O^*(^1D) + N_2O \rightarrow N_2 + O_2$						
AND k_3: $O^*(^1D) + N_2O \rightarrow NO + NO$						
k/k_{ref}: 1.35	298	-	-	-	0.8	1.2
NOTE: k_{ref}, k_2, k_3, WHERE k_2: $O^*(^1D) + N_2O \rightarrow N_2 + O_2$						
AND k_3: $O^*(^1D) + N_2O \rightarrow NO + NO$ WITH ADDED He						
73 HEI/HUS2	300	1.9(+14)	-	-	0.9	1.1
k/k_{ref}: 1.41	300	-	-	-		
NOTE: k_{ref}: $O^*(^1D) + N_2O \rightarrow$ products						
75 GAU/SNE k/k_{ref}: 5.1	300	-	-	-	0.8	1.2
NOTE: k_{ref}: $O^*(^1D) + O_2 \rightarrow O + O_2^*(^1\Sigma_g^+)$						
75 GAU/SNE	300	2.3(+14)	-	-		
NOTE: EVALUATION						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
$O^{*}(^{1}D) + CH_4 \rightarrow OH + CH_3 + H_2 + HCHO$						
OXYGEN ATOM + METHANE						
76 DAV/SAD REACTION ORDER: 2	298	7.8(+13)	-	-	0.8	1.2
77 DAV/SCH	198-357	8.4(+13)	0	0	0.7	1.3
$O + CH_4 \rightarrow H_2O + CH_2$						
OXYGEN ATOM + METHANE						
71 AVR/KOL1 REACTION ORDER: 2	373-583	3.3(+12)	0	3370±350	0.5	1.5
$O + CHO \rightarrow H + CO_2$						
OXYGEN ATOM + METHYL, OXO-, FREE RADICAL						
72 WES/DEH3 REACTION ORDER: 2 k/k_{ref}: 0.73	298	-	-	-	0.8	1.2
NOTE: k_{ref}: C + .CHO $\rightarrow$ OH + CO						
73 MAC/THR k/k_{ref}: 0.46	300	-	-	-		
NOTE: k_{ref}: k_1(O + .CHO $\rightarrow$ OH + CO) + k_2(O + .CHO $\rightarrow$ H + CO_2						
$O + CHO \rightarrow OH + CO$						
OXYGEN ATOM + METHYL, OXO-, FREE RADICAL						
73 MAC/THR REACTION ORDER: 2 k/k_{ref}: 0.54	300	-	-	-		
NOTE: k_{ref}: k_1(O + .CHO $\rightarrow$ OH + CO) + k_2(3 + .CHO $\rightarrow$ H + CO_2						
$O + CHO \rightarrow OH^{\ddagger}(v=9) + CO$						
OXYGEN ATOM + METHYL, OXO-, FREE RADICAL						
76 KRI REACTION ORDER: 2	298	3.6(+12)	-	-		
$O + CHO \rightarrow OH + CO + H + CO_2$						
OXYGEN ATOM + METHYL, OXO-, FREE RADICAL						
74 WAS/MAR REACTION ORDER: 2	297	1.3(+14)	-	-	0.8	1.2
$O + HCHO \rightarrow OH + CHO$						
OXYGEN ATOM + FORMALDEHYDE						
73 MAC/THR REACTION ORDER: 2	300	9.0(+10)	-	-	0.9	1.1
$O + HCHO \rightarrow$ products						
OXYGEN ATOM + FORMALDEHYDE						
74 CAD/WIC REACTION ORDER: 2		3.7(+12)	0	1200		
NOTE: UNSPECIFIED T RANGE NEAR 300 K						
$O + CH_3OH \rightarrow OH + .CH_2OH$						
OXYGEN ATOM + METHANOL						
71 AVR/KOL2 REACTION ORDER: 2	343-413	6.0(+12)	0	3320±350	0.5	1.5
72 LEE/MEA	273-438	1.7(+12)	0	1150±100	0.6	1.4
$O + CH_3OH \rightarrow H_2O + HCHO$						
OXYGEN ATOM + METHANOL						
71 AVR/KOL2 REACTION ORDER: 2	343-413	3.0(+11)	0	1410±350	0.5	1.5
$O^{*}(^{1}D) + CH_3OH \rightarrow$ products						
OXYGEN ATOM + METHANOL						
75 OSI/SIM REACTION ORDER: 2	298-345	-	-	-	0.6	1.4
NOTE: k_{ref}: $O^{*}(^{1}D) + N_2O \rightarrow NO + NO + N_2 + O_2$						
$O + CS \rightarrow CO + S$						
OXYGEN ATOM + CARBON MONOSULFIDE FREE RADICAL						
71 HAN/SMI REACTION ORDER: 2	298	8.4(+12)	-	-		
NOTE: EVALUATION						
$O + CS \rightarrow CO(v=n) + S$						
OXYGEN ATOM + CARBON MONOSULFIDE FREE RADICAL						
72 HAN/RID REACTION ORDER: 2 k/k_{ref}: 0.1	298	-	-	-		
NOTE: k_{ref}: O + CS $\rightarrow$ CO(v=13) + S RATIO INCREASING FROM 0.1 TO 0.9 BETWEEN v=7 AND v=12, THEN DECREASING TO 0.3 FROM v=14 TO v=15						
75 SLA/GRA1	395	1.2(+13)	-	-	0.9	1.1
76 BID/BRE	300	1.4(+13)	-	-	0.8	1.2
$O + CS_2 \rightarrow S + COS$						
OXYGEN ATOM + CARBON DISULFIDE						
74 SLA/GIL REACTION ORDER: 2 k/k_{ref}: 0.093	302	-	-	-		

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
NOTE: k_{ref}: O + CS_2 → products 77 GRA/GUT k/k_{ref}: 0.098	240-500	-	-	-	0.9	1.1
NOTE: k_{ref}: O + CS_2 → products(WITHIN THE GIVEN T RANGE k/k_{ref} RATIO DECREASES FROM 0.098±0.004 TO 0.08±0.007	249-500	1.7(+11)	-	-	0.9	1.1
NOTE: WITHIN THE GIVEN T RANGE k INCREASES FROM $1.7X10^{11}$ TO $5.5X10^{11}$ $cm^3mol^{-1}s^{-1}$						
O + CS_2 → SO + CS						
OXYGEN ATOM + CARBON DISULFIDE 71 TAK REACTION ORDER: 2	298	1.4(+12)	-	-	0.9	1.1
75 WEI/TIM	218-293	1.7(+13)	0	645±35	0.9	1.1
O + CS_2 → products						
OXYGEN ATOM + CARBON DISULFIDE 74 SIA/CIL REACTION ORDER: 2	302	2.4(+12)	-	-		
77 GRA/GUT	249-500	1.7(+12)	-	-	0.9	1.1
NOTE: NON LINEAR ARRHENIUS BEHAVIOR. WITHIN THE GIVEN T RANGE, k INCREASES FROM $1.7X10^{12}$ TO $6.7X10^{12}$ $cm^3mol^{-1}s^{-1}$						
O + COS → CO + SO						
OXYGEN ATOM + CARBON OXIDE SULFIDE 71 KRE/SIM REACTION ORDER: 2	300-523	9.8(+12)	0	2265		
74 KIE/STI	263-502	9.9(+12)	0	2167±28	0.9	1.1
75 WEI/TIM	239-404	1.2(+13)	0	2150±35	0.8	1.2
$O^*(^1D)$ + COS → CO + SO						
OXYGEN ATOM + CARBON OXIDE SULFIDE 75 GAU/SNE REACTION ORDER: 2 k/k_{ref}: 4.1	300	-	-	-	0.9	1.1
NOTE: $O^*(^1D)$ + O_2 → O + O_2* ($^1\Sigma_g^+$)						
75 GAU/SNE	300	1.8(+14)	-	-		
NOTE: EVALUATION						
O + CH_3SH → HS(O). + CH_3 + H + CH_3S(O). + CH_3O. + CH_3S.						
OXYGEN ATOM + METHANETHIOL 76 SIA/GRA REACTION ORDER: 2	300	1.1(+12)	-	-		
O + CN → CO + N						
OXYGEN ATOM + CYANOGEN FREE RADICAL 75 ALB/HOY REACTION ORDER: 2	298	1.2(+13)	-	-	0.7	1.3
NOTE: TEMPERATURE IN DEPENDENT WITHIN THE T RANGE 275-387K 77 SCH/WOL	295	1.1(+13)	-	-	0.7	1.3
O + CN (v=n) → CO + N						
OXYGEN ATOM + CYANOGEN FREE RADICAL 72 SCP/WOL2 REACTION ORDER: 2	298	8.0(+12)	-	-		
NOTE: UNREPORTED T ASSUMED TO BE 298K. k UNCHANGED BETWEEN v=0 AND v=5, BUT DECREASING TO $6.0X10^{12}$ $cm^3mol^{-1}s^{-1}$ FOR v=6						
73 SCH/SCH1	298	1.3(+13)	-	-		
NOTE: N=0 TO 6						
O + CN (v=?) → CO + N						
OXYGEN ATOM + CYANOGEN FREE RADICAL 73 SCH/SCH1 REACTION ORDER: 2	298	6.3(+13)	-	-		
O + NCO → NO + CO						
OXYGEN ATOM + CYANATO FREE RADICAL 74 SCP/SCH REACTION ORDER: 2	298	8.9(+12)	-	-		
O + CH_3ONO → OH + HCHO + NO						
OXYGEN ATOM + NITROUS ACID METHYL ESTER 75 DAV/THR REACTION ORDER: 2	300-410	1.4(+13)	0	2620±240		
O + CH_3NO_2 → CH_3O. + NO_2 (OR OH + .CH_2NO_2)						
OXYGEN ATOM + METHANE, NITRO- 75 CAM/GOO1 REACTION ORDER: 2	295	1.9(+9)	-	-	0.8	1.2
O + C_2O → CO + CO						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
OXYGEN ATOM + CARBON OXIDE (C_2O)						
72 SHA/MAS — REACTION ORDER: 2	300	5.7(+13)	-	-	0.6	1.6
$O + CH{\equiv}CH \rightarrow CO + CH_2$						
OXYGEN ATOM + ETHYNE						
73 CAE/GLA — REACTION ORDER: 2	300	<1.3(+11)	-	-		
NOTE: UPPER LIMIT k						
73 PEE/MAH2	1200-1700	5.2(+13)	0	1860		
77 VAN/VAN	700-1430	6.7(+13)	0	2000		
NOTE: EVALUATION						
$O + CH{\equiv}CH \rightarrow$ products						
OXYGEN ATOM + ETHYNE						
71 STU/NIK2 — REACTION ORDER: 2	300	7.8(+10)	-	-	0.9	1.1
77 WES/DEH	297	7.2(+10)	-	-	0.9	1.1
$O + CD{\equiv}CD \rightarrow$ products						
OXYGEN ATOM + ETHYNE-d_2						
71 STU/NIK2 — REACTION ORDER: 2	300	7.8(+10)	-	-	0.9	1.1
$O + CH{\equiv}CH + M \rightarrow CH_2{=}C{=}O + M$						
OXYGEN ATOM + ETHYNE						
73 CAE/GLA — REACTION ORDER: 2	300	<1.7(+11)	-	-		
NOTE: LIMITING HIGH-PRESSURE UPPER LIMIT k						
$O + CH_2{=}CH_2 \rightarrow H_2 + CH_2{=}C{=}O$						
OXYGEN ATOM + ETHENE						
74 PRU/SLA — REACTION ORDER: 2	300	2.3(+10)	-	-	0.8	1.2
$O + CH_2{=}CH_2 \rightarrow CHO + CH_3$						
OXYGEN ATOM + ETHENE						
73 CAE/GLA — REACTION ORDER: 2	300	7.0(+11)	-	-		
NOTE: GIVEN WITH CAUTION						
73 KUR/HUI	298	4.8(+11)	-	-	0.9	1.1
73 PEE/MAH2	1200-1700	2.3(+13)	0	1360		
74 PRU/SLA — k/k_{ref}: 0.95	300	-	-	-		
NOTE: k_{ref}: $O + CH_2{=}CH_2 \rightarrow$ products						
$O + CD_2{=}CD_2 \rightarrow CDO + CD_3$						
OXYGEN ATOM + ETHENE-d_4						
73 KUR/HUI — REACTION ORDER: 2	298	4.9(+11)	-	-	0.9	1.1
$O + CH_2{=}CH_2 \rightarrow HCHO + CH_2$						
OXYGEN ATOM + ETHENE						
73 PEE/MAH2 — REACTION ORDER: 2	1200-1600	2.5(+13)	0	2520		
NOTE: EVALUATION						
$O + CH_2{=}CH_2 \rightarrow cy\text{-}CH_2CH_2O$						
OXYGEN ATOM + ETHENE						
74 FUP/ATK — REACTION ORDER: 2	298	4.3(+11)	-	-	0.9	1.1
76 SIN/CVE	298-480	7.0(+12)	0	845±50	0.9	1.1
$O + CH_2{=}CH_2 \rightarrow$ products						
OXYGEN ATOM + ETHENE						
71 ATK/CVE — REACTION ORDER: 2	298	3.0(+11)	-	-	0.9	1.1
71 STU/NIK2	300	3.8(+10)	-	-	0.9	1.1
72 ATK/CVE	298-473	8.1(+12)	0	975±50	0.9	1.1
72 DAV/HUI	232-500	3.3(+12)	-	570±16	0.9	1.1
72 STU/NIK3	298	3.8(+11)	-	-	0.9	1.1
74 ATK/PIT1	300-392	3.4(+12)	0	640±100		
74 ATK/PIT2	301	4.0(+11)	-	-	0.9	1.1
74 MCC — k/k_{ref}: 0.042	298	-	-	-	0.8	1.2
NOTE: k_{ref}: $O + (CH_3)_2C{=}CH_2 \rightarrow$ products						
74 SIA/PRU	300	4.6(+12)	-	-		
77 ATK/PIT1	298-439	5.6(+12)	0	742±100		
$O + CD_2{=}CD_2 \rightarrow$ products						
OXYGEN ATOM + ETHENE-d_4						
72 STU/NIK3 — REACTION ORDER: 2	298	3.4(+11)	-	-	0.9	1.1

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
$O + CH_2{=}CH_2 + M \rightarrow$ products						
OXYGEN ATOM + ETHENE						
73 GAE/GLA REACTION ORDER: 2 M: N_2	300	7.0(+11)	-	-		
NOTE: LIMITING HIGH-PRESSURE k GIVEN WITH CAUTION						
$O + CH_3CH_3 \rightarrow OH + CH_3CH_2\cdot$						
OXYGEN ATOM + ETHANE						
71 AVP/KOL1 REACTION ORDER: 2	313-523	2.3(+13)	0	3780±350	0.5	1.5
71 PAP/ASH	300-365	2.8(+13)	0	3270±125	0.7	1.5
$O^*(^1D) + CH_3CH_3 \rightarrow OH + CH_3CH_2\cdot$						
OXYGEN ATOM + ETHANE						
76 ELE/HUS REACTION ORDER: 2	300	4.4(+14)	-	-	0.9	1.1
$O + CH_3CH_3 \rightarrow HCHO + H_2 + CH_2$						
OXYGEN ATOM + ETHANE						
71 AVP/KOL1 REACTION ORDER: 2	313-523	1.2(+12)	0	2160±350	0.5	1.5
$O + CH_3CH_3 \rightarrow$ products						
OXYGEN ATOM + ETHANE						
73 GAI/GLA REACTION ORDER: 2	300	2.7(+12)	-	-		
NOTE: GIVEN WITH CAUTION						
$O^*(^1D) + CH_3CH_3 \rightarrow$ products						
OXYGEN ATOM + ETHANE						
74 MIC/PAR REACTION ORDER: 2 k/k_{ref}: 0.512	300	-	-	-	0.9	1.1
NOTE: k_{ref}: $O^*(^1D) + (CH_3)_4C \rightarrow$ products						
$O + CH_3CH_3 + M \rightarrow$ products						
OXYGEN ATOM + ETHANE						
73 GAE/GLA REACTION ORDER: 2 M: N_2	300	2.9(+12)	-	-		
NOTE: LIMITING HIGH-PRESSURE k GIVEN WITH CAUTION						
$O + \cdot CH{=}C{=}C \rightarrow CO + CO + H$						
OXYGEN ATOM + ETHENYL, 2-OXO-, FREE RADICAL						
73 JEN/BAY1 REACTION ORDER 2	298	1.2(+12)	-	-	0.7	1.3
$O + \cdot CH{=}C{=}C \rightarrow$ products						
OXYGEN ATOM + ETHENYL, 2-OXO-, FREE RADICAL						
73 JEN/BAY2 REACTION ORDER: 2	296	2.2(+10)	-	-	0.5	1.5
$O + CH_2{=}C{=}C \rightarrow \cdot CHO + \cdot CHO$						
OXYGEN ATOM + ETHENONE						
74 MAC/THR2 REACTION ORDER: 2	293	3.4(+11)	-	-	0.9	1.1
$O + CH_2{=}C{=}C \rightarrow$ products						
OXYGEN ATOM + ETHENONE						
73 JEN/BAY2 REACTION ORDER: 2	296	1.7(+11)	-	-	0.8	1.2
75 GAE/ATK1	296	2.8(+11)	-	-	0.9	1.1
NOTE: EVALUATION						
$O + CH_3CHO \rightarrow OH + CH_3C(O)\cdot$						
OXYGEN ATOM + ACETALDEHYDE						
71 AVP/KOL2 REACTION ORDER: 2	373-428	1.6(+10)	0	600		
74 MAC/THR1	300	2.9(+11)	-	-	0.9	1.1
77 SIN/IRW	298-472	7.2(+12)	0	986±77	0.8	1.2
$O + CH_3CHO \rightarrow OH + \cdot CH_2CHO$						
OXYGEN ATOM + ACETALDEHYDE						
71 AVP/KOL2 REACTION ORDER: 2	373-428	4.3(+12)	0	2920		
$O + CH_3CHO \rightarrow HCHO + CH_2 + CO + CO_2 + H_2$						
OXYGEN ATOM + ACETALDEHYDE						
71 AVP/KOL2 REACTION ORDER: 2	373-428	8.8(+10)	0	1160		
$O + CH_3CH_2OH \rightarrow OH + \cdot CH_2CH_2OH + CH_3CH_2O\cdot$						
OXYGEN ATOM + ETHANOL						
71 AVP/KOL2 REACTION ORDER: 2	343-413	1.9(+13)	0	2945		

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
$O + CH_3CH_2OH \rightarrow H_2O + HCHO + CH_2$						
OXYGEN ATOM + ETHANOL						
71 AVE/KOL2 REACTION ORDER: 2	343-523	3.4(+11)	0	1335		
$O + CH_3CH_2OH \rightarrow H_2O + CH_3CHO$						
OXYGEN ATOM + ETHANOL						
71 AVE/KOL2 REACTION ORDER: 2	343-413	7.5(+11)	0	1465		
$O + (CH_3)_2O \rightarrow OH + {}^{\bullet}CH_2OCH_3$						
OXYGEN ATOM + METHANE, OXYBIS-						
72 LEE/MEA REACTION ORDER: 2	217-366	5.0(+12)	0	1435±100	0.8	1.2
$O + cy\text{-}CH_2CH_2S \rightarrow SO + CH_2{=}CH_2$						
OXYGEN ATOM + THIIRANE						
76 LEE/TIM REACTION ORDER: 2	268-424	8.1(+12)	0	18±20	0.9	1.1
$O + CH_3CH_2SH \rightarrow H + CH_3CH_2S(O)^{\bullet} + HS(O)^{\bullet} + CH_3CH_2^{\bullet}$						
OXYGEN ATOM + ETHANETHIOL						
76 SLA/GRA REACTION ORDER: 2	300	1.7(+12)	-	-		
$O + (CH_3)_2S \rightarrow CH_3 + CH_3S(O)^{\bullet}$						
OXYGEN ATOM + METHANE, THIOBIS-						
76 LEE/TIM REACTION ORDER: 2	268-424	8.6(+12)	0	-366±16	0.9	1.1
76 SLA/GRA	300	3.8(+13)	-	-		
$O + (CH_3)_2S \rightarrow$ products						
OXYGEN ATOM + METHANE, THIOBIS-						
74 CAD/WIC REACTION ORDER: 2	300	3.3(+11)	-	-		
$O + CH_3CN \rightarrow CH_3 + OCN$						
OXYGEN ATOM + ACETONITRILE						
77 BON/TIM REACTION ORDER: 2	383-500	4.8(+11)	0	2400±100	0.8	1.2
k/k_{ref}: 1.2	383	-	-	-	0.7	1.3
NOTE: k_{ref}: $O + CD_3CN \rightarrow CD_3 + OCN$						
k/k_{ref}: 1.5	423	-	-	-	0.6	1.4
NOTE: k_{ref}: $O + CD_3CN \rightarrow CD_3 + OCN$						
$O + CH_3CH_2ONO \rightarrow OH + CH_3CHO + NO$						
OXYGEN ATOM + NITROUS ACID ETHYL ESTER						
75 DAV/THR REACTION ORDER: 2	300-410	2.6(+13)	0	2440±240		
$O + OC{=}C{=}CO \rightarrow CO + CO + CO$						
OXYGEN ATOM + 1,2-PROPADIENE-1,3-DIONE						
74 PIL/WAG REACTION ORDER: 2	250-450	1.0(+13)	0	1100±170	0.8	1.2
$O^{*}(^{1}D) + OC{=}C{=}CO \rightarrow CO + CO + CO$						
OXYGEN ATOM + 1,2-PROPADIENE-1,3-DIONE						
73 BEI/BUS$_2$ REACTION ORDER: 2	300	2.4(+14)	-	-	0.9	1.1
$O + CH_3C{\equiv}CH \rightarrow cy\text{-}:(CH_3)C{=}CH:O$						
OXYGEN ATOM + PROPYNE						
73 BER REACTION ORDER: 2	275-360	1.6(+13)	0	1010		
$O + CH_3C{\equiv}CH \rightarrow$ products						
OXYGEN ATOM + PROPYNE						
75 AFR/COX REACTION ORDER: 2	298-600	1.4(+13)	0	980±350	0.7	1.3
$O + CH_2{=}C{=}CH_2 \rightarrow CO + CH_2{=}CH_2$						
OXYGEN ATOM + 1,2-PROPADIENE						
72 BER/WAG REACTION ORDER: 2	275-375	7.8(+12)	0	805	0.7	1.3
$O + CH_2{=}C{=}CH_2 \rightarrow cy\text{-}(CH_2{=}C)CH_2O^{*}$						
OXYGEN ATOM + 1,2-PROPADIENE						
73 BER REACTION ORDER: 2	275-360	7.8(+12)	0	806		
$O + CH_2{=}C{=}CH_2 \rightarrow$ products						
OXYGEN ATOM + 1,2-PROPADIENE						
74 BAV REACTION ORDER: 2 k/k_{ref}: 0.66	298	-	-	-		

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
NOTE: O + $CH_3CH_2CH{=}CH_2$ → products						
k/k_{ref}: 0.197	298	-	-	-		
NOTE: k_{ref}: O + $(CH_3)_2C{=}CH_2$ → products						
77 ATK/PIT2 REACTION ORDER: 2	297-439	1.2(+13)	0	883±100	0.9	1.1
O + $CH_3CH{=}CH_2$ → OH + $.CH_2CH{=}CH_2$						
OXYGEN ATOM + PROPENE						
71 AVR/KOL1 REACTION ORDER: 2	373-583	7.2(+12)	0	2720		
O + $CH_3CH{=}CH_2$ → HCHO + H_2 + $CH_2{=}C$:						
OXYGEN ATOM + PROPENE						
71 AVR/KOL1 REACTION ORDER: 2	361-483	5.4(+11)	0	1260		
O + $CH_3CH{=}CH_2$ → CH_3CHO + CH_2						
OXYGEN ATOM + PROPENE						
71 AVR/KOL1 REACTION ORDER: 2	361-483	5.1(+10)	0	750		
O + $CH_3CH{=}CH_2$ → cy-$(CH_3)CHCH_2O$						
OXYGEN ATOM + PROPENE						
72 KIR1 REACTION ORDER: 2	201-424	2.5(+12)	0	38±22	0.9	1.1
73 HER	275-360	4.2(+12)	0	253		
74 FUR/ATK	298	2.0(+12)	-	-	0.9	1.1
76 SIN/CVE	298-480	7.6(+12)	0	363±20	0.9	1.1
O + $CH_3CH{=}CH_2$ → products						
OXYGEN ATOM + PROPENE						
71 ATK/CVE REACTION ORDER: 2	298	1.2(+12)	-	-	0.9	1.1
71 SIU/NIK2	300	2.2(+11)	-	-	0.9	1.1
72 ATK/CVE	298-473	6.7(+12)	0	520±50	0.9	1.1
74 ATK/PIT1	300-392	2.1(+12)	0	0±150		
74 ATK/PIT2	300	2.0(+12)	-	-	0.9	1.1
74 MCC k/k_{ref}: 0.2	298	-	-	-	0.7	1.3
NOTE: k_{ref}: O + $(CH_3)_2C{=}CH_2$ → products						
O + $CH_3CH{=}CH_2$ → products						
77 ATK/PIT1	298-439	6.3(+12)	0	260±100		
O + cy-$CH_2CH_2CH_2$ → OH + cy-$CH_2CH_2CH.$						
OXYGEN ATOM + CY CLO PROPANE						
76 LEE REACTION ORDER: 2	298-478	3.3(+12)	0	-3120±60	0.9	1.1
O + $CH_3CH_2CH_3$ → OH + $(CH_3)_2CH.$ + $CH_3CH_2CH_2.$						
OXYGEN ATOM + PROPANE						
75 HAR/BUR REACTION ORDER: 2	329	3.9(+10)	-	-	0.8	1.2
$O^*(^1D)$ + $CH_3CH_2CH_3$ → OH + $(CH_3)_2CH.$ + $CH_3CH_2CH_2.$						
OXYGEN ATOM + PROPANE						
76 PLU/HUS REACTION ORDER: 2	300	5.7(+14)	-	-	0.9	1.1
$O^*(^1D)$ + $CH_3CH_2CH_3$ → products						
OXYGEN ATOM + PROPANE						
74 MIC/PAR REACTION ORDER: 2 k/k_{ref}: 0.652	300	-	-	-	0.9	1.1
NOTE: k_{ref}: $O^*(^1D)$ + $(CH_3)_4C$ → products						
75 GAU/SNE	300	4.8(+14)	-	-		
NOTE: EVALUATION k/k_{ref}:10.8	300	-	-	-	0.8	1.2
NOTE: $O^*(^1D)$ + O_2 → O + $O_2{}^*(^1\Sigma_g^+)$						
O + $CH_2{=}CHCHO$ → products						
OXYGEN ATOM + 2-PROPENAL						
72 CAD/LIN REACTION ORDER: 2	300-480	4.7(+12)	0	1000±150	0.7	1.3
75 GAE/ATK1	296	2.3(+11)	-	-	0.9	1.1
75 GAE/ATK2	296-423	1.4(+13)	0	1210±135	0.9	1.1
O + $CH_2{=}CHOCH_3$ → products						
OXYGEN ATOM + ETHENE, METHOXY-						
77 ATK/PIT2 REACTION ORDER: 2	297-439	3.8(+12)	0	-38±100	0.9	1.1

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
$O + CH_3CH_2CHO \rightarrow OH + CH_3CH_2C(O)$.						
OXYGEN ATOM + PROPANAL						
77 SIN/IRW REACTION ORDER: 2	298-472	7.8(12)	0	870±33	0.9	1.1
$O + CH_3CH_2CHO \rightarrow$ products						
OXYGEN ATOM + PROPANAL						
72 CAD/LIN REACTION ORDER: 2	300-480	8.5(+13)	0	1910±250	0.7	1.3
$O + (CH_3)_2CO \rightarrow OH + .CH_2COCH_3$						
OXYGEN ATOM + 2-PROPANONE						
72 AZA/GYU REACTION ORDER: 2	873	8.4(+10)	-	-		
77 LEE/TIM	298-478	1.9(+12)	0	2540±90	0.8	1.2
$O + CH{\equiv}CC{\equiv}CH \rightarrow$ products						
OXYGEN ATOM + 1,3-BUTADIYNE						
73 JON/BAY2 REACTION ORDER: 2	296	1.6(+12)	-	-	0.7	1.3
75 HOM/SCH	297-343	8.0(+13)	0	1230		
$O + CH_2{=}CHC{\equiv}CH \rightarrow$ products						
OXYGEN ATOM + 1-BUTEN-3-YNE						
75 HOM/SCH REACTION ORDER: 2	295	3.0(+12)	-	-	0.9	1.1
$O + CH_3CH_2C{\equiv}CH \rightarrow CO + CH_3CH_2CH$:						
OXYGEN ATOM + 1-BUTYNE						
75 HER/WAG1 REACTION ORDER: 2	290-357	1.7(+13)	0	400		
$O + CH_3C{\equiv}CCH_3 \rightarrow CO + (CH_3)_2C$:						
OXYGEN ATOM + 2-BUTYNE						
75 HER/WAG2 REACTION ORDER: 2	290-360	6.0(+13)	0	453		
NOTE: GIVEN WITH CAUTION						
$O + CH_3CH{=}C{=}CH_2 \rightarrow$ products						
OXYGEN ATOM + 1,2-BUTADIENE						
74 BAV REACTION ORDER: 2 k/k_{ref}: 1.39	298	-	-	-		
NOTE: k_{ref}: $O + CH_3CH_2CH{=}CH \rightarrow$ products						
k/k_{ref}: 0.43	298	-	-	-		
NOTE: k_{ref}: $O + (CH_3)_2C{=}CH_2 \rightarrow$ products						
$O + CH_2{=}CHCH{=}CH_2 \rightarrow$ products						
OXYGEN ATOM + 1,3-BUTADIENE						
74 MCC REACTION ORDER: 2 k/k_{ref}: 0.96	298	-	-	-	0.6	1.4
NOTE: k_{ref}: $O + (CH_3)_2C{=}CH_2 \rightarrow$ products						
77 ATK/PIT2	297-439	2.0(+13)	0	53±100	0.9	1.1
$O + CH_3CH_2CH{=}CH_2 \rightarrow OH + [C_4H_7.]$						
OXYGEN ATOM + 1-BUTENE						
72 HUI/HER2 REACTION ORDER: 2	190-491	9.6(+12)	0	990±215	0.4	1.6
$O + CH_3CH_2CH{=}CH_2 \rightarrow$ cy-$(CH_3CH_2)CHCH_2O$						
OXYGEN ATOM + 1-BUTENE						
72 HUI/HER2 REACTION ORDER: 2	190-491	2.2(+12)	0	25±105	0.5	1.5
74 FUR/ATK	298	2.4(+12)	-	-	0.9	1.1
76 SIN/CVE	298-480	7.2(+12)	0	332±23	0.9	1.1
$O + CH_3CH_2CH{=}CH_2 \rightarrow$ products						
OXYGEN ATOM + 1-BUTENE						
71 ATK/CVE REACTION ORDER: 2	298	1.6(+12)	-	-	0.9	1.1
71 HUI/HER	259-493	8.8(+12)	0	382±30	0.9	1.1
OXYGEN ATOM + 1-BUTENE						
72 ATK/CVE	298-473	6.1(+12)	0	410±50	0.9	1.1
74 BAV	298	-	-	-		
NOTE: k_{ref}: $O + (CH_3)_2C{=}CH_2 \rightarrow$ products						
74 MCC k/k_{ref}: 0.23	298	-	-	-	0.6	1.4
NOTE: k_{ref}: $O + (CH_3)_2C{=}CH_2 \rightarrow$ products						
77 ATK/PIT1 k/k_{ref}: 0.18	298-439	8.4(+12)	0	-335±100		
$O + cis\text{-}CH_3CH{=}CHCH_3 \rightarrow$ cy-$(CH_3)CHCH(CH_3)O$						
OXYGEN ATOM + cis-2-BUTENE						
74 FUR/ATK REACTION ORDER: 2	298	9.6(+12)	-	-	0.8	1.2

*CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	F
76 SIN/CVE	298-480	6.7(+12)	0	-135±13	0.9	1.1
73 DAV/HUI	268-443	5.8(+12)	0	-161±32	0.9	1.1

$O + cis\text{-}CH_3CH{=}CHCH_3 \rightarrow$ products						
OXYGEN ATOM + cis-2-BUTENE						
74 HAC REACTION ORDER: 2 k/k_{ref}: 0.95	298	-	-	-		
NOTE: k_{ref}: $O + (CH_3)_2C{=}CH_2 \rightarrow$ products						
74 MCC k/k_{ref}: 0.79	298	-	-	-	0.7	1.3
NOTE: k_{ref}: $O + (CH_3)_2C{=}CH_2$						
77 ATK/PIT1	298-439	7.3(+12)	0	-118±100		

$O + trans\text{-}CH_3CH{=}CHCH_3 \rightarrow$ products						
OXYGEN ATOM + trans-2-BUTENE						
74 MCC REACTION ORDER: 2 k/k_{ref}: 1.25	298	-	-	-	0.7	1.3
NOTE: k_{ref}: $O + (CH_3)_2C{=}CH_2 \rightarrow$ products						
77 ATK/PIT1	298-439	1.4(+13)	0	-10±100		

$O + (CH_3)_2C{=}CH_2 \rightarrow cy\text{-}(CH_3)_2CCH_2O$						
OXYGEN ATOM + 1-PROPENE, 2-METHYL-						
74 FUR/ATK REACTION ORDER: 2	298	9.9(+12)	-	-	0.9	1.1
76 SIN/CVE	298-480	8.7(+12)	0	-51±22	0.9	1.1

$O + (CH_3)_2C{=}CH_2 \rightarrow$ products						
OXYGEN ATOM + 1-PROPENE, 2-METHYL-						
71 ATK/CVE REACTION ORDER: 2	298	6.2(+12)	-	-	0.8	1.2
72 ATK/CVE	298-473	6.3(+12)	0	0±200	0.8	1.2
77 ATK/PIT1	298-439	1.1(+13)	0	43±100		

$O + (CH_3)_2C{=}CHD \rightarrow$ products						
OXYGEN ATOM + PROPENE-1-D1, 2-METHYL						
76 HAV/HUN REACTION ORDER: 2 k/k_{ref}: 1.03	298-302	-	-	-		
NOTE: k_{ref}: $O + (CH_3)_2C{=}CH_2 \rightarrow$ products						

$O + (CH_3)_2C{=}CD_2 \rightarrow$ products						
OXYGEN ATOM + PROPENE-1,1-d_2, 2-METHYL						
76 HAV/HUN REACTION ORDER: 2 k/k_{ref}: 1.05	298-302	-	-	-		
NOTE: k_{ref}: $O + (CH_3)_2C{=}CH_2 \rightarrow$ products						

$O + CH_3CH_2CH_2CH_3 \rightarrow OH + CH_3CH_2CH_2CH_2\cdot + CH_3CH_2CH(\cdot)CH_3$						
OXYGEN ATOM + BUTANE						
71 PAP/ASH REACTION ORDER: 2	300-365	1.7(+13)	0	2280±120	0.7	1.4
77 ATK/PER1	298-439	1.5(+13)	0	2100±150	0.8	1.2

$O + CH_3CH_2CH_2CH_3 \rightarrow$ products						
OXYGEN ATOM + BUTANE						
74 ATK/PIT2 REACTION ORDER: 2	301	1.9(+10)	-	-	0.9	1.1

$O^*(^1D) + CH_3CH_2CH_2CH_3 \rightarrow$ products						
OXYGEN ATOM + BUTENE						
74 MIC/PAR REACTION ORDER: 2 k/k_{ref}: 0.863	300	-	-	-	0.9	1.1
NOTE: k_{ref}: $O^*(^1D) + (CH_3)_4C \rightarrow$ products						

$O^*(^1D) + (CH_3)_4C \rightarrow$ products						
OXYGEN ATOM + PROPANE, 2, 2-DIMETHYL-						
75 GAU/SNE REACTION ORDER: 2 k/k_{ref}: 14.0	300	-	-	-	0.9	1.1
NOTE: k_{ref}: $O^*(^1D) + O_2 \rightarrow O + O_2^*(^1\Sigma_g^+)$						
75 GAU/SNE	300	6.3(+14)	-	-		
NOTE: EVALUATION						

$O + CH_3CH{=}CHCHO \rightarrow$ products						
OXYGEN ATOM + 2-BUTENAL						
74 CAD/WIC REACTION ORDER: 2		2.0(+13)	0	1160		
NOTE: UNSPECIFIED TEMPERATURE RANGE IN THE VICINITY OF 300K						
75 GAF/ATK$_1$	296	5.1(+11)	-	-	0.9	1.1

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
75 GAI/ATK2	296-423	1.5(+13)	0	995±65	0.9	1.1
$O + CH_3CH_2CH_2CHO \rightarrow OH + CH_3CH_2CH_2C(O).$						
OXYGEN ATOM + BUTANAL						
74 JAE/WAN REACTION ORDER: 2	298	1.5(+11)	-	-		
NOTE: EVALUATION						
77 SIN/IRW	298-472	1.0(+13)	0	857±20	0.9	1.1
$O + (CH_3)_2CHCHO \rightarrow OH + (CH_3)_2CHC(O).$						
OXYGEN ATOM + PROPANAL, 2-METHYL-						
77 SIN/IRW REACTION ORDER: 2	298-472	7.9(+12)	0	727±45	0.9	1.1
$O + (CH_3)_2C{=}C{=}CH_2 \rightarrow$ products						
OXYGEN ATOM + 1,2-BUTADIENE,3-METHYL-						
74 HAU REACTION ORDER: 2 k/k_{ref}: 0.76	298	-	-	-		
NOTE: k_{ref}: $O + (CH_3)_2C{=}CHCH_3 \rightarrow$ products						
$O + (CH_3)_2CCH{=}CH_2 \rightarrow$ cy-$[(CH_3)_2C]CHCH_2O$						
OXYGEN ATOM + 1-BUTENE, 3-METHYL-						
76 SIN/CVE REACTION ORDER: 2	298-480	6.0(+12)	0	266±26	0.9	1.1
$O + (CH_3)_2CHCH{=}CH_2 \rightarrow$ products						
OXYGEN ATOM + 1-BUTENE, 3-METHYL-						
74 MCC REACTION ORDER: 2 k/k_{ref}: 0.22	298	-	-	-	0.8	1.2
NOTE: k_{ref}: $O + (CH_3)_2C{=}CH_2 \rightarrow$ products						
$O + CH_3CH{=}C(CH_3)_2 \rightarrow$ cy-$(CH_3)CHC(CH_3)_2O$						
OXYGEN ATOM + 2-BUTENE, 2-METHYL-						
74 FUR/ATK REACTION ORDER: 2	298	3.1(+13)	-	-	0.9	1.1
$O^*(^1D) + CH_3CH_2CH_2CH_2CH_3 \rightarrow$ products						
OXYGEN ATOM + PENTANE						
74 MIC/PAR REACTION ORDER: 2 k/k_{ref}: 0.988	300	-	-	-	0.9	1.1
NOTE: $O^*(^1D) + (CH_3)_4C \rightarrow$ products						
$O^*(^1D) + (CH_3)_4C \rightarrow OH + (CH_3)_3CCH_2.$						
OXYGEN ATOM + PROPANE, 2, 2-DIMETHYL-						
71 SCO/CVE REACTION ORDER: 2 k/k_{ref}: 4.29	296	-	-	-	0.9	1.1
NOTE: k_{ref}: $O^*(^1D) + N_2O \rightarrow N_2 + O_2 + NO + NO$						
76 FLE/HUS	300	7.4(+14)	-	-	0.9	1.1
$O + (CH_3)_2C{=}C(CH_3)_2 \rightarrow$ cy$[(CH_3)_2CHCH(CH_3)_2]O$						
OXYGEN ATOM + 2-BUTENE, 2, 3-DIMETHYL-						
73 DAV/HUI REACTION ORDER: 2	298-355	3.4(+12)	0	-790±60	0.8	1.2
$O + (CH_3)_2C{=}C(CH_3)_2 \rightarrow$ products						
OXYGEN ATOM + 2-BUTENE, 2,3-DIMETHYL-						
75 SIN/FOR REACTION ORDER: 2	298-481	1.2(+13)	0	-390±38	0.9	1.1
$O^*(^1D) + (CH_3)_3CCH_2CH(CH_3)_2 \rightarrow$ products						
OXYGEN ATOM + 2,2,4-TRIMETHYL PENTANE						
74 MIC/PAR REACTION ORDER: 2 k/k_{ref}: 1.26	300	-	-	-	0.9	1.1
NOTE: k_{ref}: $O^*(^1D) + (CH_3)_4C \rightarrow$ products						
$O_2 + O^*(^1D) \rightarrow$ products						
OXYGEN MOLECULE + OXYGEN ATOM						
73 HEI/HUSI REACTION ORDER: 2	300	4.2(+13)	-	-	0.9	1.1
$O_2 + O + M \rightarrow O_3 + M$						
OXYGEN MOLECULE + OXYGEN ATOM						
71 STU/NIKI REACTION ORDER: 3 M: CO	300	2.4(+14)	-	-	0.7	1.3
71 ELI/CAS k/k_{ref}: 0.006	298	-	-	-		
NOTE: $O_3 + O \rightarrow O_2 + O_2$; M=He,Xe,$N_2$ (AT 2537Å)						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
71 HIP/TRO REACTION ORDER: 2 M: N_2	298	1.0(+12)	-	-	0.8	1.2
NOTE: LIMITING HIGH PRESSURE k						
71 HIP/TRJ REACTION ORDER: 3 M: N_2	298	2.9(+14)	-	-	0.8	1.2
NOTE: k_0 (LOW PRESSURE)						
71 STU/NIK1 M: O_2	300	2.3(+14)	-	-	0.7	1.3
M: N_2	300	2.0(+14)	-	-	0.7	1.3
72 CAS/SCH k/k_{ref}: 0.027	261	-	-	-		
NOTE: k_{ref}: $O_3 + O \rightarrow O_2 + O_2$; M=$O_2$,$O_3$,$N_2$ (AT 3340Å)						
k/k_{ref}: 0.006	298	-	-	-		
NOTE: k_{ref}: $O_3 + O \rightarrow O_2 + O_2$; M=$O_2$,$O_3$,$N_2$ (AT 3340Å)						
72 TCH	298	4.4(+14)	-	-		
NOTE: ROOM TEMPERATURE, ASSUMED TO BE 298K						
72 BUI/HER1 M: Ar	200-346	2.4(+13)	0	-510±23	0.9	1.1
M: Ar	218	2.5(+14)	-	-		
NOTE:M eff: Ar(1.0)						
M: N_2	218	4.0(+14)	-	-		
NOTE:M eff: N_2(1.6)						
M: Ar	298	1.3(+14)	-	-		
NOTE:M eff: Ar(1.0)						
M: He	298	1.2(+14)	-	-	0.9	1.1
NOTE:M eff: He(0.92)						
M: N_2	298	2.1(+14)	-	-	0.9	1.1
NOTE:M eff: N_2(1.6)						
73 FAL/LAR M: O_2	295	2.2(+14)	-	-	0.8	1.2
M: Ar	295	1.5(+14)	-	-	0.6	1.4
M: N_2	295	2.0(+14)	-	-	0.8	1.2
73 STE/NIK1	298	-	-	-	0.9	1.1
NOTE: $k[M]/k_{ref}$: $1.08X10^{-3}$. k_{ref}: $NO_2 + O \rightarrow NO + O_2$						
73 CAS/SCH k/k_{ref}: 0.006	298	-	-	-		
NOTE: k_{ref}: $O_3 + O \rightarrow O_2 + O_2$; M=$O_2$,$N_2$ (AT 3340Å)						
72 GAL/GLA REACTION ORDER: 2 M: N_2	300	6.0(+11)	-	-		
NOTE: LIMITING HIGH-PRESSURE k						
74 SNE REACTION ORDER: 3	295	1.8(+14)	-	-	0.9	1.1
75 GAE/TRO M: N_2	296	1.7(+12)	-	-	0.6	1.4
NOTE: LIMITING HIGH-PRESSURE k (REEVALUATION)						
75 HIP/SCH M: N_2	295	1.7(+12)	-	-	0.6	1.4
NOTE: LIMITING HIGH-PRESSURE k (REEVALUATION						
75 HIP/SCH REACTION ORDER: 3 M: N_2	295	2.3(+14)	-	-	0.6	1.4
NOTE: LIMITING LOW-PRESSURE k (REEVALUATION)						
76 HOG/BUR M: O_2	300	2.3(+14)	-	-	0.8	1.2

$O_2 + O + M \rightarrow O_3 + M^*$						
OXYGEN MOLECULE + OXYGEN ATOM						
71 FIN/SNE REACTION ORDER: 3	283-321	3.2(+11)	0	1680		
NOTE: $M^*=O_2^*(^1\Delta_g)$						

$O_2 + O + M \rightarrow O_3^\ddagger + M$						
OXYGEN MOLECULE + OXYGEN ATOM						
73 DEV/JOH REACTION ORDER: 3 M: O_2	295	2.0(+14)	-	-	0.9	1.1
73 DEV/JOH M: Ar	295	9.8(+13)	-	-	0.9	1.1
REACTION ORDER: 3 M: SF_6	295	1.1(+15)	-	-	0.9	1.1
	295	4.7(+14)	-	-	0.9	1.1
	295	4.8(+14)	-	-	0.9	1.1

$O_2 + O + M \rightarrow O_3^\ddagger(v1,v3) + M$						
OXYGEN MOLECULE + OXYGEN ATOM						
73 RES/TRA REACTION ORDER: 3	300	-	-	-		
NOTE: k_{ref}: $O_3^\ddagger(v1,v3) + M \rightarrow O_3 + M$; k/k_{ref}: $1.5X10^{-20}$ cm^{-3}						

$O_2 + O + M \rightarrow O_3^\ddagger(v=n) + M$						
OXYGEN MOLECULE + OXYGEN ATOM						

CHEMICAL REACTIONS		T/K	A	B	E/R (in °K)	k factors f	k factors F
74 RES/TRA	REACTION ORDER: 3	300	1.1(+4)	-	-	0.8	1.2
NOTE: M=O_2, or N_2							

O_2 + H → O + OH							
OXYGEN MOLECULE + HYDROGEN ATOM							
71 BRA/BEL1	REACTION ORDER: 2	1150-1400	1.3(+14)	0	8205±550	0.8	1.2
71 BRA/BEL2		30-90	1.4(+14)	0	8255	0.9	1.1
NOTE: RANKINE-HUGONIOT MEASUREMENTS IN SHOCK TUBE AT LOW T		1120-1152	1.8(+14)	0	8050	0.8	1.2
71 BEL/BRA							
NOTE: EVALUATION							

O_2 + H → O + OH							
OXYGEN MOLECULE + HYDROGEN ATOM							
71 BBE/HDY	REACTION ORDER: 2	650-1000	2.3(+14)	0	8455		
73 KEC/MOI		913-1473	2.7(+14)	0	8355±235	0.8	1.2
73 SCH		1250-2500	1.2(+17)	-0.9	8369		
74 NAM/TRO		839-924	4.8(+9)	-	-		
NOTE: E NOT DETERMINED, WITHIN THE GIVEN T RANGE TOTAL K INCREASES FROM $4.8X10^9$ TO $9.6X10^9 cm^3 mol^{-1} s^{-1}$							
75 BOW		1900-2400	6.0(+14)	-	8450		
NOTE: INDIRECT MEASUREMENT							

O_2 + D → O + OD							
OXYGEN MOLECULE + DEUTERIUM ATOM							
75 APP/APP	REACTION ORDER: 2	1700-3100	3.1(+14)	0	9935	0.7	1.3

$O_2^*(^1\Delta_g)$ + H → O + OH							
OXYGEN MOLECULE + HYDROGEN ATOM							
72 SCH/SCH_2	REACTION ORDER: 2	300	1.5(+10)	-	-	0.8	1.2

O_2 + H + M → HO_2 + M							
OXYGEN MOLECULE + HYDROGEN ATOM							
71 GAY/PRA	REACTION ORDER: 3 M: Ar	1750	1.2(+15)	-	-	0.7	1.3
NOTE: MEAN T. M eff: Ar(1.0)	M: H_2O	1750	2.2(+16)	-	-	0.7	1.3
NOTE: MEAN T. M eff: H_2O(18.0)	M: N_2	1600	2.0(+15)	-	-	0.8	1.2
NOTE: MEAN T. M eff: N_2(2.0)							
71 HIK/EYR	M: Ar	298	5.9(+15)	-	-	0.9	1.1
71 OSB	M: H_2	298	4.7(+15)	-	-		
	M: He	298	2.7(+15)	-	-		
	M: Ne	298	5.8(+14)	-	-		
	M: Ar	298	2.1(+15)	-	-		
	M: Kr	298	3.9(+15)	-	-		
	M: H_2	298	4.4(+15)	-	-	0.9	1.1
72 ABU/MIC							
NOTE:M eff: H_2(2.0)	M: He	298	2.7(+15)	-	-	0.9	1.1
NOTE:M eff: He(1.2)	M: Ne	298	5.4(+14)	-	-	0.8	1.2
NOTE:M eff: Ne(0.2)	M: Ar	298	2.2(+15)	-	-	0.9	1.1
NOTE:M eff: Ar(1.0)	M: Kr	298	4.0(+15)	-	-	0.9	1.1
72 ABU/MIC							
NOTE:M eff: Kr(1.8)	M: Ar	948-1125	2.3(+15)	0	0		
72 JAC/HOU	M: He	293-404	2.4(+15)	0	-238±48	0.8	1.2
72 KUR2	M: He	226	7.0(+15)	-	-		
NOTE:M eff: He(1.0)	M: He	298	5.7(+15)	-	-		
NOTE:M eff: He(1.0)	M: Ar	298	5.7(+15)	-	-		
NOTE:M eff: Ar(1.0)	M: N_2	226	3.2(+16)	-	-		
NOTE:M eff: N_2(4.5)	M: N_2	298	1.9(+16)	-	-		
NOTE:M eff: N_2(3.4)							
72 KUR2	M: CH_4	298	8.9(+16)	-	-		
NOTE:M eff: CH_4(15.7)							

CHEMICAL REACTIONS		T/K	A	B	E/R (in °K)	k factors f	k factors F
72 MEØ/ALL	M: H_2	297	2.3(+16)	-	-	0.8	1.2
	M: He	297	5.4(+15)	-	-	0.9	1.1
	M: Ar	297	5.6(+15)	-	-	0.9	1.1
		298	6.8(+15)	-	-	0.8	1.2
NØTE: M=He,Ar (EVALUATIØN)							
73 PEE/MAH1	M: $Ø_2$	1900	2.5(+15)	-	-		
73 KEC/MØI	M: H_2	913-1473	3.2(+15)	0	-770±100	0.9	1.1
74 HAC/HØY	M: He	300	5.0(+15)	-	-	0.8	1.2
74 WEN/DAV	M: Ar	220-360	2.4(+15)	0	-345±64	0.8	1.2
	M: Ar	220	1.2(+16)	-	-		
NØTE:M eff: Ar(1.0)							
	M: N_2	220	3.1(+16)	-	-	0.8	1.2
NØTE:M eff: N_2(2.7)							
	M: He	298	6.8(+15)	-	-	0.9	1.1
NØTE:M eff: He(0.93)							
	M: Ar	298	7.1(+15)	-	-		
NØTE:M eff: Ar(1.0)							
	M: H_2	298	2.1(+16)	-	-	0.8	1.2
NØTE:M eff: H_2(3.0)							
	M: N_2	298	2.0(+16)	-	-	0.9	1.1
NØTE:M eff: N_2(2.8)							
	M: CH_4	298	1.5(+17)	-	-	0.6	1.4
NØTE:M eff: CH_4(22.0)							
75 VAS/MAK	M: He	300	4.4(+15)	-	-		
	M: Ar	300	4.4(+15)	-	-		
	M: $CØ_2$	300	1.8(+16)	-	-		
76 HAC/WAG	M: He	293	9.0(+15)	-	-	0.9	1.1
77 SLA	M: Ar	964-1075	2.2(+15)	0	0	0.8	1.2
NØTE: EVALUATIØN	M: Ar	200-2200	2.1(+18)	-1	0		
NØTE: ALTERNATIVE, T-DEPENDENT EXPRESSIØN (RECØMMENDED EVALUATIØN Meff (Ar): 1.0							
	M: N_2	980-1176	3.3(+15)	0	0	0.8	1.2
NØTE: EVALUATIØN	M: N_2	200-2000	6.7(+19)	-1.42	0		
NØTE: ALTERNATIVE T-DEPENDENT EXPRESSIØN (EVALUATIØN) Meff (N_2): 3.1 AT 300K DECREASING TØ 1.5 ABØVE 1000K							

$Ø_2$ + D + M → $DØ_2$ + M							
ØXYGEN MØLECULE + DEUTERIUM ATØM							
75 VAS/MAR REACTIØN ØRDER: 3	M: He	300	4.4(+15)	-	-		
	M: Ar	300	4.4(+15)	-	-		
	M: $CØ_2$	300	1.7(+16)	-	-		

$Ø_2$ + H_2 → ØH + ØH							
ØXYGEN MØLECULE + HYDRØGEN MØLECULE							
71 BIL/LRA REACTIØN ØRDER: 2		1128-1152	1.7(+12)	0	19630	0.7	1.2
NØTE: EVALUATIØN 75 AZA/ALE		1076-1523	1.9(+14)	0	21900±500	0.6	1.6
$Ø_2$ + D_2 → ØD + ØD							
ØXYGEN MØLECULE + DEUTERIUM MØLECULE							
75 AZA/ALE REACTIØN ØRDER: 2		843	1.0(+3)	-	-	0.8	1.2

$Ø_2$ + S → Ø + SØ							
ØXYGEN MØLECULE + SULFUR ATØM							
72 DEN/LIT REACTIØN ØRDER: 2		295	1.0(+12)	-	-	0.8	1.2
72 DAV/KLE1		252-423	1.3(+12)	0	0±50	0.9	1.1
75 CLY/TØW		298	9.0(+11)	-	-	0.8	1.2

$Ø_2^*(^1\Delta_g)$ + $SØ_2$ → Ø + $SØ_3$							
ØXYGEN MØLECULE + SULFUR DIØXIDE							
76 DUM REACTIØN ØRDER: 2		298	1.3(+8)	-	-		

$Ø_2$ + $N^*(^2D)$ → Ø + NØ							
ØXYGEN MØLECULE + NITRØGEN ATØM							
71 SLA/WØØ REACTIØN ØRDER: 2		237-365	2.7(+11)	0.5	0	0.8	1.2
72 HIS/KIR2		300	5.6(+12)	-	-	0.8	1.2

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
$O_2 + N^*(^2D) \rightarrow$ products						
OXYGEN MOLECULE + NITROGEN ATOM						
71 LIN/KAU — REACTION ORDER: 2	300	3.7(+12)	-	-	0.7	1.3
$O_2 + N^*(^2P) \rightarrow O + NO$						
OXYGEN MOLECULE + NITROGEN ATOM						
72 BUS/KIR2 — REACTION ORDER: 2	300	2.8(+12)	-	-	0.4	1.6
$O_2^*(^1\Delta_g) + N \rightarrow O + NO$						
OXYGEN MOLECULE + NITROGEN ATOM						
73 SCH/SCH_2 — REACTION ORDER: 2	300	1.3(+9)	-	-	0.7	1.3
$O_2^*(^1\Delta_g) + NO \rightarrow O + NO_2$						
OXYGEN MOLECULE + NITROGEN OXIDE (NO)						
76 DUM — REACTION ORDER: 2	298	2.9(+6)	-	-		
$O_2 + NO + NO \rightarrow NO_2 + NO_2$						
OXYGEN MOLECULE + NITROGEN OXIDE (NO)						
73 STE/NIK1 — REACTION ORDER: 3	298	1.5(+10)	-	-	0.9	1.1
75 ENG/COR	298-323	1.9(+9)	0	602±25	0.9	1.1
$O_2 + C(^3P) \rightarrow O + CO$						
OXYGEN MOLECULE + CARBON ATOM						
75 BUS/YOU — REACTION ORDER: 2	300	1.6(+13)	-	-	0.9	1.1
$O_2 + CO \rightarrow O + CO_2$						
OXYGEN MOLECULE + CARBON MONOXIDE						
71 BRA/BELI — REACTION ORDER: 2	1300-1900	1.6(+13)	0	20640	0.6	1.7
76 WEI	2500-2900	2.5(+13)	0	24160		
$O_2 + CH \rightarrow$ products						
OXYGEN MOLECULE + METHYLIDYNE FREE RADICAL						
71 BOS/PER — REACTION ORDER: 2	298	<2.4(+13)	-	-		
NOTE: UPPER LIMIT k						
$O_2 + CH_2 \rightarrow H + H + CO_2$						
OXYGEN MOLECULE + METHYLENE FREE RADICAL						
73 PEE/MAH_2 — REACTION ORDER: 2	1200-1600	1.0(+14)	0	1860		
NOTE: EVALUATION						
$O_2 + CH_2 \rightarrow$ products						
OXYGEN MOLECULE + METHYLENE FREE RADICAL						
73 JEN/BAY2 — REACTION ORDER: 2 k/k_{ref}: 0.095	296	-	-	-	0.7	1.3
NOTE: k_{ref}: $C + CH_2 \rightarrow CO + H + H$						
75 PEE/VIN	2000	1.2(+13)	-	-		
$O_2 + {}^3CH_2 \rightarrow$ products						
OXYGEN MOLECULE + METHYLENE FREE RADICAL						
77 PIL/ROB — REACTION ORDER: 2	298	7.2(+11)	-	-		
NOTE: $^3CH_2$ (GROUND STATE)						
$O_2 + {}^1CH_2^* + M \rightarrow$ products						
OXYGEN MOLECULE + METHYLENE FREE RADICAL						
74 LAU/DAS — REACTION ORDER: 2 M: He	298	1.8(+13)	-	-		
NOTE: LIMITING HIGH PRESSURE k. (UPPER LIMIT)						
$O_2 + {}^3CH_2^* + M \rightarrow$ products						
OXYGEN MOLECULE + METHYLENE FREE RADICAL						
74 LAU/DAS — REACTION ORDER: 2 M: He	298	9.0(+11)	-	-	0.9	1.1
NOTE: $^3CH_2$ (GROUND STATE) LIMITING HIGH PRESSURE k						
$O_2 + CH_3 \rightarrow O + CH_3O\cdot$						
OXYGEN MOLECULE + METHYL FREE RADICAL						
75 BRA/BRO — REACTION ORDER: 2	1200-1800	2.4(+13)	0	14500		

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
$O_2 + CH_3 \rightarrow OH + HCHO$						
OXYGEN MOLECULE + METHYL FREE RADICAL						
75 BOW REACTION ORDER: 2	1900-2400	1.2(+11)	0	5000		
NOTE: INDIRECT MEASUREMENT						
76 WAS/BAY	259-341	1.7(+11)	0	940±250	0.4	2.2
76 TSU	1500-2000	9.0(+11)	0	6000		

$O_2 + CH_3 + M \rightarrow CH_3O_2\cdot + M$						
OXYGEN MOLECULE + METHYL FREE RADICAL						
71 VAN/CAL REACTION ORDER: 2	295	1.1(+12)	-	-		
NOTE: LIMITING HIGH-PRESSURE k. (GIVEN WITH CAUTION)						
M = $CH_3CH_2CH_3$						
72 BAS/JAM REACTION ORDER: 3 M: N_2	295	9.4(+11)	-	-	0.9	1.1
NOTE: LOW PRESSURE k						
72 BAS/JAM	295	3.6(+17)	-	-	0.9	1.1
NOTE: LOW PRESSURE k. M=$(CH_3)_4C$						
REACTION ORDER: 2	295	3.1(+11)	-	-	0.9	1.1
NOTE: LIMITING HIGH-PRESSURE k; M:N_2,OR$(CH_3)_4C$						
73 SEK/NIK REACTION ORDER: 3 M: He		3.9(+16)	-	-		
NOTE: LOW PRESSURE k REACTION ORDER: 2 M: He	453	1.5(+12)	-	-		
NOTE: LIMITING HIGH PRESSURE k	298	1.0(+12)	-	-		
75 IAU/BAS2						
NOTE: LIMITING HIGH PRESSURE k. M=He,Ar,N_2						
77 HOC/GHO M: N_2	295	1.3(+12)	-	-	0.8	1.2
NOTE: LIMITING HIGH PRESSURE k						
77 PAP M: N_2	298	7.2(+11)	-	-	0.3	1.7
NOTE: LIMITING HIGH PRESSURE k						
REACTION ORDER: 3 M: N_2	298	1.1(+17)	-	-	0.7	1.3
NOTE: LOW PRESSURE k	298	5.4(+17)	-	-		
NOTE: LOW PRESSURE k; M=$(CH_3)_4C$						

$O_2 + \cdot CHO \rightarrow OH + CO_2$						
OXYGEN MOLECULE + METHYL, OXO-, FREE RADICAL						
76 OSI/HEI REACTION ORDER: 2 k/k_{ref}: ≤0.19	296	-	-	-		
NOTE: k_{ref}: $O_2 + CH_3\cdot \rightarrow HO_2\cdot + CO$; UPPER LIMIT RATIO						

$O_2 + \cdot CHO \rightarrow HO_2 + CO$						
OXYGEN MOLECULE + METHYL, OXO-, FREE RADICAL						
73 PLI/MAHI REACTION ORDER: 2	1600	3.0(+13)	-	-		
NOTE: TENTATIVE K						
74 WAS/MAR	297	3.4(+12)	-	-	0.8	1.2
77 SHI/EBA	298	5.1(+12)	-	-	0.9	1.1

$O_2 + \cdot CHO \rightarrow HCO_3$						
OXYGEN MOLECULE + METHYL, OXO-, FREE RADICAL						
76 OSI/HEI REACTION ORDER: 2 k/k_{ref}: 5.0	296	-	-	-	0.8	1.2
NOTE: k_{ref}: $O_2 + \cdot CHO \rightarrow HO_2 + CO$						

NOTE: k_{ref}: $O_2 + \cdot CHO \rightarrow HO_2\cdot + CO$						

$O_2 + HCHO \rightarrow HO_2 + \cdot CHO$						
OXYGEN MOLECULE + FORMALDEHYDE						
71 BAL/LAN REACTION ORDER: 2	713	1.3(+1)	-	-		
74 BAL/LUL	713-816	2.0(+13)	0	19580±750		

$O_2 + CH_3O\cdot \rightarrow HO_2 + HCHO$						
OXYGEN MOLECULE + METHOXY FREE RADICAL						
73 WIE/VIL REACTION ORDER: 2	298	-	-	-		
NOTE: k_{ref}: $NO_2 + CH_3O\cdot \rightarrow HNO + HCHO + CH_3ONO$						
k/k_{ref}: 4.7×10^{-5}						
75 AIC/HIL	373	1.2(+9)	-	-		
NOTE: OPTIMIZATION	296	-	-	-	0.9	1.1
75 GLA						
NOTE: k_{ref}: $NO + CH_3O\cdot \rightarrow CH_2ONO$; k/k_{ref}=5.2×10^{-5}						
75 GLA	296	-	-	-	0.9	1.1

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
NOTE: k_{ref}: NO_2 + CH_3O_2. → CH_3ONO_2; k/k_{ref}: $7.4X10^{-5}$						
(UPPER LIMIT RATIO)						
75 WEA/HEA	298	2.6(+9)	-	-	0.7	1.3
NOTE: EVALUATION						
75 MEN/GOL	300	3.5(+8)	-	-		
77 FAR/BEN	396-442	3.2(+11)	0	2000±1400	0.1	32
NOTE: EVALUATION						

O_2 + CN → O + NCO						
OXYGEN MOLECULE + CYANOGEN FREE RADICAL						
72 BUI/COO1 REACTION ORDER: 2	300-377	6.7(+12)	-	-		
NOTE: POSSIBLY SMALL NEGATIVE E						
74 SCH/SCH	299-388	3.2(+13)	0	500		
75 AIB/HOY	718-1111	3.2(+13)	0	510±170	0.7	1.3

O_2 + CN(v=n) → O + NCO						
OXYGEN MOLECULE + CYANOGEN FREE RADICAL						
72 SCE/WOL2 REACTION ORDER: 2	298	4.7(+12)	-	-		
NOTE: UNREPORTED T, ASSUMED TO BE 298K. k DECREASING TO $1.8X10^{12}$ $cm^3mol^{-1}s^{-1}$ BETWEEN v=0 AND v=6						
73 SCH/SCH1	298	6.3(+12)	-	-		
NOTE: k DECREASES MONOTONICALLY FROM V=0 TO V=7: k(V=7)=$1.6X10^{12}$ $cm^3mol^{-1}s^{-1}$						

O_2 + CH_3O_2NO + CH_3O_2NO → O_2 + CH_3ONO_2 + CH_3ONO_2						
OXYGEN MOLECULE + PEROXYNITROUS ACID METHYL ESTER						
73 SPI/VIL REACTION ORDER: 3	298	3.8(+13)	-	-		

O_2 + CH≡C. → CO + .CHO[#]						
OXYGEN MOLECULE + ETHYNYL FREE RADICAL						
72 MAT/SLA REACTION ORDER: 2	1100-2100	-	-	5500±5000		

O_2 + CH≡C. → CO_2 + CH[#]						
OXYGEN MOLECULE + ETHYNYL FREE RADICAL						
72 MAT/SLA REACTION ORDER: 2	1100-2100	-	-	12600±5000		

O_2 + CH_3CH_2. → HO_2 + CH_2=CH_2						
OXYGEN MOLECULE + ETHYL FREE RADICAL						
71 BAL/LAN REACTION ORDER: 2	713	8.2(+10)	-	-		

O_2 + .CH=C=O → products						
OXYGEN MOLECULE + ETHENYL, 2-OXO-, FREE RADICAL						
73 JEN/BAY2 REACTION ORDER: 2 k/k_{ref}: 0.018	296	-	-	-	0.8	1.2
NOTE: k_{ref}: O + .CH=C=O → products						
	296	2.2(+10)	-	-	0.5	1.5
NOTE: EVALUATION						

O_2 + $CH_3C(O).$ → $CH_3C(O)OO.$						
OXYGEN MOLECULE + ETHYL, 1-OXO-, FREE RADICAL						
74 DIX/SKI1 REACTION ORDER: 2	336-357	1.2(+10)	-	-	0.7	1.3

O_2 + CH_3CHO → HO_2 + $CH_3C(O).$						
OXYGEN MOLECULE + ACETALDEHYDE						
77 CCL/NAE REACTION ORDER: 2	1030-1115	2.0(+13)	0.5	21240±600	0.5	2.0

O_2 + CH_3CHO + M → $CH_3C(O)OOH$ + M						
OXYGEN MOLECULE + ACETALDEHYDE						
76 HRY/LEV REACTION ORDER: 3 M: O_3	393-473	5.0(+17)	0	7550±850		

O_2 + $CH_3CH_2CH_2$. → OH + CH_3CH_2CHO						
OXYGEN MOLECULE + PROPYL FREE RADICAL						
71 BAK/BAL REACTION ORDER: 2	753	1.1(+8)	-	-		

O_2 + $CH_3CH_2CH_2$. → OH + cy-$(CH_3)CHCH_2O$						
OXYGEN MOLECULE + PROPYL FREE RADICAL						
71 BAK/BAL REACTION ORDER: 2	753	3.1(+9)	-	-		

O_2 + $CH_3CH_2CH_2$. → HO_2 + CH_3CH=CH_2						
OXYGEN MOLECULE + PROPYL FREE RADICAL						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
71 BAK/BAL REACTION ORDER: 2	753	3.8(+10)	-	-		
71 BAL/LAN REACTION ORDER: 2	723	5.8(+10)	-	-		
O_2 + $(CH_3)_2CH\cdot$ → HO_2 + $CH_3CH{=}CH_2$						
OXYGEN MOLECULE + ETHYL, 1-METHYL-, FREE RADICAL						
76 BAL/CLE REACTION ORDER: 2 k/k_{ref}: 3060	713	-	-	-	0.9	1.1
NOTE: H_2 + $(CH_3)_2CH\cdot$ → H + $CH_3CH_2CH_3$						
REACTION ORDER: 2 k/k_{ref}: 7680	713	-	-	-	0.9	1.1
NOTE: k_{ref}: D_2 + $(CH_3)_2CH\cdot$ → D + CH_3CHDCH_3						
O_2 + CH_3CH_2CHO → HO_2 + $CH_3CH_2C(O)\cdot$						
OXYGEN MOLECULE + PROPANAL						
71 PAL/LAN REACTION ORDER: 2	713	7.6(+1)	-	-		
$O_2^{*}(^1\Delta_g)$ + cis-$CH_3CH{=}CHCH_3$ → $CH_2{\cdot}CHCH(CH_3)OOH$						
OXYGEN MOLECULE + cis-2-BUTENE						
75 ASH/GGR REACTION ORDER: 2	300-500	1.3(+11)	0	3255±140	0.7	1.4
$O_2^{*}(^1\Delta_g)$ + trans-$CH_3CH{=}CHCH_3$ → $CH_2{\cdot}CHCH(CH_3)OOH$						
OXYGEN MOLECULE + trans-2-BUTENE						
75 ASH/GGR REACTION ORDER: 2	300-500	1.6(+11)	0	3665±180	0.7	1.5
O_2 + $CH_3CH_2CH_2CH_2\cdot$ → OH + cy-$CH_2CH_2CH_2CH_2O$						
OXYGEN MOLECULE + BUTYL FREE RADICAL						
75 BAK/BAL3 REACTION ORDER: 2	753	2.6(+10)	-	-		
O_2 + $CH_3CH_2CH_2CH_2\cdot$ → HO_2 + $CH_3CH_2CH{=}CH_2$						
OXYGEN MOLECULE + BUTYL FREE RADICAL						
71 BAK/BAL REACTION ORDER: 2	753	2.8(+11)	-	-		
75 BAK/BAL2	753	2.7(+11)	-	-		
O_2 + $CH_3CH_2CH(\cdot)CH_3$ → OH + $CH_3CH_2CHCH_3$						
OXYGEN MOLECULE + PROPYL, 1-METHYL-, FREE RADICAL						
71 BAK/BAL REACTION ORDER: 2	753	2.3(+9)	-	-		
75 BAK/BAL3	753	9.4(+8)	-	-		
O_2 + $CH_3CH_2CH(\cdot)CH_3$ → OH + cy-$(CH_3CH_2)CHCH_2O$						
OXYGEN MOLECULE + PROPYL, 1-METHYL-, FREE RADICAL						
75 BAK/BAL3 REACTION ORDER: 2	753	1.2(+9)	-	-	0.7	1.3
O_2 + $CH_3CH_2CH(\cdot)CH_3$ → OH + cis-[cy-$(CH_3)CHCH(CH_3)$]O						
OXYGEN MOLECULE + PROPYL, 1-METHYL-, FREE RADICAL						
75 BAK/BAL3 REACTION ORDER: 2	753	4.8(+9)	-	-		
O_2 + $CH_3CH_2CH(\cdot)CH_3$ → OH + trans-[cy-$(CH_3)CHCH(CH_3)$]O						
OXYGEN MOLECULE + PROPYL, 1-METHYL-, FREE RADICAL						
75 BAK/BAL3 REACTION ORDER: 2	753	1.0(+10)	-	-		
O_2 + $CH_3CH_2CH(\cdot)CH_3$ → HO_2 + $CH_3CH_2CH{=}CH_2$						
OXYGEN MOLECULE + PROPYL, 1-METHYL- FREE RADICAL						
75 BAK/BAL2 REACTION ORDER: 2	753	5.1(+10)	-	-		
O_2 + $CH_3CH_2CH(\cdot)CH_3$ → HO_2 + cis-$CH_3CH{=}CHCH_3$						
OXYGEN MOLECULE + PROPYL, 1-METHYL-, FREE RADICAL						
71 BAK/BAL REACTION ORDER: 2	753	1.2(+11)	-	-		
75 BAK/BAL2	753	4.3(+10)	-	-		
O_2 + $CH_3CH_2CH(\cdot)CH_3$ → HO_2 + trans-$CH_3CH{=}CHCH_3$						
OXYGEN MOLECULE + PROPYL, 1-METHYL-, FREE RADICAL						
71 BAK/BAL REACTION ORDER: 2	753	2.1(+11)	-	-		
75 BAK/BAL2	753	7.8(+10)	-	-		
O_2 + $(CH_3)_2CHCH_2\cdot$ → OH + $(CH_3)_2CHCHO$						
OXYGEN MOLECULE + PROPYL, 2-METHYL-, FREE RADICAL						
71 BAK/BAL REACTION ORDER: 2	753	2.3(+9)	-	-		
O_2 + $(CH_3)_2CHCH_2\cdot$ → HO_2 + $(CH_3)_2C{=}CH_2$						
OXYGEN MOLECULE + PROPYL, 2-METHYL-, FREE RADICAL						
76 BAK/BAL REACTION ORDER: 2	753	2.3(+10)	-	-		

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F

$O_2^*(^1\Delta_g) + CH_3CH{=}C(CH_3)_2 \rightarrow CH_2{=}CHC(CH_3)_2OOH$ + $CH_2{=}C(CH_3)CH(CH_3)OOH$						
OXYGEN MOLECULE + 2-BUTENE, 2-METHYL-						
73 HUI/HER REACTION ORDER: 2	298	3.3(+7)	-	-		
75 ASH/OGR	300-500	1.3(+11)	0	2465±140	0.7	1.4

$O_2 + (CH_3)_2CHCH_2CH_3 \rightarrow HO_2 + (CH_3)_2C(.)CH_2CH_3$ + $(CH_3)_2CHCH(.)CH_3$						
OOXYGEN MOLECULE + BUTANE, 2-METHYL-						
73 DIG/DEN REACTION ORDER: 2	410-439	1.5(+15)	0	19120		

$O_2^*(^1\Delta_g) + CH_3CH_2CH{=}C(CH_3)_2 \rightarrow CH_3CH{=}CHC(CH_3)_2OOH$ + $CH_3CH_2CH(OOH)C(CH_3){=}CH_2$						
OXYGEN MOLECULE + 2-PENTENE, 2-METHYL						
73 HUI/HER REACTION ORDER: 2	298	9.0(+6)	-	-		
NOTE: GIVEN WITH CAUTION						

$O_2^*(^1\Delta_g) + (CH_3)_2C{=}C(CH_3)_2 \rightarrow CH_2{=}C(CH_3)C(CH_3)_2OOH$						
OXYGEN MOLECULE + 2-BUTENE, 2,3-DIMETHYL						
72 ACK/PIT REACTION ORDER: 2	298	4.9(+8)	-	-	0.9	1.1
NOTE: FOR PRESSURES > 3TORR	298	7.6(+8)	-	-		
73 HUI/HER	300-500	1.3(+11)	0	1625±75	0.8	1.2
75 ASH/OGR	298	2.0(+7)	-	-		
76 DUM						

$O_2 + (CH_3)_2CHC(O.)(CH_3)_2 \rightarrow$ products						
OXYGEN MOLECULE + PROPOXY, 1,1,2-TRIMETHYL-, FREE RADICAL						
75 AIC/MIL REACTION ORDER: 2	373	1.2(+9)	-	-		
NOTE: OPTIMIZATION						

$O_2^*(^1\Delta_g) + (CH_3)_2C{=}CHN(CH_3)_2 \rightarrow CH_2{=}C(CH_3)CH(OOH)[N(CH_3)_2]$						
OXYGEN MOLECULE + 1-PROPEN-1-AMINE, N,N,2-TRIMETHYL-						
73 HUI/HER REACTION ORDER: 2	298	1.5(+10)	-	-		

$O_2^*(^1\Delta_g) + (CH_3)_2C{=}C(CH_3)CH_2CH_3 \rightarrow CH_2{=}C(CH_3)C(CH_2CH_3OOH$ + $CH_2{=}C.CH_2CH_3)C(CH_3)OOH$						
OXYGEN MOLECULE + 2-PENTENE, 2,3-DIMETHYL-						
73 HUI/HER REACTION ORDER: 2	298	5.2(+8)	-	-		

$O_2 + CH_3(CH_2)_5CH_3 \rightarrow HO_2 + [C_7H_{15}.]$						
OXYGEN MOLECULE + HEPTANE						
75 SHA/DEN REACTION ORDER: 2	397-434	3.2(+17)	0	21800±2000		

$O_2^*(^1\Delta_g) + (CH_3)_2C{=}C(CH_3)CH_2CH_2CH_3 \rightarrow$ $CH_2{=}C(CH_3)C(CH_2CH_2CH_3)(CH_3)OOH$ + $CH_2{=}C(CH_2CH_2CH_3)C(CH_3)_2OOH$						
OXYGEN MOLECULE + 2-HEXENE, 2,3-DIMETHYL-						
73 HUI/HER REACTION ORDER: 2	298	5.0(+8)	-	-		

$O2 + (CH_3O_3CCH_2CH(CH_3)_2 \rightarrow HO2 + (CH_3O_3CCH_2C(.)(CH_3)_2$ + $(CH_3)_2C(CH(.)CH(CH_3)_2$						
OXYGEN MOLECULE + PENTANE, 2,2,4-TRIMETHYL-						
73 DIG/DEN REACTION ORDER: 2	400-465	1.0(+15)	0	19120		

$O2^*(^1\Delta_g) + CH_3CH_2OCH{=}C(CH_2CH_3)CH_2CH_2CH_2CH_3 \rightarrow$ $CH_3CH{=}C(CH_2CH_2CH_2CH_3)CH(OCH_2CH_3)$						
OXYGEN MOLECULE + 1-HEXENE, 1-ETHOXY-2-ETHYL-						
73 HUI/HER REACTION ORDER: 2	298	4.0(+8)	-	-		
NOTE: GIVEN WITH CAUTION						

$O2 + M \rightarrow O + O + M$						
OXYGEN MOLECULE						
71 HRE/BIR REACTION ORDER: 2 M: O_2	4000-8500	7.6(+14)	-	52750		
NOTE: MEFF: O_2(9.6)						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
71 BRE/BIR — M: He	4000-8500	1.4(+14)	-	53950		
NOTE: MEFF: HE(1.5±0.1) — M: Ar	4000-8500	5.9(+13)	0	51080		
NOTE: Meff: Ar(1.0±0.1) — M: Kr	4000-8500	7.9(+13)	0	5275		
NOTE: Meff: Kr(1.0) (STANDARD INERT GAS)	4000-8500	1.1(+14)	0	51840		
NOTE: Meff: Xe(1.7±0.1)						

$O_3 + O \rightarrow O_2 + O_2$						
OZONE + OXYGEN ATOM						
71 FRE/SIM — REACTION ORDER: 2	197-299	7.2(+12)	0	2165±100	0.8	1.2
72 EAL/EGO	292-370	7.1(+12)	0	1935±85	0.8	1.3
72 HUS/KIR1	300	7.8(+9)	-	-	0.6	1.4
72 MCC	269-409	1.1(+13)	0	2245		
72 MCC/KAU	269-409	6.3(+12)	0	2170±50	0.8	1.2
73 DAV/WON	220-353	1.2(+13)	0	2276±106	0.9	1.1
76 DAV	293	7.2(+9)	-	-	0.9	1.1

$O_3 + O^*(^1D) \rightarrow O_2 + O_2$						
OZONE + OXYGEN ATOM						
71 GOL/GRE — REACTION ORDER: 2 k/k_{ref}: 4.1	298	-	-	-		
NOTE: k_{ref}: $N_2O + O^*(^1D) \rightarrow N_2 + O_2 + NO + NO$. (AT 2288 Å)						
71 GOL/GRE — k/k_{ref}: 2.6	298	-	-	-		
NOTE: k_{ref}: $N_2O + O^*(^1D) \rightarrow N_2 + O_2 + NO + NO$ (AT 2537 Å)						
73 HEI/HUS1	300	1.6(+14)	-	-	0.9	1.1
k/k_{ref}: 3.9	300	-	-	-		
NOTE: k_{ref}: $O_2 + O^*(^1D) \rightarrow$ products						

$O_3 + O^*(^1D) \rightarrow O_2 + O_2$ (OR $O_2 + O + O$)						
OZONE + OXYGEN ATOM						
75 GAU/SNE — REACTION ORDER: 2 k/k_{ref}: 8.0	300	-	-	-	0.7	1.3
NOTE: k_{ref}: $O_2 + O^*(^1D) \rightarrow O_2^*(^1\Sigma_g^+) + O$						
	300	3.6(+14)	-	-		
NOTE: EVALUATION						
76 DAV/SAD	298	1.4(+14)	-	-	0.9	1.1
76 STR/HOW	103-393	1.4(+14)	0	0	0.9	1.1

$O_3 + H \rightarrow O_2 + OH$						
OZONE + HYDROGEN ATOM						
77 CIY/WON — REACTION ORDER: 2	298-638	6.0(+13)	0	224±26	0.8	1.3

$O_3 + OH \rightarrow O_2 + HO_2$						
OZONE + HYDROXYL FREE RADICAL						
73 AND/KAU2 — REACTION ORDER: 2	220-450	7.8(+11)	0	956		
73 DEM	300	4.8(+10)	-	-		
73 KUR	298	3.9(+10)	-	-	0.8	1.2
74 SIM/HEI1	298	>9.0(+9)	-	-		
NOTE: LOWER LIMIT k_o EVALUATION						
74 SIM/HEI1	298	3.0(+10)	-	-	0.4	1.6
NOTE: EVALUATION						
75 DEM	271-333	-	-	-		
NOTE: k_{ref}: $CO + OH \rightarrow CO_2 + H$; k/k_{ref}: 16.8exp(-1233/T)						
	271-333	1.5(+12)	0	1233		
NOTE: EVALIATION						

$O_3 + OD(V=N) \rightarrow O_2 + DO_2$						
OZONE + HYDROXYL-D FREE RADICAL						
74 BAS/GRA — REACTION ORDER: 2	298	3.3(+12)	-	-	0.8	1.2
NOTE: UNREPORTED T. ASSUMED TO BE 298K						

$O_3 + OH(V=2) \rightarrow$ products						
OZONE + HYDROXYL FREE RADICAL						
71 COL/WOR — REACTION ORDER: 2	298	1.1(+12)	-	-	0.4	1.6
NOTE: UNREPORTED T ASSUMED TO BE 298K; K INCREASING TO 4.6×10^{12} $cm^3 mol^{-1} s^{-1}$ FROM v=2 TO v=9						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
O_3 + OH(V=5) → products						
OZONE + HYDROXYL FREE RADICAL						
71 PET/COL REACTION ORDER: 2	298	4.6(+12)	-	-	0.9	1.1
NOTE: UNREPORTED T ASSUMED TO BE 298K						
O_3 + OH(V=4) → products						
OZONE + HYDROXYL FREE RADICAL						
76 STR/JOH REACTION ORDER: 2	300	2.2(+12)	-	-	0.9	1.1
NOTE: K INCREASING TO $6.6X10^{12}$ $cm^3 mol^{-1} s^{-1}$ FOR OH(V=9).						
O_3 + HO_2 → O_2 + O_2 + OH						
OZONE + HYDROPEROXYL FREE RADICAL						
72 DEM REACTION ORDER: 2	300	1.8(+9)	-	-		
73 AND/KAU2	220-450	<3.0(+9)	-	-		
NOTE: UPPER LIMIT k						
73 SIM/HEI3	225-298	2.0(+10)	0	1010		
NOTE: EVALUATION						
74 DEM/TSC	273-342	1.2(+11)	0	1560±250		
NOTE: EVALUATION						
O_3 + S → O_2 + SO						
OZONE + SULFUR ATOM						
75 CLY/TOW REACTION ORDER: 2	298	7.2(+12)	-	-	0.7	1.3
O_3(V=N) + SO → O_2 + SO_2^*						
OZONE + SULFUR MONOXIDE						
74 KAL/BRA REACTION ORDER: 2 k/k_{ref}: 2.4	300	-	-	-	0.8	1.3
NOTE: k_{ref}: O_3 + SO → O_2 + SO_2^*						
O_3 + SO_2 → O_2 + SO_3						
OZONE + SULFUR DIOXIDE						
74 DAV/PRU REACTION ORDER: 2	300	<6.0(+1)	-	-		
NOTE: UPPER LIMIT k						
O_3 + H_2S → H_2O + SO_2						
OZONE + HYDROGEN SULFIDE						
75 BEC/ING REACTION ORDER: 2	298	<1.2(+4)	-	-		
NOTE: UPPER LIMIT k. UNREPORTED T ASSUMED TO BE 298K						
75 GIA/TOB1	293-343	4.9(+10)	0	3420		
NOTE: ESTIMATE						
75 GIA/TOB2	298-343	1.6(+12)	0	2620±600	0.2	6.3
O_3 + NO → O_2 + NO_2						
OZONE + NITROGEN OXIDE (NO)						
73 GEO/ELL REACTION ORDER: 2	298	8.5(+9)	-	-	0.9	1.1
73 STE/NIKI	298	1.0(10)	-	-	0.9	1.1
74 BEC/SCH	290	1.0(+10)	-	-		
74 DEM/CLY	298	1.1(+10)	-	-	0.9	1.1
75 BIR/SHO	203-361	1.4(+12)	0	1450±50	0.9	1.1
76 FRE/STE	298	1.5(+11)	-	-	0.9	1.1
NOTE: INCLUDES O_3(001)						
O_3 + NO(V=1) → O_2 + $NO_2^*(^2B_1)$						
OZONE + NITROGEN OXIDE(NO)						
76 STE/FRE REACTION ORDER: 2 k/k_{ref}: 5.7	298	-	-	-	0.8	1.5
NOTE: k_{ref}: O_3 + NO → O_2 + $NO_2^*(^2B_1)$						
O_3(V=1,2) + NO → O_2 + NO_2						
OZONE + NITROGEN OXIDE (NO)						
75 KUR/BRA REACTION ORDER: 2	153-373	1.2(+13)	0	1525		
O_3(001) + NO → O_2 + NO_2						
OZONE + NITROGEN OXIDE (NO)						
76 GER/LIN REACTION ORDER: 2	308	5.4(+10)	-	-	0.9	1.1
O_3(001) + NO → O_2 + NO_2^*						
OZONE + NITROGEN OXIDE (NO)						
76 GER/LIN REACTION ORDER: 2	308	4.3(+9)	-	-	0.8	1.2

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
$O_3^{\ddagger}(\Sigma^1) + NO \rightarrow O_2 + NO_2^*$						
OZONE + NITROGEN OXIDE (NO)						
77 MCY/BAR REACTION ORDER: 2 k/k_{ref}: 7.6	300	-	-	-	0.7	1.2
NOTE: k_{ref}: $O_3 + NO \rightarrow O_2 + NO_2^*$						
$O_3(V=N) + NO \rightarrow O_2 + NO_2^*$						
OZONE + NITROGEN OXIDE (NO)						
73 GOR/LIN REACTION ORDER: 2	350	1.5(+11)	-	-	0.9	1.1
$O_3(V=N) + NO \rightarrow O_2 + NO_2^*$						
OZONE + NITROGEN OXIDE (NO)						
74 BRA/KUR REACTION ORDER: 2 k/k_{ref}: 5.6	300	-	-	-	0.8	1.2
NOTE: k_{ref}: $O_3 + NO \rightarrow O_2 + NO_2^*$						
$O_3(V=N) + NO \rightarrow O_2 + NO_2^{\ddagger}(^2A_1)$						
OZONE + NITROGEN OXIDE (NO)						
74 KUR/BRA REACTION ORDER: 2 k/k_{ref}: 17.1	300	-	-	-	0.7	1.3
NOTE: k_{ref}: $O_3 + NO \rightarrow O_2 + NO_2^{\ddagger}(^2A_1)$						
$O_3(V=N) + NO \rightarrow O_2 + NO_2^{\ddagger}(^2A_1) + NO_2^*(^2B_1)$						
OZONE + NITROGEN OXIDE (NO)						
74 KUR/BRA REACTION ORDER: 2 k/k_{ref}: 16.2	300	-	-	-	0.8	1.2
NOTE: k_{ref}: $O_3 + NO \rightarrow O_2 + NO_2^{\ddagger}(^2A_1) + NO_2^*(^2B_1)$						
74 KUR/BRA	300	1.6(+11)	-	-	0.9	1.1
$O_3(V=N) + NO \rightarrow O_2 + NO_2^*(^2B_1)$						
OZONE + NITROGEN OXIDE (NO)						
74 KUR/BRA REACTION ORDER: 2 k/k_{ref}: 4.1	300	-	-	-	0.5	1.5
NOTE: k_{ref}: $O_3 + NO \rightarrow O_2 + NO_2^*(^2B_1)$						
$O_3 + NO(V=N) \rightarrow$ products						
OZONE + NITROGEN OXIDE (NO)						
76 STE/FRE REACTION ORDER: 2 k/k_{ref}: ≤22	298	-	-	-		
NOTE: k_{ref}: $O_3 + NO \rightarrow O_2 + NO_2(^2A_1)$ (UPPER LIMIT RATIO)						
$O_3 + NO_2 \rightarrow O_2 + NO_3$						
OZONE + NITROGEN OXIDE (NO_2)						
73 STE/NIK1 REACTION ORDER: 2	298	3.9(+7)	-	-	0.9	1.1
73 GEO/FLL	298	4.7(+7)	-	-	0.9	1.1
73 WU/MAR	299	1.3(+7)	-	-	0.9	1.2
74 DAV/PRU	260-343	5.4(+10)	0	2426±115	0.9	1.1
74 GEO/FLL	298	1.9(+7)	-	-	0.8	1.2
74 GEA/JOR	231-298	8.1(+10)	0	2466±30	0.9	1.1
74 HUI/HER	259-362	9.4(+10)	0	2509±76	0.7	1.3
74 BIC/SCH	289	2.0(+7)	-	-		
75 HER/HUI	259-363	9.4(+10)	0	2509±76	0.7	1.3
75 GEA	231-298	8.1(+10)	0	2466±30	0.9	1.1
$O_3 + CO \rightarrow O_2 + CO_2$						
OZONE + CARBON MONOXIDE						
72 API/WAR REACTION ORDER: 2	296	<2.4(-1)	-	-		
NOTE: UPPER LIMIT k						
$O_3 + CO \rightarrow$ products						
OZONE + CARBON MONOXIDE						
73 STE/NIK2 REACTION ORDER: 2	298	6.0(+2)	-	-		
NOTE: UPPER LIMIT k						
$O_3 + CH_3 \rightarrow O_2 + H + HCHO$						
OZONE + METHYL FREE RADICAL						
75 [illegible]M/HEI REACTION ORDER: 2	221-298	3.3(+12)	-	530		

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
NOTE: EVALUATION						
$O_3 + CH_4 \rightarrow$ products						
OZONE + METHANE						
73 STE/NIK2 REACTION ORDER: 2	298	7.2(+2)	-	-		
NOTE: UPPER LIMIT k						
$O_3 + HCHO \rightarrow HCO_3 + OH + HCO_2 + HO_2$						
OZONE + FORMALDEHYDE						
76 BKA/HEI REACTION ORDER: 2	298	1.3	-	-		
$O_3 + CH_3O_\cdot \rightarrow$ products						
OZONE + METHOXY FREE RADICAL						
75 SIM/HEI REACTION ORDER: 2	298	1.2(+9)	-	-		
NOTE: UPPER LIMIT k						
$O_3 + CH_3O_{2\cdot} \rightarrow$ products						
OZONE + METHYLDIOXY FREE RADICAL						
75 SIM/HEI REACTION ORDER: 2	298	1.4(+7)	-	-		
NOTE: UPPER LIMIT k						
$O_3 + CH_3ONO \rightarrow O_2 + CH_3ONO_2$						
OZONE + NITROUS ACID METHYL ESTER						
76 HAS/FRE REACTION ORDER: 2	298-352	4.1(+11)	0	5315±172	0.6	1.7
$O_3 + CH{\equiv}CH \rightarrow$ products						
OZONE + ETHYNE						
71 DEM REACTION ORDER: 2	294	1.8(+4)	-	-	0.8	1.2
73 STE/NIK2 REACTION ORDER: 2	298	5.2(+4)	-	-	0.9	1.1
76 PAT/ATK REACTION ORDER: 2	297	2.3(+4)	-	-	0.8	1.2
$O_3 + CH_2{=}CD_2 \rightarrow [CH_2{=}CH_2.O_3]$						
OZONE + ETHENE						
76 TEH/TOB REACTION ORDER: 2	303	1.02(+6)	-	-	0.9	1.1
$O_3 + CH_2{=}CH_2 \rightarrow$ products						
OZONE + ETHENE						
73 STE/WU REACTION ORDER: 2	299	9.3(+5)	-	-	0.9	1.1
74 BIC/SCH	289-360	7.2(+9)	0	2500±100		
74 FIN/PIT	298	1.0(+6)	-	-	0	2.0
NOTE: IN O_2 CARRIER GAS	298	5.0(+6)	-	-	0.6	1.4
NOTE: IN N_2 CARRIER GAS						
74 HER/HUI	235-362	5.4(+9)	0	2557±167	0.4	1.6
74 JAP/WU	298	1.1(+6)	-	-	0.9	1.1
76 JAP/WU	299	1.1(+6)	-	-	0.9	1.1
76 WIL	298	8.8(+5)	-	-		
$O_3 + CD_2{=}CD_2 \rightarrow$ products						
OZONE + ETHENE-d_4						
74 JAP/WU REACTION ORDER: 2	298	1.4(+6)	-	-	0.9	1.1
$O_3 + CH_3CHO \rightarrow$ products						
OZONE + ACETALDEHYDE						
73 STE/NIK2 REACTION ORDER: 2	298	2.0(+4)	-	-	0.9	1.1
$O_3 + CH_3CH_2ONO \rightarrow O_2 + CH_3CH_2ONO_2$						
OZONE + NITROUS ACID ETHYL ESTER						
76 HAS/FRE REACTION ORDER: 2	298-352	1.9(+8)	-	2357±116	0.7	1.4
$O_3 + CH_3C{\equiv}CH \rightarrow$ products						
OZONE + 1-PROPYNE						
71 DEM REACTION ORDER: 2	294	1.3(+4)	-	-	0.5	1.5
$O_3 + CH_2{=}C{=}CH_2 \rightarrow [CH_2{=}C{=}CH_2.O_3]$						
OZONE + 1,2-PROPADIENE						
74 TEH/TOB REACTION ORDER: 2	499-598	1.0(+9)	0	2770±500		
$O_3 + CH_3CH{=}CH_2 \rightarrow$ products						
OZONE + PROPENE						
72 CEX/PEN REACTION ORDER: 2	295	7.6(+6)	-	-		

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
73 STI/WU	299	7.5(+6)	-	-	0.9	1.1
74 BIC/SCH	280-360	6.6(+9)	0	1970±100		
74 FIN/PIT	235-362	3.7(+9)	0	1897±109	0.6	1.4
76 JAP/WU	299	7.8(+6)	-	-	0.9	1.1
76 WIL	298	5.8(+6)	-	-		

O_3 + $CD_3CD{=}CD_2$ → products						
OZONE + PROPENE-d_6						
74 JAP/WU REACTION ORDER: 2	298	9.1(+6)	-	-	0.9	1.1

O_3 + CH_3CHCHO → products						
OZONE + PROPANAL, 2-OXO-						
76 PAT/ATK REACTION ORDER: 2	297	6.6(+2)	-	-	0.5	1.5

O_3 + $CH_3CH_2C{\equiv}CH$ → products						
OZONE + 1-BUTYNE						
71 DEM REACTION ORDER: 2	294	2.4(+4)	-	-	0.7	1.3

O_3 + $CH_3C{\equiv}CCH_3$ → products						
OZONE + 2-BUTYNE						
71 DEM REACTION ORDER: 2	294	2.0(+4)	-	-	0.8	1.2

O_3 + $CH_2{=}CHCH{=}CH_2$ → [$CH_2{=}CHCH{-}CH_2.O_3$]						
OZONE + 1,3-BUTADIENE						
75 TUH/TOB REACTION ORDER: 2	273-343	6.3(+10)	0	2920±400	0.3	3.0
74 BIC/SCH	280-360	3.3(+10)	0	2680±100		
74 JAP/WU	298	5.1(+6)	-	-	0.9	1.1

O_3 + $CH_3CH_2CH{=}CH_2$ → products						
OZONE + 1-BUTENE						
75 HUI/HER REACTION ORDER: 2	225-363	1.8(+9)	0	1686±20	0.9	1.1
NOTE: IN 0.0015 TORR OF O_2 AS SCAVENGER						
74 JAP/WU	298	7.5(+6)	-	-	0.9	1.1
76 WIL	298	5.6(+6)	-	-		

O_3 + $CH_3CH{=}CHCH_3$ → products						
OZONE + 2-BUTENE						
74 BIC/SCH REACTION ORDER: 2	280-360	5.7(+9)	0	1150±75		
NOTE: cis-AND trans-2-BUTENE MIXTURE						

O_3 + cis-$CH_3CH{=}CHCH_3$ → products						
OZONE + cis-2-BUTENE						
74 JAP/WU REACTION ORDER: 2	298	9.7(+7)	-	-	0.9	1.1
74 FIN/PIT	298	6.3(+7)	-	-	0.7	1.3
NOTE: IN O_2 CARRIER GAS						
74 FIN/PIT	298	1.5(+8)	-	-	0.9	1.1
NOTE: IN N_2 CARRIER GAS						
75 HUI/HER	225-336	1.9(+9)	0	956±54	0.8	1.2
NOTE: IN 0.0075 TORR OF O_2 AS SCAVENGER						
76 WIL	298	7.3(+6)	-	-		

O_3 + trans-$CH_3CH{=}CHCH_3$ → products						
OZONE + trans-2-BUTENE						
73 STI/WU	299	1.7(+8)	-	-	0.9	1.1
74 JAP/WU	298	1.6(+8)	-	-	0.9	1.1
75 HUI/HER	225-363	3.6(+9)	0	1051±43	0.9	1.2
NOTE: IN 0.0075 TORR OF O_2 AS SCAVENGER						
76 JAP/WU	299	1.5(+8)	-	-	0.9	1.1

O_3 + $(CH_3)_2C{=}CH_2$ → products						
OZONE + 1-PROPENE, 2-METHYL-						
74 BIC/SCH REACTION ORDER: 2	283	1.1(+7)	-	-		
74 FIN/PIT	298	5.4(+6)	-	-	0.6	1.4
NOTE: IN O_2 CARRIER GAS	298	3.6(+7)	-	-	0.8	1.2
NOTE: IN N_2 CARRIER GAS						
75 HUI/HER	225-363	1.9(+9)	0	1671±23	0.9	1.1
NOTE: IN 0.0075 TORR OF O_2 AS SCAVENGER						
74 JAP/WU	298	8.2(+6)	-	-	0.9	1.1
76 WIL	298	7.4(+6)	-	-		

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
O_3 + $CH_3CH_2CH_2CH{=}CH_2$ → products						
OZONE + 1-PENTENE						
74 JAP/WU REACTION ORDER: 2	298	6.4(+6)	-	-	0.9	1.1
O_3 + $CH_3CH{=}C(CH_3)_2$ → products						
OZONE + 2-BUTENE, 2-METHYL-						
74 JAP/WU REACTION ORDER: 2	298	3.0(+8)	-	-	0.9	1.1
75 HUI/HER	227-363	3.8(+9)	0	826±78	0.8	1.3
NOTE: IN 0.0075 TORR OF O_2 AS SCAVENGER						
O_3 + $CH_3CH_2CH_2CH_2CH{=}CH_2$ → products						
OZONE + 1-HEXENE						
72 CEX/PEN REACTION ORDER: 2	295	8.2(+6)	-	-		
72 CEX/PEN	295	7.2(+6)	-	-		
NOTE: IN N_2 ATMOSPHERE						
73 STE/WU	299	6.6(+6)	-	-	0.9	1.1
74 JAP/WU	298	6.7(+6)	-	-	0.9	1.1
O_3 + $CH_3CH_2CH_2C(CH_3){=}CH_2$ → products						
OZONE + 1-PENTENE, 2-METHYL-						
72 CEX/PEN REACTION ORDER: 2	295	1.0(+7)	-	-		
O_3 + $(CH_3)_2CHCH_2CH{=}CH_2$ → products						
OZONE + 1-PENTENE, 4-METHYL-						
72 CEX/PEN REACTION ORDER: 2	295	6.4(+6)	-	-		
O_3 + $CH_3CH_2C(CH_3){=}CHCH_3$ → products						
OZONE + cis-2-PENTENE, 3-METHYL-						
74 JAP/WU REACTION ORDER: 2	298	2.7(+8)	-	-	0.9	1.1
O_3 + $CH_3CH_2C(CH_3){=}CHCH_3$ → products						
OZONE + trans-2-PENTENE, 3-METHYL-						
74 JAP/WU REACTION ORDER: 2	298	3.4(+8)	-	-	0.9	1.1
O_3 + $(CH_3)_2C{=}C(CH_3)_2$ → products						
OZONE + 2-BUTENE, 2,3-DIMETHYL-						
74 JAP/WU REACTION ORDER: 2	298	9.1(+8)	-	-	0.9	1.1
75 HUI/HER	227-363	1.7(+9)	0	294±196		
NOTE: IN 0.0075 TORR OF O_2 AS SCAVENGER						
O_3 + M* → O + O_2 + M						
OZONE						
71 FIN/SNE REACTION ORDER: 2	283-321	2.7(+13)	0	2830±180		
NOTE: M*=$O_2^*(^1\Delta_g)$						
72 BIC/GRO	296-360	3.6(+13)	0	2850±140		
NOTE: M*=$O_2^*(^1\Delta_g)$						
72 HUS/KIR1 REACTION ORDER: 2	300	<6.0(+9)	-	-		
NOTE: M*=$O_2^*(^1\Delta_g)$						
73 COL/HUS	300	2.7(+9)	-	-	0.7	1.3
NOTE: M* IS $O_2^*(^1\Delta_g)$						
$O_3^{\ddagger}$ + M* → O + O_2 + M						
OZONE						
74 KUR/BRA REACTION ORDER: 2 k/k_{ref}: 38	300	-	-	-	0.5	1.5
NOTE: M*=$O_2^*(^1\Delta)$ k_{ref}: O_3 + M* → O + O_2 + M						
74 SNE REACTION ORDER: 2	298	1.4(+13)	-	-	0.8	1.2
NOTE: M=$O_2^*(^1\Sigma_g^+)$						
H + O → OH(v=1)						
HYDROGEN ATOM + OXYGEN ATOM						
76 TIC REACTION ORDER: 2	298	2.7(+1)	-	-		
H + O + M → OH + M						
HYDROGEN ATOM + OXYGEN ATOM						
76 TIC REACTION ORDER: 3 M: H	298	5.8(+11)	-	-		
M: H_2	298	6.2(+9)	-	-		

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	F
$H + O + M \rightarrow OH(v=1) + M$						
HYDROGEN ATOM + OXYGEN ATOM						
76 TIC REACTION ORDER: 3 M: H	298	1.5(+10)	-	-		
$H + O + M \rightarrow OH^* + M$						
HYDROGEN ATOM + OXYGEN ATOM						
76 KEI/MOR REACTION ORDER: 3 M: Ar	1250-2000	1.0(+9)	0	5540		
$H + O_2 \rightarrow OH + O$						
HYDROGEN ATOM + OXYGEN MOLECULE						
71 BRA/BEL1 REACTION ORDER: 2	1150-1400	1.3(+14)	0	8205±550	0.8	1.2
71 BRA/BEL2	30-90	1.4(+14)	0	8255	0.9	1.1
NOTE: RANKINE-HUGONIOT MEASUREMENTS IN SHOCK TUBE AT LOW T.						
71 EBE/ROY	650-1000	2.3(+14)	0	8455		
	1128-1152	1.8(+14)	0	8050	0.8	1.2
NOTE: EVALUATION						
73 KEC/MEI	913-1473	2.7(+14)	0	8355±235	0.8	1.2
73 SCH	1250-2500	1.2(+17)	-0.9	8369		
74 NAM/TRO	839-924	4.8(+9)	-	-		
NOTE: E NOT DETERMINED. WITHIN THE GIVEN T RANGE TOTAL k INCREASES FROM 4.8×10^9 TO 9.6×10^9 $cm^3 mol^{-1} s^{-1}$						
75 REW	1900-2400	6.0(+14)	0	8450		
NOTE: INDIRECT MEASUREMENT						
$D + O_2 \rightarrow OD + O$						
DEUTERIUM ATOM + OXYGEN MOLECULE						
75 AFP/APP REACTION ORDER: 2	1700-3100	3.1(+14)	0	9935	0.7	1.3
$H + O_2^*(^1\Delta_g) \rightarrow OH + O$						
HYDROGEN ATOM + OXYGEN MOLECULE						
72 SCP/SCH_2 REACTION ORDER: 2	300	1.5(+10)	-	-	0.8	1.2
$H + O_2 + M \rightarrow HO_2 + M$						
HYDROGEN ATOM + OXYGEN MOLECULE						
71 GAY/PRA REACTION ORDER: 3 M: Ar	1750	1.2(+15)	-	-	0.7	1.3
NOTE: MEAN T. M eff: Ar(1.0) M: H_2O	1750	2.2(+16)	-	-	0.7	1.3
NOTE: MEAN T. M eff: H_2O(18.0) M: N_2	1600	2.0(+15)	-	-	0.8	1.2
NOTE: MEAN T. M eff: N_2(2.0)						
71 HIK/EYR M: Ar	298	5.9(+15)	-	-	0.9	1.1
71 ESB M: H_2	298	4.7(+15)	-	-		
M: He	298	2.7(+15)	-	-		
M: Ne	298	5.8(+14)	-	-		
M: Ar	298	2.1(+15)	-	-		
M: Kr	298	3.9(+15)	-	-		
72 ABU/MIC M: H_2	298	4.4(+15)	-	-	0.9	1.1
NOTE:M eff: H_2(2.0) M: He	298	2.7(+15)	-	-	0.9	1.1
72 ABU/MIC						
NOTE:M eff: He(1.2) M: Ne	298	5.4(+14)	-	-	0.8	1.2
72 ABU/MIC						
NOTE:M eff: Ne(0.2) M: Ar	298	2.2(+15)	-	-	0.9	1.1
72 ABU/MIC						
NOTE:M eff: Ar(1.0) M: Kr	298	4.0(+15)	-	-	0.9	1.1
72 ABU/MIC						
NOTE:M eff: Kr(1.8) M: Ar	948-1125	2.3(+15)	0	0		
72 JAC/HOU M: He	203-404	2.4(+15)	0	-238±48	0.8	1.2
M: He	226	7.0(+15)	-	-		
NOTE:M eff: He(1.0) M: N_2	226	3.2(+16)	-	-		
NOTE:M eff: N_2(4.5) M: He	298	5.7(+15)	-	-		
NOTE:M eff: He(1.0) M: Ar	298	5.7(+15)	-	-		
NOTE:M eff: Ar(1.0) M: N_2	298	1.9(+16)	-	-		
NOTE:M eff: N_2(3.4) M: CH_4	298	8.9(+16)	-	-		

CHEMICAL REACTIONS		T/K	A	B	E/R (in °K)	k factors f	k factors F
NOTE:M eff: CH_4(15.7)							
72 MEO/ALL	M: H_2	297	2.3(+16)	-	-	0.8	1.2
	M: He	297	5.4(+15)	-	-	0.9	1.1
	M: Ar	297	5.6(+15)	-	-	0.9	1.1
72 WES/DEHI		298	6.8(+15)	-	-	0.8	1.2
NOTE: M=He, Ar; EVALUATION							
73 PEE/MAHI	M: O_2	1900	2.5(+15)	-	-		
	M: H_2	913-1473	3.2(+15)	0	-770±100	0.9	1.1
73 KEC/MOI	M: He	300	5.0(+15)	-	-	0.8	1.2
74 HAC/HOY2	M: Ar	220-360	2.4(+15)	0	-345±64	0.8	1.2
74 WOX/DAV	M: Ar	220	1.2(+16)	-	-		
NOTE:M eff: Ar(1.0)	M: N_2	220	3.1(+16)	-	-	0.8	1.2
NOTE:M eff: N_2(2.7)							
	M: He	298	6.8(+15)	-	-	0.9	1.1
NOTE:M eff: He(0.93)	M: Ar	298	7.1(+15)	-	-		
NOTE:M eff: Ar(1.0)	M: H_2	298	2.1(+16)	-	-	0.8	1.2
NOTE:M eff: H_2(3.0)	M: N_2	298	2.0(+16)	-	-	0.9	1.1
NOTE:M eff: N_2(2.8)	M: CH_4	298	1.5(+17)	-	-	0.6	1.4
NOTE:M eff: CH_4(22.0)							
75 VAS/MAK	M: He	300	4.4(+15)	-	-		
	M: Ar	300	4.4(+15)	-	-		
	M: Ar	300	1.8(+16)	-	-		
	M: He	293	9.0(+15)	-	-	0.9	1.1
76 HAC/WAG	M: Ar	964-1075	2.2(+15)	0	0	0.8	1.2
77 SLA							
NOTE: EVALUATION	M: Ar	200-2200	2.1(+18)	-1	0		
NOTE: ALTERNATIVE T-DEPENDENT EXPRESSION (RECOMMENDED EVALUATION); M eff(Ar): 1.0	M: N_2	980-1176	3.3(+15)	0	0	0.8	1.2
NOTE: EVALUATION	M: N_2	200-2000	6.7(+19)	-1.42	0		
NOTE: ALTERNATIVE T-DEPENDENT EXPRESSION (EVALUATION) M eff (N_2): 3.1 AT 300K DECREASING TO 1.5 ABOVE 1000K							

D + O_2 + M -> DO_2 + M							
DEUTERIUM ATOM + OXYGEN MOLECULE							
75 VAS/MAK REACTION ORDER: 3	M: He	300	4.4(+15)	-	-		
	M: Ar	300	4.4(+15)	-	-		
	M: CO_2	300	1.7(+16)	-	-		

H + O_3 -> OH + O_2							
HYDROGEN ATOM + OZONE							
77 CLY/MON REACTION ORDER: 2		298-638	6.0(+13)	0	224±26	0.8	1.3

H + H + M -> H_2 + M							
HYDROGEN ATOM							
71 BEN/BLA	M: H_2	298	3.4(+15)	-	-	0.9	1.1
NOTE:M eff: H_2(1.0)	M: He	298	4.4(+15)	-	-	0.9	1.1
NOTE:M eff: He(1.3)	M: Ar	298	5.8(+15)	-	-	0.9	1.1
NOTE:M eff: Ar(1.7)	M: N_2	298	3.7(+15)	-	-	0.9	1.1
NOTE:M eff: N_2(1.1)	M: N_2O	298	3.1(+16)	-	-	0.9	1.1
NOTE: M eff: N_2O(9.0) GIVEN WITH CAUTION (POSSIBLE WALL EFFECT)	M: CO_2	298	5.4(+15)	-	-	0.9	1.1
NOTE:M eff: CO_2(1.6)							
71 BEN/BLA REACTION ORDER: 3		298	5.8(+15)	-	-	0.9	1.1
NOTE:M eff: CH_4(1.7)							

CHEMICAL REACTIONS		T/K	A	B	E/R (in °K)	k factors f	k factors F
71 GAY/PRA	REACTION ORDER: 3	1900	3.8(+14)	-	-	0.9	1.1
NOTE: MEAN T. M eff: AR(1.0)	M: H_2O	1900	2.3(+15)	-	-	0.7	1.3
NOTE: MEAN T M eff: H_2O(6.0)	M: N_2	1650	3.9(+14)	-	-	0.7	1.3
NOTE: MEAN T. M eff: N_2(1.0)	M: He	298	5.9(+15)	-	-	0.8	1.2
73 AZA/BOR	M: Ar	298	4.5(+15)	-	-	0.8	1.2
NOTE: ROOM TEMPERATURE, ASSUMED TO BE 298K	M: NH_3	298	4.0(+16)	-	-	0.9	1.1
NOTE: ROOM TEMPERATURE, ASSUMED TO BE 298K	M: NH_3	298	5.2(+16)	-	-		
NOTE: EVALUATION	M: He	77	4.4(+15)	-	-	0.9	1.1
NOTE: ALTERNATIVE EVALUATION	M: He	298	2.5(+15)	-	-	0.9	1.1
73 TRA/BAM	M: Ar	77	9.9(+15)	-	-	0.8	1.2
	M: Ar	298	3.3(+15)	-	-	0.9	1.1
	M: H_2	77	6.7(+15)	-	-	0.9	1.1
	M: H_2	298	2.9(+15)	-	-	0.9	1.1
74 MAL/OWE	M: H_2	1300-1700	1.0(+15)	0	0	0.8	1.2
75 WAL/KAU		295	2.9(+15)	-	-	0.9	1.1
NOTE: M eff: H_2(1.0)	M: H_2	77-298	9.2(+16)	-0.6	0	0.9	1.1
	M: He	295	2.6(+15)	-	-	0.9	1.1
NOTE: M eff: He(0.87)	M: He	77-298	2.5(+16)	-0.4	0	0.9	1.1
	M: Ar	295	3.4(+15)	-	-	0.9	1.1
NOTE: M eff: Ar(1.14)	M: Ar	77-298	3.4(+17)	-0.81	0	0.9	1.1
	M: SF_6	295	7.0(+15)	-	-	0.9	1.1
NOTE: M eff: SF_6(2.41)	M: SF_6	161-295	2.0(+20)	-1.8	0	0.9	1.1
	M: N_2	295	3.3(+15)	-	-	0.9	1.1
NOTE: M eff: N_2(1.13)	M: N_2	77-295	6.7(+18)	-1.33	0	0.9	1.1
	M: CO_2	295	5.9(+15)	-	-	0.9	1.1
NOTE: M eff: CO_2(2.02)	M: CO_2	175-295	2.2(21)	-2.27	0	0.9	1.1
	M: CH_4	295	5.6(+15)	-	-	0.9	1.1
NOTE: M eff: CH_4(1.89)	M: CH_4	77-295	5.4(+18)	-1.2	0	0.9	1.1
	M: H_2	298	3.1(+15)	-	-	0.9	1.1
76 LYN/SCH	M: He	298	2.5(+15)	-	-	0.8	1.2
	M: Ne	298	2.1(+15)	-	-	0.7	1.3
	M: Ar	298	2.9(+15)	-	-	0.9	1.1
	M: Kr	298	3.7(+15)	-	-	0.9	1.1
	M: N_2	298	3.5(+15)	-	-	0.8	1.2
77 MIT/LER	M: He	297	2.1(+15)	-	-	0.9	1.1
NOTE: ABOUT 25% p-H_2 FORMED							

D + D + M → D_2 + M							
DEUTERIUM ATOM							
73 AZA/BOR	REACTION ORDER: 3 M: He	298	4.0(+15)	-	-	0.8	1.2
NOTE: ROOM TEMPERATURE, ASSUMED TO BE 298K	M: Ar	298	2.9(+15)	-	-	0.8	1.2
73 AZA/BOR							
NOTE: ROOM TEMPERATURE, ASSUMED TO BE 298K	M: D_2	77	5.5(+15)	-	-	0.9	1.1
73 TRA/BAM	M: D_2	298	2.2(+15)	-	-	0.9	1.1

H + HD → H_2 + D							
HYDROGEN ATOM + DEUTERIUM HYDRIDE							
72 NIK/MAI	REACTION ORDER: 2	1000	1.4(+13)	-	-	0.9	1.1

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
$H + D_2 \rightarrow HD + D$						
HYDROGEN ATOM + DEUTERIUM MOLECULE						
72 NIK/MAI REACTION ORDER: 2	1000	2.8(+13)	-	-	0.9	1.1
75 APP/APP	1860	4.0(+12)	-	-		
	2680	9.4(+12)	-	-		
	2730	1.0(+13)	-	-		
76 PRA/ROG1	274-1220	2.3(+3)	3.2	2850±90	0.3	3.4

$D + H_2 \rightarrow DH + H$						
DEUTERIUM ATOM + HYDROGEN MOLECULE						
72 NIK/MAI REACTION ORDER: 2	1000	3.7(+13)	-	-	0.0	1.1
73 MIT/LER REACTION ORDER: 2	107-346	1.6(+7)	2.0	2698±20	0.9	1.1
75 APP/APP REACTION ORDER: 2	2600	1.5(13)	-	-		
76 PRA/ROG1 REACTION ORDER: 2	274-1220	4.8(+5)	2.5	2490±70	0.4	2.8

$D + HD \rightarrow D_2 + H$						
DEUTERIUM ATOM + DEUTERIUM HYDRIDE						
72 NIK/MAI REACTION ORDER: 2	1000	1.9(+13)	-	-	0.9	1.1

$H + OH \rightarrow H_2O$						
HYDROGEN ATOM + HYDROXYL FREE RADICAL						
77 ZEL/ERL REACTION ORDER: 2	230-300	1.6(+10)	0	0	0.8	1.2

$H + OH + M \rightarrow H_2O + M$						
HYDROGEN ATOM + HYDROXYL FREE RADICAL						
71 GAY/PRA REACTION ORDER: 3	1900	2.7(+15)	-	-	0.7	1.3
NOTE: MEAN T. M eff: Ar(1.0)						

M: N_2	1650	1.0(+16)	-	-	0.7	1.3
NOTE: MEAN T. M eff: N_2(4.0)						
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71 GAY/PRA M: H_2O	1900	4.9(+16)	-	-	0.7	1.3
NOTE: MEAN T. M eff: H_2O(~18.0)						
72 FRI/SUT REACTION ORDER: 2	2130	4.4(+10)	-	-		
NOTE: RATE CONSTANT EXPRESSED AS : $k[M]=4.4X10^{10}\ cm^3 mol^{-1} s^{-1}$; M=$O_2$,$N_2$,$H_2O$						
M: He	230-300	1.6(+23)	-2.6	0	0.3	1.7
77 ZEL/ERL M: He	300	5.4(+16)	-	-	0.7	1.3
NOTE: M eff: He(1.0) M: Ar	300	8.2(+16)	-	-	0.7	1.3
NOTE: M eff: Ar(1.5) M: N_2	300	1.7(+17)	-	-	0.7	1.3
NOTE: M eff: N_2(3.2±0.3) M: CO_2	300	3.3(+17)	-	-	0.7	1.3
NOTE: Meff: CO_2(6±1)						

$H + OH + M \rightarrow H_2O + M^*$						
HYDROGEN ATOM + HYDROXYL FREE RADICAL						
74 DAV/MCG M: OH	1740-1860	8.3(+15)	0	0	0.6	1.4

$H + HO_2 \rightarrow O + H_2O$						
HYDROGEN ATOM + HYDROPEROXYL FREE RADICAL						
72 WES/DEH1 REACTION ORDER: 2 k/k_{ref}: 0.11	298	-	-	-		
NOTE: k_{ref}: $H + HO_2 \rightarrow$ products. EVALUATION						

$H + HO_2 \rightarrow O + H_2O + OH + OH$						
HYDROGEN ATOM + HYDROPEROXYL FREE RADICAL						
72 DAY/DIX REACTION ORDER: 2 k/k_{ref}: 6.5	300-1800	-	-	-	0.8	1.2
NOTE: k_{ref}: $H + HO_2 \rightarrow H_2 + O_2$. EVALUATION						
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73 DAY/THO REACTION ORDER: 2 k/k_{ref}: 6.6	300-1050	-	-	-	0.8	1.2
NOTE: k_{ref}: $H + HO_2 \rightarrow H_2 + O_2$. EVALUATION						

$H + HO_2 \rightarrow H_2 + O_2$						
HYDROGEN ATOM + HYDROPEROXYL FREE RADICAL						
71 BEN/BLA REACTION ORDER: 2 k/k_{ref}: 0.75	298	-	-	-		

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
NOTE: k_{ref}: $H + HO_2 \rightarrow OH + OH$						
72 WES/DEH1 k/k_{ref}: 0.63	298	-	-	-		
NOTE: k_{ref}: $H + HO_2 \rightarrow$ products. EVALUATION						
76 BAC/WAG	293	6.7(+12)	-	-	0.8	1.2

$H + HO_2 \rightarrow OH + OH$						
HYDROGEN ATOM + HYDROPEROXYL FREE RADICAL						
72 WES/DEH1 REACTION ORDER: 2 k/k_{ref}: 0.27	298	-	-	-		
NOTE: k_{ref}: $H + HO_2 \rightarrow$ products. EVALUATION						
76 BAC/WAG	293	1.6(+13)	-	-	0.5	1.5

$H + H_2O_2 \rightarrow H_2 + HO_2$						
HYDROGEN ATOM + HYDROGEN PEROXIDE						
73 GOK	298	2.4(+8)	-	-	0.5	1.5
NOTE: EVALUATION						
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74 GOR/VOL REACTION ORDER: 2	298	1.9(+9)	-	-	0.7	1.3
NOTE: EVALUATION						

$D + H_2O_2 \rightarrow HD + HO_2 + OH + HDO$						
DEUTERIUM ATOM + HYDROGEN PEROXIDE						
71 AIB/HOY REACTION ORDER: 2	294-464	7.0(+12)	0	2100±200		

$H + H_2O_2 \rightarrow OH + H_2O$						
HYDROGEN ATOM + HYDROGEN PEROXIDE						
72 GOR/VOL REACTION ORDER: 2 k/k_{ref}: 2.0	298	-	-	-	0.5	1.5
NOTE: k_{ref}: $H + H_2O_2 \rightarrow H_2 + HO_2$. (CORRECTED k/k_{ref} RATIO)						
73 GOK	298	7.2(+8)	-	-	0.5	1.5
NOTE: EVALUATION						
k/k_{ref}: 3.0	298	-	-	-		
NOTE: k_{ref}: $H + H_2O_2 \rightarrow H_2 + HO_2$. (EVALUATION)						
74 GOK/VOL k/k_{ref}: 1.86	298	-	-	-	0.9	1.1
NOTE: k_{ref}: $H + H_2O_2 \rightarrow H_2 + HO_2$.						
74 GOK/VOL	298	3.4(+9)	-	-	0.8	1.2
NOTE: EVALUATION						
75 KLE/PAY	283-353	3.1(+12)	0	1400±140	0.6	1.4
75 MEA/HEI k/k_{ref}: 1.3	298	-	-	-		
NOTE: k_{ref}: $H + H_2O_2 \rightarrow H_2 + HO_2$						

$H + SH \rightarrow H_2 + S$						
HYDROGEN ATOM + MERCAPTO FREE RADICAL						
72 LAN/OLD REACTION ORDER: 2	293	<6.0(+12)	-	-		
NOTE: UPPER LIMIT K						
73 LEA/TRU	298	2.5(+13)	-	-		
75 CUP/GLA	295	1.5(+13)	-	-	0.7	1.3

$H + H_2S \rightarrow H_2 + SH$						
HYDROGEN ATOM + HYDROGEN SULFIDE						
71 KUR/PET REACTION ORDER: 2	190-464	7.8(+12)	0	860±30	0.9	1.1
72 ROM/SCH	298	2.3(+11)	-	-	0.8	1.3
73 LEA/TRU	298	5.0(+11)	-	-		

$H + N + M \rightarrow NH + M$						
HYDROGEN ATOM + NITROGEN ATOM						
73 BKC REACTION ORDER: 3	298	1.8(+16)	-	-	0.4	1.6
NOTE: k CENTRAL VALUE OBTAINED BY AVERAGING $k<(6.4\pm1.5)X10^{-32}$ AND $k>(3.1\pm1.0)X10^{-32}$ $cm^6 molecule^{-2} s^{-1}$. $M=N_2.H_2$						

$H + NO \rightarrow N + OH$						
HYDROGEN ATOM + NITROGEN OXIDE (NO)						
75 PRA/GRA REACTION ORDER: 2	2530-3020	3.5(+14)	0	23940		
75 DUX/PRA	2200-3250	2.6(+14)	0	24560		
75 ELO/HAN	2400-4500	1.3(+14)	0	24760±400	0.9	1.1
75 KOS/AND	2000-4000	3.2(+13)	0	24160±150	0.5	2.0
76 AND/ASA	2300-3500	5.0(+13)	0	24510	0.7	1.4
NOTE: REEVALUATION						
76 MCC/KRU	4750-2040	1.7(+14)	0	24760	0.6	1.6
76 MCC/KRU	1700-4300	1.3(+14)	0	24077		
NOTE: RECOMMENDED K.						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
77 FLC/HAN	2400-4200	2.2(+14)	0	25400±300	0.8	1.2

$H + NO + M \rightarrow HNO + M$						
HYDROGEN ATOM + NITROGEN OXIDE (NO)						
71 HIK/EYR REACTION ORDER: 3 M: H_2	298	1.4(+16)	-	-	0.9	1.1
71 GSB M: H_2	298	2.3(+16)	-	-		
M: He	298	1.5(+16)	-	-		
M: Ne	298	7.9(+15)	-	-		
M: Ar	298	1.4(+16)	-	-		
M: Kr	298	2.0(+16)	-	-		
72 ABU/MIC M: He	298	1.6(+16)	-	-	0.9	1.1
NOTE: M eff: He(1.1) M: Ne	298	7.6(+15)	-	-	0.9	1.1
NOTE: M eff: Ne(0.5) M: Ar	298	1.4(+16)	-	-	0.9	1.1
NOTE: M eff: Ar(1.0) M: Kr	298	2.0(+16)	-	-	0.9	1.1
NOTE: M eff: Kr(1.4) M: H_2	298	2.6(+16)	-	-	0.9	1.1
NOTE: M eff: H_2(1.6)						
73 ATK/CVE M: H_2	285-390	8.9(+15)	0	-272±75	0.9	1.1
75 CAM/HAN2 M: Ar	392	8.7(+15)	-	-	0.9	1.1
NOTE: M eff: Ar(1.0)						
75 CAM/HAN M: N_2	392	1.4(+16)	-	-	0.9	1.1
NOTE: M eff: N_2(1.64±0.12)						
77 OKA/SIN M: H_2	298	1.6(+16)	-	-	0.9	1.1

$H + NO_2 \rightarrow OH + NO$						
HYDROGEN ATOM + NITROGEN OXIDE (NO_2)						
76 WAG/WEL REACTION ORDER: 2	240-460	4.3(+14)	0	505±85	0.6	1.4
77 BEM/CLY	298	6.8(+13)	-	-	0.8	1.2

$H + NO_2 \rightarrow OH + NO$						
HYDROGEN ATOM + NITROGEN OXIDE (NO_2)						
77 CLY/MON	298-653	2.9(+14)	0	174±31	0.8	1.2

$H + N_2O \rightarrow OH + N_2$						
HYDROGEN ATOM + NITROGEN OXIDE (N_2O)						
73 BAL/GET REACTION ORDER: 2 k/k_{ref}: 0.64	773	-	-	-		
NOTE: k_{ref}: $H + O_2 \rightarrow OH + O$	773	2.6(+9)	-	-	0.6	1.4
NOTE: EVALUATION						
73 BAL/GET	460-2500	1.6(+13)	0	7600±500		
NOTE: EVALUATION						
73 WAL1 k/k_{ref}: 0.64	773	-	-	-	0.9	1.1
NOTE: k_{ref}: $H + O_2 \rightarrow OH + O$	773	2.6(+10)	-	-	0.6	1.4
NOTE: EVALUATION	700-2500	7.6(+13)	0	7600±500		
NOTE: EVALUATION (PREFERRED K)						
75 ALE/HCY	718-1111	2.2(+14)	0	8710±350	0.7	1.3

$H + N_2O(v=3) \rightarrow OH + N_2$						
HYDROGEN ATOM + NITROGEN OXIDE (N_2O)						
77 GEP/EGS REACTION ORDER: 2	298	<6.0(+10)	-	-		
NOTE: UPPER LIMIT k.						

$H + NH_2 + M \rightarrow NH_3 + M$						
HYDROGEN ATOM + AMIDOGEN FREE RADICAL						
71 GOK/MUL REACTION ORDER: 3	298	2.2(+18)	-	-		
NOTE: UNREPORTED T ASSUMED TO BE 298 K.						

$H + NH_3 \rightarrow H_2 + NH_2$						
HYDROGEN ATOM + AMMONIA						
74 DEV/NIP REACTION ORDER: 2	1500-2150	2.8(+13)	0	8760±650	0.7	1.4

$H + NH_2NH_2 \rightarrow NH_2\cdot + NH_2\cdot$						
HYDROGEN ATOM + HYDRAZYL FREE RADICAL						

CHEMICAL REACTIONS		T/K	A	B	E/R (in °K)	k factors f	k factors F
71 GEB/HØY	REACTION ØRDER: 2	300	1.6(+12)	-	-	0.5	1.5
H + NH_2NH_2 → H_2 + NH_2NH.							
HYDRØGEN ATØM + HYDRAZINE							
71 ERA/JØN	REACTION ØRDER: 2	300-540	1.5(+12)	0	650±100	0.8	1.2
71 GEB/HØY		213-473	1.3(+13)	0	1260		
75 YE		298	1.5(+11)	-	-		
76 STI/PAY		228-400	5.9(+12)	0	1200±50	0.9	1.1
H + HN3 → NH_2 + N_2							
HYDRØGEN ATØM + HYDRAZØIC ACID							
73 LEB/CØN	REACTION ØRDER: 2	300-460	1.5(+13)	0	2315		
H + HNØ → H_2 + NØ							
HYDRØGEN ATØM + NITRØSYL HYDRIDE							
72 SMI	REACTION ØRDER: 2	2100	2.3(+12)	-	-	0.5	1.5
H + $HØNØ_2$ → products							
HYDRØGEN ATØM + NITRIC ACID							
74 CHA/WAY	REACTION ØRDER: 2	300	<1.2(+9)	-	-		
NØTE: UPPER LIMIT k							
H + CØ + M → .CHØ + M							
HYDRØGEN ATØM + CARBØN MØNØXIDE							
71 BEN/BIA	REACTION ØRDER: 3 M: H_2	298	<1.2(+14)	-	-		
NØTE: UPPER LIMIT k.							
71 HIK/EYR	M: H_2	298	4.0(+13)	-	-	0.8	1.2
	M: Ar	298	2.6(+13)	-	-	0.8	1.2
72 ABU/MIC	M: H_2	298	2.9(+13)	-	-	0.9	1.1
NØTE: M eff: H_2(1.3)							
72 ABU/MIC	M: He	298	2.2(+13)	-	-	0.9	1.1
NØTE: M eff: He(1.0)	M: Ne	298	1.7(+13)	-	-	0.9	1.1
NØTE: M eff: Ne(0.8)	M: Ar	298	2.2(+13)	-	-	0.9	1.1
NØTE: M eff: Ar(1.0)							
72 ABU/MIC	M: Kr	298	2.5(+13)	-	-	0.9	1.1
NØTE: M eff: Kr(1.1)							
72 BAL/JAC	M: H_2	773	2.3(+14)	-	-		
NØTE: EVALUATION							
73 AZA/AND	M: Ar	298	4.0(+13)	-	-	0.5	1.5
73 AZA/AND	M: CØ	298	8.0(+13)	-	-	0.7	1.3
77 WAN	M: H_2	298-373	-	-	100		
H + CH_3 → CH_4							
HYDRØGEN ATØM + METHYL FREE RADICAL							
72 TEN/JØN	REACTION ØRDER: 2	303-603	1.2(+12)	0	25		
74 CAM/MAK		503-753	1.6(+12)	0	0	0.7	1.3
NØTE: AVERAGE ØF THREE k's AT 8, 12, AND 16 TØRR							
77 CPE/LEE		308	1.5(14)	-	-		
77 CHI/YEH		308	2.0(+14)	-	-	0.6	1.5
NØTE: EXTRAPOLATED LIMITING HIGH-PRESSURE k							
H + CH_3 + M → CH_4 + M							
HYDRØGEN ATØM + METHYL FREE RADICAL							
74 PRA/VEL	REACTION ØRDER: 3 M: He	295	5.3(+18)	-	-	0.8	1.2
76 PRA/VEL1	M: He	321-521	6.9(+19)	-0.33	0	0.2	5.0
74 PRA/VEL	M: NØ	295	2.0(+20)	-	-	0.9	1.1
H + CH_4 → H_2 + CH_3							
HYDRAGEN ATØM + METHANE							
73 FIL/MAH	REACTION ØRDER: 2	1600	3.2(+12)	-	-	0.8	1.2
73 CIA/DØVI		300-1800	2.2(+4)	3.0	4400±20	0.9	1.1
75 KOT/JUS		1700-2300	7.2(+14)	0	7600		
H + .CHØ → H_2 + CØ							
HYDRØGEN ATØM + METHYL, ØXØ-, FREE RADICAL							
73 MAC/THR	REACTION ØRDER: 2 k/k_{ref}: 4.0	300	-	-	-		
NØTE: k_{ref}: k_1(H + .CHØ → H_2 + CØ) + k_2(H + .CHØ → H + $CØ_2$)							

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
H + HCHO → H_2 + CHO						
HYDROGEN ATOM + FORMALDEHYDE						
72 FID/DAV REACTION ORDER: 2	297	3.3(+10)	-	-	0.9	1.1
72 WES/DEH$_2$	297-652	1.4(+13)	0	1900		
H + CH_3O. → H_2 + HCHO						
HYDROGEN ATOM + METHOXY FREE RADICAL						
77 M00/SLE REACTION ORDER: 2 k/k_{ref}: 0.31	223-398	-	-	-	0	2.0
NOTE: k_{ref}: H + CH_3O. → H_2 + HCHO + OH + CH_3						
(MOST PROBABLE RATIO)						
H + CH_3O. → OH + CH_3						
HYDROGEN ATOM + METHOXY FREE RADICAL						
77 M00/SLE REACTION ORDER: 2 k/k_{ref}: 0.69	223-398	-	-	-	0.6	1.4
NOTE: k_{ref}: H + CH_3O → H_2 + HCHO + OH + CH_3						
(MOST PROBABLE RATIO)						
H + CH_3OH → H_2 + .CH_2OH						
HYDROGEN ATOM + METHANOL						
74 MEA/KIM REACTION ORDER: 2	298-575	6.5(+12)	0	2740±75		
NOTE: FLOW DISCHARGE METHOD WITH ESR DETECTION.						
k GIVEN WITH CAUTION						
D + CH_3OH → OD + .CH_2OH						
DEUTERIUM ATOM + METHANOL						
74 MEA/KIM REACTION ORDER: 2	298-575	2.8(+13)	0	2620±50	0.9	1.1
NOTE: FLOW DISCHARGE METHOD WITH ESR DETECTION.						
k GIVEN WITH CAUTION						
H + CH_3OH → products						
HYDROGEN ATOM + METHANOL						
71 ADI/WAG REACTION ORDER: 2	295-653	2.3(+13)	0	2670±150	0.9	1.1
73 ADI	298-650	1.3(+13)	0	2670		
H + CH_3OOH → products						
HYDROGEN ATOM + HYDROPEROXIDE, METHYL-						
77 SIL/WAR REACTION ORDER: 2	250-358	1.7(+11)	0	935±95	0.7	1.3
H + COS → SH + CO						
HYDROGEN ATOM + CARBON OXIDE SULFIDE						
72 REM/SCH REACTION ORDER: 2	298	1.3(+10)	-	-	0.8	1.3
75 TSU/YOK	300-525	9.1(+12)	0	1965±185	0.9	1.1
76 LIF	298-478	9.8(+13)	0	2775±40	0.9	1.1
77 LEE/STI	261-500	5.5(+12)	0	1940±55	0.8	1.2
H + CH_2=N=N → CH_3 + N2						
HYDROGEN ATOM + METHANE, DIAZO-						
72 NIK/MOR2 REACTION ORDER: 2	300	9.6(+12)	-	-		
H + CH_3NO_2 → products						
HYDROGEN ATOM + METHANE, NITRO-						
75 SLE/WAR2 REACTION ORDER: 2	298-398	1.6(+12)	0	1760±125	0.6	1.4
H + CH_3ONO → H_2 + .CH_2ONO + HNO + Cl_3C.						
HYDROGEN ATOM + NITROUS ACID METHYL ESTER						
77 M00/SLE REACTION ORDER: 2	223-398	1.4(+11)	0	956±55	0.8	1.2
NOTE: k IS (53±5)% OF K(OVERALL) (SEE BELOW)						
H + CH_3ONO → NO + CH_3OH						
HYDROGEN ATOM + NITROUS ACID METHYL ESTER						
77 M00/SLE REACTION ORDER: 2	223-398	1.2(+11)	0	956±55	0.8	1.2
NOTE: k IS (47±5)% OF K(OVERALL) (SEE BELOW)						
H + CH_3ONO → NO + CH_3OH + H_2 + .CH_2ONO + HNO + CH_3O.						
HYDROGEN ATOM + NITROUS ACID METHYL ESTER						
77 M00/SLE REACTION ORDER: 2	223-398	2.6(+11)	0	956±55	0.8	1.2
NOTE: OVERALL REACTION						
H + CD≡CD → D + CH≡CD						
HYDROGEN ATOM + ETHYNE-d_2						
71 POY/WAG REACTION ORDER: 2	300-470	2.0(+13)	0	2670±250		

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
D + CH≡CH → H + CH≡CD DEUTERIUM ATOM + ETHYNE 71 HOY/WAG — REACTION ORDER: 2	200-465	3.1(+13)	0	1860±100		
H + CH≡CH → H_2 + CH≡C. HYDROGEN ATOM + ETHYNE 74 YAM/LAV — REACTION ORDER: 2 71 OSB — REACTION ORDER: 2	1063-1233 298	4.8(+13) 2.7(+10)	0 -	8260±2000 -	0.4	2.5
H + CH≡CH → CH_2=CH. HYDROGEN ATOM + ETHYNE 76 KEI/LYN	298	6.3(+9)	-	-	0.9	1.1
NOTE: PRESSURE-DEPENDENT k INCREASING FROM 6.3×10^{9} TO 1.3×10^{10} $cm^3mol^{-1}s^{-1}$ WITHIN THE 1.0-10 TORR PRESSURE RANGE						
H + CH≡CH → products HYDROGEN ATOM + ETHYNE 76 KEI/LYN — REACTION ORDER: 2	298	2.7(+10)	-	-	0.9	1.1
NOTE: PRESSURE-DEPENDENT k INCREASING FROM 2.7×10^{10} TO 1.1×10^{11} $cm^3mol^{-1}s^{-1}$ WITHIN THE 6.0-7.42 TORR PRESSURE RANGE						
H + CD≡CD → products HYDROGEN ATOM + ETHYNE-d_2 76 KEI/LYN — REACTION ORDER: 2	298	2.2(+10)	-	-	0.9	1.1
NOTE: PRESSURE-DEPENDENT k INCREASING FROM 2.2×10^{10} TO 3.5×10^{10} $cm^3mol^{-1}s^{-1}$ WITH THE 1-5 TORR PRESSURE RANGE (IN EXCESS H)	298	4.0(+10)	-	-	0.9	1.1
NOTE: PRESSURE-DEPENDENT k INCREASING FROM 4.0×10^{10} TO 5.8×10^{10} $cm^3mol^{-1}s^{-1}$ WITHIN THE 1.2-5.6 TORR PRESSURE RANGE (IN EXCESS C_2D_2)						
D + CH≡CH → H + CH≡CD DEUTERIUM ATOM + ETHYNE 76 KEI/LYN — REACTION ORDER: 2 NOTE: AVERAGE k FOR PRESSURE RANGE 1-6.7 TORR	298	7.3(+10)	-	-	0.9	1.1
D + CD≡CD → CD_2=CD. DEUTERIUM ATOM + ETHYNE-d_2 76 KEI/LYN — REACTION ORDER: 2	298	6.6(+9)	-	-	0.9	1.1
NOTE: PRESSURE-DEPENDENT K INCREASING FROM 6.6×10^{9} TO 1.1×10^{10} $cm^3mol^{-1}s^{-1}$ WITHIN THE 1.0-5.6 TORR PRESSURE RANGE						
H + CH≡CH + M → CH_2CH. + M HYDROGEN ATOM + ETHYNE 76 FAY/STI — REACTION ORDER: 2 M: He NOTE: LIMITING HIGH-PRESSURE k	193-400	5.5(+12)	0	1210±70	0.7	1.3
H + CD_2=CD_2 → D + CD_2=CDH HYDROGEN ATOM + ETHENE-d_4 74 YAM1 — REACTION ORDER: 2 NOTE: AVERAGED k OVER GIVEN T RANGE	1000-1200	6.8(+12)	-	-	0.7	1.4
H + CH_2=CH_2 → H_1 + CH_2=CH. HYDROGEN ATOM + ETHENE 72 FAI/SUN — REACTION ORDER: 2 k/k_{ref}: ±0.0003	298	-	-	-		
NOTE: k_{ref}: H. + CH_2CH_2 → CH_3CH_2. (UPPER LIMIT k) 73 PEE/MAH2 NOTE: EVALUATION	1200-1700	1.1(+14)	0	4280		
H + CH_2=CH_2 → H_2 + CH_2=CH. HYDROGEN ATOM + ETHENE 74 YAM2 77 JIS/ROT — REACTION ORDER: 2 NOTE: TENTATIVE K	1093-1213 1700-2000	1.9(+13) 5.0(+15)	0 0	5185±1000 11500	0.4	2.5

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
$H + CH_2{=}CH_2 \rightarrow CH_3CH_2\cdot$						
HYDROGEN ATOM + ETHENE						
71 GSB — REACTION ORDER: 2	298	3.7(+11)	-	-		
72 TEN/JON	303-603	7.9(+11)	0	365		
$H + CH_2{=}CH_2 \rightarrow CH_3CH_2\cdot$*						
HYDROGEN ATOM + ETHENE						
75 MIH/SCH — REACTION ORDER: 2	295	7.5(+11)	-	-	0.9	1.1
$H + CH_2{=}CH_2 \rightarrow CH_3CH_2V\cdot$						
HYDROGEN ATOM + ETHENE						
77 WAN — REACTION ORDER: 2	298-373	-	-	1000		
$H + CD_2{=}CD_2 \rightarrow CD_2HCD_2\cdot$						
HYDROGEN ATOM + ETHENE-d_2						
71 GSB — REACTION ORDER: 2	298	5.4(+11)	-	-		
75 CCW/MIC	297	4.2(+11)	-	-		
NOTE: IN EXCESS H, AT 1 TORR, k INCREASING TO 5.9×10^{11} $cm^{3}mol^{-1}s^{-1}$ AT 4.9 TORR						
$H + CD_2{=}CD_2 \rightarrow CD_2HCD_2\cdot$*						
HYDROGEN ATOM + ETHENE-d_4						
75 MIH/SCH — REACTION ORDER: 2	295	6.9(+11)	-	-	0.9	1.1
$D + CH_2{=}CH_2 \rightarrow CH_2DCH_2\cdot$						
DEUTERIUM ATOM + ETHENE						
75 CCW/MIC — REACTION ORDER: 2	297	4.6(+11)	-	-	0.9	1.1
NOTE: IN EXCESS D. PRESSURE INDEPENDENT k WITHIN THE 1-5 TORR RANGE						
75 CCW/MIC	297	4.7(+11)	-	-	0.9	1.1
NOTE: IN EXCESS $CH_2{=}CH_2$. STABLE K WITHIN THE 1-1.8 TORR PRESSURE RANGE, BUT INCREASING TO 7.3×10^{11} $cm^{3}mol^{-1}s^{-1}$ AT 4.2 TORR						
$D + CH_2{=}CH_2 \rightarrow CH_2DCH_2\cdot$*						
DEUTERIUM ATOM + ETHENE						
75 MIH/SCH — REACTION ORDER: 2	295	5.2(+11)	-	-	0.9	1.1
$D + CD_2{=}CD_2 \rightarrow CD_3CD_2\cdot$						
DEUTERIUM ATOM + ETHENE-d_4						
71 GSB — REACTION ORDER: 2	298	4.4(+11)	-	-		
75 CCW/MIC	297	1.3(+11)	-	-		
NOTE: IN EXCESS D, AT 1 TORR, K INCREASING TO 2.8×10^{11} $cm^{3}mol^{-1}s^{-1}$ AT 5 TORR						
$D + CD_2{=}CD_2 \rightarrow CD_3CD_2\cdot$*						
DEUTERIUM ATOM + ETHENE-d_4						
75 MIH/SCH — REACTION ORDER: 2	295	5.1(+11)	-	-	0.9	1.1
$H + CH_2{=}CH_2 \rightarrow$ PRODUCTS						
HYDROGEN ATOM + ETHENE						
74 LAU/BUE — REACTION ORDER: 2	298	2.5(+11)	-	-		
$H + CH_2{=}CH_2 + M \rightarrow CH_3CH_2\cdot + M$						
HYDROGEN ATOM + ETHENE						
71 CCV/KEI — REACTION ORDER: 2	298	2.3(+11)	-	-	0.7	1.3
NOTE: STEADY STATE PHOTOLYSIS METHOD. 10-15 TORR PRESSURE M=Ne,Ar						
73 MIC/OSB	298	9.7(+11)	-	-	0.8	1.2
NOTE: LIMITING HIGH-PRESSURE k						
$H + CH_2{=}CH_2 + M \rightarrow CH_3CH_2\cdot^{*} + M$						
HYDROGEN ATOM + ETHENE						
71 BIK/CYM — REACTION ORDER: 2	298	5.5(+11)	-	-	0.9	1.1
NOTE: LIMITING HIGH PRESSURE k. M=H_2 OR Ar						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
$H + CH_3CH_2\cdot \rightarrow H_2 + CH_2{=}CH_2$						
HYDROGEN ATOM + ETHYL FREE RADICAL						
74 CAM/MAR — REACTION ORDER: 2	503-753	1.7(+12)	0	0		
$H + CH_3CH_2\cdot \rightarrow CH_3 + CH_3$						
HYDROGEN ATOM + ETHYL FREE RADICAL						
72 TEN/JON — REACTION ORDER: 2	303-603	1.1(+14)	0	435		
74 CAM/MAR	503-753	3.7(+13)	0	0		
74 PEA/VEL	295	4.3(+13)	-	-	0.9	1.1
76 PEA/VEL1	321-521	6.6(+13)	0	112±35	0.9	1.1
$H + CH_3CH_3 \rightarrow H_2 + CH_3CH_2\cdot$						
HYDROGEN ATOM + ETHANE						
72 KAI/KOR — REACTION ORDER: 2	1073-1173	3.3(+12)	-	-	0.2	1.8
73 CLA/DOV1	300-1800	5.4(+2)	3.5	2620±35	0.9	1.1
74 KAI/SHE	1023-1123	2.4(+12)	-	-	0.7	1.3
74 CAM/MAR	290-1290	1.3(+14)	0	4720±110	0.8	1.2
NOTE: RECOMMENDED k	503-753	1.9(+14)	0	4920±190	0.7	1.3
74 CAM/MAR	800-900	1.5(+11)	-	-	0.7	1.3
75 NAM/SHE						
$H + CH_2{=}C{=}O \rightarrow CH_3\cdot + CO$						
HYDROGEN ATOM + ETHENONE						
75 SLE/WAR1 — REACTION ORDER: 2	218-363	3.6(+12)	0	1180±100	0.6	1.4
$H + CH_3C(O)\cdot \rightarrow H_2 + CH_2{=}C{=}O$						
HYDROGEN ATOM + ETHYL, 1-OXO-, FREE RADICAL						
75 SLE/WAR1 — REACTION ORDER: 2 k/k_{ref}: 0.63	298	-	-	-		
NOTE: k_{ref}: $H + CH_3C(O)\cdot \rightarrow H_2 + CH_2{=}C{=}O + CH_3\cdot + .CHO$						
$H + CH_3C(O)\cdot \rightarrow CH_3\cdot + .CHO$						
HYDROGEN ATOM + ETHYL, 1-OXO-, FREE RADICAL						
75 SLE/WAR1 — REACTION ORDER: 2 k/k_{ref}: 0.37	298	-	-	-		
NOTE: k_{ref}: $H + CH_3C(O)\cdot \rightarrow H_2 + CH_2{=}C{=}O + CH_3\cdot + .CHO$						
$H + CH_3CHO \rightarrow H_2 + CH_3C(O)\cdot$						
HYDROGEN ATOM + ACETALDEHYDE						
73 ADE/WAG1 — REACTION ORDER: 2	295-389	2.6(+12)	0	1310±75	0.9	1.1
75 SLE/WAR1 k/k_{ref}: 0.46	298	-	-	-		
NOTE: k_{ref}: $H + CH_2{=}C{=}O \rightarrow CH_3\cdot + CO$						
76 WEY/MIC2	298-500	1.3(+13)	0	1660±60	0.8	1.2
$H + CH_3CH_2OH \rightarrow H_2 + CH_3CH(\cdot)OH$						
HYDROGEN ATOM + ETHANOL						
73 ADE/WAG2 — REACTION ORDER: 2	295-700	4.4(+12)	0	2300		
$H + CH_3CH_2OH \rightarrow H_2O + CH_3CH_2\cdot$						
HYDROGEN ATOM + ETHANOL						
73 ADE/WAG2 — REACTION ORDER: 2	295-700	5.9(+11)	0	1736		
NOTE: GIVEN WITH CAUTION						
$H + CH_3CH_2OH \rightarrow$ products						
HYDROGEN ATOM + ETHANOL						
73 ADE/WAG2 — REACTION ORDER: 2	295-700	4.2(+12)	0	2115±150	0.9	1.1
$H + (CH_3)_2O \rightarrow H_2 + .CH_2OCH_3$						
HYDROGEN ATOM + METHANE, OXYBIS-						
74 MEA/KIM — REACTION ORDER: 2	300-404	1.3(+13)	0	2360±50	0.8	1.4
NOTE: FLOW DISCHARGE METHOD WITH MASS SPECTROMETRIC DETECTION						
$D + (CH_3)_2O \rightarrow DH + .CH_2OCH_3$						
DEUTERIUM ATOM + METHANE, OXYBIS-						
74 MEA/KIM — REACTION ORDER: 2	198-363	4.1(+13)	0	2230±50	0.8	1.2
NOTE: FLOW DISCHARGE METHOD WITH ESR DETECTION						
k GIVEN WITH CAUTION						
$H + cy\text{-}CH_2CH_2S \rightarrow H_2 + cy\text{-}CH_2SCH\cdot$						
HYDROGEN ATOM + THIIRANE						
76 LER — REACTION ORDER: 2	298	7.1(+11)	-	-	0.8	1.2

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
H • cy-CH_2CH_2S → SH • CH_2=CH_2						
HYDROGEN ATOM • THIIRANE						
75 YOK/AHM — REACTION ORDER: 2	300-425	5.7(•13)	0	978±88	0.9	1.1
77 LEE/STI	223-423	1.7(•13)	0	946±12	0.9	1.1
H • $(CH_3)_2S$ → H_2 • $.CH_2SCH_3$						
HYDROGEN ATOM • METHANE, THIOBIS-						
76 LEE — REACTION ORDER: 2	300	9.0(•10)	-	-	0.7	1.3
H • OC=C=CO → CO • OC=CH.						
HYDROGEN ATOM • 1,2-PROPADIENE-1,3-DIONE						
77 FAU/WAG1 — REACTION ORDER: 2	295-480	1.7(•13)	0	1480±180	0.6	1.4
H • CH_3C≡CH → $CH_3C(.)$=CH_2*						
HYDROGEN ATOM • PROPYNE						
72 WAG/ZEL2 — REACTION ORDER: 2	195-503	6.5(•12)	0	1000±100	0.8	1.2
H • CH_3C≡CH → CH_3CH=$CH.$*						
HYDROGEN ATOM • PROPYNE						
72 WAG/ZEL2 — REACTION ORDER: 2	195-503	5.8(•12)	0	1560±125	0.8	1.2
H • CH_3C≡CH → CH_3CH=$CH.$ • $CH_3C(.)$=CH_2						
HYDROGEN ATOM • PROPYNE						
76 WHY/PAY — REACTION ORDER: 2	215-460	3.6(•13)	0	1235±50	0.8	1.2
H • CH_2=C=CH_2 → $CH_3C(.)$=CH_2*						
HYDROGEN ATOM • 1,2-PROPADIENE						
72 WAG/ZEL3 — REACTION ORDER: 2	273-470	8.5(•12)	0	1000±100	0.8	1.2
H • CH_2=C=CH_2 → $.CH_2CH$=CH_2*						
HYDROGEN ATOM • 1,2-PROPADIENE						
72 WAG/ZEL3 — REACTION ORDER: 2	273-470	4.0(•12)	0	1360±200	0.5	1.5
H • CH_3CH=CH_2 → H_2 • $.CH_2CH$=CH_2						
HYDROGEN ATOM • PROPENE						
72 FAL/SUN — REACTION ORDER: 2 k/k_{ref}: 0.002	298	-	-	-		
NOTE: H • CH_3CH=CH_2 → $(CH_3)_2CH.$ • $CH_3CH_2CH_2.$						
H • CH_3CH=CH_2 → $CH_3.$ • CH_2=CH_2						
HYDROGEN ATOM • PROPENE						
72 KAI/KOR — REACTION ORDER: 2	1073-1173	4.5(•12)	-	-	0.8	1.2
H • CH_3CH=CH_2 → $CH_3CH_2CH_2.$*						
HYDROGEN ATOM • PROPENE						
72 WAG/ZEL1, — REACTION ORDER: 2	195-390	4.4(•12)	0	1385±100	0.9	1.1
H • CH_3CH=CH_2 → $(CH_3)_2CH.$*						
HYDROGEN ATOM • PROPENE						
72 WAG/ZEL1 — REACTION ORDER: 2	195-390	5.4(•12)	0	630±50	0.9	1.1
74 IAU/BUE k/k_{ref}: 1.79	298	-	-	-	0.96	1.04
NOTE: k_{ref}: H • CH_2=CH_2 → $CH_3CH_2.$*						
H • CH_3CH=CH_2 → $CH_3CH(.)CH_3$* • $CH_3CH_2CH_2.$*						
HYDROGEN ATOM • PROPENE						
75 MIH/SCH — REACTION ORDER: 2	295	1.0(•12)	-	-	0.9	1.1
D • CH_3CH=CH_2 → $CH_3CHDCH_2.$						
DEUTERIUM ATOM • PROPENE						
77 YAN — REACTION ORDER: 2 k/k_{ref}: 0.65	1260-1390	-	-	-	0.8	1.2
NOTE: k_{ref}: D • CH_3CH=CH_2 → $CH_3CH(.)CH_2D$						
D • CH_3CH=CH_2 → $CH_3CH(.)CH_2D$* • $CH_3CHDCH_2.$*						
DEUTERIUM ATOM • PROPENE						
75 MIH/SCH — REACTION ORDER: 2	295	6.9(•11)	-	-	0.9	1.1

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	F
H + $CH_3CH{=}CH_2$ + M → $(CH_3)_2CH\cdot$ + $CH_3CH_2CH_2\cdot$ + M						
HYDROGEN ATOM + PROPENE						
71 COW/KEI REACTION ORDER: 2 M: He	298	4.0(+11)	-	-	0.9	1.1
NOTE: DISCHARGE FLOW METHOD k INCREASING TO 4.8×10^{11} $cm^3mol^{-1}s^{-1}$ FROM 1 TO 5 TORR PRESSURES.						
71 COW/KEI	298	5.7(+11)	-	-	0.9	1.1
NOTE: STEADY STATE PHOTOLYSIS METHOD 10-15 TORR PRESSURE. M = Ne, Ar						
71 DAB/NIK M: He	298	4.6(+11)	-	-	0.9	1.1
NOTE: 1.0 TO 2.4 TORR He PRESSURE						
D + $CH_3CH{=}CH_2$ + M → $CH_3CH(\cdot)CH_2D$ + $CH_3CHDCH_2\cdot$ + M						
DEUTERIUM ATOM + PROPENE						
71 DAB/NIK REACTION ORDER: 2 M: He	298	6.2(+11)	-	-	0.9	1.1
NOTE: 0.6 TO 2.2 TORR He PRESSURE						
H + $CH_3CH_2CH_3$ → H_2 + $(CH_3)_2CH\cdot$ + $CH_3CH_2CH_2\cdot$						
HYDROGEN ATOM + PROPANE						
76 SPE/KAL REACTION ORDER: 2	1123	3.7(+12)	-	-		
77 LID/VIL	295	1.5(+8)	-	-		
H + $(CH_3)_2CO$ → H_2 + $CH_3COCH_2\cdot$						
HYDROGEN ATOM + 2-PROPANONE						
72 AZA/GYU REACTION ORDER: 2	843-928	2.3(+14)	0	7000±750	0.6	1.4
H + $CH{\equiv}CC{\equiv}CH$ → [$\cdot CH{=}CHC{\equiv}CH$ + $CH_2{=}(\cdot)C{\equiv}CH$]						
HYDROGEN ATOM + 1,3-BUTADIYNE						
75 SCH/WAR REACTION ORDER: 2	298	1.3(+12)	-	-		
H + $CH_2{=}CHCH{=}CH_2$ + M → $CH_3CH(\cdot)CH{=}CH_2$ + $\cdot CH_2CH_2CH{=}CH_2$ + M						
HYDROGEN ATOM + 1,3-BUTADIENE						
71 DAB/NIK REACTION ORDER: 2 M: He	298	5.0(+12)	-	-	0.9	1.1
NOTE: 1.3 TORR He PRESSURE						
D + $CH_2{=}CHCH{=}CH_2$ + M → $CH_2DCH(\cdot)CH{=}CH_2$ + $\cdot CH_2CHDCH{=}CH_2$ + M						
DEUTERIUM ATOM + 1,3-BUTADIENE						
71 DAB/NIK REACTION ORDER: 2 M: He	298	3.2(+12)	-	-	0.9	1.1
NOTE: 1.6 TO 2.6 TORR He PRESSURE						
H + $CH_3CH_2CH{=}CH_2$ → H_2 + $CH_3CH(\cdot)CH{=}CH_2$						
HYDROGEN ATOM + 1-BUTENE						
72 FAL/SUN REACTION ORDER: 2 k/k_{ref}: 0.016	298	-	-	-		
NOTE: k_{ref}: H + $CH_3CH_2CH{=}CH_2$ → $CH_3CH_2CH(\cdot)CH_3$ + $CH_3CH_2CH_2CH_2\cdot$						
H + $CH_3CH_2CH{=}CH_2$ → $CH_3CH_2CH(\cdot)CH_3$						
HYDROGEN ATOM + 1-BUTENE						
74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 3.0	923	-	-	-		
NOTE: k_{ref}: H + $CH_3CH_2CH{=}CH_2$ → $CH_3CH_2CH_2CH_2\cdot$						
H + $CH_3CH_2CH{=}CH_2$ → $CH_3CH_2CH(\cdot)CH_3$ + $CH_3CH_2CH_2CH_2\cdot$						
HYDROGEN ATOM + 1-BUTENE						
74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 15.0	923	-	-	-		
NOTE: k_{ref}: H + $CH_3CH_2CH{=}CH_2$ → H_2 + $CH_3CH(\cdot)CH{=}CH_2$ + $\cdot CH_2CH_2CH{=}CH_2$						
H + $CH_3CH_2CH{=}CH_2$ + M → $CH_3CH_2CH(\cdot)CH_3$ + $CH_3CH_2CH_2CH_2\cdot$ + M						
HYDROGEN ATOM + 1-BUTENE						
71 COW/KEI REACTION ORDER: 2 M: He	298	6.8(+11)	-	-	0.9	1.1
NOTE: DISCHARGE FLOW METHOD. 2.9 TORR PRESSURE						
71 COW/KEI	298	7.8(+11)	-	-	0.9	1.1
NOTE: STEADY STATE PHOTOLYSIS METHOD. 10-15 TORR PRESSURE M = Ne, Ar						
71 DAB/NIK M: He	298	8.3(+11)	-	-	0.9	1.1
NOTE: 0.4 TO 2.8 TORR He PRESSURE						
D + $CH_3CH_2CH{=}CH_2$ + M → $CH_3CH_2CH(\cdot)CH_2D$ + $CH_3CH_2CHDCH_2\cdot$ + M						
DEUTERIUM ATOM + 1-BUTENE						
71 DAB/NIK REACTION ORDER: 2 M: He	298	8.3(+11)	-	-	0.9	1.1
NOTE: 0.6 TO 2.6 TORR He PRESSURE						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
$H + CH_3CH{=}CHCH_3 \rightarrow CH_3CH(.)CH_2CH_3$						
HYDROGEN ATOM + 2-BUTENE						
74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 5.0	923	-	-	-		
NOTE: k_{ref}: $H + CH_3CH{=}CHCH_3 \rightarrow H_2 + .CH_2CH{=}CHCH_3$						
$H + CH_3CH{=}CHCH_3 \rightarrow CH_3CH_2CH(.)CH_3^{*}$						
HYDROGEN ATOM + 2-BUTENE						
74 LAU/BUE REACTION ORDER: 2 k/k_{ref}: 0.83	298	-	-	-	0.8	1.2
NOTE: k_{ref}: $H + CH_2{=}CH_2 \rightarrow CH_3CH_2^{*}$						
$H + cis\text{-}CH_3CH{=}CHCH_3 \rightarrow H_2 + .CH_2CH{=}CHCH_3$						
HYDROGEN ATOM + cis-2-BUTENE						
72 FAL/SUN REACTION ORDER: 2 k/k_{ref}: 0.015	298	-	-	-		
NOTE: k_{ref}: $H + cis\text{-}CH_3CH{=}CHCH_3 \rightarrow CH_3CH_2CH(.)CH_3$						
$H + cis\text{-}CH_3CH{=}CHCH_3 + M \rightarrow CH_3CH_2CH(.)CH_3 + M$						
HYDROGEN ATOM + cis-2-BUTENE						
71 CEW/KEI REACTION ORDER: 2 M: He	298	3.9(+11)	-	-	0.9	1.1
NOTE: DISCHARGE FLOW METHOD. 3.2 TORR PRESSURE						
71 CEW/KEI	298	2.4(+11)	-	-	0.8	1.2
NOTE: STEADY STATE PHOTOLYSIS METHOD 10-15 TORR PRESSURE						
M = Ne, Ar						
71 DAB/NIK	298	4.7(+11)	-	-	0.9	1.1
NOTE: 1.1 TO 2.8 TORR He PRESSURE						
$D + cis\text{-}CH_3CH{=}CHCH_3 + M \rightarrow CH_3CHDCH(.)CH_3 + M$						
DEUTERIUM ATOM + cis-2-BUTENE						
71 DAB/NIK REACTION ORDER: 2	298	4.1(+11)	-	-	0.9	1.1
NOTE: 0.6 TO 2.6 TORR He PRESSURE						
$H + trans\text{-}CH_3CH{=}CHCH_3 \rightarrow H_2 + .CH_2CH{=}CHCH_3$						
HYDROGEN ATOM + trans-2-BUTENE						
72 FAL/SUN REACTION ORDER: 2 k/k_{ref}: 0.009	298	-	-	-		
NOTE: k_{ref}: $H + trans\text{-}CH_3CH{=}CHCH_3 \rightarrow CH_3CH_2CH(.)CH_3$						
$H + trans\text{-}CH_3CH{=}CHCH_3 + M \rightarrow CH_3CH_2CH(.)CH_3 + M$						
HYDROGEN ATOM + trans-2-BUTENE						
71 CEW/KEI REACTION ORDER: 2 M: He	298	4.3(+11)	-	-	0.9	1.1
NOTE: DISCHARGE FLOW METHOD 1.8 TORR PRESSURE						
71 CEW/KEI	298	3.3(+11)	-	-	0.7	1.3
NOTE: STEADY STATE PHOTOLYSIS METHOD 10-15 TORR PRESSURE						
M = Ne, Ar						
71 DAB/NIK M: He	298	5.4(+11)	-	-	0.9	1.1
NOTE: 0.4 TO 1.9 TORR He PRESSURE						
$D + trans\text{-}CH_3CH{=}CHCH_3 + M \rightarrow CH_3CHDCH(.)CH_3 + M$						
DEUTERIUM ATOM + trans-2-BUTENE						
71 DAB/NIK REACTION ORDER: 2 M: He	298	4.7(+11)	-	-	0.9	1.1
NOTE: 0.7 TO 2.2 TORR He PRESSURE						
$H + (CH_3)_2C{=}CH_2 \rightarrow H_2 + .CH_2C(CH_3){=}CH_2$						
HYDROGEN ATOM + 1-PROPENE, 2-METHYL-						
76 BRA/WES2 REACTION ORDER: 2	1055-1325	-	-	-	0.7	1.5
NOTE: k_{ref}: $H + (CH_3)_2C{=}CH_2 \rightarrow (CH_3)_3C.$						
k/k_{ref}: $6.8X10^{-2}$ exp(2400/T)						
$H + (CH_3)_2C{=}CH_2 \rightarrow (CH_3)_3C.$						
HYDROGEN ATOM + 1-PROPENE,-2-METHYL-,						
76 BRA/WES1 REACTION ORDER: 2	1030-1300	1.6(+13)	0	760	0.5	1.9
$H + (CH_3)_2C{=}CH_2 + M \rightarrow (CH_3)_3C. + (CH_3)_2CHCH_2. + M$						
HYDROGEN ATOM + 1-PROPENE,2-METHYL-						
71 CEW/KEI REACTION ORDER: 2	298	2.0(+12)	-	-	0.7	1.3
NOTE: STEADY STATE PHOTOLYSIS METHOD 10-15 TORR PRESSURE						
M = Ne, Ar						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
D + $(CH_3)_2C{=}CH_2$ + M → $(CH_3)_2C(.)CH_2D$ + $(CH_3)_2CHDCH_2$. + M DEUTERIUM ATOM + 1-PROPENE, 2-METHYL- REACTION ORDER: 2 M: He 71 DAB/NIK	298	2.0(+12)	-	-	0.9	1.1
NOTE: 1.0 TO 2.2 TORR He PRESSURE						
H + $(CH_3)_3COH$ → H_2O + $(CH_3)_3C$. HYDROGEN ATOM + 2-PROPANOL, 2-METHYL- REACTION ORDER: 2 73 ABE/WAG2	295-700	4.0(+13)	0	4125±300	0.9	1.1
H + $CH_3CH_2CH_2CH{=}CH_2$ → $CH_3CH_2CH_2CH(.)CH_3$ HYDROGEN ATOM + 1-PENTENE 74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 3.0	923	-	-	-		
NOTE: k_{ref}: H + $CH_3CH_2CH_2CH{=}CH_2$ → $CH_3CH_2CH_2CH_2CH_2$.						
H + $CH_3CH_2CH_2CH{=}CH_2$ → $CH_3CH_2CH_2CH(.)CH_3$ + $CH_3CH_2CH_2CH_2CH_2$. HYDROGEN ATOM + 1-PENTENE 74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 9.0	923	-	-	-		
NOTE: k_{ref}: H + $CH_3CH_2CH_2CH{=}CH_2$ + H_2 + $CH_3CH_2CH(.)CH{=}CH_2$ + $.CH_2CH_2CH_2CH{=}CH_2$ + $CH_3CH(.)CH_2CH{=}CH_2$						
H + $CH_3CH_2CH_2CH{=}CH_2$ + M → $CH_3CH_2CH_2CH(.)CH_3$ + $CH_3CH_2CH_2CH_2CH_2$. + M HYDROGEN ATOM + 1-PENTENE 71 CEW/KEI REACTION ORDER: 2 M: He	298	6.4(+11)	-	-	0.9	1.1
NOTE: DISCHARGE FLOW METHOD 3.0 TORR PRESSURE 71 CEW/KEI	298	7.8(+11)	-	-	0.7	1.3
NOTE: STEADY STATE PHOTOLYSIS METHOD 10-15 TORR PRESSURE M = Ne, Ar						
H + $CH_3CH_2CH{=}CH_2CH_3$ → $CH_3CH_2CH(.)CH_2CH_3$ HYDROGEN ATOM + 2-PENTENE 74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 1.0	923	-	-	-		
NOTE: k_{ref}: H + $CH_3CH_2CH{=}CHCH_3$ → $CH_3CH_2CH_2CH(.)CH_3$						
H + $CH_3CH_2CH{=}CHCH_3$ → $CH_3CH_2CH(.)CH_2CH_3$ + $CH_3CH_2CH_2CH(.)CH_3$ HYDROGEN ATOM + 2-PENTENE 74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 3.0	923	-	-	-		
NOTE: k_{ref}: H + $CH_3CH_2CH{=}CHCH_3$ → H_2 + $CH_3CH_2CH{=}CHCH_2$. + $CH_3CH(.)CH{=}CHCH_3$ + $CH_2CH_2CH{=}CHCH_3$						
H + $CH_3CH_2C(CH_3){=}CH_2$ → $CH_3CH_2C(.)(CH_3)_2$ HYDROGEN ATOM + 1-BUTENE, 2-METHYL- 74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 4.0	923	-	-	-		
NOTE: k_{ref}: H + $CH_3CH_2C(CH_3){=}CH_2$ → $CH_3CH_2CH(CH_3)CH_2$.						
H + $CH_3CH_2C(CH_3){=}CH_2$ → $CH_3CH_2C(.)(CH_3)_2$ + $CH_3CH_2CH(CH_3)CH_2$. HYDROGEN ATOM + 1-BUTENE, 2-METHYL- 74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 13.0	923	-	-	-		
NOTE: k_{ref}: H + $CH_3CH_2C(CH_3){=}CH_2$ → H_2 + $CH_3CH(.)C(CH_3){=}CH_2$ + $.CH_2CH_2C(CH_3){=}CH_2$ + $CH_3CH_2C(CH_2.){=}CH_2$						
H + $CH_3CH_2C(CH_3){=}CH_2$ + M → $CH_3CH_2C(.)(CH_3)_2$ + $CH_3CH_2CH(CH_3)CH_2$. + M HYDROGEN ATOM + 1-BUTENE, 2-METHYL- 71 DAB/NIK REACTION ORDER: 2 M: He	298	9.1(+11)	-	-	0.9	1.1
NOTE: 0.7 TO 1.3 TORR He PRESSURE						
D + $CH_3CH_2C(CH_3){=}CH_2$ + M → $CH_3CH_2C(.)(CH_3)CH_2D$ + $CH_3CH_2CD(CH_3)CH_2$. + M DEUTERIUM ATOM + 1-BUTENE, 2-METHYL- 71 DAB/NIK REACTION ORDER: 2	298	2.1(+12)	-	-	0.9	1.1
NOTE: 1.2 TO 2.6 TORR He PRESSURE						
H + $(CH_3)_2CHCH{=}CH_2$ + M → $(CH_3)_2CHCH(.)CH_3$						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
$+ (CH_3)_2CHCH_2CH_2\cdot + M$						
HYDROGEN ATOM + 1-BUTENE, 3-METHYL-						
71 DAB/NIK — REACTION ORDER: 2 M: He	298	7.3(+11)	-	-	0.9	1.1
NOTE: 0.6 TO 2.7 TORR He PRESSURE						

$D + (CH_3)_2CHCH{=}CH_2 + M \rightarrow (CH_3)_2CHCH(\cdot)CH_2D$						
$+ (CH_3)_2CDCHDCH_2\cdot + M$						
DEUTERIUM ATOM + 1-BUTENE, 3-METHYL-						
71 DAB/NIK — REACTION ORDER: 2 M: He	298	7.6(+11)	-	-	0.9	1.1
NOTE: 0.6 TO 2.6 TORR He PRESSURE						

$H + CH_3CH{=}C(CH_3)_2 \rightarrow CH_3CH_2C(\cdot)(CH_3)_2$						
HYDROGEN ATOM + 2-BUTENE, 2-METHYL-						
74 SHI/AMA — REACTION ORDER: 2 k/k_{ref}: 4.0	923	-	-	-		
NOTE: k_{ref}: $H + CH_3CH{=}C(CH_3)_2 \rightarrow CH_3CH(\cdot)CH(CH_3)_2$						

$H + CH_3CH{=}C(CH_3)_2 \rightarrow CH_3CH_2C(\cdot)(CH_3)_2^{*}$						
HYDROGEN ATOM + 2-BUTENE, 2-METHYL-						
74 LAU/BUE — REACTION ORDER: 2 k/k_{ref}: 1.25	298	-	-	-	0.8	1.4
NOTE: k_{ref}: $H + CH_2{=}CH_2 \rightarrow CH_3CH_2\cdot^{*}$						

$H + CH_3CH{=}C(CH_3)_2 \rightarrow CH_3CH_2C(\cdot)(CH_3)_2 + CH_3CH(\cdot)CH(CH_3)_2$						
HYDROGEN ATOM + 2-BUTENE, 2-METHYL-						
74 SHI/AMA — REACTION ORDER: 2 k/k_{ref}: 3.0	923	-	-	-		
NOTE: k_{ref}: $H + CH_3CH{=}C(CH_3)_2 \rightarrow H_2 + CH_3CH{=}C(CH_3)CH_2\cdot$						
$+ \cdot CH_2CH{=}C(CH_3)_2$						

$H + CH_3CH{=}C(CH_3)_2 + M \rightarrow CH_3CH(\cdot)CH(CH_3)_2$						
$+ CH_3CH_2C(\cdot)(CH_3)_2 + M$						
HYDROGEN ATOM + 2-BUTENE, 2-METHYL-						
71 DAB/NIK — REACTION ORDER: 2 M: He	298	8.2(+11)	-	-	0.9	1.1
NOTE: 0.7 TO 1.3 TORR He PRESSURE						

$D + CH_3CH{=}C(CH_3)_2 + M \rightarrow CH_3CH(\cdot)CD(CH_3)_2$						
$+ CH_3CHDC(\cdot)(CH_3)_2 + M$						
DEUTERIUM ATOM + 2-BUTENE, 2-METHYL-						
71 DAB/NIK — REACTION ORDER: 2	298	9.2(+11)	-	-	0.9	1.1
NOTE: 0.6 TO 2.6 TORR He PRESSURE						

$H + CH_3CH_2CH_2CH_3 \rightarrow H_2 + CH_3CH_2CH(\cdot)CH_3 + CH_3CH_2CH_2CH_2\cdot$						
HYDROGEN ATOM + BUTANE						
75 NAM/SHE — REACTION ORDER: 2	800-850	1.6(+13)	-	-	0.8	1.2
76 YAM/NAM — REACTION ORDER: 2	980-1050	9.6(+11)	-	-	0.7	1.3

$H + (CH_3)_4C \rightarrow H_2 + (CH_3)_3CCH_2\cdot$						
HYDROGEN ATOM + PROPANE, 2,2-DIMETHYL-						
76 BAK/BAL — REACTION ORDER: 2 k/k_{ref}: 52.0	753	-	-	-		
NOTE: k_{ref}: $H + O2 \rightarrow OH + O$ (OPTIMIZATION)						
76 BAK/BAL	753	2.4(+11)	-	-		
NOTE: EVALUATION						

$H + CH_3CH_2CH_2C(CH_3){=}CH_2 \rightarrow CH_3CH_2CH_2C(\cdot)(CH_3)_2$						
HYDROGEN ATOM + 1-PENTENE, 2-METHYL-						
74 SHI/AMA — REACTION ORDER: 2 k/k_{ref}: 4.0	923	-	-	-		
NOTE: k_{ref}: $H + CH_3CH_2CH_2C(CH_3){=}CH_2 \rightarrow CH_3CH_2CH_2CH(CH_3)CH_2\cdot$						

$H + CH_3CH_2CH_2C(CH_3){=}CH_2 \rightarrow CH_3CH_2CH_2C(\cdot)(CH_3)_2$						
$+ CH_3CH_2CH_2CH(CH_3)CH_2\cdot$						
HYDROGEN ATOM + 1-PENTENE, 2-METHYL-						
74 SHI/AMA — REACTION ORDER: 2 k/k_{ref}: 8.0	923	-	-	-		
NOTE: k_{ref}: $H + CH_3CH_2CH_2C(CH_3){=}CH_2 \rightarrow$						
$H_2 + CH_3CH_2CH(\cdot)C(CH_3){=}CH_2 + \cdot CH_2CH_2CH_2C(CH_3){=}CH_2$						
$+ CH_3CH_2CH_2C(CH_2\cdot){=}CH_2$						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
$H + CH_3CH_2CH{=}C(CH_3)_2 \rightarrow CH_3CH_2CH_2C(.)(CH_3)_2$						
HYDROGEN ATOM + 2-PENTENE, 2-METHYL-						
74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 3.0	923	-	-	-		
NOTE: k_{ref}: $H + CH_3CH_2CH{=}C(CH_3)_2 \rightarrow CH_3CH_2CH(.)CH(CH_3)_2$						
$H + CH_3CH_2CH{=}C(CH_3)_2 \rightarrow CH_3CH_2CH_2C(.)(CH_3)_2$						
$+ CH_3CH_2CH(.)CH(CH_3)_2$						
HYDROGEN ATOM + 2-PENTENE, 2-METHYL-						
74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 3.0	923	-	-	-		
NOTE: k_{ref}: $H + CH_3CH_2CH{=}C(CH_3)_2 \rightarrow$						
$H_2 + CH_3CH_2CH{=}C(CH_3)CH_2\cdot + CH_3CH(.)CH{=}C(CH_3)_2$						
$H + CH_3CH_2C(CH_3){=}CHCH_3 \rightarrow CH_3CH_2C(.)(CH_3)CH_2CH_3$						
HYDROGEN ATOM + 2-PENTENE, 3-METHYL-						
74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 3.0	923	-	-	-		
NOTE: k_{ref}: $H + CH_3CH_2C(CH_3){=}CHCH_3 \rightarrow CH_3CH_2CH(CH_3)CH(.)CH_3$						
$H + CH_3CH_2C(CH_3){=}CHCH_3 \rightarrow CH_3CH_2C(.)(CH_3)CH_2CH_3$						
$+ CH_3CH_2CH(CH_3)CH(.)CH_3$						
HYDROGEN ATOM + 2-PENTENE, 3-METHYL-						
74 SHI/AMA REACTION ORDER: 2	923	-	-	-		
NOTE: KREF: $H + CH_3CH_2C(CH_3){=}CHCH_3 \rightarrow$						
$H_2 + CH_3CH_2C(CH_3){=}CHCH_2\cdot + CH_3CH(.)C(CH_3){=}CHCH_3$						
$+ CH_3CH_2C(CH_2\cdot){=}CHCH_3$						
$H + (CH_3)_2C{=}C(CH_3)_2 + M \rightarrow (CH_3)_2C(.)CH(CH_3)_2 + M$						
HYDROGEN ATOM + 2-BUTENE, 2,3-DIMETHYL						
71 DAB/NIK REACTION ORDER: 2 M: He	298	7.0(+11)	-	-	0.9	1.1
NOTE: 0.7 TO 1.3 TORR HE PRESSURE						
$D + (CH_3)_2C{=}C(CH_3)_2 + M \rightarrow (CH_3)_2C(.)CD(CH_3)_2 + M$						
DEUTERIUM ATOM + 2-BUTENE, 2,3-DIMETHYL-						
71 DAB/NIK REACTION ORDER: 2	298	8.6(+11)	-	-	0.9	1.1
NOTE: 0.6 TO 2.6 TORR He PRESSURE						
$H_2 + O \rightarrow H + OH$						
HYDROGEN MOLECULE + OXYGEN ATOM						
71 LKA/BELI REACTION ORDER: 2	1200-1600	3.0(+13)	0	4930±650	0.8	1.2
72 SCH/GET k/k_{ref}: 4.0	1700-2000	-	-	-	0.7	1.3
NOTE: k_{ref}: $O_2 + H \rightarrow O + OH$						
72 SCH/GET	1700	4.5(+12)	-	-		
NOTE: EVALUATION						
73 GET	1400-1900	3.2(+14)	0	7550	0.7	1.3
74 NAM/TRO	839-924	7.2(+10)	-	-		
NOTE: E NOT DETERMINED. WITHIN THE GIVEN T RANGE TOTAL k						
INCREASES FROM $7.2X10^{10}$ TO $1.3X10^{11}$ $cm^3mol^{-1}s^{-1}$						
74 LAW/GAR	1200-2000	-	-	-		
NOTE: k_{ref}: $OH + OH \rightarrow H_2O + O$; k/k_{ref}: 2.9EXP(-3250/T)						
	1200-2000	1.6(+14)	0	6810		
NOTE: REEVALUATION						
74 SCH/GET k/k_{ref}: 3.6	1400-1900	-	-	-	0.8	1.2
NOTE: k_{ref}: $H + O_2 \rightarrow OH + O$						
	1400-1900	2.2(+14)	0	8920	0.8	1.3
NOTE: EVALUATION						
75 CAM/HAN2	303-490	3.1(+13)	0	4950±300	0.8	1.2
75 DUB/MCK	347-832	5.3(+12)	0	4200±240	0.4	1.6
NOTE: BY AIR AFTERGLOW.	347-832	5.0(+12)	0	4330±240	0.5	1.5
NOTE: BY RESONANCE-FLUORESCENCE.						
$D_2 + O \rightarrow D + OD$						
DEUTERIUM MOLECULE + OXYGEN ATOM						
75 ATI/APP REACTION ORDER: 2	1700-3100	4.1(+10)	1.0	8255	0.5	2.0
$H_2 + O^*(^1D) \rightarrow H + OH$						
HYDROGEN MOLECULE + OXYGEN ATOM						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
75 GAU/SNE REACTION ØRDER: 2 k/k_{ref}: 4.0	300	-	-	-	0.7	1.3
NØTE: k_{ref}: $Ø_2$ + $Ø^*(^1D)$ → $Ø_2{}^*(^1\Sigma_g{}^+)$ + Ø						
NØTE: EVALUATION	300	1.8(+14)	-	-		
73 FEI/HUS2	300	1.6(+14)	-	-		
k/k_{ref}: 1.23	300	-	-	-	0.9	1.1
NØTE: k_{ref}: $N_2Ø$ + $Ø^*(^1D)$ → products						
75 STI/PAY k/k_{ref}: 4.23	300	-	-	-	0.6	1.4
NØTE: k_{ref}: $Ø_2$ + $Ø^*(^1D)$ → $Ø_2$ + $Ø(^3P)$						
NØTE: EVALUATION	300	1.5(+14)	-	-	0.4	1.6
76 DAV/SAD	298	7.8(+13)	-	-	0.9	1.1
77 DAV/SCH	204-352	6.0(+13)	0	0	0.7	1.3

D_2 + $Ø^*(^1D)$ → D + ØD						
DEUTERIUM MØLECULE + ØXYGEN ATØM						
73 FEI/HUS2 REACTION ØRDER: 2	300	1.1(+14)	-	-	0.9	1.1
76 DAV/SAD	298	7.8(+13)	-	-	0.9	1.1

H_2(v=1) + Ø → H + ØH						
HYDRØGEN MØLECULE + ØXYGEN ATØM						
75 DIR/KAS REACTION ØRDER: 2	300	<6.0(+10)	-	-		
NØTE: UPPER LIMIT k						

H_2 + $Ø_2$ → ØH + ØH						
HYDRØGEN MØLECULE + ØXYGEN MØLECULE						
71 FEL/BRA REACTION ØRDER: 2	1128-1152	1.7(+12)	0	19630	0.7	1.2
NØTE: EVALUATION						
75 AZA/ALE	1076-1523	1.9(+14)	0	21900±500	0.6	1.6

D_2 + $Ø_2$ → ØD + ØD						
DEUTERIUM MØLECULE + ØXYGEN MØLECULE						
75 AZA/ALE REACTION ØRDER: 2	843	1.0(+3)	-	-	0.8	1.2

H_2 + D → H + DH						
HYDRØGEN MØLECULE + DEUTERIUM ATØM						
72 NIK/MAI REACTION ØRDER: 2	1000	3.7(+13)	-	-	0.9	1.1
73 MIT/LER	167-346	1.6(+7)	2.0	2698±20	0.9	1.1
75 AEP/APP	2600	1.5(+13)	-	-		
76 PEA/RØG1	274-1220	4.8(+5)	2.5	2490±70	0.4	2.8

HD + H → D + H_2						
DEUTERIUM HYDRIDE + HYDRØGEN ATØM						
72 NIK/MAI REACTION ØRDER: 2	1000	1.4(+13)	-	-	0.9	1.1

HD + D → H + D_2						
DEUTERIUM HYDRIDE + DEUTERIUM ATØM						
72 NIK/MAI REACTION ØRDER: 2	1000	1.9(+13)	-	-	0.9	1.1

D_2 + H → D + DH						
DEUTERIUM MØLECULE + HYDRØGEN ATØM						
72 NIK/MAI REACTION ØRDER: 2	1000	2.8(+13)	-	-	0.9	1.1
75 AEP/APP	1800	4.0(+12)	-	-		
	2680	9.4(+12)	-	-		
	2730	1.0(+13)	-	-		
76 PEA/RØG1	274-1220	2.3(+3)	3.2	2850±90	0.3	3.4

H_2 + D2 → HD + HD						
HYDRØGEN ATØM + DEUTERIUM ATØM						
77 LIF/FRE REACTION ØRDER: 2	1200-1500	1.3(+14)	0	19100±2500	0.2	6.3
NØTE: GIVEN WITH CAUTION EVALUATION						

D_2 + H_2 → ØH + DH						
DEUTERIUM MØLECULE + HYDRØGEN MØLECULE						
77 LIF/FPE REACTION ØRDER: 2	1200-1500	1.3(+14)	0	19100±2500	0.2	6.3
NØTE: GIVEN WITH CAUTION EVALUATION						

H_2 + ØH → H + $H_2Ø$						
HYDRØGEN MØLECULE + HYDRØXYL FREE RADICAL						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
71 BRA/BEL1 REACTION ORDER: 2	1100-1600	2.1(+13)	0	2565±150	0.7	1.5
71 ELE/HOY	500-1500	1.0(+13)	0	2415		
72 DIX	1050	2.7(+12)	-	-	0.9	1.1
NOTE: EVALUATION						
72 STU/NIK1	298	4.3(+9)	-	-	0.9	1.2
73 DAY/THO	1050	2.7(+12)	-	-	0.9	1.1
NOTE: EVALUATION						
73 GAR/MAL	1200-2500	5.2(+13)	0	3270	0.8	1.2
73 SMI/ZEL2	210-460	1.4(+13)	0	2420		
73 WES/DEH1	298-745	4.6(+9)	-	-		
NOTE: NON LINEAR ARRHENIUS BEHAVIOR: WITHIN THE GIVEN T RANGE, k INCREASES FROM $4.6X10^{9}$ TO $4.0X10^{11}$ $cm^3 mol^{-1} s^{-1}$						
74 GAL/MAL	300-1800	3.2(+7)	1.77	1530		
NOTE: EVALUATION						
74 GAR/MAL	1350-1600	5.2(+13)	0	3250		
73 SMI/ZEL	210-460	1.1(+13)	0	2330±120	0.7	1.5
75 ATK/HAN1	298	4.2(+9)	-	-	0.9	1.1
75 ATK/HAN2	297-434	3.6(+12)	0	2010±150		
75 OVE/PAR	295	3.5(+9)	-	-	0.9	1.1
75 TRA/ROS	300	3.9(+9)	-	-		
75 VAN/PEE	600-1300	7.0(+12)	0	2215		
$H_2 + OH \rightarrow H + H_2O$						
HYDROGEN MOLECULE + HYDROXYL FREE RADICAL						
76 BRA/CAP REACTION ORDER: 2 k/k_{ref}: 0.59	1300	-	-	-		
NOTE: k_{ref}: $CH_4 + OH \rightarrow CH_3\cdot + H_2O$						

$HD + OH(v=1) \rightarrow H + H_2O$						
HYDROGEN MOLECULE + HYDROXYL FREE RADICAL						
77 SFE/END REACTION ORDER: 2	295	<6.0(+9)	-	-		
NOTE: $OH^{\ddagger}(v=1)$ STATE UPPER LIMIT k						

$HD + OH \rightarrow H + HDO$						
DEUTERIUM HYDRIDE + HYDROXYL FREE RADICAL						
72 DIX REACTION ORDER: 2	1050	9.6(+11)	-	-	0.9	1.1
NOTE: EVALUATION						
73 DAY/THO REACTION ORDER: 2	1050	9.6(+11)	-	-	0.9	1.1
NOTE: EVALUATION						

$D_2 + OH \rightarrow D + DHO$						
DEUTERIUM MOLECULE + HYDROXYL FREE RADICAL						
72 STU/NIK1 REACTION ORDER: 2	298	1.2(+9)	-	-	0.9	1.2
74 SMI/ZEL	210-460	7.5(+12)	0	2590±180	0.7	1.5

$D_2 + OD \rightarrow D_2O + D$						
DEUTERIUM MOLECULE + HYDROXYL-D FREE RADICAL						
75 AFP/APP REACTION ORDER: 2	1700-3100	6.6(+13)	0	2592	0.3	3.0

$H_2 + S^*(^1D) \rightarrow$ products						
HYDROGEN MOLECULE + SULFUR ATOM						
72 LIT/DAL REACTION ORDER: 2 k/k_{ref}: 0.22	300	-	-	-		
NOTE: k_{ref}: $CH_2{=}CH_2 + S^*(^1D) \rightarrow$ products						

$H_2 + N^*(^2D) \rightarrow$ products						
HYDROGEN MOLECULE + NITROGEN ATOM						
72 HUS/KIR2 REACTION ORDER: 2	300	1.0(+12)	-	-	0.7	1.3

$H_2 + NO \rightarrow H + HNO$						
HYDROGEN MOLECULE + NITROGEN OXIDE (NO)						
75 KOS/AND REACTION ORDER: 2	2000-4000	4.0(+13)	0	29040		
76 AND/ASA	2300-3500	3.2(+13)	0	27780	0.7	1.4
NOTE: RE-EVALUATION						

$H_2 + C^* \rightarrow H_2 + CH$						
HYDROGEN MOLECULE + CARBON ATOM						
71 HUS/KIR1 REACTION ORDER: 2	300	1.6(+14)	-	-	0.9	1.1
NOTE: $C^*(2\,^1D_2)$STATE						

$H_2 + C(^3P) + M \rightarrow$ products						
HYDROGEN MOLECULE + CARBON ATOM						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
75 HLS/YSU REACTION ORDER: 3 M: He	300	2.5(+16)	-	-	0.8	1.2
H_2 + CH → products						
HYDROGEN MOLECULE + METHYLIDYNE FREE RADICAL						
71 BCS/PER REACTION ORDER: 2	298	1.05(+13)	-	-	0.9	1.1
H_2 + $^{1}CH_2$* → H + CH_3						
HYDROGEN MOLECULE + METHYLENE FREE RADICAL						
77 PIL/ROB REACTION ORDER: 2	298	1.2(+13)	-	-		
NOTE: $^{1}CH_2$*($^{1}B_1$) STATE						
H_2 + $^{3}CH_2$ → H + CH_3						
HYDROGEN MOLECULE + METHYLENE FREE RADICAL						
77 PIL/ROB REACTION ORDER: 2	298	3.0(+9)	-	-		
NOTE: $^{3}CH_2$ (GROUND STATE); UPPER LIMIT k						
H_2 + CH_3 → H + CH_4						
HYDROGEN MOLECULE + METHYL FREE RADICAL						
72 SHA/WES REACTION ORDER: 2	398-718	-	-	-		
NOTE: k_{ref}: D_2 + CH_3• → D + CH_3D; k/k_{ref}: 0.911 EXP(+688/T)						
73 CLA/DOV2 REACTION ORDER: 2	1200-2000	1.5(+13)	0	7800	0.5	2.0
NOTE: EVALUATION BASED ON AN EXPERIMENTAL $k = (4.6 \pm 1.4) \times 10^{10}$ $cm^3 mol^{-1} s^{-1}$ AT 1						
74 KOB/PAC	372-1370	7.9(+5)	2.0	4810		
H_2 + CH_3* → H + CH_4						
HYDROGEN MOLECULE + METHYL FREE RADICAL						
73 TIN/WES REACTION ORDER: 2 k/k_{ref}: 0.75	298	-	-	-	0.7	1.3
NOTE: k_{ref}: CH_3Br + CH_3* → $.CH_2Br$ + CH_4						
H_2 + CD_3 → H + CD_3H						
HYDROGEN MOLECULE + METHYL-d_3 FREE RADICAL						
72 SHA/WES REACTION ORDER: 2	398-718	-	-	-		
NOTE: k_{ref}: D_2 + CD_3 → D + CD_4 k/k_{ref}: 1.592 exp (+296/T)						
H_2 + CD_3*• → H + CD_3H						
HYDROGEN MOLECULE + METHYL-d_3 FREE RADICAL						
73 TIN/WES REACTION ORDER: 2 k/k_{ref}: 0.093	298	-	-	-	0.9	1.1
NOTE: k_{ref}: CD_3Br + CD_3*• → CD_2Br + CD_4						
GIVEN IN PAPER: $k_{ref}/k = 10.8 \pm 0.7$						
DH + CH_3 → D + CH_4						
DEUTERIUM HYDRIDE + METHYL FREE RADICAL						
72 SHA/WES REACTION ORDER: 2	398-718	-	-	-		
NOTE: k_{ref}: HD + CH_3• → CH_3D + H;						
k/k_{ref}: 0.283 exp(+970/T)						
DH + CD_3 → D + CD_3H						
DEUTERIUM HYDRIDE + METHYL-d_3 FREE RADICAL						
72 SHA/WES REACTION ORDER: 2	398-718	-	-	-		
NOTE: k_{ref}: HD + CD_3 → H + CD_4; k/k_{ref}: 0.932(+275/T)						
D_2 + CH_3 → D + CH_3D						
DEUTERIUM MOLECULE + METHYL FREE RADICAL						
77 YAN REACTION ORDER: 2 k/k_{ref}: 0.34	1260-1390	-	-	-		
NOTE: k_{ref}: $CH_3CH{=}CH_2$ + CH_3 → $.CH_2CH{=}CH_2$ + CH_3						
76 PEA/ROG2	300-1118	1.6(+12)	0	6370±40		
D_2 + CH_3* → D + CH_3D						
DEUTERIUM MOLECULE + METHYL FREE RADICAL						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
73 TIN/WES REACTION ORDER: 2 k/k_{ref}: 0.05	298	-	-	-	0.9	1.1
NOTE: k_{ref}: $CH_3Br + CH_3^* \rightarrow .CH_3Br + CH_4$						
$D_2 + CD_3^* \rightarrow D + CD_4$						
DEUTERIUM MOLECULE + METHYL-d_3 FREE RADICAL						
73 TIN/WES REACTION ORDER: 2 k/k_{ref}: 2.15	298	-	-	-	0.6	1.4
NOTE: k_{ref}: $H_2 + CD_3^* \rightarrow H + CD_3H$						
$H_2 + CN \rightarrow H + HCN$						
HYDROGEN MOLECULE + CYANOGEN FREE RADICAL						
74 SCH/SCH REACTION ORDER: 2	298-388	6.3(+13)	-	2670		
75 AID/HOY	718-1111	6.0(+13)	0	2670±300	0.7	1.3
77 SCH/WAG	259-396	6.0(+13)	0	2670±300	0.7	1.3
$H_2 + CH{\equiv}C\cdot \rightarrow H + CH{\equiv}CH$						
HYDROGEN MOLECULE + ETHYNYL FREE RADICAL						
74 YAN/LAV REACTION ORDER: 2	1063-1233	6.0(+12)	0	3270	0.4	2.5
NOTE: $k_1 = k_{-1}$						
$D_2 + CH{\equiv}CH \rightarrow CHD{=}CHD$						
DEUTERIUM MOLECULE + ETHYNE						
77 OGU2 REACTION ORDER: 2	1000-1600	4.9(+11)	0	17565±300	0.7	1.3
$H_2 + CH_3CH_2\cdot \rightarrow H + CH_3CH_3$						
HYDROGEN MOLECULE + ETHYL FREE RADICAL						
71 EAL/LAN REACTION ORDER: 2	713	2.2(+8)	-	-		
$D_2 + CH_3CH_2\cdot \rightarrow D + CH_3CH_2D$						
DEUTERIUM MOLECULE + ETHYL FREE RADICAL						
71 EAL/LAN REACTION ORDER: 2	713	8.3(+7)	-	-		
$H_2 + (CH_3)_2CH\cdot \rightarrow H + CH_3CH_2CH_3$						
HYDROGEN MOLECULE + ETHYL, 1-METHYL-, FREE RADICAL						
76 PAL/CLE REACTION ORDER: 2 k/k_{ref}: 2.15	713	-	-	-	0.9	1.1
NOTE: k_{ref}: $D_2 + (CH_3)_2CH\cdot \rightarrow D + CH_3CHDCH_3$						
$H_2 + M \rightarrow H + H + M$						
HYDROGEN MOLECULE						
73 BEE/BIR REACTION ORDER: 2 M: H	3500-8000	2.1(+15)	0	43885		
M: H_2	3500-8000	3.3(+15)	0	53000		
M: Ar	3500-8000	9.4(+13)	0	44740		
M: Xe	3500-8000	9.4(+13)	0	44740		
$D_2 + M \rightarrow D + D + M$						
DEUTERIUM MOLECULE						
75 AFP/APP REACTION ORDER: 2	1800-4000	1.4(+14)	0	47000	0.9	1.1
$OH + O \rightarrow H + O_2$						
HYDROXYL FREE RADICAL + OXYGEN ATOM						
77 CAM/HAN REACTION ORDER: 2 k/k_{ref}: 260.	425	-	-	-	0.9	1.1
NOTE: k_{ref}: $OH + CO \rightarrow H + CO_2$						
77 CAM/HAN	425	2.7(+13)	-	-	0.8	1.2
NOTE: EVALUATION						
$OH(v=1) + O \rightarrow H + O_2$						
HYDROXYL FREE RADICAL + OXYGEN ATOM						
77 SPE/END REACTION ORDER: 2	295	5.4(+13)	-	-	0.7	1.3
77 SPE/GLA	295	6.3(+13)	-	-	0.5	1.5
$OH^{\ddagger}(v=0) + O \rightarrow$ products						
HYDROXYL FREE RADICAL + OXYGEN ATOM						
76 KRI REACTION ORDER: 2	298	1.8(+13)	-	-		
$OH + O_3 \rightarrow HO_2 + O_2$						
HYDROXYL FREE RADICAL + OZONE						
73 AND/KAU2 REACTION ORDER: 2	220-450	7.8(+11)	0	956		
73 DEM	300	4.8(+10)	-	-		

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
73 KUI	298	3.9(+10)	-	-	.8	1.2
74 SIM/HEI1	298	9.0(+9)	-	-		
NOTE: LOWER LIMIT k EVALUATION	298	3.0(+10)	-	-	.4	1.6
NOTE: EVALUATION	271-333	-	-	-		
75 DEM REACTION ORDER: 2						
NOTE: k_{ref}: OH + CO → H + CO_2; k/k_{ref}: 16.8 exp (-1233/T)						
75 DEM	271-333	1.5(+12)	)	1233		
NOTE: EVALUATION						

$OD(v=n) + O_3 \rightarrow DO_2 + O_2$						
HYDROXYL-D FREE RADICAL + OZONE						
74 EAS/BKA REACTION ORDER: 2	298	3.3(+12)	-	-	0.8	1.2
NOTE: UNREPORTED T, ASSUMED TO BE 298 K						

$OH(v=2) + O_3 \rightarrow$ products						
HYDROXYL FREE RADICAL + OZONE						
71 COL/WOK REACTION ORDER: 2	298	1.1(+12)	-	-	0.4	1.6
NOTE: UNREPORTED T ASSUMED TO BE 298K.						
k INCREASING TO $4.6X10^{12} cm^3 mol^{-1} s^{-1}$ FROM v=2 TO v=9						

$OH(v=4) + O_3 \rightarrow$ products						
HYDROXYL FREE RADICAL + OZONE						
76 STR/JOH REACTION ORDER: 2	300	2.2(+12)	-	-	0.9	1.1
NOTE: k INCREASING TO $6.6X10^{12} cm^3 mol^{-1} s^{-1}$ FOR OH(v=9)						

$OH(v=9) + O_3 \rightarrow$ products						
HYDROXYL FREE RADICAL + OZONE						
71 PET/COL REACTION ORDER: 2	298	4.6(+12)	-	-	0.9	1.1
NOTE: UNREPORTED T ASSUMED TO BE 298K						

$OH + H \rightarrow H_2O$						
HYDROXYL FREE RADICAL + HYDROGEN ATOM						
77 ZEL/ERL REACTION ORDER: 2	230-300	1.6(+10)	0	0	0.8	1.2

$OH + H + M \rightarrow H_2O + M$						
HYDROXYL FREE RADICAL + HYDROGEN ATOM						
71 GAY/PRA REACTION ORDER: 3 M: Ar	1900	2.7(+15)	-	-	0.7	1.3
NOTE: MEAN T. M eff: Ar(1.0) REACTION ORDER: 3 M: N_2	1650	1.0(+16)	-	-	0.7	1.3
NOTE: MEAN T. M eff: N_2(4.0) M: H_2O	1900	4.9(+16)	-	-	0.7	1.3
NOTE: MEAN T. M eff: H_2O(18.0)						
72 FRI/SUT REACTION ORDER: 2	2130	4.4(+10)	-	-		
NOTE: RATE CONSTANT EXPRESSED AS: $k[M] = 4.4X10^{10} cm^3 mol^{-1} s^{-1}$						
M = e_2,N_2,H_2O						
77 ZEL/ERL REACTION ORDER: 3 M: He	230-300	1.6(+23)	-2.6	0	0.3	1.7
M: He	300	5.4(+16)	-	-	0.7	1.3
NOTE:M eff: He(1.0) M: Ar	300	8.2(+16)	-	-	0.7	1.3
NOTE:M eff: Ar(1.5) 77 ZEL/ERL M: N_2	300	1.7(+17)	-	-	0.7	1.3
NOTE:M eff: N_2(3.2 + 0.3) 77 ZEL/ERL M: CO_2	300	3.3(+17)	-	-	0.7	1.3
NOTE:M eff: CO_2(6 + 1)						

$OH + H + M \rightarrow H_2O + M^*$						
HYDROXYL FREE RADICAL + HYDROGEN ATOM						
74 DAV/MCG REACTION ORDER: 3 M: OH	1740-1860	8.3(+15)	0	0	0.6	1.4

$OH + H_2 \rightarrow H_2O + H$						
HYDROXYL FREE RADICAL + HYDROGEN MOLECULE						
71 BEA/BEL1 REACTION ORDER: 2	1100-1600	2.1(+13)	0	2565±150	0.7	1.5
	500-1500	1.0(+13)	0	2415		
71 EBE/HOY	1050	2.7(+12)	-	-	0.9	1.1
72 DIX						
NOTE: EVALUATION	298	4.3(+9)	-	-	0.9	1.2
72 STU/NIK1	1050	2.7(+12)	-	-	0.9	1.1
73 DAY/THO						
NOTE: EVALUATION						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
73 GAR/MAL	1200-2500	5.2(+13)	0	3270	0.8	1.2
73 SMI/ZEL2	210-460	1.4(+13)	0	2420		
73 WES/DEH1	298-745	4.6(+9)	-	-		
NOTE: NON LINEAR ARRHENIUS BEHAVIOR; WITHIN THE GIVEN T RANGE, k INCREASES FROM $4.6X10^{9}$ TO $4.0X10^{11}$ $cm^3 mol^{-1} s^{-1}$						
74 GAR/MAL	1350-1600	5.2(+13)	0	3250		
	300-1800	3.2(+7)	1.77	1530		
NOTE: EVALUATION						
74 SMI/ZEL	210-460	1.1(+13)	0	2330±120	0.7	1.5
75 ATK/HAN1	298	4.2(+9)	-	-	0.9	1.1
75 ATK/HAN2	297-434	3.6(+12)	0	2010±150		
$OH + H_2 \rightarrow H_2O + H$						
HYDROXYL FREE RADICAL + HYDROGEN MOLECULE						
75 EVE/PAR	295	3.5(+9)	-	-	0.9	1.1
75 TEA/ROS	300	3.9(+9)	-	-		
75 VAN/PEE	600-1300	7.0(+12)	0	2215		
76 BEA/CAP k/k_{ref}: 0.59	1300	-	-	-		
NOTE: k_{ref}: $OH + CH_4 \rightarrow H_2O + CH_3$•						

$OH + HD \rightarrow HDO + H$						
HYDROXYL FREE RADICAL + DEUTERIUM HYDRIDE REACTION ORDER: 2						
72 DIX	1050	9.6(+11)	-	-	0.9	1.1
NOTE: EVALUATION						
73 DAY/THO	1050	9.6(+11)	-	-	0.9	1.1
NOTE: EVALUATION						

$OH + D_2 \rightarrow DHO + D$						
HYDROXYL FREE RADICAL + DEUTERIUM MOLECULE REACTION ORDER: 2						
72 STO/NIK1	298	1.2(+9)	-	-	0.9	1.2
74 SMI/ZEL	210-460	7.5(+12)	0	2590±180	0.7	1.5

$OD + D_2 \rightarrow D + D_2O$						
HYDROXYL-D FREE RADICAL + DEUTERIUM MOLECULE REACTION ORDER: 2						
75 AFP/APP	1700-3100	6.6(+13)	0	2592	0.3	3.0

$OH^{\ddagger} + H_2 \rightarrow H_2O + H$						
HYDROXYL FREE RADICAL + HYDROGEN MOLECULE REACTION ORDER: 2						
76 SHI/END	295	<6.0(+9)	-	-		
NOTE: $OH^{\ddagger}$(v=1) STATE. UPPER LIMIT k						

$OH + OH \rightarrow H_2O + O$						
HYDROXYL FREE RADICAL REACTION ORDER: 2						
73 GAR/MAL	1200-2500	5.5(+13)	0	3525	0.8	1.2
73 MCE/MUL	298	1.3(+12)	-	-	0.8	1.2
73 WES/DEH2	298	1.4(+12)	-	-	0.9	1.1
74 CIY/DOW	300	8.4(+11)	-	-	0.9	1.1
74 CIY/DOW	300	1.0(+12)	-	-	0.6	1.4
NOTE: SUGGESTED k						
74 KAW/GAR	1200-2000	5.5(+13)	0	3490		
NOTE: REEVALUATION						
	1200-2000	2.1(+9)	1.11	0		
NOTE: REEVALUATION (ALTERNATE EXPRESSION)						
74 KAW/GAR	1200-2000	1.7(+6)	2.03	-600		
NOTE: REEVALUATION (ALTERNATE EXPRESSION)						
74 TEA/ROS1	298	1.3(+12)	-	-	0.9	1.1

$OH + OH + M \rightarrow H_2O2 + M$						
74 TEA/ROS REACTION ORDER: 3 M: N_2	298	9.1(+16)	-	-	0.9	1.1

$OH + HO_2 \rightarrow H_2O + O_2$						
HYDROXYL FREE RADICAL + HYDROPEROXYL FREE RADICAL REACTION ORDER: 2						
72 CAS/SCH	2130	1.2(+13)	-	-		
72 DAY/DIX k/k_{ref}: ≤5.5	300-1800	-	-	-		
NOTE: k_{ref}: $H + HO_2 \rightarrow H_2 + O_2$ (UPPER LIMIT RATIO)						
72 HOC/GHO	298	1.2(+14)	-	-	0.8	1.2
73 DAY/THO	300-1050	-	-	-		
NOTE: k_{ref}: $H + HO_2 \rightarrow H_2 + O_2$ (UPPER LIMIT RATIO)						
73 PIT/MAH1	1600	5.0(+13)	-	-		
NOTE: TENTATIVE k						
74 DEM/TSC	298	9.6(+13)	-	-	0.3	3.0
75 HAC/ROY	298-670	<2.0(+13)	-	-		
NOTE: UPPER LIMIT k						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
77 EUR/HAR	293	3.1(+13)	-	-	0.7	1.3

$OH(v=9) + H_2O \rightarrow$ products						
HYDROXYL FREE RADICAL + WATER						
72 WER/COL REACTION ORDER: 2	298	>1.2(+11)	-	-	0.2	1.8
NOTE: LOWER LIMIT k. UNREPORTED T ASSUMED TO BE 298K						

$OH + H_2O_2 \rightarrow H_2O + HO_2$						
HYDROXYL FREE RADICAL + HYDROGEN PEROXIDE						
72 GER/VOL REACTION ORDER: 2	298	7.2(+11)	-	-	0.7	1.3
74 HAC/HOY2	298-669	4.8(+12)	0	670±70	0.8	1.2
75 HAC/HOY	298-670	4.8(+12)	0	670±70	0.8	1.2
75 MEA/HEI k/k_{ref}: 4.1	298	-	-	-	0.9	1.1
NOTE: k_{ref}: $OH + CO \rightarrow H + CO_2$						
76 GOR	298	7.5(+11)	-	-	0.9	1.1

$OH(v=9) + SO_2 \rightarrow HOSO2$						
HYDROXYL FREE RADICAL + SULFUR DIOXIDE						
72 WEP/COL REACTION ORDER: 2	298	>1.4(+10)	-	-	0.8	1.2
NOTE: LOWER LIMIT k[UNREPORTED T ASSUMED TO BE 298K						

$OH + SO_2 + M \rightarrow HOSO_2 + M$						
HYDROXYL FREE RADICAL + SULFUR DIOXIDE						
74 CEX2 REACTION ORDER: 2	294	3.6(+11)	-	-	0.9	1.1
NOTE: EVALUATION; RATECONSTANT EXPRESSED AS k[M] WITH $M=N_2 + O_2$ at 1 ATM						
75 CAS/DAV M: N_2	298	3.6(+11)	-	-		
NOTE: LIMITING HIGH-PRESSURE k (760 TORR) REACTION ORDER: 3 M: N_2	298	5.8(+16)	-	-		
NOTE: k (LOW PRESSURE : <20 TORR)						
75 GOL/HUL1 REACTION ORDER: 2 M: He	435	1.1(+12)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR						
75 HAR/WAY REACTION ORDER: 3 M: Ar	298	1.6(+17)	-	-	0.7	1.3
M: N_2	298	2.6(+17)	-	-	0.6	1.4
76 ATK/PER3 REACTION ORDER: 2	298	4.0(+11)	-	-	0.9	1.1
NOTE: AT 760 TORR	298	5.0(+11)	-	-		
NOTE: LIMITING HIGH-PRESSURE k REACTION ORDER: 3	298	5.9(+16)	-	-	0.8	1.2
NOTE: LIMITING LOW-PRESSURE k						
77 CAS/TAN REACTION ORDER: 2	297	3.6(+11)	-	-		
NOTE: LIMITING HIGH-PRESSURE K(760 TORR) REACTION ORDER: 3	297	5.8(+16)	-	-		
NOTE: k_0 (LOW PRESSURE)	253-297	5.0(+14)	0	-1410		
NOTE: k (LOW PRESSURE) ON THE BASIS OF k (297) AND EA EXPERIMENTAL VALUES	253-297	2.5(+29)	-5.1	0		
NOTE: k (LOW PRESSURE). ALTERNATIVE T-DEPENDENT EXPRESSION						

$OH + H_2S \rightarrow H_2O + SH$						
HYDROXYL FREE RADICAL + HYDROGEN SULFIDE						
73 WIS/DEH3 REACTION ORDER: 2	298-885	1.4(+13)	0	443		
74 STU	298	1.8(+12)	-	-	0.8	1.2
76 PER/ATK1	297-427	3.1(+12)	0	0	0.9	1.1

$OH + H_2S \rightarrow$ products (OVERALL)						
HYDROXYL FREE RADICAL + HYDROGEN SULFIDE						
72 NIK/MOR1 REACTION ORDER: 2	300	5.2(+12)	-	-		
NOTE: APPROXIMATE k						

$OH(v=9) + H_2S \rightarrow$ products						
HYDROXYL FREE RADICAL + HYDROGEN SULFIDE						
72 WER/COL REACTION ORDER: 2	298	>1.5(+11)	-	-	0.6	1.4
NOTE: LOWER LIMIT k[UNREPORTED T ASSUMED TO BE 298K						

$OH + N_2 \rightarrow H + N_2O$						
HYDROXYL FREE RADICAL + NITROGEN MOLECULE						
75 AIB/HOY REACTION ORDER: 2	700-1100	3.2(+12)	0	40510		
NOTE: EVALUATION BASED ON k_{-1} AND THERMODYNAMIC DATA						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
$OH(v=9) + N_2 \rightarrow$ products						
HYDROXYL FREE RADICAL + NITROGEN MOLECULE						
72 WOR/COL REACTION ORDER: 2	298	2.2(+9)	-	-	0.9	1.1
NOTE: UNREPORTED T ASSUMED TO BE 298K						
$OH(v=9) + NO \rightarrow HONO$						
HYDROXYL FREE RADICAL + NITROGEN OXIDE (NO)						
72 WOR/COL REACTION ORDER: 2	298	9.0(+10)	-	-	0.8	1.2
NOTE: UNREPORTED T ASSUMED TO BE 298K						
$OH + NO + M \rightarrow HONO + M$						
HYDROXYL FREE RADICAL + NITROGEN OXIDE (NO)						
72 AND/KAU REACTION ORDER: 3 M: Ar	297	1.5(+17)	-	-	0.5	1.5
NOTE: AT 5 TORR	297	9.1(+16)	-	-	0.6	1.4
72 AND/KAU						
NOTE: AT 6 TORR	300-416	1.0(+16)	0	-810±240	0.8	1.2
72 MCR/SMI						
NOTE: k (LOW PRESSURE)						
72 STU/NIK2 REACTION ORDER: 2 M: He	300	1.2(+12)	-	-	0.5	1.5
NOTE: LIMITING HIGH-PRESSURE k						
72 WES/DEH4 REACTION ORDER: 3 M: He	273-395	4.7(+17)	-	-		
NOTE: k DECREASING WITHIN GIVEN T RANGE FROM 4.7×10^{17} TO 1.3×10^{17} $cm^6 mol^{-1} s^{-1}$						
72 WES/DEH4 M: Ar	298	1.3(+17)	-	-		
$OH + NO + M \rightarrow HONO + M$						
HYDROXYL FREE RADICAL + NITROGEN OXIDE (NO)						
74 AND/MAR M: He	295	1.2(+17)	-	-	0.8	1.2
NOTE: A NEGATIVE ACTIVATION ENERGY OF -1700±300 cal/mol (OR E/R=-856±150) WAS DETERMINED IN THE RANGE 295-439K						
M: Ar	295	1.2(+17)	-	-	0.8	1.2
M: N_2	295	2.1(+17)	-	-	0.8	1.2
74 AND/MAR						
74 COX2 REACTION ORDER: 2	294	3.7(+12)	-	-	0.8	1.2
NOTE: EVALUATION; RATECONSTANT EXPRESSED AS k[M] WITH M=N_2 + O_2 AT 1 ATM						
74 HOW/EVE REACTION ORDER: 3 M: He	296	1.5(+17)	-	-		
M: Ar	296	1.6(+17)	-	-		
M: N_2	296	2.8(+17)	-	-		
74 HOW/EVE						
75 ATK/HAN1 REACTION ORDER: 2 M: Ar	298	3.1(+12)	-	-	0.8	1.2
NOTE: LIMITING HIGH-PRESSURE k REACTION ORDER: 3 M: Ar	298	1.5(+17)	-	-	0.9	1.1
NOTE: LOW PRESSURE k REACTION ORDER: 2 M: N_2	298	3.7(+12)	-	-	0.8	1.2
NOTE: LIMITING HIGH-PRESSURE k REACTION ORDER: 3 M: N_2	298	2.2(+17)	-	-	0.9	1.1
NOTE: LOW PRESSURE k M: H_2O	435	4.5(+12)	-	-	0.9	1.1
75 GOI/MUL1						
NOTE: IN AN ATMOSPHERE OF WATER VAPOR						
75 HAR/WAY REACTION ORDER: 3 M: Ar	298	2.5(+17)	-	-	0.7	1.3
M: N_2	298	5.4(+17)	-	-	0.7	1.3
76 COX/DER1 REACTION ORDER: 2 k/k_{ref}: 1630	298	-	-	-		
NOTE: k_{ref}: $OH + H_2 \rightarrow H_2O + H$ M=N_2 + O_2	298	7.0(+12)	-	-	0.9	1.1
NOTE: EVALUATION; M=N_2 + O_2	295	1.1(+13)	-	-		
76 OVE/PAR						
NOTE: LIMITING HIGH PRESSURE k; M=H_2O,CF_4,SF_6,N_2,Ar, OR He M: He	295	2.5(+12)	-	-	0.9	1.1
NOTE: AT 777 TORR M: Ar	295	2.5(+12)	-	-	0.9	1.1
NOTE: AT 720 TORR M: SF_6	295	7.7(+12)	-	-	0.9	1.1
NOTE: AT 770 TORR M: N_2	295	4.2(+12)	-	-	0.9	1.1
NOTE: AT 770 TORR M: CF_4	295	8.4(+12)	-	-	0.9	1.1
NOTE: AT 710 TORR M: H_2	298	-	-	-	0.9	1.1
76 SIF/SIM2						
NOTE: k_{ref}: $OH + CO \rightarrow H + CO_2$ (CONSTANT RATIO FOR 408-768 TORR PRESSURE RANGE, DECREASING TO 16.1 AT 96 TORR)						

CHEMICAL REACTIONS		T/K	A	B	E/R (in ^{o}K)	k factors f	F
76 SIE/SIM2	M: H_2	298	7.2(+12)	-	-		
NOTE: LIMITING HIGH-PRESSURE k (EVALUATION)							
76 SIM/HEI	M: H_2	296	2.2(+12)	-	-		
NOTE: AT ~100 TORR (EVALUATION)							
	M: H_2	296	6.6(+12)	-	-		
NOTE: AT 730 TORR (EVALUATION)							

OH + NO_2 + M → $HONO_2$ + M							
HYDROXYL FREE RADICAL + NITROGEN OXIDE (NO2)							
72 AND/KAU REACTION ORDER: 3	M: Ar	297	3.6(+17)	-	-	0.7	1.3
REACTION ORDER: 3	M: N_2	297	7.3(+17)	-	-	0.7	1.3
72 SIM/BEI2 REACTION ORDER: 2	M: H_2O	300-423	6.3(+12)	0	170		
NOTE: LIMITING HIGH-PRESSURE k (EVALUATION)							
REACTION ORDER: 3	M: H_2O	300-423	4.0(+18)	0	0		
NOTE: TEMPERATURE INDEPENDENT k (EVALUATION)							
72 WES/DEH4	M: Ar	298	3.0(+17)	-	-		
72 WES/DEH4		273-395	7.3(+17)	-	-		
NOTE: k DECREASING WITHIN GIVEN T RANGE FROM $7.3X10^{17}$ TO $2.1X10^{17}$ $cm^6 mol^{-1} s^{-1}$							
74 AND/MAR	M: He	295	3.6(+17)	-	-	0.8	1.2
	M: Ar	295	3.6(+17)	-	-	0.8	1.2
NOTE: A NEGATIVE ACTIVATION ENERGY OF -1800±300 cal/mol WAS DETERMINED IN THE RANGE 295-439K							
	M: N_2	295	8.3(+17)	-	-	0.8	1.2
74 GLA/TRO1	M: He	295-1200	1.4(+25)	-2.98	0	0.6	1.6
NOTE: LIMITING LOW-PRESSURE k (EVALUATION: $k_1 = Kk_{-1}$)							
CONCENTRATION DEPENDENT ARRHENIUS EXPRESSION = k/[He]							
REACTION ORDER: 2	M: Ar	295-1200	4.0(+14)	-0.85	0	0.6	1.6
NOTE: LIMITING HIGH-PRESSURE k (EVALUATION: $k_1 = Kk_{-1}$)							
REACTION ORDER: 3	M: Ar	295-1200	5.6(+24)	-2.9	0	0.6	1.6
NOTE: LIMITING LOW-PRESSURE k (EVALUATION: $k_1 = Kk_{-1}$)							
CONCENTRATION DEPENDENT ARRHENIUS EXPRESSION = k/[Ar]							
	M: N_2	622	3.0(+17)	-	-		
NOTE: LIMITING LOW-PRESSURE k (EVALUATION: $k_1 K_{k-1}$)							
CONCENTRATION DEPENDENT ARRHENIUS EXPRESSION = k/[N_2]							
	M: N_2	670	1.7(+17)	-	-		
NOTE: LIMITING LOW PRESSURE k (EVALUATION: $k_1 = Kk_{-1}$							
CONCENTRATION DEPENDENT ARRHENIUS EXPRESSION = k/[N_2]							
74 HOW/EVE	M: N_2	296	1.1(+18)	-	-		
75 GER/MUL1	M: N_2	435	3.2(+12)	-	-		
NOTE: IN AN ATMOSPHERE OF WATER VAPOR							
75 HAR/WAY REACTION ORDER: 3	M: Ar	298	5.4(+17)	-	-	0.7	1.3
	M: N_2	298	9.4(+17)	-	-	0.6	1.4
76 ANA/SNI	M: O_2	296	6.5(+17)	-	-		
NOTE: M eff: O_2(0.68). LIMITING LOW PRESSURE k							
	M: Ar	296	4.0(+17)	-	-		
NOTE: M eff: Ar(0.42). LIMITING LOW-PRESSURE k							
	M: He	296	3.3(+17)	-	-		
NOTE: M eff: He(0.34). LIMITING LOW-PRESSURE k							
	M: N_2	296	9.8(+12)	-	-		
NOTE: LIMITING HIGH-PRESSURE k							
REACTION ORDER: 3	M: N_2	296	9.6(+17)	-	-		
NOTE: M eff: N_2(1.0). LIMITING LOW-PRESSURE k							
	M: N_2	220-550	5.5(+16)	0	-818	0.8	1.2
NOTE: LIMITING LOW-PRESSURE k							
	M: N_2	220-550	2.6(+24)	-2.6	0	0.8	1.2
NOTE: LIMITING LOW-PRESSURE k (ALTERNATE T-DEPENDENT EXPRESSION)							
	M: SF_6	296	2.4(+18)	-	-		
NOTE: M eff: SF_6(2.5). LIMITING LOW-PRESSURE k							
76 ATK/PER3	M: Ar	298	3.6(+12)	-	-	0.9	1.1
NOTE: AT 760 TORR							
	M: Ar	298	3.7(+17)	-	-	0.9	1.1
NOTE: LIMITING LOW-PRESSURE k							

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
REACTION ORDER: 2 M: N_2	298	3.9(+12)	-	-	0.8	1.2
NOTE: AT 760 TORR	298	5.1(+12)	-	-		
NOTE: M=Ar, or N_2. LIMITING HIGH-PRESSURE k						
77 ERL/FIE REACTION ORDER: 3 M: He	213-300	5.4(+24)	-2.9	0	0.7	1.3
NOTE: k_0 (LOW PRESSURE)						
77 ERI/FIE M: He	300	3.6(+17)	-	-	0.6	1.4
NOTE: k_0 (LOW PRESSURE)						
77 ERL/FIE M: CO_2	300	1.5(+18)	-	-	0.9	1.1
NOTE: k_0 (LOW PRESSURE)						

OH + N_2O → HO_2 + N_2						
HYDROXYL FREE RADICAL + NITROGEN OXIDE (N_2O)						
76 BIE/ZET REACTION ORDER: 2	298	2.3(+7)	-	-	0.7	1.3
77 CHA/KAU	480	<2.4(+8)	-	-		
NOTE: UPPER LIMIT k						

OH(v=9) + N_2O → products						
HYDROXYL FREE RADICAL + NITROGEN OXIDE (N_2O)						
72 WEK/COL REACTION ORDER: 2	298	2.9(+10)	-	-	0.5	1.5
NOTE: UNREPORTED T ASSUMED TO BE 298 K						

OH + N_2O + M → HO_2 + N_2 + M						
HYDROXYL FREE RADICAL + NITROGEN OXIDE (N_2O)						
75 GER/MUL1 REACTION ORDER: 2 M: H_2O	440	<1.0(+10)	-	-		
NOTE: IN AN ATMOSPHERE OF WATER VAPOR. UPPER LIMIT k						

OH + N_2O + M → products						
HYDROXYL FREE RADICAL + NITROGEN OXIDE (N_2O)						
76 ATK/PER REACTION ORDER: 2	298-443	<1.2(+8)	-	-		
NOTE: LIMITING HIGH-PRESSURE k (UPPER LIMIT); (25-654 TORR)						

OH + NH_3 → H_2O + NH_2						
HYDROXYL FREE RADICAL + AMMONIA						
73 GEH/HOY REACTION ORDER: 2	298	1.7(+11)	-	-		
73 KUK	298	2.5(+10)	-	-	0.9	1.1
73 STU3	298	9.0(+10)	-	-	0.7	1.3
74 DOV/NIP	1620-192	<8.0(+9)	0.68	554		
NOTE: UPPER LIMIT k	230-490	1.4(+12)	0	805	0.9	1.1
74 ZEL/SMI	298-669	3.2(+12)	0	920	0.8	1.2
74 HAC/HOY1	296	7.2(+10)	-	-	0.7	1.3
75 COX/DER2						
NOTE: EVALUATION	228-472	1.4(+12)	0	805	0.9	1.1
75 SMI/ZEL	297-427	1.8(+12)	0	860±150		
76 PEP/ATK1						
OH + NH_3 + M → H_2O + NH_2 + M						
HYDROXYL FREE RADICAL + AMMONIA						
75 GER/MUL1 REACTION ORDER: 2 M: H_2O	418	2.6(+11)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR						

OH + HNO → H_2O + NO						
HYDROXYL FREE RADICAL + NITROSYL HYDRIDE						
72 SMI REACTION ORDER: 2	2100	1.1(+13)	-	-	0.9	1.1
75 CAM/HAN2 k/k_{ref}: ≤4.4	425	-	-	-		
NOTE: k_{ref}: O + HNO → OH + NO UPPER LIMIT RATIO.						

OH + HONO → H_2O + NO_2						
HYDROXYL FREE RADICAL + NITROUS ACID						
74 COX2 REACTION ORDER: 2	294	1.3(+12)	-	-	0.9	1.1
NOTE: EVALUATION						
74 COX1 k/k_{ref}: 0.37	300	-	-	-	0.8	1.2
NOTE: k_{ref}: OH + NO + M → HONO + M						
	300	1.1(+12)	-	-		
NOTE: EVALUATION						
75 COX	300	1.3(+12)	-	-	0.9	1.1
75 COX/DER2	298	2.2(+12)	-	-		
NOTE: EVALUATION						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	F
76 CEX/DER1 k/k_{ref}: 945	298	-	-	-		
NOTE: k_{ref}: $OH + H_2 \rightarrow H_2O + H$						
76 CEX/DER1	298	$4.0(+12)$	-	-	0.9	1.1
NOTE: EVALUATION						
76 CEX/DER2 k/k_{ref}: 904	298	-	-	-	0.9	1.1
NOTE: k_{ref}: $OH + CH_4 \rightarrow H_2O + CH_3$.						
76 CEX/DER3 k/k_{ref}: 0.32	296	-	-	-	0.9	1.1
NOTE: k_{ref}: $OH + CH_3CHO \rightarrow H_2O + CH_3C(O)$.						
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76 FIF REACTION ORDER: 2	1000-1400	$1.6(+12)$	0	0	0.7	1555
NOTE: ALTERNATIVE, T DEPENDENT k: $6.92X10^{12}exp(-1760/T)cm^3mol^{-1}s^{-1}$						
$OH + HONO_2 \rightarrow H_2O + NO_3$						
HYDROXYL FREE RADICAL + NITRIC ACID						
72 MER/SMI REACTION ORDER: 2	300	$7.8(+10)$	-	-	0.6	1.4
74 GLA/TRO1	1000-1100	$9.5(+10)$	-	-	0.8	1.2
74 ZEL/SMI	240-405	$5.4(+10)$	0	0	0.8	1.2
75 MAK/KAU	270-470	$5.4(+10)$	0	0	0.9	1.1
75 SMI/ZEL	240-406	$4.8(+10)$	0	0	0.7	1.3

$OH + NH_2NH_2 \rightarrow$ products						
HYDROXYL FREE RADICAL + HYDRAZINE						
74 HAC/HOY1 REACTION ORDER: 2	298	$1.3(+13)$	-	-	0.8	1.2

$OH + CO \rightarrow H + CO_2$						
HYDROXYL FREE RADICAL + CARBON MONOXIDE						
71 ERA/BEL1 REACTION ORDER: 2	1300-1900	$4.2(+11)$	0	500±100	0.7	1.3
72 DIX REACTION ORDER: 2	1050	$2.4(+11)$	-	-	0.9	1.1
NOTE: EVALUATION						
72 STU/NIK1	298	$8.1(+10)$	-	-	0.9	1.2
73 DAY/THO	1050	$2.4(+11)$	-	-	0.9	1.1
NOTE: EVALUATION						
73 GAR/MAL	1200-2500	$4.0(+12)$	0	4025	0.8	1.2
73 PEE/MAH1	1750	$2.8(+11)$	-	-		
73 SMI/ZEL1	300	$8.7(+10)$	-	-		
NOTE: WITHIN THE 210-460 RANGE, SLIGHT POSITIVE T DEPENDENCE, POSSIBLY CURVED						
73 WES/DEH1	298-915	$8.0(+10)$	-	-		
NOTE: NON LINEAR ARRHENIUS BEHAVIOR; WITHIN THE GIVEN T RANGE, k INCREASES FROM $8.0X10^{10}$ TO $13.1X10^{10}cm^3mol^{-1}s^{-1}$						
74 DAV/ELS	220-373	$1.3(+11)$	0	80±40	0.9	1.1
74 HOW/EVE	296	$9.4(+10)$	-	-		
74 TRA/ROS2	300	$7.5(+10)$	-	-		
75 EIC/LAZ	1350-1750	$4.7(+11)$	0	0		
75 STE/ZEL	300	$9.3(+10)$	-	-	0.8	1.2
NOTE: NON LINEAR ARRHENIUS BEHAVIOUR WITHIN THE T RANGE 300-900K: $\log k = 10.85+4.0X10^{-4}T$						
75 TRA/ROS REACTION ORDER: 2	300	$7.5(+10)$	-	-		
75 VAN/PEE REACTION ORDER: 2	400-800	$8.0(+10)$	-	-		
NOTE: NON LINEAR ARRHENIUS BEHAVIOR(WITHIN THE GIVEN T RANGE, k INCREASES ONLY SLIGHTLY FROM $8.0X10^{10}cm^3mol^{-1}s^{-1}$						
75 VAN/PEE REACTION ORDER: 2	1000-1800	$2.3(+12)$	0	2870		
76 PEA/CAP REACTION ORDER: 2 k/k_{ref}: 0.18	1300	-	-	-		
NOTE: k_{ref}: $OH + CH_4 \rightarrow H_2O + CH_3$						
76 CEX/DER1 REACTION ORDER: 2 k/k_{ref}: 38.6	298	-	-	-		
NOTE: k_{ref}: $OH + H_2 \rightarrow H_2O + H$						
76 CEX/DER1	298	$1.6(+11)$	-	-	0.9	1.1
NOTE: EVALUATION						
76 SIE/SIM1	217-276	-	-	-		
NOTE: k_{ref}: $OH + H_2 \rightarrow H_2O + H$ k/k_{ref}: $0.20exp(+1710/T)$ (HIGH-PRESSURE LIMITING RATIO)						
76 SIE/SIM1 REACTION ORDER: 2 k/k_{ref}: 14.0	298	-	-	-		
NOTE: k_{ref}: $OH + H_2 \rightarrow H_2O + H$ k/k_{ref}: RATIO INCREASING TO A HIGH-PRESSURE LIMITING VALUE OF 50						
77 CHA/USE k/k_{ref}: 0.059	298	-	-	-		
NOTE: k_{ref}: $OH + (CH_3)_3CH \rightarrow H_2O + (CH_3)_3C. + (CH_3)_2CHCH_2.$ (AT 100 TORR.)						
77 CHA/USE k/k_{ref}: 0.127	298	-	-	-		

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	F
NOTE: k_{ref}: OH + $(CH_3)_2CH$ → H_2O + $(CH_3)_3C\cdot$ + $(CH_3)_2CHCH_2\cdot$ (AT 100 TORR.)						
OH(v=1) + CO → H + CO_2						
HYDROXYL FREE RADICAL + CARBON MONOXIDE REACTION ORDER: 2						
77 SIE/END	295	<1.8(+11)	-	-		
NOTE: UPPER LIMIT k						
77 SIE/GLA	295	<3.0(+12)	-	-		
NOTE: UPPER LIMIT k.						
OH + CO + M → H + CO_2 + M						
HYDROXYL FREE RADICAL + CARBON MONOXIDE REACTION ORDER: 2						
75 GER/MUL1	298	9.1(+10)	-	-	0.9	1.1
NOTE: M=AR(710 TORR) + H_2O(10 TORR) + CO(10 TORR)						
76 ATK/PER M: Ar	299	9.3(+10)	-	-	0.9	1.1
NOTE: LIMITING HIGH-PRESSURE k (25-654 TORR)						
76 SIE/SIM2 M: H_2	298	2.1(+11)	-	-		
NOTE: LIMITING HIGH PRESSURE k (EVALUATION)						
77 CVF/PAR1 M: He	296	1.2(+11)	-	-	0.9	1.1
NOTE: LIMITING HIGH-PRESSURE k (50 TORR)						
M: SF_6	296	2.0(+11)	-	-	0.9	1.1
NOTE: LIMITING HIGH PRESSURE k (200, AND 350 TORR)						
OH + CO + M → products						
HYDROXYL FREE RADICAL + CARBON MONOXIDE						
77 FER/ATK2 M: Ar	299	9.4(+10)	-	-	0.9	1.1
NOTE: IN PRESSURE RANGE 25 TO 643 TORR	299	9.4(+10)	-	-	0.9	1.1
NOTE: PRESSURE-DEPENDENT K INCREASING FROM $9.4X10^{10}$ TO $2.1X10^{11}$ $cm^3mol^{-1}s^{-1}$ WITHIN THE 25-604 TORR. PRESSURE RANGE						
OH(v=9) + CO_2 → products.						
HYDROXYL FREE RADICAL + CARBON DIOXIDE REACTION ORDER: 2						
72 WEK/COL	298	1.4(+10)	-	-	0.6	1.4
NOTE: UNREPORTED T ASSUMED TO BE 298K						
OH + CH_4 → H_2O + CH_3						
HYDROXYL FREE RADICAL + METHANE REACTION ORDER: 2						
73 PEE/MAH1	1100-1900	3.0(+13)	0	3020		
74 DAV/FIS	240-373	1.4(+12)	0	1710±90	0.9	1.1
74 MAR/KAU	290-440	2.3(+12)	0	1840±20	0.9	1.1
75 CVF/PAR	295	3.9(+9)	-	-	0.9	1.1
75 STE/ZEL	300-700	2.8(+12)	0	1860		
76 COX/DER1 REACTION ORDER: 2 k/k_{ref}: 1.04	298	-	-	-		
NOTE: k_{ref}: OH + H_2 → H_2O + H						
76 COX/DER1	298	4.6(+9)	-	-	0.9	1.1
NOTE: EVALUATION						
76 PEW/TVE1	296	5.7(+9)	-	-	0.9	1.1
76 ZEL/STE	300-900	3.47(+3)	3.08	1010	0.8	1.1
OH(v=9) + CH_4 → H_2O + CH_3						
HYDROXYL FREE RADICAL + METHANE REACTION ORDER: 2						
72 WEK/COL	298	8.4(+9)	-	-	0.9	1.1
NOTE: UNREPORTED T ASSUMED TO BE 298 K						
OH(v=1) + CH_4 → H_2O + CH_3						
HYDROXYL FREE RADICAL + METHANE REACTION ORDER: 2						
77 SIE/END	295	<1.8(+10)	-	-		
NOTE: UPPER LIMIT k						
OH + CH_4 + M → H_2O + CH_3 + M						
HYDROXYL FREE RADICAL + METHANE REACTION ORDER: 2 M: H_2O						
75 GER/MUL1	381	1.6(+10)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR						
75 GER/MUL1 M: H_2O	416	3.3(+10)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR						
OH + CDH_3 + M → H_2O + DHO + CDH_2 + CH_3 + M						
HYDROXYL FREE RADICAL + METHANE-D						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
75 GER/MUL1 REACTION ORDER: 2 M: H_2O	416	2.2(+10)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR						
$OH + CD_2H_2 + M \rightarrow H_2O + DHO + CD_2H + CDH_2 + M$						
HYDROXYL FREE RADICAL + METHANE-d_2						
75 GER/MUL1 REACTION ORDER: 2 M: H_2O	416	1.8(+10)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR						
$OH + CD_3H + M \rightarrow H_2O + DHO + CD_3 + CD_2H + M$						
HYDROXYL FREE RADICAL + METHANE-D_3						
75 GER/MUL1 REACTION ORDER: 2 M: H_2O	416	6.7(+9)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR						
$OH + CD_4 + M \rightarrow DHO + CD_3 + M$						
HYDROXYL FREE RADICAL + METHANE-D_4						
75 GER/MUL1 REACTION ORDER: 2 M: H_2O	416	3.0(+9)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR						
$OH + HCHO \rightarrow H_2O + .CHO$						
HYDROXYL FREE RADICAL + FORMALDEHYDE						
71 MER/NIK1 REACTION ORDER: 2	298	8.4(+12)	-	-	0.7	1.3
71 MER/NIK2 k/k_{ref}: 0.9	300	-	-	-		
NOTE: k_{ref}: $OH + CH_3CH=CH_2 \rightarrow$ products						
73 PEL/MAH1	1400-1800	2.3(+13)	0	0		
NOTE: TENTATIVE K						
77 VAN/VAN	300-1600	3.9(+13)	0	705		
NOTE: EVALUATION						
$OH + CH_3OH \rightarrow H_2O + .CH_2OH$						
HYDROXYL FREE RADICAL + METHANOL						
76 CAM/MCL REACTION ORDER: 2	292	5.7(+13)	-	-	0.9	1.1
$OH + CH_3OH \rightarrow H_2O + CH_3O. + .CH_2OH$						
HYDROXYL FREE RADICAL + METHANOL						
75 OSI/SIM REACTION ORDER: 2 k/k_{ref}: 0.63	298	-	-	-	0.8	1.2
NOTE: k_{ref}: $OH + CO \rightarrow H + CO_2$						
75 OSI/SIM k/k_{ref}: 0.98	345	-	-	-	0.8	1.2
NOTE: k_{ref}: $OH + CO \rightarrow H + CO_2$						
$OH + CH_3OH \rightarrow$ products						
HYDROXYL FREE RADICAL + METHANOL						
77 OSI REACTION ORDER: 2 k/k_{ref}: 0.63	298	-	-	-	0.8	1.2
NOTE: k_{ref}: $OH + CO \rightarrow$ products						
77 OSI k/k_{ref}: 0.98	345	-	-	-	0.8	1.2
NOTE: k_{ref}: $OH + CO \rightarrow$ products						
$OH(v=0) + COS \rightarrow$ products						
HYDROXYL FREE RADICAL + CARBON OXIDE SULFIDE						
72 WEB/COL REACTION ORDER: 2	298	1.5(+10)	-	-	0.4	1.6
NOTE: UNREPORTED T, ASSUMED TO BE 298K						
$OH + CH_3NO_2 \rightarrow$ products						
HYDROXYL FREE RADICAL + METHANE, NITRO-						
75 CAM/GOD$_2$ REACTION ORDER: 2	292	5.5(+11)	-	-	0.9	1.1
NOTE: EVALUATION						
$OH + CH_3ONO \rightarrow$ products						
HYDROXYL FREE RADICAL + NITROUS ACID METHYL ESTER						
75 CAM/GOD$_2$ REACTION ORDER: 2	292	8.0(+11)	-	-	0.9	1.1
NOTE: EVALUATION						
$OH + CH{\equiv}CH \rightarrow H + CH_2=C=O$						
HYDROXYL FREE RADICAL + ETHYNE						
77 VAN/VAN REACTION ORDER: 2	570-850	3.2(+11)	0	100		
NOTE: EVALUATION						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
$OH + CH{\equiv}CH \rightarrow H_2 + CH{\equiv}CO\cdot$						
HYDROXYL FREE RADICAL + ETHYNE						
71 BEF/GLA REACTION ORDER: 2	295	1.1(+11)	-	-	0.7	1.3
$OH + CH{\equiv}CH \rightarrow CO + CH_3$						
HYDROXYL FREE RADICAL + ETHYNE						
72 VAN/VAN REACTION ORDER: 2	650-1110	5.5(+13)	0	6900		
NOTE: EVALUATION						
$OH + CH{\equiv}CH \rightarrow$ products						
HYDROXYL FREE RADICAL + ETHYNE						
73 SMI/ZELI REACTION ORDER: 2	210-460	1.2(+12)	0	250		
74 PAS/CAR	298	1.2(+11)	-	-	0.7	1.3
$OH + CH{\equiv}CH + M \rightarrow$ products						
HYDROXYL FREE RADICAL + ETHYNE						
74 EAV/FIS REACTION ORDER: 2 M: He	300	9.9(+10)	-	-	0.9	1.1
NOTE: PRESSURE INDEPENDENT						
77 PER/ATK REACTION ORDER: 2 M: Ar	288-422	1.2(+12)	0	310±200		
NOTE: AT PRESSURES ≥200 TORR						
$OH + CH_2{=}CH_2 \rightarrow H_2O + CH_2{=}CH\cdot$						
HYDROXYL FREE RADICAL + ETHENE						
76 ERA/CAP REACTION ORDER: 2 k/k_{ref}: 2.33	1300	-	-	-		
NOTE: k_{ref}: $OH + CH_4 \rightarrow H_2O + CH_3\cdot$						
76 MIA/HEI k/k_{ref}: 0.26	298	-	-	-		
NOTE: k_{ref}: $OH + CH_2{=}CH_2 \rightarrow H_2O + CH_2{=}CH\cdot + \cdot CH_2CH_2OH^*$						
$OH + CH_2{=}CH_2 \rightarrow$ products						
HYDROXYL FREE RADICAL + ETHENE						
71 MOP/NIK2 REACTION ORDER: 2 k/k_{ref}: 0.1	300	-	-	-		
NOTE: k_{ref}: $OH + CH_3CH{=}CH_2 \rightarrow$ products						
71 MCK/STE	300	1.1(+12)	-	-	0.7	1.3
73 ERA/HAC	298	1.0(+12)	-	-	0.7	1.3
73 SII	298	1.8(+12)	-	-	0.7	1.3
73 SMI/ZELI	210-460	4.5(+12)	0	110		
75 PAS/CAR	300	1.4(+12)	-	-	0.9	1.1
75 CEX	300	5.7(+12)	-	-	0.9	1.1
76 ILO/DAR2	305	5.2(+12)	-	-	0.8	1.2
NOTE: EVALUATION						
$OH + CH_2{=}CH_2 + M \rightarrow \cdot CH_2CH_2OH + M$						
HYDROXYL FREE RADICAL + ETHENE						
77 ATK/PER REACTION ORDER: 2 M: Ar	299-425	1.3(+12)	0	390±150		
NOTE: LIMITING HIGH PRESSURE k						
$OH + CH_2{=}CH_2 + M \rightarrow \cdot CH_2CH_2OH + M$						
HYDROXYL FREE RADICAL + ETHENE						
77 EVI/PAR2 REACTION ORDER: 2	296	6.0(+12)	-	-	0.8	1.2
NOTE: LIMITING HIGH PRESSURE k						
$OH + CH_2{=}CH_2 + M \rightarrow$ products						
HYDROXYL FREE RADICAL + ETHENE						
75 EAV/FIS REACTION ORDER: 2 M: He	300	3.2(+12)	-	-	0.9	1.1
NOTE: LIMITING HIGH PRESSURE k M: H_2O	381	3.8(+12)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR						
75 GOK/MUL1 M: H_2O	416	4.4(+12)	-	-		
NOTE: IN AN ATMOSPHERE OF WATER VAPOR						
76 DEW REACTION ORDER:2	296	2.4(+12)	-	-		
NOTE: LIMITING HIGH PRESSURE k						
$OH + CH_3CH_3 \rightarrow H_2O + CH_3CH_2\cdot$						
HYDROXYL FREE RADICAL + ETHANE						
75 BUC/D00 REACTION ORDER: 2 k/k_{ref}: 9.6	653	-	-	-	0.9	1.1
NOTE: k_{ref}: $OH + CH_4 \rightarrow H_2O + CH_3\cdot$						
75 OVE/PAR	295	1.6(+11)	-	-	0.9	1.1
76 ERA/CAP REACTION ORDER: 2 k/k_{ref}: 2.88	1300	-	-	-		

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	F
NOTE: k_{ref}: OH + CH_4 → H_2O + CH_3•						
76 HOW/EVE2	296	1.7(+11)	-	-	0.8	1.2
OH + CH_3CH_3 + M → H_2O + CH_3CH_2• + M						
HYDROXYL FREE RADICAL + ETHANE REACTION ORDER: 2 M: H_2O						
75 GOR/MUL1	381	4.0(+11)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR M: H_2O	416	4.8(+11)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR						
OH + CH_2=C=O → .CHO + HCHO						
HYDROXYL FREE RADICAL + ETHENONE REACTION ORDER: 2						
77 VAN/VAN	480-1000	2.8(+13)	0	0		
NOTE: EVALUATION						
OH + CH_3CHO → H_2O + $CH_3C(O)$•						
HYDROXYL FREE RADICAL + ACETALDEHYDE k/k_{ref}: 0.90						
71 MER/NIK2	300	-	-	-		
NOTE: k_{ref}: OH + CH_3CH=CH_2						
71 MER/STE	300	9.0(+12)	-	-	0.7	1.3
76 COX/DER	296	1.2(+13)	-	-		
NOTE: UPPER LIMIT k						
OH + CH_3CH_2OH → H_2O + .CH_2CH_2OH						
HYDROXYL FREE RADICAL + ETHANOL REACTION ORDER: 2						
76 CAM/MCL	292	1.8(+12)	-	-	0.9	1.1
OH + CH_3OCH_3 → H_2O + .CH_2OCH_3						
HYDROXYL FREE RADICAL + METHANE, OXYBIS- REACTION ORDER: 2						
77 PER/ATK1	299-427	7.8(+12)	0	390±150		
OH + $CH_3C(O)OONO_2$ → products						
HYDROXYL FREE RADICAL + PEROXIDE, ACETYL NITRO- REACTION ORDER: 2						
77 WIN/LIS	299	<1.0(+11)	-	-		
NOTE: UPPER LIMIT k						
OH + O=C=C-C=O → CO_2 + .CH=C=O						
HYDROXYL FREE RADICAL + 1,2-PROPADIENE-1,3-DIONE REACTION ORDER: 2						
77 FAU/WAG2	295-480	7.0(+12)	0	620±160	0.6	1.4
OH + CH_3C≡CH → products						
HYDROXYL FREE RADICAL + PROPYNE REACTION ORDER: 2						
73 BRA/HAC	298	5.7(+11)	-	-	0.8	1.2
OH + CH_2=C=CH_2 → products						
HYDROXYL FREE RADICAL + 1,2-PROPADIENE REACTION ORDER: 2						
73 BRA/HAC	298	2.7(+12)	-	-	0.4	1.6
77 ATK/PER3	299-424	3.4(+12)	0	-153±150	0.9	1.1
OH + CH_3CH=CH_2 → H_2O + .CH_2CH=CH_2						
HYDROXYL FREE RADICAL + PROPENE REACTION ORDER: 2						
76 GER	298	8.3(+12)	-	-	0.8	1.2
74 GER/VAL	298	8.1(+12)	-	-	0.7	1.3
OH + CH_3CH=CH_2 → products						
HYDROXYL FREE RADICAL + PROPENE REACTION ORDER: 2 k/k_{ref}: 1.0						
71 MER/NIK2	300	-	-	-		
NOTE: k_{ref}: OH + CH_3CH=CH_2 → products						
71 MER/STE	300	1.0(+13)	-	-	0.7	1.3
73 BRA/HAC	298	3.0(+12)	-	-	0.7	1.3
73 SIM/HEI2 REACTION ORDER: 2 k/k_{ref}: 75.0	373	-	-	-	0.9	1.1
73 SIM/HEI2 k/k_{ref}: 55.0	473	-	-	-	0.9	1.1
NOTE: k_{ref}: OH + CO → H + CO_2						
73 SIM/HEI2 REACTION ORDER : 2	373-473	8.2(+12)	0	50		
NOTE: EVALUATION	298	8.7(+12)	-	-	0.8	1.2
73 STU	297-425	2.5(+12)	0	-545±150		
75 ATK/PIT	300	2.2(+13)	-	-	0.9	1.1
75 COX						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
75 PAS/CAR	300	3.0(+12)	-	-	0.8	1.2
76 LLO/DAR2	305	1.8(+13)	-	-	0.8	1.2
NOTE: EVALUATION						
76 WIN/LLO	305	1.5(+13)	-	-	0.9	1.1
NOTE: EVALUATION						

$OH + CD_3CE{=}CD_2 \rightarrow$ products						
HYDROXYL FREE RADICAL + PROPENE-D6						
71 MER/NIK2 REACTION ORDER: 2 k/k_{ref}: 1.1	300	-	-	-		
NOTE: k_{ref}: $OH + CH_3CH{=}CH_2 \rightarrow$ products						
72 STU	298	1.0(+13)	-	-		

$OH + CH_3CH{=}CH_2 + M \rightarrow$ products						
HYDROXYL FREE RADICAL + PROPENE						
75 GER/MDL1 REACTION ORDER: 2 M: H_2O	381	8.6(+12)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR						

$OH + CH_3CH{=}CH_2 + M \rightarrow$ products						
HYDROXYL FREE RADICAL + PROPENE						
75 GER/MDL1 REACTION ORDER: 2 M: H_2O	416	1.2(+13)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR						

$OH + CH_3CH_2CH_3 \rightarrow H_2O + (CH_3)_2CH\cdot + CH_3CH_2CH_2\cdot$						
HYDROXYL FREE RADICAL + PROPANE						
74 GER/VOL REACTION ORDER: 2	298	1.3(+12)	-	-	0.7	1.3
75 BAR/LUR	329	1.2(+12)	-	-	0.9	1.1
75 CVE/PAR	295	1.2(+12)	-	-	0.9	1.1
75 HUC/DOO k/k_{ref}: 2.18	653	-	-	-	0.9	1.1
NOTE: k_{ref}: $OH + CH_3CH_3 \rightarrow H_2O + CH_3CH_2\cdot$						

$OH + CH_3CH_2CH_3 \rightarrow$ products						
HYDROXYL FREE RADICAL + PROPANE						
73 BEA/HAC REACTION ORDER: 2	298	5.0(+11)	-	-	0.8	1.2

$OH + CH_3CH_2CH_3 + M \rightarrow H_2O + (CH_3)_2CH\cdot + CH_3CH_2CH_2\cdot + M$						
HYDROXYL FREE RADICAL + PROPANE						
75 GER/MDL1 REACTION ORDER: 2 M: H_2O	381	1.3(+12)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR						
75 GER/MDL1 REACTION ORDER: 2	416	1.2(+12)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR						

$OH + CH_2{=}CHCH_2OH + M \rightarrow$ products						
HYDROXYL FREE RADICAL + 2-PROPEN-1-OL						
75 GER/MDL1 REACTION ORDER: 2	440	1.6(+13)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR						

$OH + CH_2{=}CHOCH_3 \rightarrow$ products						
HYDROXYL FREE RADICAL + ETHENE, METHOXY-						
77 PER/ATK1 REACTION ORDER: 2	299-427	3.7(+12)	0	-510±150		

$OH + CH_3CH_2CHO \rightarrow H_2O + CH_3CH_2C(O)\cdot$						
HYDROXYL FREE RADICAL + PROPANAL						
71 MER/NIK2 REACTION ORDER: 2 k/k_{ref}: 1.8	300	-	-	-		
NOTE: k_{ref}: $OH + CH_3CH{=}CH_2 \rightarrow$ products						
72 VGI/GOR	298	2.3(+12)	-	-	0.6	1.4

$OH + CH_3CH_2CH_2OH \rightarrow H_2O + [\cdot C_3H_6OH]$						
HYDROXYL FREE RADICAL + 1-PROPANOL						
76 CAM/MCL REACTION ORDER: 2	292	2.3(+12)	-	-	0.9	1.1

$OH + (CH_3)_2CHOH \rightarrow$ products						
HYDROXYL FREE RADICAL + 2-PROPANOL						
76 LLO/DAR1 REACTION ORDER: 2	305	4.3(+12)	-	-	0.7	1.3
NOTE: EVALUATION						

$OH + CH_2{=}CHCH{=}CH_2 \rightarrow$ products						
HYDROXYL FREE RADICAL + 1,3-BUTADIENE						
76 LLO/DAR2 REACTION ORDER: 2	305	4.6(+13)	-	-	0.8	1.2
NOTE: EVALUATION						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
77 ATK/PER3	299-424	8.7(+12)	0	-468±150	0.9	1.1

$OH + CH_3CH_2CH{=}CH_2 \rightarrow$ products						
HYDROXYL FREE RADICAL + 1-BUTENE						
71 MCR/NIK2 REACTION ORDER: 2 k/k_{ref}: 2.4	300	-	-	-		
NOTE: k_{ref}: $OH + CH_3CH{=}CH_2 \rightarrow$ products						
HYDROXYL FREE RADICAL + 1-BUTENE						
75 ATK/PIT	297-425	4.6(+12)	0	-470±150		
75 PAS/CAR	300	9.0(+12)	-	-	0.9	1.1

$OH + cis\text{-}CH_3CH{=}CHCH_3 \rightarrow$ products						
HYDROXYL FREE RADICAL + cis-2-BUTENE						
71 MCR/NIK2 REACTION ORDER: 2 k/k_{ref}: 3.6	300	-	-	-		
NOTE: k_{ref}: $OH + CH_3CH{=}CH_2 \rightarrow$ products						
75 ATK/PIT	297-425	6.3(+12)	0	-490±150		
76 LLO/DAR2	305	3.9(+13)	-	-	0.8	1.2
NOTE: EVALUATION						
76 WIN/LLO	305	3.7(+13)	-	-	0.8	1.2
NOTE: EVALUATION						

$OH + trans\text{-}CH_3CH{=}CHCH_3 \rightarrow$ products						
HYDROXYL FREE RADICAL + trans-2-BUTENE						
71 MCR/NIK2 REACTION ORDER: 2 k/k_{ref}: 4.2	300	-	-	-		
NOTE: k_{ref}: $OH + CH_3CH{=}CH_2 \rightarrow$ products						
75 CEX	300	6.4(+13)	-	-	0.7	1.3
75 ATK/PIT	297-425	6.7(+12)	0	-550±150		
75 PAS/CAR	300	7.2(+12)	-	-	0.2	1.8
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71 MCR/NIK2 k/k_{ref}: 3.8	300	-	-	-		
NOTE: k_{ref}: $OH + CH_3CH{=}CH_2 \rightarrow$ products						
75 ATK/PIT	297-425	5.5(+12)	0	-500±150		

$OH + CH_3CH_2CH_2CH_3 \rightarrow H_2O + CH_3CH_2\dot{C}H_2CH_2\cdot$						
HYDROXYL FREE RADICAL + BUTANE						
75 CAM/HAN1 REACTION ORDER: 2 k/k_{ref}: 14.8	292	-	-	-	0.9	1.1
NOTE: k_{ref}: $OH + CO \rightarrow H + CO_2$						

$OH + CH_3CH_2CH_2CH_3 \rightarrow H_2O + CH_3CH_2\dot{C}H(\cdot)CH_3 + CH_3CH_2CH_2CH_2\cdot$						
HYDROXYL FREE RADICAL + BUTANE						
71 MCR/NIK2 REACTION ORDER: 2 k/k_{ref}: 0.24	300	-	-	-		
NOTE: k_{ref}: $OH + CH_3CH{=}CH_2 \rightarrow$ products						
73 GER	298	2.0(+12)	-	-	0.9	1.1
73 STU	298	1.4(+12)	-	-	0.9	1.1
74 GER/VOL	298	1.7(+12)	-	-	0.8	1.2
75 BLC/BOO REACTION ORDER: 2 k/k_{ref}: 1.54	653	-	-	-	0.9	1.1
NOTE: k_{ref}: $OH + CH_3CH_2CH_3 \rightarrow H_2O + (CH_3)_2\dot{C}H\cdot + CH_3CH_2CH_2\cdot$						
76 PER/ATK2	297-420	1.1(+13)	0	560±150		

$OH + CH_3CH_2CH_2CH_3 + M \rightarrow H_2O + CH_3CH_2\dot{C}H(\cdot)CH_3 + CH_3CH_2CH_2CH_2\cdot + M$						
HYDROXYL FREE RADICAL + BUTANE						
75 GER/MUL1 REACTION ORDER: 2	298	2.5(+12)	-	-	0.9	1.1
NOTE: M=AR(710 TORR) + H_2O(10 TORR) + C_4H_{10}(0.54-2.46 TORR)						
75 GER/MUL1 M: H_2O	381	2.5(+12)	-	-	0.9	1.1
M: H_2O	416	3.0(+12)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR						

$OH + (CH_3)_3CH \rightarrow H_2O + (CH_3)_3C\cdot + (CH_3)_2CHCH_2\cdot$						
HYDROXYL FREE RADICAL + PROPANE, 2-METHYL-						
72 GER/VOL REACTION ORDER: 2	298	2.1(+12)	-	-	0.8	1.2
75 BLC/BOO k/k_{ref}: 1.28	653	-	-	-	0.9	1.1
NOTE: k_{ref}: $OH + CH_3CH_2CH_3 \rightarrow H_2O + (CH_3)_2\dot{C}H\cdot + CH_3CH_2CH_2\cdot$						

$OH + CH_3COCH_2CH_3 \rightarrow$ products						
HYDROXYL FREE RADICAL + 2-BUTANONE						
76 WIN/LLO REACTION ORDER: 2	305	2.0(+12)	-	-	0.8	1.2

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	F
NOTE: EVALUATION						
OH + cy-$CH_2CH_2CH_2CH_2O$ → products						
HYDROXYL FREE RADICAL + FURAN, TETRAHYDRO-						
77 WIN/LIS REACTION ORDER: 2	305	8.8(+12)	-	-	0.8	1.2
OH + $CH_3CH_2CH_2CH_2OH$ → H_2O + [.C_4H_9O]						
HYDROXYL FREE RADICAL + 1-BUTANOL						
76 CAM/MCL REACTION ORDER: 2	292	4.1(+12)	-	-	0.9	1.1
OH + $CH_3CH_2OCH_2CH_3$ → products						
HYDROXYL FREE RADICAL + ETHANE, 1,1-OXYBIS-						
76 ILO/DAR1 REACTION ORDER: 2	305	5.6(+12)	-	-	0.8	1.2
NOTE: EVALUATION						
OH + $CH_3CH_2CH_2CH=CH_2$ → products						
HYDROXYL FREE RADICAL + 1-PENTENE						
71 MCR/NIK2 REACTION ORDER: 2 k/k_{ref}: 2.5	300	-	-	-		
NOTE: k_{ref}: OH + $CH_3CH=CH_2$ → products						
OH + $CH_3CH_2CH=CHCH_3$ → products						
HYDROXYL FREE RADICAL + 2-PENTENE						
71 MCR/NIK2 REACTION ORDER: 2 k/k_{ref}: 5.3	300	-	-	-		
NOTE: k_{ref}: OH + $CH_3CH=CH_2$ → products						
OH + $CH_3CH_2C(CH_3)=CH_2$ → products						
HYDROXYL FREE RADICAL + 1-BUTENE,2-METHYL-						
71 MCR/NIK2 REACTION ORDER: 2 k/k_{ref}: 5.3	300	-	-	-		
NOTE: k_{ref}: OH + $CH_3CH=CH_2$ → products						
OH + $(CH_3)_2CHCH=CH_2$ → products						
HYDROXYL FREE RADICAL + 1-BUTENE, 3-METHYL-						
77 ATK/PER3 REACTION ORDER: 2	299-424	3.2(+12)	0	-533±150	0.9	1.1
OH + $CH_3CH=C(CH_3)_2$ → products						
HYDROXYL FREE RADICAL + 2-BUTENE, 2-METHYL-						
71 MCR/NIK2 REACTION ORDER: 2 k/k_{ref}: 7.0	300	-	-	-		
NOTE: k_{ref}: OH + $CH_3CH=CH_2$ → products						
76 ATK/PER1	297-425	2.2(+13)	0	-226±200		
OH + $(CH_3)_2CHCH_2CH_3$ → products						
HYDROXYL FREE RADICAL + BUTANE, 2-METHYL-						
76 ILO/DAR2 REACTION ORDER: 2	305	2.0(+12)	-	-	0.8	1.2
NOTE: EVALUATION						
OH + $(CH_3)_4C$ → H_2O + $(CH_3)_3CCH_2$.						
HYDROXYL FREE RADICAL + PROPANE, 2,2-DIMETHYL-						
76 BAK/BAL REACTION ORDER: 2 k/k_{ref}: 10.0	753	-	-	-		
NOTE: k_{ref}: OH + H_2 → H_2O + H. (OPTIMIZATION)						
76 BAK/BAL	753	3.9(+12)	-	-	0.9	1.1
NOTE: EVALUATION						
OH + $CH_3COOCH_2CH_2CH_3$ → products						
HYDROXYL FREE RADICAL + ACETIC ACID PROPYL ESTER						
77 WIN/LIS REACTION ORDER: 2	305	2.6(+12)	-	-	0.8	1.2
OH + $(CH_3)_2C=C(CH_3)_2$ → products						
HYDROXYL FREE RADICAL + 2-BUTENE, 2,3-DIMETHYL-						
71 MCR/NIK2 REACTION ORDER: 2 k/k_{ref}: 9.0	300	-	-	-		
NOTE: k_{ref}: OH + $CH_3CH=CH_2$ → products						
OH + $CH_3(CH_2)_4CH_3$ → H_2O + [.C_6H_{13}]						
HYDROXYL FREE RADICAL + HEXANE						
76 CAM/MCL REACTION ORDER: 2	292	3.3(+12)	-	-	0.9	1.1
OH + $CH_3(CH_2)_4CH_3$ → products						
HYDROXYL FREE RADICAL + HEXANE						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
76 LIO/DAR2 REACTION ORDER: 2	305	3.8(+12)	-	-	0.8	1.2
NOTE: EVALUATION						

OH + $(CH_3)_2CHCH_2CH_2CH_3$ → products						
HYDROXYL FREE RADICAL + PENTANE, 2-METHYL-						
76 LIO/DAR2 REACTION ORDER: 2	305	3.2(+12)	-	-	0.8	1.2
NOTE: EVALUATION						

OH + $CH_3CH_2CH(CH_3)CH_2CH_3$ → products						
HYDROXYL FREE RADICAL + PENTANE, 3-METHYL-						
76 LIO/DAR2 REACTION ORDER: 2	305	4.3(+12)	-	-	0.8	1.2
NOTE: EVALUATION						

OH + $(CH_3)_2CHCH(CH_3)_2$ → products						
HYDROXYL FREE RADICAL + BUTANE, 2,3-DIMETHYL-						
76 DAR/WIN REACTION ORDER: 2 k/k_{ref}: 0.1	305	-	-	-		
NOTE: k_{ref}: OH + $(CH_3)_2C=CH_2$ → products						

OH + $CH_3COCH_2CH(CH_3)_2$ → products						
HYDROXYL FREE RADICAL + 2-PENTANONE, 4-METHYL-						
76 WIN/LIO REACTION ORDER: 2	305	9.0(+12)	-	-	0.7	1.3
NOTE: EVALUATION						

OH + $CH_3COOCH(CH_3)CH_2CH_3$ → products						
HYDROXYL FREE RADICAL + ACETIC ACID 1-METHYLETHYL ESTER						
77 WIN/LIO REACTION ORDER: 2	305	3.4(+12)	-	-	0.8	1.2

OH + $CH_3CH_2CH_2OCH_2CH_2CH_3$ → products						
HYDROXYL FREE RADICAL + PROPANE, 1,1-OXYBIS-						
76 LIO/DAR1 REACTION ORDER: 2	305	1.0(+13)	-	-	0.8	1.2

OH + $CH_3CH_2CH_2CH_2CH_2CH=CH_2$ → products						
HYDROXYL FREE RADICAL + 1-HEPTENE						
76 DAR/WIN REACTION ORDER: 2 k/k_{ref}: 0.73	305	-	-	-		
NOTE: k_{ref}: OH + $(CH_3)_2C=CH_2$ → products						

OH + $(CH_3)_3CCH(CH_3)_2$ → products						
HYDROXYL FREE RADICAL + BUTANE, 2,2,3-TRIMETHYL-						
76 DAR/WIN REACTION ORDER: 2 k/k_{ref}: 0.74	305	-	-	-		
NOTE: k_{ref}: OH + $(CH_3)_2C=CH_2$ → products						

OH + $(CH_3)_2CHCH_2COCH_2CH(CH_3)_2$ → products						
HYDROXYL FREE RADICAL + 4-HEPTANONE, 2,6-DIMETHYL-						
76 WIN/LIO REACTION ORDER: 2	305	1.5(+13)	-	-	0.7	1.3
NOTE: EVALUATION						

HO_2 + O → O_2 + OH						
HYDROPEROXYL FREE RADICAL + OXYGEN ATOM						
73 PEE/MAH REACTION ORDER: 2	1600	5.0(+13)	-	-		
NOTE: TENTATIVE k						
77 BUK/HAR	293	2.1(+13)	-	-	0.7	1.3

HO_2 + O_3 → OH + O_2 + O_2						
HYDROPEROXYL FREE RADICAL + OZONE						
73 AND/KAU2 REACTION ORDER: 2	220-450	<3.0(+9)	-	-		
NOTE: UPPER LIMIT k						
73 DEM	300	1.8(+9)	-	-		
73 SIK/HEI3	225-298	2.0(+10)	0	1010		
NOTE: EVALUATION						
74 DEM/TSC	273-342	1.2(+11)	0	1560±250		
NOTE: EVALUATION						

HO_2 + H → O_2 + H_2						
HYDROPEROXYL FREE RADICAL + HYDROGEN ATOM						
71 BEN/BLA REACTION ORDER: 3 k/k_{ref}: 0.75	298	-	-	-		
NOTE: k_{ref}: HO_2 + H → OH + OH						
72 WES/DEH1 k/k_{ref}: 0.63	298	-	-	-		
NOTE: k_{ref}: HO_2 + H → products. EVALUATION						
76 HAC/WAG	293	6.7(+12)	-	-	0.8	1.2

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F

$HO_2 + I \rightarrow OH + OI$						
HYDROPEROXYL FREE RADICAL + HYDROGEN ATOM						
72 WES/DEH1 REACTION ORDER: 2 k/k_{ref}: 0.27	298	-	-	-		
NOTE: k_{ref}: $HO_2 + H \rightarrow$ products. EVALUATION						
76 HAC/WAG	293	1.6(+13)	-	-	0.5	1.5

$HO_2 + H \rightarrow H_2O + O$						
HYDROPEROXYL FREE RADICAL + HYDROGEN ATOM						
72 WES/DEH1 REACTION ORDER: 2 k/k_{ref}: 0.11	298	-	-	-		
NOTE: k_{ref}: $HO_2 + H \rightarrow$ products. EVALUATION						

$HO_2 + H \rightarrow H_2O + O + OH + OH$						
HYDROPEROXYL FREE RADICAL + HYDROGEN ATOM						
72 DAY/DIX REACTION ORDER: 2 k/k_{ref}: 6.5	300-1800	-	-	-	0.8	1.2
NOTE: k_{ref}: $HO_2 + H \rightarrow H_2 + O_2$. EVALUATION						
73 DAY/THO REACTION ORDER: 2 k/k_{ref}: 6.5	300-1050	-	-	-	0.8	1.2
NOTE: k_{ref}: $HO_2 + H \rightarrow H_2 + O_2$. EVALUATION						

$HO_2 + OH \rightarrow O_2 + H_2O$						
HYDROPEROXYL FREE RADICAL + HYDROXYL FREE RADICAL						
72 CAS/SCH REACTION ORDER: 2	2130	1.2(+13)	-	-		
72 DAY/DIX REACTION ORDER: 2 k/k_{ref}: ≤5.5	300-1800	-	-	-		
NOTE: k_{ref}: $HO_2 + H \rightarrow O_2 + H_2$ UPPER LIMIT RATIO						
72 HOC/GHO	298	1.2(+14)	-	-	0.8	1.2
73 DAY/THO k/k_{ref}: ≤5.5	300-1050	-	-	-		
NOTE: k_{ref}: $HO_2 + H \rightarrow H_2 + O_2$ UPPER LIMIT RATIO						
73 PEE/MAH1	1600	5.0(+13)	-	-		
NOTE: TENTATIVE k						
74 DEM/TSC	298	9.6(+13)	-	-	0.3	3.0
75 HAC/HOY	298-670	<2.0(+13)	-	-		
NOTE: UPPER LIMIT k						
77 BER/BAR	293	3.1(+13)	-	-	0.7	1.3

$HO_2 + HO_2 \rightarrow H_2O_2 + O_2$						
HYDROPEROXYL FREE RADICAL						
72 HOC/GHO REACTION ORDER: 2	298	5.7(+12)	-	-	0.9	1.1
72 PAD/JOH	295	2.2(+12)	-	-	0.9	1.1
75 HAM	298	1.9(+12)	-	-		
77 HAM/LII	298	1.5(+12)	-	-	0.8	1.2

$HO_2 + SO_2 \rightarrow OH + SO_3$						
HYDROPEROXYL FREE RADICAL + SULFUR DIOXIDE						
73 PAY/STI REACTION ORDER: 2	300	5.2(+8)	-	-	0.8	1.2
NOTE: EVALUATION						

$HO_2 + NO \rightarrow NO_2 + OH$						
HYDROPEROXYL FREE RADICAL + NITROGEN OXIDE (NO)						
73 PAY/STI REACTION ORDER: 2	300	1.8(+11)	-	-	0.3	3.0
NOTE: EVALUATION						
73 SIM/HEI1	298	>9.0(+10)	-	-		
NOTE: EVALUATION, LOWER LIMIT k						
74 HAC/HOY2	298-669	2.0(+13)	0	1430	0.5	1.5
74 SIM/HEI2 k/k_{ref}: 7.0	298	-	-	-	0.9	1.1
NOTE: k_{ref}: $HO_2 + NO_2 \rightarrow HONO + O_2$						
75 COX	300	7.2(+11)	-	-	0.7	1.3
75 COX/DER1	296	7.2(+11)	-	-	0.8	1.3
75 GLA/TRO	1350-1700	4.5(+12)	-	-	0.8	1.2
75 HAC/HOY	298-670	1.2(+13)	0	1200±150	0.7	1.3
76 SIM/HEI	296	6.0(+11)	-	-	0.8	1.2
NOTE: EVALUATION						
77 POW/PVE	296	4.9(+12)	-	-	0.8	1.2
77 SIM/HEI	245-328	7.2(+12)	0	710±250		
NOTE: EVALUATION						

$HO_2 + NO \rightarrow NO_2 + OH + HONO_2$						
HYDROPEROXYL FREE RADICAL + NITROGEN OXIDE (NO)						
76 SIM/HEI REACTION ORDER: 2 k/k_{ref}: 9.5	295	-	-	-	0.6	1.4

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
NOTE: k_{ref}: HO_2 + NO_2 → [HO_2.NO_2]						

HO_2 + NO → $HONO_2$						
HYDROPEROXYL FREE RADICAL + NITROGEN OXIDE (NO)						
75 CEX/DER1 REACTION ORDER: 2	296	8.4(+10)	-	-	0.8	1.3
NOTE: OPTIMIZATION						
76 SIM/HEI	296	<1.2(+9)	-	-		
NOTE: UPPER LIMIT k						

HO_2 + NO(+M) → $HONO_2$(+M)						
HYDROPEROXYL FREE RADICAL + NITROGEN OXIDE (NO)						
75 CEX REACTION ORDER: 2	300	8.4(+10)	-	-	0.7	1.3

HO_2 + NO_2 → [HO_2.NO_2]						
HYDROPEROXYL FREE RADICAL + NITROGEN OXIDE(NO_2)						
76 SIM/HEI REACTION ORDER: 2	296	5.9(+10)	-	-	0.6	1.4
NOTE: EVALUATION						

HO_2 + NO_2 → O_2 + HONO						
HYDROPEROXYL FREE RADICAL + NITROGEN OXIDE(NO_2)						
74 SIM/HEI2 REACTION ORDER: 2	298	>1.8(+11)	-	-		
NOTE: LOWER LIMIT k						
75 CEX	300	7.2(+10)	-	-	0.7	1.3
75 CEX/DER1	296	7.2(+10)	-	-	0.8	1.3
NOTE: OPTIMIZATION						
77 HEW	300	<1.8(+9)	-	-		
NOTE: UPPER LIMIT k						
77 LEV/USE k/k_{ref}: 0.043	297	-	-	-	0.5	1.5
NOTE: k_{ref}: HO_2 + NO → OH + NO_2 EVALUATION						
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77 LEV/USE k/k_{ref}: 0.7	297	-	-	-	0.4	1.6
NOTE: k_{ref}: HO_2 + NO_2(+M) → $HONO_2$(+M) EVALUATION						

HO_2 + NO_2 → $HONO_2$						
HYDROPEROXYL FREE RADICAL + NITROGEN OXIDE(NO_2)						
77 SIM/HEI REACTION ORDER: 2	245-328	2.5(+11)	0	0		
NOTE: EVALUATION						

HO_2 + NO_2 + M → $HONO_2$ + M						
HYDROPEROXYL FREE RADICAL + NITROGEN OXIDE (NO_2)						
77 HEW REACTION ORDER: 3 M: O_2	300	5.5(+16)	-	-	0.7	1.3
77 HEW M: He	300	3.6(+16)	-	-	0.7	1.3
77 HEW M: N_2	300	7.6(+16)	-	-	0.8	1.2
77 HEW M: NO_2	300	2.4(+17)	-	-	0.5	1.5

HO_2 + CO → OH + CO_2						
HYDROPEROXYL FREE RADICAL + CARBON MONOXIDE						
72 VAR/DAN REACTION ORDER: 2 M: 0.06	878-952	1.3(+14)	0	11600±1500		
72 WES/DER1	298	-	-	-		
NOTE: k_{ref}: HO_2 + H → OH + OH EVALUATION						
73 DAV/PAY	300	<6.0(+3)	-	-		
NOTE: EVALUATION, UPPER LIMIT k						
73 SIM/HEI1	373-473	<3.0(+6)	-	-		
NOTE: EVALUATION, UPPER LIMIT k						
76 GER	298	<9.6(7)	-	-		
NOTE: UPPER LIMIT k						
75 VAR/SAC	878-952	1.0(+14)	0	11600±1500	0.7	1.3
77 COL/NAE	1110	5.6(+9)	-	-	0.3	4.0
NOTE: EVALUATION						

HO_2 + HCHO → H_2O_2 + .CHO						
HYDROPEROXYL FREE RADICAL + FORMALDEHYDE						
71 BAL/LAN REACTION ORDER: 2	713	1.4(+9)	-	-		
72 BAL/FUL	773	9.6(+8)	-	-		
NOTE: EVALUATION						

HO_2 + CH_2=CH_2 → OH + cy-CH_2CH_2O						
HYDROPEROXYL FREE RADICAL + ETHENE						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
73 WAL2 REACTION ORDER: 2 k/k_{ref}: 0.016	773	-	-	-	0.9	1.1
NOTE: k_{ref}: HO_2 + HCHO → H_2O_2 + .CHO						
73 WAL2	773	1.5(+7)	-	-		
NOTE: EVALUATION						

HO_2 + CH_3CH_3 → H_2O_2 + CH_3CH_2.						
HYDROPEROXYL FREE RADICAL + ETHANE						
71 BAL/LAN REACTION ORDER: 2 k/k_{ref}: 0.028	713	-	-	-		
NOTE: k_{ref}: HCHO + CH_3CH_3 → products						
73 BAL/FUL k/k_{ref}: 0.03	773	-	-	-		
NOTE: k_{ref}: HO_2 + HCHO → H_2O_2 + .CHO						
	773	3.0(+7)	-	-		
NOTE: EVALUATION						

HO_2 + CH_3CHO → H_2O_2 + $CH_3C(O)$.						
HYDROPEROXYL FREE RADICAL + ACETALDEHYDE						
77 CAL/NAE REACTION ORDER: 2	1030-1115	1.7(+12)	0	5350	0.3	4.0
NOTE: EVALUATION						

HO_2 + .CH_2CH_2OH → O_2 + CH_3CH_2OH						
HYDROPEROXYL FREE RADICAL + ETHYL, 2-HYDROXY-, FREE RADICAL						
76 MEA/HEI REACTION ORDER: 2 k/k_{ref}: 1.2	298	-	-	-		
NOTE: k_{ref}: HO_2 + .CH_2CH_2OH → H_2O + HCHO + HCHO						

HO_2 + $CH_3CH_2CH_3$ → H_2O_2 + $CH_3CH_2CH_2$.						
HYDROPEROXYL FREE RADICAL + PROPANE						
73 BAL/FUL REACTION ORDER: 2 k/k_{ref}: 0.03	773	-	-	-		
NOTE: k_{ref}: HO_2 + HCHO → H_2O_2 + .CHO						
	773	3.1(+7)	-	-		
NOTE: EVALUATION						

HO_2 + $CH_3CH_2CH_3$ → H_2O_2 + $(CH_3)_2CH$.						
HYDROPEROXYL FREE RADICAL + PROPANE						
73 BAL/FUL REACTION ORDER: 2 k/k_{ref}: 0.048	773.	-	-	-		
NOTE: k_{ref}: HO_2 + HCHO → H_2O_2 + .CHO						
	773	4.8(+7)	-	-		
NOTE: EVALUATION						

HO_2 + $CH_3CH_2CH_3$ → H_2O_2 + $(CH_3)_2CH$. + $CH_3CH_2CH_2$.						
HYDROPEROXYL FREE RADICAL + PROPANE						
71 BAL/LAN REACTION ORDER: 2 k/k_{ref}: 0.088	713	-	-	-		
NOTE: k_{ref}: HCHO + $CH_3CH_2CH_3$ → products						

HO_2 + CH_3CH_2CHO → H_2O_2 + $CH_3CH_2C(O)$.						
HYDROPEROXYL FREE RADICAL + PROPANAL						
71 BAL/LAN REACTION ORDER: 2	713	1.8(+9)	-	-		

HO_2 + $(CH_3)_3CH$ → H_2O_2 + $(CH_3)_2CHCH_2$.						
HYDROPEROXYL FREE RADICAL + PROPANE, 2-METHYL-						
73 BAL/FUL REACTION ORDER: 2 k/k_{ref}: 0.045	773	-	-	-		
NOTE: k_{ref}: HO_2 + HCHO → H_2O_2 + .CHO						
	773	4.6(+7)	-	-		
NOTE: EVALUATION						

HO_2 + $(CH_3)_3CH$ → H_2O_2 + $(CH_3)_3C$.						
HYDROPEROXYL FREE RADICAL + PROPANE, 2-METHYL-						
71 BAL/LAN REACTION ORDER: 2 k/k_{ref}: 0.155	713	-	-	-		
NOTE: k_{ref}: HCHO + $(CH_3)_3CH$ → products						
73 BAL/FUL k/k_{ref}: 0.133	773	-	-	-		
NOTE: k_{ref}: HO_2 + HCHO → H_2O_2 + .CHO						
73 BAL/FUL	773	1.4(+8)	-	-		
NOTE: EVALUATION						

HO_2 + $CH_3CH_2CH_2CHO$ → H_2O_2 + $CH_3CH_2CH_2C(O)$.						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
HYDROPEROXYL FREE RADICAL + BUTANAL 71 LAL/LAN REACTION ORDER: 2	713	2.4(+9)	-	-		
$HO_2 + (CH_3)_2CHCH(CH_3)_2 \rightarrow H_2O_2 + (CH_3)_2CHC(.)(CH_3)_2$ HYDROPEROXYL FREE RADICAL + BUTANE, 2,3-DIMETHYL- 75 AIC/MIL REACTION ORDER: 2 NOTE: OPTIMIZATION	373	2.5(+5)	-	-		
$H_2O + O \rightarrow OH + OH$ WATER + OXYGEN ATOM 71 AIB/HOY REACTION ORDER: 2	753-1045	4.0(+13)	0	8700±250		
$H_2O + O^*(^1D) \rightarrow OH + OH$ WATER + OXYGEN ATOM 71 SCO/CVE REACTION ORDER: 2 k/k_{ref}: 1.5	296	-	-	-	0.9	1.1
NOTE: k_{ref}: $N_2O + O^*(^1D) \rightarrow N2 + O_2 + NO + NO$						
72 FER/SNE k/k_{ref}: 3.5	295	-	-	-		
NOTE: k_{ref}: $N2 + O^*(^1D) \rightarrow N2 + O$ 72 SIM/HEI2	300-423	-	-	-		
NOTE: k_{ref}: $CO + O^*(^1D) \rightarrow CO + O(^3P)$; k/k_{ref}: $3.8\times10^{-1}\exp(624/T)$. (EVALUATION) 73 HEI/HUS1	300	1.8(+14)	-	-	0.9	1.1
k/k_{ref}: 4.4	300	-	-	-		
NOTE: k_{ref}: $O_2 + O^*(^1D) \rightarrow$ products 73 SIM/HEI2 k/k_{ref}: 2.1	373	-	-	-	0.9	1.1
NOTE: k_{ref}: $N_2O + O^*(^1D) \rightarrow$ products 75 GAU/SNE k/k_{ref}: 5.0	300	-	-	-	0.7	1.3
NOTE: k_{ref}: $O_2 + O^*(^1D) \rightarrow O_2^*(^1\Sigma_g^+) + O$	300	2.2(+14)	-	-		
NOTE: EVALUATION 76 DAV/SAD 76 STK/HOW	298 253-353	1.3(+14) 1.4(+14)	- 0	- 0	0.5 0.9	1.5 1.1
$H_2O + OH(v=9) \rightarrow$ products WATER + HYDROXYL FREE RADICAL 72 WER/COL REACTION ORDER: 2 NOTE: LOWER LIMIT k. UNREPORTED T ASSUMED TO BE 298K	298	>1.2(+11)	-	-	0.2	1.8
$H_2O + SO_3 \rightarrow H_2SO_4$ WATER + SULFUR TRIOXIDE 75 CAS/DAV REACTION ORDER: 2	298	5.5(+11)	-	-	0.8	1.2
$H_2O + NO + NO_2 \rightarrow HONO + HONO$ WATER + NITROGEN OXIDE (NO) + NITROGEN OXIDE (NO_2) 75 ENG/CAR REACTION ORDER: 3 76 CBA/NOR	298-323 296	1.5(+11) 2.2(+10)	0 -	0 -	0.7	1.3
$H_2O + NO_2 \rightarrow OH + HONO$ WATER + NITROGEN OXIDE (NO_2) 76 FIF REACTION ORDER: 2 NOTE: $k_1 = k_{-1}$	1000-1400	8.3(+12)	0	21140		
$H_2O + NO_2 + NO_2 \rightarrow HONO + HNO_3$ WATER + NITROGEN OXIDE (NO_2) 74 ENG/CAR REACTION ORDER: 3	298-323	1.0(+10)	0	-492±10	0.9	1.1
$H_2O + N_2O_3 \rightarrow HNO_2 + HNO_2$ WATER + NITROGEN OXIDE (N_2O_3) 75 ENG/CAR REACTION ORDER: 2 NOTE: EVALUATION	313-323	3.1(+14)	0	5133±1760	0.9	1.1

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
$H_2O + N_2O_4 \rightarrow HONO + HNO_2$						
WATER + NITROGEN OXIDE (N_2O_4)						
74 ENG/CER REACTION ORDER: 2	298-323	6.0(+14)	0	6090±250	0.9	1.1
$H_2O + N_2O_5 \rightarrow HONO_2 + HNO_2$						
WATER + NITROGEN OXIDE (N_2O_5)						
73 MOR/NIK2 REACTION ORDER: 2	298	<7.8(+3)	-	-		
NOTE: UPPER LIMIT k						
$H_2O + C(^3P) \rightarrow$ products						
WATER + CARBON ATOM						
75 HUS/YOU REACTION ORDER: 2	300	<6.0(+11)	-	-		
NOTE: UPPER LIMIT k						
$H_2O + CH \rightarrow$ products						
WATER + METHYLIDYNE FREE RADICAL						
71 BOS/PER REACTION ORDER: 2	298	2.7(+13)	-	-	0.9	1.2
$H_2O_2 + O^*(^1D) \rightarrow HO_2 + OH$						
HYDROGEN PEROXIDE + OXYGEN ATOM						
76 FIE/HUS REACTION ORDER: 2	300	3.1(+14)	-	-	0.9	1.1
$H_2O_2 + O \rightarrow HO_2 + OH + H_2O + O_2$						
HYDROGEN PEROXIDE + OXYGEN ATOM						
71 AIB/HOY REACTION ORDER: 2	370-800	2.8(+13)	0	3220±300		
74 DAV/WON	283-368	1.7(+12)	0	2125±261	0.9	1.1
$H_2O_2 + H \rightarrow HO_2 + H_2$						
HYDROGEN PEROXIDE + HYDROGEN ATOM						
74 GEF/VOL REACTION ORDER: 2	298	1.9(+9)	-	-	0.7	1.3
NOTE: EVALUATION						
76 GEF	298	2.4(+8)	-	-	0.5	1.5
NOTE: EVALUATION						
$H_2O_2 + D \rightarrow HO_2 + HD + HDO + OH$						
HYDROGEN PEROXIDE + DEUTERIUM ATOM						
71 ALB/HOY REACTION ORDER: 2	294-464	7.0(+12)	0	2100±200		
$H_2O_2 + H \rightarrow H_2O + OH$						
HYDROGEN PEROXIDE + HYDROGEN ATOM						
72 GEF/VOL REACTION ORDER: 2 k/k_{ref}: 2.0	298	-	-	-	0.5	1.5
NOTE: k_{ref}: $H_2O_2 + H \rightarrow HO_2 + H_2$ (CORRECTED k/k_{ref} RATIO)						
73 GER k/k_{ref}: 3.0	298	-	-	-		
NOTE: KEEP: $H_2O_2 + H \rightarrow HO_2 + H_2$ (EVALUATION)						
	298	7.2(+8)	-	-	0.5	1.5
NOTE: EVALUATION						
74 GEF/VOL k/k_{ref}: 1.86	298	-	-	-	0.9	1.1
NOTE: k_{ref}: $H_2O_2 + H \rightarrow HO_2 + H_2$						
	298	3.4(+9)	-	-	0.8	1.2
NOTE: EVALUATION						
75 KII/PAY	283-353	3.1(+12)	0	1400±140	0.6	1.4
75 MIA/HEI k/k_{ref}: 1.3	298	-	-	-		
NOTE: k_{ref}: $H_2O_2 + H \rightarrow HO_2 + H_2$						
72 GOK/VOL	298	7.2(+11)	-	-	0.7	1.3
74 HAC/HOY2	298-669	4.6(+12)	0	670±70	0.8	1.2
75 HAC/HOY	298-670	4.8(+12)	0	670±70	0.8	1.2
75 MIA/HEI k/k_{ref}: 4.1	298	-	-	-	0.9	1.1
NOTE: k_{ref}: $CO + OH \rightarrow CO_2 + H$						
76 GEF	298	7.5(+11)	-	-	0.9	1.1
$H_2O_2 + NO \rightarrow OH + HONO$						
HYDROGEN PEROXIDE + NITROGEN OXIDE (NO)						
72 GRA/LIS REACTION ORDER: 2	298	<3.1(+4)	-	-		
NOTE: UPPER LIMIT k						
$H_2O_2 + NO_2 \rightarrow HONO_2 + 1/2H_2O + 1/4O_2$ (OVERALL)						
HYDROGEN PEROXIDE + NITROGEN OXIDE (NO_2)						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
72 GRA/LIS REACTION ORDER: 2 NOTE: UPPER LIMIT k	298	<6.0(+5)	-	-		
$H_2O_2 + M \rightarrow OH + OH + M$ 71 TES/FOR REACTION ORDER: 2	717-754	3.2(+18)	0	23553±650	0.4	2.5
$S + O_2 \rightarrow SO + O$ SULFUR ATOM + OXYGEN MOLECULE 72 DAV/KLEI REACTION ORDER: 2 72 DON/LIT 75 CLY/TOW	252-423 295 298	1.3(+12) 1.0(+12) 9.0(+11)	0 - -	0±50 - -	0.9 0.8 0.8	1.1 1.2 1.2
$S + O_3 \rightarrow SO + O_2$ SULFUR ATOM + OZONE 75 CLY/TOW REACTION ORDER: 2	298	7.2(+12)	-	-	0.7	1.3
$S^*(^1D) + H_2 \rightarrow$ products SULFUR ATOM + HYDROGEN MOLECULE 72 LIT/DAL REACTION ORDER: 2 k/k_{ref}: 0.22 NOTE: k_{ref}: $S^*(^1D) + CH_2{=}CH_2 \rightarrow$ products	300	-	-	-		
$S^*(^1D) + N_2 \rightarrow$ products SULFUR ATOM + NITROGEN MOLECULE 72 LIT/DAL REACTION ORDER: 2 k/k_{ref}: 0.062 NOTE: k_{ref}: $S^*(^1D) + CH_2{=}CH_2 \rightarrow$ products	300	-	-	-		
$S^*(^1D) + NO \rightarrow$ products SULFUR ATOM + NITROGEN OXIDE (NO) 72 LIT/DAL REACTION ORDER: 2 k/k_{ref}: 0.68 NOTE: k_{ref}: $S^*(^1D) + CH_2{=}CH_2 \rightarrow$ products	300	-	-	-		
$S + NO_2 \rightarrow SO + NO$ SULFUR ATOM + NITROGEN OXIDE (NO_2) 75 CLY/TOW REACTION ORDER: 2	298	3.7(+13)	-	-	0.8	1.2
$S^*(^1D) + N_2O \rightarrow NS + NO$ SULFUR ATOM + NITROGEN OXIDE (N_2O) 72 LIT/DAL REACTION ORDER: 2 k/k_{ref}: ~0. NOTE: k_{ref}: $S^*(^1D) + CH_2{=}CH_2 \rightarrow$ products	300	-	-	-		
$S^*(^1D) + CO \rightarrow$ products SULFUR ATOM + CARBON MONOXIDE 72 LIT/DAL REACTION ORDER: 2 k/k_{ref}: 0.19 NOTE: k_{ref}: $S^*(^1D) + CH_2{=}CH_2 \rightarrow$ products	300	-	-	-		
$S^*(^1D) + CO_2 \rightarrow$ products SULFUR ATOM + CARBON DIOXIDE 72 LIT/DAL REACTION ORDER: 2 k/k_{ref}: 0.24 NOTE: k_{ref}: $S^*(^1D) + CH_2{=}CH_2 \rightarrow$ products	300	-	-	-		
$S^*(^1D) + CH_4 \rightarrow CH_3SH$ SULFUR ATOM + METHANE 72 LIT/DAL REACTION ORDER: 2 k/k_{ref}: 0.076 NOTE: k_{ref}: $S^* + CH_2{=}CH_2 \rightarrow$ products	300	-	-	-		
$S + COS \rightarrow S_2 + CO$ SULFUR ATOM + CARBON OXIDE SULFIDE 72 JAK/AHM REACTION ORDER: 2 NOTE: EVALUATION 74 KIE/DAV	298 233-245	1.1(+10) 9.2(+11)	- 0	- 1825±60	0.9	1.1

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F

$S^*(^1D) + CCS \rightarrow S_2 + CO$						
SULFUR ATOM + CARBON OXIDE SULFIDE						
72 LIT/DAL REACTION ORDER: 2 k/k_{ref}: 1.5	300	-	-	-	0.7	1.3
NOTE: k_{ref}: $S^*(^1D) + CH_2{=}CH_2 \rightarrow$ products						

$S + CH{\equiv}CH \rightarrow$ cy-CH=CHS						
SULFUR ATOM + ETHYNE						
71 STR/O'C REACTION ORDER: 2	298-450	-	-	-		
NOTE: K/k_{ref}: 6.2exp(-1007/T)						
k_{ref}: $S + CH_2{=}CH_2 \rightarrow$ cy-CH_2CH_2S						
CONVINTIONAL PHOTOLYSIS METHOD						

$S + CH_2{=}CH_2 \rightarrow$ cy-CH_2CH_2S						
SULFUR ATOM + ETHENE						
71 CON/VAN REACTION ORDER: 2	298	9.0(+11)	-	-	0.9	1.1
NOTE: FLASH PHOTOLYSIS METHOD						
71 STR/O'C REACTION ORDER: 2 k/k_{ref}: 1.0	298-450	-	-	-		
NOTE: k_{ref}: $S + CH_2{=}CH_2 \rightarrow$ cy-CH_2CH_2S						
CONVENTIONAL PHOTOLYSIS METHOD						
72 DAV/KLE2	218-442	4.3(+12)	0	795±40	0.9	1.1

$S + CD_2{=}CH_2 \rightarrow$ cy-CD_2CH_2S						
SULFUR ATOM + ETHENE-1,1-d_2						
71 STR/O'C REACTION ORDER: 2 k/k_{ref}: 1.07	298-450	-	-	-		
NOTE: k_{ref}: $S + CH_2{=}CH_2 \rightarrow$ cy-CH_2CH_2S						
CONVENTIONAL PHOTOLYSIS METHOD						
finis						

$S +$ cis-CHD=CHD $\rightarrow$ cy-CHDCHDS						
SULFUR ATOM + cis-ETHENE-1,2-d_2						
71 STR/O'C REACTION ORDER: 2 k/k_{ref}: 1.04	298-450	-	-	-		
NOTE: k_{ref}: $S + CH_2{=}CH_2 \rightarrow$ cy-CH_2CH_2S						
CONVENTIONAL PHOTOLYSIS METHOD						

$S + CD_2{=}CD_2 \rightarrow$ cy-CD_2CD_2S						
SULFUR ATOM + ETHENE-d_4						
71 STR/O'C REACTION ORDER: 2 k/k_{ref}: 1.14	298-450	-	-	-		
NOTE: k_{ref}: $S + CH_2{=}CH_2 \rightarrow$ cy-CH_2CH_2S						
CONVINTIONAL PHOTOLYSIS METHOD						

$S^*(^1D) + CH_3CH_3 \rightarrow$ products						
SULFUR ATOM + ETHANE						
72 LIT/DAL REACTION ORDER: 2 k/k_{ref}: 0.17	300	-	-	-		
NOTE: k_{ref}: $S^*(^1D) + CH_2{=}CH_2 \rightarrow$ products						

$S +$ cy-$CH_2CH_2S \rightarrow S_2 + CH_2{=}CH_2$						
SULFUR ATOM + THIIRANE						
71 STR/O'C REACTION ORDER: 2	298-450	-	-	-		
NOTE: k/k_{ref}: 8.3exp(+906/T); k_{ref}: $S + CH_2{=}CH_2 \rightarrow$ cy-CH_2CH_2S						
CONVINTIONAL PHOTOLYSIS METHOD						
73 KLE/DAV1	298-355	2.7(+13)	0	0	0.9	1.1

$S + CH_3C{\equiv}CH \rightarrow$ cy-$(CH_3)C{=}CHS$						
SULFUR ATOM + 1-PROPYNE						
71 STR/O'C REACTION ORDER: 2	298-450	-	-	-		
NOTE: k/k_{ref}: 6.2exp(-453/T); k_{ref}: $S + CH_2{=}CH_2 \rightarrow$ cy-CH_2CH_2S						
CONVENTIONAL PHOTOLYSIS METHOD						

$S + CH_3CH{=}CH_2 \rightarrow$ cy-$(CH_3)CHCH_2S$						
SULFUR ATOM + PROPENE						
71 CON/VAN REACTION ORDER: 2	298	6.0(+12)	-	-	0.8	1.2
NOTE: FLASH PHOTOLYSIS METHOD						
71 STR/O'C	298-450	-	-	-		

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	F
NOTE: k/k_{ref}: 1.0exp(+574/T); k_{ref}: S + CH_2=CH_2 → cy-CH_2CH_2S						
CONVENTIONAL PHOTOLYSIS METHOD						
73 KLE/DAV2	214-500	3.6(+12)	0	190±45	0.2	5.2

S + cy-(CH_2)$CHCH_2S$ → S_2 + CH_3CH=CH_2						
SULFUR ATOM + THIIRANE, METHYL-						
71 STR/G'C REACTION ORDER: 2	298-450	-	-	-		
NOTE: k/k_{ref}: 8.4exp(+1057/T)						
k_{ref}: S + CH_2=CH_2 → cy-CH_2CH_2S						
CONVENTIONAL PHOTOLYSIS METHOD						

S + CH_3C≡CCH_3 → $CH-(CH_3)C$=$C(CH_3)S$						
SULFUR ATOM + 2-BUTYNE						
71 STR/G'C REACTION ORDER: 2	298-450	-	-	-		
NOTE: k/k_{ref}: 2.7exp(+654/T)						
k_{ref}: S + CH_2=CH_2 → cy-CH_2CH_2S						
CONVENTIONAL PHOTOLYSIS METHOD						

S + CH_2=$CHCH$=CH_2 → cy-(CH_2=CH)$CHCH_2S$						
SULFUR ATOM + 1,3-BUTADIENE						
71 STR/G'C REACTION ORDER: 2	298-450	-	-	-		
NOTE: k/k_{ref}: 2.4exp(+1027/T)						
k_{ref}: S + CH_2=CH_2 → cy-CH_2CH_2S						
CONVENTIONAL PHOTOLYSIS METHOD						

S + CH_3CH_2CH=CH_2 → cy-(CH_3CH_2)$CHCH_2S$						
SULFUR ATOM + 1-BUTENE						
71 CEN/VAN REACTION ORDER: 2	298	9.0(+12)	-	-	0.9	1.1
NOTE: FLASH PHOTOLYSIS METHOD						
71 STR/G'C	298-450	-	-	-		
NOTE: k/k_{ref}: 9.75exp(+866/T)						
k_{ref}: S + CH_2=CH_2 → cy-CH_2CH_2S						
CONVENTIONAL PHOTOLYSIS METHOD						
73 KLE/DAV2	216-475	4.5(+12)	0	180±45	0.1	14.0

S + cis-CH_3CH=$CHCH_3$ → cy-(CH_3)$CHCH(CH_3)S$						
SULFUR ATOM + cis-2-BUTENE						
71 STR/G'C REACTION ORDER: 2	298-450	-	-	-		
NOTE: k/k_{ref}: 0.53exp(+1050/T)						
k_{ref}: S + CH_2=CH_2 → cy-CH_2CH_2S						
CONVENTIONAL PHOTOLYSIS METHOD						

S + cis-CH_3CH=$CHCH_3$ → products						
SULFUR ATOM + cis-2-BUTENE						
73 DAV/KLE REACTION ORDER: 2	219-500	2.8(+12)	0	-116±45	0.9	1.1

S + trans-CH_3CH=$CHCH_3$ → cy-(CH_3)$CHCH(CH_3)S$						
SULFUR ATOM + trans-2-BUTENE						
71 CEN/VAN REACTION ORDER: 2	298	1.2(+13)	-	-	0.8	1.2
NOTE: FLASH PHOTOLYSIS METHOD						
71 STR/G'C	298-450	-	-	-		
NOTE: k/k_{ref}: 0.65exp(+1010/T)						
k_{ref}: S + CH_2=CH_2 → cy-CH_2CH_2S						
CONVENTIONAL PHOTOLYSIS METHOD						

S + $(CH_3)_2C$=CH_2 → cy-[$(CH_3)_2$]CCH_2S						
SULFUR ATOM + 1-PROPENE, 2-METHYL-						
71 CEN/VAN REACTION ORDER: 2	298	3.6(+13)	-	-	0.9	1.1
NOTE: FLASH PHOTOLYSIS METHOD						
71 STR/G'C	298-450	-	-	-		
NOTE: k/k_{ref}: 0.97exp(+1190/T)						
k_{ref}: S + CH_2=CH_2 → cy-CH_2CH_2S						
CONVENTIONAL PHOTOLYSIS METHOD						

S + $CH_3CH_2C(CH_3)$=CH_2 → cy-(CH_3CH_2)$C(CH_3)CH_2S$						
SULFUR ATOM + 1-BUTENE, 2-METHYL-						
71 STR/G'C REACTION ORDER: 2	298-450	-	-	-		

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
NOTE: k/k_{ref}: 0.78exp(+1424/T) k_{ref}: S + CH_2=CH_2 → cy-CH_2CH_2S CONVENTIONAL PHOTOLYSIS METHOD						
S + CH_3CH=$C(CH_3)_2$ → cy-$(CH_3)CHC[(CH_3)_2]S$ SULFUR ATOM + 2-BUTENE, 2-METHYL 71 STR/O'C REACTION ORDER: 2	298-450	-	-	-		
NOTE: k/k_{ref}: 0.51exp(+1515/T) k_{ref}: S + CH_2=CH_2 → cy-CH_2CH_2S CONVENTIONAL PHOTOLYSIS METHOD						
S + $(CH_3)_2C$=$C(CH_3)_2$ → cy-$[(CH_3)_2CC(CH_3)_2]S$ SULFUR ATOM + 2-BUTENE, 2,3-DIMETHYL- 71 CEN/VAN REACTION ORDER: 2	298	>6.2(+13)	-	-	0.9	1.1
NOTE: LOWER LIMIT k. FLASH PHOTOLYSIS METHOD 71 STR/O'C	298-450	-	-	-		
NOTE: k/k_{ref}: 0.50exp(+1690/T) k_{ref}: S + CH_2=CH_2 → cy-CH_2CH_2S CONVENTIONAL PHOTOLYSIS METHOD						
S + $(CH_3)_2C$=$C(CH_3)_2$ → products SULFUR ATOM + 2-BUTENE, 2,3-DIMETHYL- 73 DAV/KLE REACTION ORDER: 2	252-500	2.8(+12)	0	-650±115	0.6	1.4
S_2 + S_2 + M → S_4 + M SULFUR DIMER 72 LAN/OLD REACTION ORDER: 3 M: CO_2	293	9.1(+17)	-	-	0.1	10.
73 LAN/OLD M: CO_2	293	3.6(+18)	-	-		
NOTE: GIVEN WITH CAUTION						
SO + O + M → SO_2 + M SULFUR MONOXIDE + OXYGEN ATOM 71 MIY/TAK1 REACTION ORDER: 3 M: Ar	298	7.3(+16)	-	-	0.9	1.1
SO + O_3(v=n) → SO_2* + O_2 SULFUR MONOXIDE + OZONE 74 KAL/BRA REACTION ORDER: 2 k/k_{ref}: 2.4	300	-	-	-	0.8	1.3
NOTE: k_{ref}: SO + O_3 → SO_2* + O_2						
SO + SO → SO_2 + S SULFUR MONOXIDE 75 CHU/CAL REACTION ORDER: 2	298	5.0(+8)	-	-	0.2	1.8
SO + SO_3 → SO_2 + SO_2 SULFUR MONOXIDE + SULFUR TRIOXIDE 75 CHU/CAL REACTION ORDER: 2	298	1.2(+9)	-	-	0.4	1.6
SO + NO_2 → SO_2 + NO SULFUR MONOXIDE + NITROGEN OXIDE(NO_2) 71 MIY/TAK2 REACTION ORDER: 2	298	1.2(+16)	-	-	0.9	1.1
SO_2 + O + M → SO_3 + M SULFUR DIOXIDE + OXYGEN ATOM 74 ATK/PIT3 REACTION ORDER: 3 M: N_2O	299-392	3.3(+16)	0	1000±200		
75 WES/DEH2 M: He	297	3.0(+14)	-	-	0.9	1.1
NOTE: M eff: He(1.0) M: SO_2	297	2.9(+15)	-	-	0.7	1.3
NOTE: M eff: SO_2(9.5) M: N_2	297	7.2(+14)	-	-	0.9	1.1
NOTE: M eff: N_2(2.4) M: He	248-415	3.9(+16)	0	1400±50	0.8	1.2
SO_2 + O_2*($^1\Delta_g$) → SO_3 + O SULFUR DIOXIDE + OXYGEN MOLECULE 76 DUM REACTION ORDER: 2	298	1.3(+8)	-	-		

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
$SO_2 + O_3 \rightarrow SO_3 + O_2$						
SULFUR DIOXIDE + OZONE						
74 DAV/FRU REACTION ORDER: 2	300	<6.0(+1)	-	-		
NOTE: UPPER LIMIT k						
$SO_2 + OH((v=9) \rightarrow HSO_3$						
SULFUR DIOXIDE + HYDROXYL FREE RADICAL						
72 WOF/COL REACTION ORDER: 2	298	>1.4(+10)	-	-	0.8	1.2
NOTE: LOWER LIMIT k, UNREPORTED T ASSUMED TO BE 298K						
$SO_2 + OH + M \rightarrow HOSO_2 + M$						
SULFUR DIOXIDE + HYDROXYL FREE RADICAL						
74 COX2 REACTION ORDER: 2	294	3.6(+11)	-	-	0.9	1.1
NOTE: EVALUATION; RATE CONSTANT EXPRESSED AS k[M] M = 1 atm air M: N_2	298	3.6(+11)	-	-		
75 CAS/DAV						
NOTE: LIMITING HIGH-PRESSURE k(760TORR) REACTION ORDER: 3 M: N_2	298	5.8(+16)	-	-		
NOTE: k(LOW PRESSURE: < 20TORR)						
75 GOR/MUL1 REACTION ORDER: 2 M: H_2O	435	1.1(+12)	-	-		
NOTE: IN AN ATMOSPHERE OF WATER VAPOR						
75 PAR/WAY REACTION ORDER: 3 M: Ar	298	1.6(+17)	-	-	0.7	1.3
M: N_2	298	2.6(+14)	-	-	0.6	1.4
76 ATK/PER3 REACTION ORDER: 2 M: Ar	298	4.0(+11)	-	-	0.9	1.1
NOTE: AT 760TORR M: Ar	298	5.0(+11)	-	-		
NOTE: LIMITING HIGH-PRESSURE k REACTION ORDER: 3 M: Ar	298	5.9(+16)	-	-	0.8	1.2
NOTE: LIMITING LOW-PRESSURE k						
77 CAS/TAN REACTION ORDER: 2 M: N_2	297	3.6(+11)	-	-		
NOTE: LIMITING HIGH-PRESSURE k(760TORR) REACTION ORDER: 3 M: N_2	297	5.8(+16)	-	-		
NOTE: k_0(LOW-PRESSURE) 3 M: N_2	253-297	5.0(+14)	0	-1410		
NOTE: k (LOW PRESSURE) ON THE BASIS OF k (297) AND Ea	253-297	2.5(+29)	-5.1	0		
NOTE: k (LOW PRESSURE) (ALTERNATIVE T-DEPENDENT EXPRESSION)						
$SO_2 + HO_2 \rightarrow SO_3 + HO$						
SULFUR DIOXIDE + HYDROPEROXYL FREE RADICAL						
73 PAY/STI REACTION ORDER: 2	300	5.2(+8)	-	-	0.8	1.2
NOTE: EVALUATION						
$SO_2 + SO_2^*(^1B_1) \rightarrow SO^*(^1\Delta_g, ^3\Sigma^-) + SO_3$						
SULFUR DIOXIDE						
75 CHU/CAL REACTION ORDER: 2	298	2.2(+12)	-	-	0.8	1.2
$SO_2 + SO_2^*(^3B_1) \rightarrow SO^*(^3\Sigma^-) + SO_3$						
SULFUR DIOXIDE						
75 CHU/CAL REACTION ORDER: 2	298	4.2(+10)	-	-	0.9	1.1
$SO_2 + NO_2 \rightarrow SO_3 + NO$						
SULFUR DIOXIDE + NITROGEN OXIDE(NO_2)						
71 ARM/CUL REACTION ORDER: 2	703-1193	6.3(+12)	0	13950		
77 FEE/PAL	430-1850	6.3(+12)	0	16000		
NOTE: EXTENDED VALIDITY OF k REPORTED IN 71 ARM/CUL (ABOVE).						
$SO_2 + NO_3 \rightarrow SO_3 + NO_2$						
SULFUR DIOXIDE + NITROGEN OXIDE(NO_3)						
75 DAU/CAL REACTION ORDER: 2	300	<4.2(+3)	-	-		
NOTE: UPPER LIMIT k						
$SO_2 + N_2O_5 \rightarrow SO_3 + N_2O_4$						
SULFUR DIOXIDE + NITROGEN OXIDE(N_2O_5)						
75 DAU/CAL REACTION ORDER: 2	300	<2.5(+1)	-	-		
NOTE: UPPER LIMIT k						
$^1SO_2^* + CO \rightarrow SO + CO_2$						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	F
SULFUR DIOXIDE + CARBON MONOXIDE 73 CEH/HEI — REACTION ORDER: 2	300	-	-	-		
NOTE: k_{ref}: $^1SO_2^*$ + SO_2 → products; k/k_{ref} = 5.0 x 10^{-3} (2537 Å)						
	300	-	-	-		
NOTE: k_{ref}: $^1SO_2^*$ + SO_2 → products; k/k_{ref} = 1.5 x 10^{-3} (3130 Å)						

SO_2^* + CO → SO + CO_2						
SULFUR DIOXIDE + CARBON MONOXIDE 73 CEH/HEI — REACTION ORDER: 2	300	-	-	-		
NOTE: k_{ref}: SO_2^* → products; k/k_{ref} = 2.2 x 10^{-5} (3130 TO 3261 Å)						
(SO_2^* IS A VIBRATIONALLY EXCITED SINGLET)						

SO_2^{**} + CO → SO + CO_2						
SULFUR DIOXIDE + CARBON MONOXIDE 73 CEH/HEI — REACTION ORDER: 2	300	-	-	-	0.7	1.4
NOTE: k_{ref}: SO_2^{**} → SO_2; k/k_{ref} = 1.8X10^{-5} (2537 TO 3261 Å)						

SO_2 + CO + M → products						
SULFUR DIOXIDE + CARBON MONOXIDE 71 FAU/JEF — REACTION ORDER: 2 M: Ar	1770-2453	2.7(+12)	0	24300±600	0.8	1.3
NOTE: AT 27-170 TORR PRESSURE						

SO_2 + CH_3 + M → CH_3SO_2 + M						
SULFUR DIOXIDE + METHYL FREE RADICAL 73 JAM/KER — REACTION ORDER: 2	298	1.8(+11)	-	-	0.9	1.1
NOTE: LIMITING HIGH-PRESSURE k						

SO_2 + CH≡CH → products						
SULFUR DIOXIDE + ETHYNE 71 FIF/MCR — REACTION ORDER: 2	1550-2150	3.2(+10)	0.5	20535		
NOTE: GIVEN WITH CAUTION						

$SO_2^*(^3B_1)$ + cis-CH_3CH=$CHCH_3$ → [cis-CH_3CH=$CHCH_3$.SO_2]*						
SULFUR DIOXIDE + cis-2-BUTENE 74 DEM/CAL — REACTION ORDER: 2	294	1.3(+14)	-	-	0.9	1.1
76 WAM	295	6.3(+13)	-	-	0.8	1.2

$SO_2^*(^3B_1)$ + trans-CH_3CH=$CHCH_3$ → [trans-CH_3CH=$CHCH_3$.SO_2]*						
SULFUR DIOXIDE + trans-2-BUTENE 74 DEM/CAL — REACTION ORDER: 2	294	1.2(+14)	-	-	0.9	1.1

$SO_2^*(^3B_1)$ + trans-CH_3CH_2CH=$CHCH_3$ → [SO_2.CH_3CH_2CH=$CHCH_3$]*						
SULFUR DIOXIDE + trans-2-PENTENE 76 WAM — REACTION ORDER: 2	295	1.0(+14)	-	-	0.7	1.3

SO_3 + O → SO_2 + O_2						
SULFUR TRIOXIDE + OXYGEN ATOM 71 MEE/LEV — REACTION ORDER: 2	1100-1400	6.5(+14)	0	5435		
NOTE: K DETERMINED IN H_2S FLAME						
	900-1600	2.8(+14)	0	6040		
NOTE: K DETERMINED IN COS FLAME						
72 JAC/WIN	300-500	1.5(+8)	0	500		

SO_3 + O + M → SO_2 + O_2 + M						
SULFUR TRIOXIDE + OXYGEN ATOM 75 WES/DEH1 — REACTION ORDER: 3 M: He	298	7.3(+17)	-	-	0.9	1.1
NOTE: M eff: He(1.0) — M: SO_3	298	<7.3(+18)	-	-		
NOTE: M eff: SO_3(<10.0) UPPER LIMIT RATIO — M: N_2	298	1.0(+18)	-	-	0.9	1.1
NOTE: M eff: N_2(1.4) — M: He	298-507	5.0(+16)	0	-785	0.9	1.1

SO_3 + H_2O → H_2SO_4						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
SULFUR TRIOXIDE + WATER						
75 CAS/DAV — REACTION ORDER: 2	298	5.5(+11)	-	-	0.8	1.2
$SO_3 + SO \rightarrow SO_2 + SO_2$						
SULFUR TRIOXIDE + SULFUR MONOXIDE						
75 CBU/CAL — REACTION ORDER: 2	298	1.2(+9)	-	-	0.4	1.6
$SO_3 + N \rightarrow SO_2 + NO$						
SULFUR TRIOXIDE + NITROGEN ATOM						
72 JAC/WIN — REACTION ORDER: 2	300	3.0(+8)	-	-		
75 WES/DEH1	298	<6.0(+6)	-	-		
NOTE: UPPER LIMIT k						
$S_2O + O \rightarrow SO + SO$						
SULFUR OXIDE(S_2O) + OXYGEN ATOM						
74 STE/ALV — REACTION ORDER: 2	298	9.0(+11)	-	-	0.9	1.1
NOTE: EVALUATION						
$SH + O \rightarrow SO + H$						
MERCAPTO FREE RADICAL + OXYGEN ATOM						
75 CUP/GLA — REACTION ORDER: 2	295	9.6(+13)	-	-	0.7	1.3
$SH + H \rightarrow S + H_2$						
MERCAPTO FREE RADICAL + HYDROGEN ATOM						
72 IAN/OLD — REACTION ORDER: 2	293	6.0(+12)	-	-		
NOTE: UPPER LIMIT k						
73 BEA/TRU	298	2.5(+13)	-	-		
75 CUP/GLA	295	1.5(+13)	-	-	0.7	1.3
$SH + SH \rightarrow H_2S + S$						
MERCAPTO FREE RADICAL						
72 IAN/OLD — REACTION ORDER: 2	293	1.8(+13)	-	-		
NOTE: UPPER LIMIT k						
73 BEA/TRU	298	7.8(+12)	-	-		
SH + NO → products						
MERCAPTO FREE RADICAL + NITROGEN OXIDE(NO)						
73 BEA/TRU — REACTION ORDER: 2	298	6.3(+11)	-	-		
$H_2S + O \rightarrow SH + OH$						
HYDROGEN SULFIDE + OXYGEN ATOM						
76 WEY/TIM — REACTION ORDER: 2	263-495	4.4(+12)	0	1660±50	0.9	1.1
$D_2S + O \rightarrow SD + OD$						
HYDROGEN SULFIDE(D_2S) + OXYGEN ATOM						
76 WEY/TIM — REACTION ORDER: 2	298-450	6.3(+12)	0	2145±155	0.5	1.5
$H_2S + O_3 \rightarrow SO_2 + H_2O$						
HYDROGEN SULFIDE + OZONE						
75 BEC/ING — REACTION ORDER: 2	298	<1.2(+4)	-	-		
NOTE: UPPER LIMIT k. UNREPORTED T ASSUMED TO BE 298K						
$H_2S + O_3 \rightarrow SO_2 + H_2O$						
HYDROGEN SULFIDE + OZONE						
75 GLA/TOB1 — REACTION ORDER: 2	293-343	4.9(+10)	0	3420		
NOTE: ESTIMATE						
75 GLA/TOB2	298-343	1.6(+12)	0	2620±600	0.2	6.3
$H_2S + H \rightarrow SH + H_2$						
HYDROGEN SULFIDE + HYDROGEN ATOM						
71 KUP/PET — REACTION ORDER: 2	190-464	7.8(+12)	0	860±30	0.9	1.1
72 KOM/SCH	298	2.3(+11)	-	-	0.8	1.3
73 BEA/TRU	298	5.0(+11)	-	-		
$H_2S + OH \rightarrow SH + H_2O$						
HYDROGEN SULFIDE + HYDROXYL FREE RADICAL						
73 WES/DEH3 — REACTION ORDER: 2	298-885	1.4(+13)	0	443		
74 STU	298	1.8	-	-	0.8	1.2
76 PER/ATK1	297-427	3.1(+12)	0	0	0.9	1.1
$H_2S + OH \rightarrow$ products (OVERALL)						
HYDROGEN SULFIDE + HYDROXYL FREE RADICAL						
72 NIK/NOM1 — REACTION ORDER: 2	300	5.2(+12)	-	-		

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
NOTE: APPROXIMATE k						
$H_2S + OH(v=0) \rightarrow$ products						
HYDROGEN SULFIDE + HYDROXYL FREE RADICAL						
72 WEK/COL REACTION ORDER: 2	298	>1.5(+11)	-	-	0.6	1.4
NOTE: LOWER LIMIT k. UNREPORTED T ASSUMED TO BE 298K						
$H_2S + M \rightarrow SH + H + M$						
HYDROGEN SULFIDE						
76 PIG/SAI REACTION ORDER: 2 M: Ar	2380-3000	1.3(+16)	0	46300		
77 BOW/DOD M: Ar	2700-3800	2.0(+13)	0	3700±960	0.7	1.5
$N + O + M \rightarrow NO + M$						
NITROGEN ATOM + OXYGEN ATOM						
73 MAN/CAR REACTION ORDER: 3	300	1.7(+6)	-	-	0.8	1.2
$N + O + M \rightarrow NO + M$						
NITROGEN ATOM + OXYGEN ATOM						
73 CAM/GRA REACTION ORDER: 3 M: N_2	196-298	2.0(+15)	0	-155	0.9	1.1
NOTE: BASED ON EXPERIMENTAL VALUES k(196)=(4.38±0.38)X10^9 AND k(298) = (3.34±0.36) x $10^9 dm^6 mol^{-2} s^{-1}$						
$N^*(2D) + O2 \rightarrow NO + O$						
NITROGEN ATOM + OXYGEN MOLECULE						
71 SIA/WOO REACTION ORDER: 2	237-365	2.7(+11)	0.5	0	0.8	1.2
72 BUS/KIR2	300	5.6(+12)	-	-	0.8	1.2
$N^*(^2D) + O_2 \rightarrow$ products						
NITROGEN ATOM + OXYGEN MOLECULE						
71 LIN/KAU REACTION ORDER: 2	300	3.7(+12)	-	-	0.7	1.3
$N^*(^2P) + O_2 \rightarrow NO + O$						
NITROGEN ATOM + OXYGEN MOLECULE						
72 BUS/KIR2 REACTION ORDER: 2	300	2.8(+12)	-	-	0.4	1.6
$N + O_2^*(^1\Delta_g) \rightarrow NO + O$						
NITROGEN ATOM + OXYGEN MOLECULE						
73 SCH/SCH2 REACTION ORDER: 2	300	1.3(+9)	-	-	0.7	1.3
$N + H + M \rightarrow NH + M$						
NITROGEN ATOM + HYDROGEN ATOM						
73 DEO REACTION ORDER: 3	298	1.8(+16)	-	-	0.4	1.6
NOTE: k CENTRAL VALUE OBTAINED BY AVERAGING k<(6.4±1.5) x 10^{-32} AND k>(3.1±1.0) x $10^{-32} cm^6 molecule^{-2} s^{-1}$. M = N_2, He						
$N^*(^2D) + H_2 \rightarrow$ products						
NITROGEN ATOM + HYDROGEN MOLECULE						
72 BUS/KIR2 REACTION ORDER: 2	300	1.0(+12)	-	-	0.7	1.3
$N + SO_3 \rightarrow NO + SO_2$						
NITROGEN ATOM + SULFUR TRIOXIDE						
72 JAC/WIN REACTION ORDER: 2	300	3.0(+8)	-	-		
75 WES/DEH1	298	<6.0(+6)	-	-		
NOTE: UPPER LIMIT k						
$N + NO \rightarrow N_2 + O$						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
NITROGEN ATOM + NITROGEN OXIDE (NO) 75 CLY/MCD REACTION ORDER: 2	298-670	4.9(+13)	0	410±120	0.8	1.2
$N^*(^2D) + NO \rightarrow$ products NITROGEN ATOM + NITROGEN OXIDE (NO) 72 HUS/KIR2 REACTION ORDER: 2	300	3.7(+13)	-	-	0.4	1.6
$N^*(^2P) + NO \rightarrow$ products NITROGEN ATOM + NITROGEN OXIDE (NO) 72 HUS/KIR2 REACTION ORDER: 2	300	2.0(+13)	-	-	0.7	1.3
$N + NO_2 \rightarrow O + N_2O$ NITROGEN ATOM + NITROGEN OXIDE(NO_2) 75 CLY/MCD REACTION ORDER: 2	298	8.4(+11)	-	-	0.9	1.1
$N^*(^2D) + N_2O \rightarrow N_2 + NO$ NITROGEN ATOM + NITROGEN OXIDE (N_2O) 71 SIA/WOO REACTION ORDER: 2 72 HUS/KIR2	237-365 300	2.2(+11) 2.9(+12)	0.5 -	400 -	0.9 0.8	1.1 1.2
$N^*(^2P) + N_2O \rightarrow N_2 + NO$ NITROGEN ATOM + NITROGEN OXIDE (N_2O) 72 HUS/KIR2 REACTION ORDER: 2	300	2.0(+12)	-	-	0.6	1.4
$N^*(^2D) + N_2O \rightarrow$ products NITROGEN ATOM + NITROGEN OXIDE (N_2O) 71 LIN/KAU REACTION ORDER: 2	300	2.1(+12)	-	-	0.7	1.3
$N + HN_3 \rightarrow N_2 + N_2H$ NITROGEN ATOM + HYDRAZOIC ACID 73 LEE/COM REACTION ORDER: 2	298	3.0(+9)	-	-		
$N + NH_2NH_2 \rightarrow NH + NH_2NH$ NITROGEN ATOM + HYDRAZINE 75 YE REACTION ORDER: 2	298	2.7(+10)	-	-		
$N + NH_2NH_2 \rightarrow$ products NITROGEN ATOM + HYDRAZINE 75 YE REACTION ORDER: 2	298-379	3.1(+12)	0	1158		
$N + C + M \rightarrow CN^*(B) + M$ NITROGEN ATOM + CARBON ATOM 75 WAS/KLE REACTION ORDER: 3 M: Ar NOTE: UNREPORTED T ASSUMED TO BE 298K	298	3.8(+15)	-	-	0.7	1.3
$N^*(^2D) + CO_2 \rightarrow$ products NITROGEN ATOM + CARBON DIOXIDE 71 LIN/KAU REACTION ORDER: 2	300	3.0(+11)	-	-	0.6	1.4
$N + HCHO \rightarrow$ products NITROGEN ATOM + FORMALDEHYDE 71 WEI REACTION ORDER: 2	323-643	2.6(+12)	0	1810±300		

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
$N + CN \rightarrow N_2 + C$						
NITROGEN ATOM + CYANOGEN FREE RADICAL						
76 SIA REACTION ORDER: 2	5000-8000	4.4(+14)	0	4530	0.5	1.5
NOTE: EVALUATION						

$N + NCC{\equiv}CCN \rightarrow [N.C_4N_2^{*}]$						
NITROGEN ATOM + 2-BUTYNEDINITRILE						
76 HAN/OBE REACTION ORDER: 2	300	3.2(+9)	-	-	0.2	1.8

$N_2 + O \rightarrow N + NO$						
NITROGEN MOLECULE + OXYGEN ATOM						
73 EAC/EBE REACTION ORDER: 2	1900-2250	5.0(+13)	0	37950	0.5	2.0
73 IVE/BAS	1900-2400	1.3(+14)	0	37950		
NOTE: EVALUATION						
76 HAR/NAS	2270-2620	9.1(+13)	0	38000	0.9	1.1
77 BIA/SME	1880-2350	7.5(+13)	0	38250	0.8	1.2
77 MEN/HAN2	2384-3850	1.8(+14)	0	38375	0.7	1.4

$N_2 + O \rightarrow N_2O$						
NITROGEN MOLECULE + OXYGEN ATOM						
73 GAE/GLA REACTION ORDER: 2	300	1.0(+12)	-	-		
NOTE: GIVEN WITH CAUTION. RATE CONSTANT EXPRESSED AS: $k = [N_2]\ 1.0 \times 10^{12}\ cm^6 mol^{-2} s^{-1}$						

$N_2 + O^{*}(^1D) \rightarrow$ products						
NITROGEN MOLECULE + OXYGEN ATOM						
73 HEI/HUS1 REACTION ORDER: 2	300	4.2(+13)	-	-	0.9	1.1
k/k_{ref}: 1.0	300	-	-	-		
NOTE: k_{ref}: $O_2 + O^{*}(^1D) \rightarrow$ products						

$N_2 + O + M \rightarrow N_2O + M$						
NITROGEN MOLECULE + OXYGEN ATOM						
71 STU/NIK1 REACTION ORDER: 3 M: N_2	300	<1.8(+10)	-	-		
NOTE: UPPER LIMIT k						

$N_2 + O^{*}(^1D) + M \rightarrow N_2O + M$						
NITROGEN MOLECULE + OXYGEN ATOM						
72 SIM/LIS REACTION ORDER: 3 k/k_{ref}: <0.04	298	-	-	-		
NOTE: k_{ref}: $N_2 + O^{*}(^1D) \rightarrow N_2 + O$ (RATIO IN $cm^3 mol^{-1}$ UNITS)						

$N_2 + OH \rightarrow N_2O + H$						
NITROGEN MOLECULE + HYDROXYL FREE RADICAL						
75 ALE/HOY REACTION ORDER: 2	700-1100	3.2(+12)	0	40510		
NOTE: EVALUATION BASED ON k_{-1} AND THERMODYNAMIC DATA						

$N_2 + OH(v=5) \rightarrow$ products						
NITROGEN MOLECULE + HYDROXYL FREE RADICAL						
72 WER/COL REACTION ORDER: 2	298	2.2(+9)	-	-	0.9	1.1
NOTE: UNREPORTED T ASSUMED TO BE 298K						

$N_2 + S^{*}(^1D) \rightarrow$ products						
NITROGEN MOLECULE + SULFUR ATOM						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
72 LIT/DAL REACTION ORDER: 2 k/k_{ref}: 0.062	300	-	-	-		
NOTE: k_{ref}: $CH_2{=}CH_2$ + $S^*(^1D)$ → products						

N_2 + CH → products						
NITROGEN MOLECULE + METHYLIDYNE FREE RADICAL						
71 DOS/PER REACTION ORDER: 2	298	6.1(+11)	-	-	0.5	1.2

N_2 + M → N + N + M						
NITROGEN MOLECULE						
74 KEW/HOR REACTION ORDER: 2 M: N	6000-14000	8.5(+25)	-2.5	56970	0.6	1.6
M: N_2	6000-14000	2.3(+29)	-3.5	56970	0.6	1.6

NO + O → N + O_2						
NITROGEN OXIDE (NO) + OXYGEN ATOM						
74 HAN/FLO REACTION ORDER: 2	2500-4100	2.4(+9)	1	19446		
	1700-2300	1.7(+9)	0	19447	0.8	1.3
	1500-5000	3.7(+9)	1.0	20850		
NOTE: RECOMMENDED k						

NO + $O^*(^1D)$ → N + O_2						
NITROGEN OXIDE (NO) + OXYGEN ATOM						
73 HEI/HUS2 REACTION ORDER: 2	300	5.1(+13)	-	-	0.9	1.1
73 HEI/HUS2 k/k_{ref}: 0.43	300	-	-	-		
NOTE: k_{ref}: N_2O + $O^*(^1D)$ → products						

NO + O + M → NO_2 + M						
NITROGEN OXIDE (NO) + OXYGEN ATOM						
71 ATK/CVE REACTION ORDER: 3 M: N_2O	298	3.7(+16)	-	-	0.8	1.2
71 STU/NIK1 M: He	300	2.4(+16)	-	-	0.9	1.1
71 STU/NIK1 M: NO	300	5.4(+16)	-	-	0.9	1.1
72 ATK/CVE M: N_2O	298-473	2.6(+15)	0	-805±150	0.8	1.2
73 GAE/GLA REACTION ORDER: 2 M: N_2	300	8.0(+12)	-	-		
NOTE: LIMITING HIGH-PRESSURE k						
74 ATK/PIT1 M: N_2O	300-392	9.6(+15)	0	-450±100		
74 ATK/PIT2 M: N_2O	300	4.3(+16)	-	-	0.9	1.1
74 FUR/ATK M: N_2O	298	5.8(+16)	-	-	0.9	1.1
75 CAM/HAN2 M: Ar	285-432	1.1(+15)	0	-900±85	0.7	1.3
NOTE:M eff: Ar(1.0)						
M: N_2	285-432	1.8(+15)	0	-900±85	0.7	1.3
NOTE:M eff: N_2(1.62±0.14)						
75 GAE/TRO REACTION ORDER: 2 M: N_2	296	1.8(+13	-	-	0.8	1.2
NOTE: LIMITING HIGH-PRESSURE k						
75 EIF/SCH M: N_2	295	1.8(+13)	-	-	0.8	1.2
NOTE: LIMITING HIGH-PRESSURE k (REEVALUATION)						
REACTION ORDER: 3 M: N_2	295	2.7(+16)	-	-	0.8	1.2
NOTE:M eff: N_2(1.0) LIMITING LOW-PRESSURE k (REEVALUATION)						
75 SIN/FUR M: N_2O	298-473	6.1(+15)	0	-620±28	0.9	1.1
76 MIC/PAY M: He	217-500	3.9(+15)	0	-523±30	0.9	1.1
NOTE:M eff: (He):0.87(217K); 0.95(298K); 1.0(500K)						
M: Ne	217-500	3.4(+15)	0	-518±30	0.9	1.1
NOTE:M eff(Ne): 3.74(217K); 0.8(298K); 0.9(500K)						
M: Ar	217-500	3.3(+15)	0	-594±35	0.9	1.1
NOTE:M eff(Ar): 1.0(217-500K)						

CHEMICAL REACTIONS		T/K	A	B	E/R (in °K)	k factors f	k factors F
	M: Kr	217-500	3.5(•15)	0	-574±35	0.9	1.1
NOTE: M eff(Kr): 0.97(217K)(0.99(298K) 1.0(500K)							
76 WPY/MICI	M: N_2	217-500	5.6(•15)	0	-584±35	0.9	1.1
	M: N_2	217-500	1.4(•21)	-1.82	0		
NOTE: ALTERNATIVE T-DEPENDENT k							
77 A3K/PER1	M: Ar	298-439	5.3(•15)	0	-473±100	0.9	1.1

$NO + O_2^*(^1\Delta_g) \rightarrow NO_2 + O$							
NITROGEN OXIDE (NO) • OXYGEN MOLECULE							
76 DUM REACTION ORDER: 2		298	2.9(•6)	-	-		

$NO + O_3 \rightarrow NO_2 + O_2$							
NITROGEN OXIDE (NO) • OZONE							
73 GBO/ELL REACTION ORDER: 2		298	8.5(•9)	-	-	0.9	1.1
73 STF/NIK1		298	1.0(•10)	-	-	0.9	1.1
74 EEC/SCH		290	1.0(•10)	-	-		
74 ELM/CLY		298	1.1(•10)	-	-	0.9	1.1
76 BIK/SHO		203-361	1.4(•12)	0	1450±50	0.9	1.1
76 FRE/STE		298	1.5(•11)	-	-	0.9	1.1
NOTE: INCLUDES $O_3(001)$.							

$NO + O_3(v=1,2) \rightarrow NO_2 + O_2$							
NITROGEN OXIDE(NO) • OZONE							
75 KUR/BRA REACTION ORDER: 2		153-373	1.2(•13)	0	1525		

$NO + O_3(001) \rightarrow NO_2 + O_2$							
NITROGEN OXIDE(NO) • OZONE							
76 GCK/LIN REACTION ORDER: 2		308	5.4(•10)	-	-	0.9	1.1

$NO + O_3(v=n) \rightarrow NO_2(v=n) + O_2$							
NITROGEN OXIDE(NO) • OZONE							
73 GER/LIN REACTION ORDER: 2		350	1.5(•11)	-	-	0.9	1.1

$NO + O_3(v=n) \rightarrow NO_2^* + O_2$							
NITROGEN OXIDE(NO) • OZONE							
74 BRA/KUR REACTION ORDER: 2 k/k_{ref}: 5.6		300	-	-	-	0.8	1.2
NOTE: k_{ref}: $NO + O_3 \rightarrow NO_2^* + O_2$							

$NO + O_3^\ddagger \rightarrow NO_2^\ddagger(^2A_1) + O_2$							
NITROGEN OXIDE(NO) • OZONE							
74 KIR/BRA REACTION ORDER: 2 k/k_{ref}: 17.1		300	-	-	-	0.7	1.3
NOTE: k_{ref}: $NO + O_3 \rightarrow NO_2^\ddagger(^2A_1) + O_2$							

$NO + O_3(001) \rightarrow NO_2^* + O_2$							
NITROGEN OXIDE(NO) • OZONE							
76 GCK/LIN REACTION ORDER: 2		308	4.3(•9)	-	-	0.8	1.2
77 MCY/BAR k/k_{ref}: 7.6		300	-	-	-	0.7	1.2
NOTE: k_{ref}: $NO + O_3 \rightarrow NO_2^* + O_2$							

$NO + O_3^\ddagger \rightarrow NO_2^\ddagger(^2A_1) + NO_2^*(2B1) + O_2$							
NITROGEN OXIDE(NO) • OZONE							
74 KIR/BRA REACTION ORDER: 2 k/k_{ref}: 16.2		300	-	-	-	0.8	1.2

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
NOTE: k_{ref}: NO + O_3 → $NO_2^{\ddagger}(^2A_1)$ + $NO_2^{*}(2B1)$ + O_2						
74 KUR/BRA	300	1.6(+11)	-	-	0.9	1.1

NO + $O_3^{\ddagger}$ → $NO_2^{*}(2B1)$ + O_2						
NITROGEN OXIDE(NO) + OZONE						
74 KUR/BRA REACTION ORDER: 2 k/k_{ref}: 4.1	300	-	-	-	0.5	1.5
NOTE: k_{ref}: NO + O_3 → $NO_2^{*}(2B1)$ + O_2						

NO(v=1) + O_3 → $NO_2^{*}(2B1)$ + O_2						
NITROGEN OXIDE(NO) + OZONE						
76 STE/FRE REACTION ORDER: 2 k/k_{ref}: 5.7	298	-	-	-	0.8	1.5
NOTE: k_{ref}: NO + O_3 → $NO_2^{*}(2B1)$ + O_2						

NO(v=n) + O_3 → products						
NITROGEN OXIDE(NO) + OZONE						
76 STE/FRE REACTION ORDER: 2 k/k_{ref}: ≤22	298	-	-	-		
NOTE: k_{ref}: NO + O_3 → $NO_2(2A1)$ + O_2 (UPPER LIMIT RATIO)						

NO + H → OH + N						
NITROGEN OXIDE(NO) + HYDROGEN ATOM						
75 BRA/CRA REACTION ORDER: 2	2530-3020	3.5(+14)	0	23940		
75 DUX/PRA	2200-3250	2.6(+14)	0	24560		
75 FIO/HAN	2400-4500	1.3(+14)	0	24760±400	0.9	1.1
75 KOS/AND	2000-4000	3.2(+13)	0	24160±150	0.5	2.0
76 AND/ASA	2300-3500	5.0(+13)	0	24510	0.7	1.4
NOTE: REEVALUATION						
76 FIO	2400-4200	2.2(+14)	0	25415	0.8	1.2
76 MCC/KRU	1750-2040	1.7(+14)	0	24760	0.6	1.6
	1700-4300	1.3(+14)	0	24077		
NOTE: RECOMMENDED k						
77 FIO/HAN	2400-4200	2.2(+14)	0	25400±300	0.8	1.2

NO + H + M → HNO + M						
NITROGEN OXIDE(NO) + HYDROGEN ATOM						
71 BIK/EYR REACTION ORDER: 3 M: H_2	298	1.4(+16)	-	-	0.9	1.1
71 CSB M: H_2	298	2.3(+16)	-	-		
M: He	298	1.5(+16)	-	-		
M: Ne	298	7.9(+15)	-	-		
M: Ar	298	1.4(+16)	-	-		
M: Kr	298	2.0(+16)	-	-		
72 ABU/MIC M: H_2	298	2.6(+16)	-	-	0.9	1.1
NOTE:M eff: H_2(1.6)						
M: He	298	1.6(+16)	-	-	0.9	1.1
NOTE:M eff: He(1.1)						
M: Ne	298	7.6(+15)	-	-	0.9	1.1
NOTE:M eff: NE(0.5)						
M: Ar	298	1.4(+16)	-	-	0.9	1.1
NOTE:M eff: Ar(1.0)						
M: Kr	298	2.0(+16)	-	-	0.9	1.1
NOTE:M eff: Kr(1.4)						
75 CAM/HAN2 M: Ar	392	8.7(+15)	-	-	0.9	1.1
NOTE:M eff: Ar(1.0)						

CHEMICAL REACTIONS		T/K	A	B	E/R (in °K)	k factors f	k factors F
	M: N_2	392	1.4(+16)	-	-	0.9	1.1
NOTE: M eff: N_2(1.64±0.12)							
77 CKA/SIN	M: H_2	298	1.6(+16)	-	-	0.9	1.1

$NO + H_2 \rightarrow HNO + H$							
NITROGEN OXIDE(NO) + HYDROGEN MOLECULE							
75 KOS/AND	REACTION ORDER: 2	2000-4000	4.0(+13)	0	29040		
76 AND/ASA		2300-3500	3.2(+13)	0	27780	0.7	1.4
NOTE: REEVALUATION							

$NO + OH(v=5) \rightarrow HONO$							
NITROGEN OXIDE(NO) + HYDROXYL FREE RADICAL							
72 WOR/COL	REACTION ORDER: 2	298	9.0(+10)	-	-	0.8	1.2
NOTE: UNREPORTED T ASSUMED TO BE 298K							

$NO + OH + M \rightarrow HONO + M$							
NITROGEN OXIDE(NO) + HYDROXYL FREE RADICAL							
72 AND/KAU	REACTION ORDER: 3 M: Ar	297	1.5(+17)	-	-	0.5	1.5
NOTE: AT 5 TORR							
	REACTION ORDER: 3 M: Ar	297	9.1(+16)	-	-	0.6	1.4
NOTE: AT 8 TORR							
72 STU/NIK2	REACTION ORDER: 2 M: He	300	1.2(+12)	-	-		
NOTE: LIMITING HIGH-PRESSURE k							
73 MOR/SMI	REACTION ORDER: 3 M: He	300-416	1.0(+16)	0	-810±240	0.8	1.2
72 WIS/DEH4	REACTION ORDER: 3	273-395	4.7(+17)	-	-		
NOTE: k DECREASING WITHIN GIVEN T RANGE FROM $4.7X10^{17}$ TO $1.3x10^{17}$ $cm^6 mol^{-2} s^{-1}$							
	M: Ar	298	1.3(+17)	-	-		
74 AND/MAR		295	1.2(+17)	-	-	0.8	1.2
NOTE: A NEGATIVE ACTIVATION ENERGY OF -1700±300 CAL/MOL (OR E/R=-856±150) WAS DETERMINED IN THE T-RANGE 295-439K.							
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74 AND/MAR	M: Ar	295	1.2(+17)	-	-	0.8	1.2
	M: Ar	295	2.1(+17)	-	-	0.8	1.2
74 COX2	REACTION ORDER: 2	294	3.7(+12)	-	-	0.8	1.2
NOTE: EVALUATION. RATE CONSTANT EXPRESSED AS K[M] WITH M=N_2 + O_2 AT 1 ATM							
74 HOW/EVE	REACTION ORDER: 3 M: He	296	1.5(+17)	-	-		
	M: Ar	296	1.6(+17)	-	-		
	M: N_2	296	2.8(+17)	-	-		
75 ATK/HANI	REACTION ORDER: 2 M: Ar	298	3.1(+12)	-	-	0.8	1.2
NOTE: LIMITING HIGH-PRESSURE k							
	REACTION ORDER: 3 M: Ar	298	1.5(+17)	-	-	0.9	1.1
NOTE: LOW PRESSURE k							
	REACTION ORDER: 2 M: N_2	298	3.7(+12)	-	-	0.8	1.2
NOTE: LIMITING HIGH-PRESSURE k							
	REACTION ORDER: 3 M: N_2	298	2.2(+17)	-	-	0.9	1.1
NOTE: LOW PRESSURE k							
75 GEL/MUL1	REACTION ORDER: 2	435	4.5(+12)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR							
75 HAR/WAY	REACTION ORDER: 3 M: Ar	298	2.5(+17)	-	-	0.7	1.3
	M: N_2	298	5.4(+17)	-	-	0.7	1.3

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
76 COX/DER1 REACTION ORDER: 2 k/k_{ref}: 1630	298	-	-	-	0.8	1.2
NOTE: k_{ref}: H_2 + OH → H + H_2O; M=N_2 + O_2						
	298	7.0(+12)	-	-	0.9	1.1
NOTE: EVALUATION; M=N_2 + O_2						
76 OVE/PAR	295	1.1(+13)	-	-		
NOTE: LIMITING HIGH. PRESSURE k; M=H_2O,CF_4,SF_6,N_2,Ar, OR He						
M: He	295	2.5(+12)	-	-	0.9	1.1
NOTE: AT 777 TORR						
M: Ar	295	2.5(+12)	-	-	0.9	1.1
NOTE: AT 720 TORR						
M: SF_6	295	7.7(+12)	-	-	0.9	1.1
NOTE: AT 770 TORR						
M: N_2	295	4.2(+12)	-	-	0.9	1.1
NOTE: AT 770 TORR						
M: CF_4	295	8.4(+12)	-	-	0.9	1.1
NOTE: AT 710 TORR						
76 SIE/SIM2 M: H_2	298	-	-	-	0.9	1.1
NOTE: k_{ref}: CO + OH → CO_2 + H						
(CONSTANT RATIO FOR 408-768 TORR PRESSURE RANGE, DECREASING TO 16.1 AT 96 TORR)						
M: H_2	298	7.2(+12)	-	-		
NOTE: LIMITING HIGH-PRESSURE k (EVALUATION)						
76 SIM/HEI M: H_2	296	2.2(+12)	-	-		
NOTE: AT ~100 TORR (EVALUATION)						
76 SIM/HEI REACTION ORDER: 2	296	6.6(+12)	-	-		
NOTE: AT ~730 TORR (EVALUATION)						

NO + HO_2 → NO_2 + OH						
NITROGEN OXIDE(NO) + HYDROPEROXYL FREE RADICAL						
76 PAY/STI REACTION ORDER: 2	300	1.8(+11)	-	-	0.3	3.0
NOTE: EVALUATION						
73 SIM/HEI1 REACTION ORDER: 2	298	>9.0(+10)	-	-		
NOTE: EVALUATION, LOWER LIMIT K						
74 HAC/HOY2	298-669	2.0(+13)	0	1430	0.5	1.5
74 SIM/HEI2 k/k_{ref}: 7.0	298	-	-	-	0.9	1.1
NOTE: k_{ref}: NO_2 + HO_2 → O_2 + HONO						
75 COX	300	7.2(+11)	-	-	0.7	1.3
75 GIA/TRO	1350-1700	4.5(+12)	-	-	0.8	1.2
75 COX/DER1	296	7.2(+11)	-	-	0.8	1.3
NOTE: OPTIMIZATION						
75 HAC/HOY	298-670	1.2(+13)	0	1200±150	0.7	1.3
76 SIM/HEI	296	6.0(+11)	-	-	0.8	1.2
NOTE: EVALUATION						
77 POW/EVE REACTION ORDER: 2	296	4.9(+12)	-	-	0.8	1.2
77 SIM/HEI	245-328	7.2(+12)	0	710±250		
NOTE: EVALUATION						

NO + HO_2 → NO_2 + OH + HNO_2						
NITROGEN OXIDE(NO) + HYDROPEROXYL FREE RADICAL						
76 SIM/HEI REACTION ORDER: 2 k/k_{ref}: 9.5	295	-	-	-	0.6	1.4
NOTE: k_{ref}: NO_2 + HO_2 → [HO_2.NO_2]						

NO + HO_2 → HNO_2						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
NITROGEN OXIDE(NO) + HYDROPEROXYL FREE RADICAL						
75 CEX/DER1 REACTION ORDER: 2	296	8.4(+10)	-	-	0.8	1.3
NOTE: OPTIMIZATION						
76 SIM/REI	296	<1.2(+9)	-	-		
NOTE: UPPER LIMIT k						

$NO + HO_2(+M) \rightarrow HONO_2(+M)$						
NITROGEN OXIDE(NO) + HYDROPEROXYL FREE RADICAL						
75 CEX REACTION ORDER: 2	300	8.4(+10)	-	-	0.7	1.3
NOTE: M: $N_2 + O_2$						

$NO + H_2O_2 \rightarrow HONO + OH$						
NITROGEN OXIDE(NO) + HYDROGEN PEROXIDE						
72 GRA/LIS REACTION ORDER: 2	298	<3.1	-	-		
NOTE: UPPER LIMIT k						

$NO + S^*(^1D) \rightarrow$ products						
NITROGEN OXIDE(NO) + SULFUR ATOM						
72 LIT/DAL REACTION ORDER: 2 k/k_{ref}: 0.68	300	-	-	-		
NOTE: k_{ref}: $CH_2{=}CH_2 + S^*(^1D) \rightarrow$ products						

$NO + SH \rightarrow$ products						
NITROGEN OXIDE(NO) + MERCAPTO FREE RADICAL						
73 BEA/TRU REACTION ORDER: 2	298	6.3(+11)	-	-		

$NO + N \rightarrow O + N_2$						
NITROGEN OXIDE(NO) + NITROGEN ATOM						
75 CLY/MCD REACTION ORDER: 2	298-670	4.9(+13)	0	410±120	0.8	1.2

$NO + N^*(^2D) \rightarrow$ products						
NITROGEN OXIDE(NO) + NITROGEN ATOM						
72 HUS/KIR2 REACTION ORDER: 2	300	3.7(+13)	-	-	0.4	1.6

$NO + N^*(^2P) \rightarrow$ products						
NITROGEN OXIDE(NO) + NITROGEN ATOM						
72 HUS/KIR2 REACTION ORDER: 2	300	2.0(+13)	-	-	0.7	1.3

$NO + NO \rightarrow N_2O + O$						
NITROGEN OXIDE(NO)						
73 MYL REACTION ORDER: 2	2600-6300	2.4(+10)	0	14600		

$NO + NO \rightarrow N_2O + O$						
NITROGEN OXIDE(NO)						
76 MCC/KRU REACTION ORDER: 2	1750-2100	1.8(+12)	0	32110	0.5	2.0

$NO + NO + O_2 \rightarrow NO_2 + NO_2$						
NITROGEN OXIDE(NO) + OXYGEN MOLECULE						
73 SHE/NIK1 REACTION ORDER: 3	298	1.5(+10)	-	-	0.9	1.1
75 ENG/COR	298-323	1.9(+9)	0	602±25	0.9	1.1

$NO + NO_2 + H_2O \rightarrow HONO + HONO$						
NITROGEN OXIDE(NO) + NITROGEN OXIDE(NO_2) + WATER						
75 ENG/COR REACTION ORDER: 3	298-323	1.5(+11)	0	0	0.7	1.3

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
76 CHA/NØR	296	2.2(+10)	-	-	0.7	1.3

$NØ + NØ_3 \rightarrow NØ_2 + NØ_2$						
NITROGEN ØXIDE($NØ_3$) + NITROGEN ØXIDE($NØ_3$)						
73 HAR/JØH REACTIØN ØRDER: 2	296	5.2(+12)	-	-		
NØTE: EVALUATIØN						
74 GLA/TRØ1	1000-1100	8.0(+12)	-	-	0.5	1.5
75 GRA	297	1.1(+13)	-	-	0.8	1.2
NØTE: $k_1 + Fk_{-1}$						

$NØ + N_2Ø \rightarrow N2 + NØ_2$						
NITROGEN ØXIDE(NØ) + NITROGEN ØXIDE(N2Ø)						
73 BØR/SKA REACTIØN ØRDER: 2	1050-2500	2.8(+14)	0	25170±1500	0.6	1.6
NØTE: EVALUATIØN						

NØ + NH → products						
NITROGEN ØXIDE(NØ) + IMIDØGEN FREE RADICAL						
71 GØK/MUL REACTIØN ØRDER: 2	298	2.3(+13)	-	-		
NØTE: UNREPØRTED T ASSUMED TØ BE 298						
76 HAN/HØE	298	2.8(+13)	-	-	0.7	1.3
NØTE: UNREPØRTED T ASSUMED TØ BE 298K						

$NØ + NH_2 \rightarrow H_2Ø + N_2$						
NITROGEN ØXIDE(NØ) + AMIDØGEN FREE RADICAL						
72 BED/THØ REACTIØN ØRDER: 2	615-660	-	-	-		
NØTE: k/k_{ref}: 0.005exp(322±500/T)						
k_{ref}: $NØ_2 + NH_2 \rightarrow HØNØ + NH$						
75 IES/KHE	298	1.1(+13)	-	-	0.8	1.2
75 GØR/MUL2	300	1.2(+13)	-	-		
75 HAN/LAN	298	1.3(+13)	-	-	0.9	1.1

$NØ + NH_2 \rightarrow H_2Ø^* + N_2$						
NITROGEN ØXIDE(NØ) + AMIDØGEN FREE RADICAL						
73 GEH/HØY REACTIØN ØRDER: 2	298	5.0(+12)	-	-	0.8	1.2

NØ + NH_2 → products						
NITROGEN ØXIDE(NØ) + AMIDØGEN FREE RADICAL						
71 GØK/MUL REACTIØN ØRDER: 2	298	1.6(+13)	-	-		
NØTE: UNREPØRTED T ASSUMED TØ BE 298K						

$NØ + HØNØ_2 \rightarrow NØ_2 + HØNØ$						
NITROGEN ØXIDE(NØ) + NITRIC ACID						
77 KAI/WU REACTIØN ØRDER: 2	300	9.0(+3)	-	-		

$NØ + C(^3P) \rightarrow$ products						
NITROGEN ØXIDE(NØ) + CARBØN ATØM						
75 PUS/YØU REACTIØN ØRDER: 2	300	2.9(+13)	-	-	0.8	1.2

$NØ + {}^1CH_2^* \rightarrow$ products						
NITROGEN ØXIDE(NØ) + METHYLENE FREE RADICAL						
74 LAU/DAS REACTIØN ØRDER: 2	298	2.4(+13)	-	-		
NØTE: LIMITING HIGH-PRESSURE k (UPPER LIMIT)						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
$NO + {}^3CH_2 \rightarrow CH_2NO$						
NITROGEN OXIDE(NO) + METHYLENE FREE RADICAL ALIGN						
77 FIT/ROB REACTION ORDER: 2 ALIGN	298	6.0(+12)	-	-		
NOTE: $^3CH_2$ (GROUND STATE)						

$NO + {}^3CH_2 + M \rightarrow$ products						
NITROGEN OXIDE(NO) + METHYLENE FREE RADICAL						
74 LAU/BAS M: He	298	9.6(+12)	-	-	0.9	1.1
NOTE: $^3CH_2$ (GROUND STATE). LIMITING HIGH-PRESSURE k						

$NO + CH_3 \rightarrow CH_3NO$						
NITROGEN OXIDE(NO) + METHYL FREE RADICAL						
72 DAV/COR REACTION ORDER: 2 k/k_{ref}: 0.62	295	-	-	-		
NOTE: k_{ref}: $NO_2 + CH_3 \rightarrow CH_3NO_2$						

$NO + CH_3 + M \rightarrow CH_3NO + M$						
NITROGEN OXIDE(NO) + METHYL FREE RADICAL						
71 VAN/CAL REACTION ORDER: 2	295	1.0(+13)	-	-	0.8	1.2
NOTE: LIMITING HIGH-PRESSURE k; M=N_2 OR $CH_3CH_2CH_3$						
74 PEA/VEL REACTION ORDER: 3 M: He	295	1.0(+17)	-	-	0.9	1.1
74 TIT/BAL REACTION ORDER: 2	443	1.8(+12)	-	-	0.9	1.1
NOTE: LIMITING HIGH-PRESSURE k; M=$(CH_3)_2CO$						
REACTION ORDER: 3	443	6.1(+16)	-	-		
NOTE: k_0 (LOW PRESSURE): M=$(CH_3)_2CO$						
75 LAU/BAS2 REACTION ORDER: 2	298	1.9(+13)	-	-		
NOTE: LIMITING HIGH-PRESSURE k; M=He, Ar, N_2.						
76 FIL/ROB	298	7.2(+12)	-	-	0.9	1.1
NOTE: LIMITING HIGH-PRESSURE k; M=Ar, OR SF_6.						
76 PEA/VEL2 M: He	325-521	7.2(+16)	0	-210±10	0.8	1.2

$NO + {}^{\cdot}CHO \rightarrow HNO + CO$						
NITROGEN OXIDE(NO) + METHYL, OXO-, FREE RADICAL						
77 SHI/EBA REACTION ORDER: 2	298	3.4(+12)	-	-	0.8	1.2

$NO + CH_3O{\cdot} \rightarrow HNO + HCHO$						
NITROGEN OXIDE(NO) + METHOXY FREE RADICAL						
73 WIE/HEI REACTION ORDER: 2 k/k_{ref}: 0.145	298-423	-	-	-		
NOTE: k_{ref}: $NO + CH_3O{\cdot} \rightarrow HNO + HCHO + CH_3ONO^*$						
73 WIE/VIL REACTION ORDER: 2 k/k_{ref}: 0.145	298	-	-	-		
NOTE: k_{ref}: $NO + CH_3O{\cdot} \rightarrow HNO + HCHO + CH_3ONO$						
75 EAT/MCC	393-473	4.0(+12)	0	0±500	0.3	3.2
75 GIA k/k_{ref}: 0.13	296	-	-	-		
NOTE: k_{ref}: $NO + CH_3O{\cdot} \rightarrow HNO + HCHO + CH_3ONO$						
77 EAT/MIL3	440-472	2.0(+12)	0	0±500		
NOTE: EVALUATION						

$NO + CH_3O{\cdot} \rightarrow HNO + HCHO + CH_3CNO$						
NITROGEN OXIDE(NO) + METHOXY FREE RADICAL						
73 WIE/VIL REACTION ORDER: 2 k/k_{ref}: 1.2	298	-	-	-		
NOTE: k_{ref}: $NO_2 + CH_3O{\cdot} \rightarrow HONO + HCHO + CH_3ONO_2$						

$NO + CH_3O{\cdot} \rightarrow CH_3ONO$						
NITROGEN OXIDE(NO) + METHOXY FREE RADICAL						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
74 EAT/MIL — REACTION ORDER: 2	393-473	1.3(+13)	0	0±500	0.4	2.5
75 EAT/MCC	393-473	1.3(+13)	0	0±500	0.4	2.5
77 EAT/MIL3	440-473	1.3(+13)	0	0±500	0.3	4.0
NOTE: EVALUATION						

$NO + CH_3O_2\cdot \rightarrow NO_2 + CH_3O\cdot$						
NITROGEN OXIDE(NO) + METHYLDIOXY FREE RADICAL						
74 SIM/HEI3 — REACTION ORDER: 2 k/k_{ref}: 2.2	298	-	-	-		
NOTE: k_{ref}: $NO_2 + CH_3O_2\cdot \rightarrow$ products						
76 COX/DER2	298	7.2(+11)	-	-		
NOTE: LOWER LIMIT ESTIMATE						

$NO + CH_3O_2\cdot \rightarrow CH_3O_2NO$						
NITROGEN OXIDE(NO) + METHYLDIOXY FREE RADICAL						
73 SPI/VIL — REACTION ORDER: 2 k/k_{ref}: 0.6	298	-	-	-	0.8	1.2
NOTE: k_{ref}: $NO + CH_3O_2\cdot \rightarrow HONO + HCHO + CH_3O_2NO$						

$NO + CN \rightarrow CO + N_2$						
NITROGEN OXIDE(NO) + CYANOGEN FREE RADICAL						
75 MUI/PHI — REACTION ORDER: 2	1500	7.3(+12)	-	-		

$NO + CH_3CH_2\cdot \rightarrow CH_3CH_2NO$						
NITROGEN OXIDE(NO) + ETHYL FREE RADICAL						
74 PEA/VEL — REACTION ORDER: 2	295	1.2(+11)	-	-	0.9	1.1
76 PEA/VEI2 — REACTION ORDER: 2	325-521	1.4(+11)	0	0	0.6	1.6

$NO + CH_3C(O)CO\cdot \rightarrow NO_2 + CH_3\cdot + CO_2$						
NITROGEN OXIDE(NO) + ETHYLDIOXY, 1-OXO-, FREE RADICAL						
76 COX/DER3 — REACTION ORDER: 2 k/k_{ref}: 1.7	296	-	-	-		
NOTE: k_{ref}: $NO_2 + CH_3C(O)O_2\cdot \rightarrow CH_3C(O)O_2NO_2$						

$NO + CH_3C(O)CO\cdot \rightarrow NO_2 + CH_3C(O)O\cdot$						
NITROGEN OXIDE(NO) + ETHYLDIOXY, 1-OXO-, FREE RADICAL						
77 BEN/KEN — REACTION ORDER: 2	298-318	2.0(+12)	-	-		
77 COX/ROF	300	1.6(+12)	-	-		
NOTE: EVALUATION						

$NO + CH_3CH_2O\cdot \rightarrow HNO + CH_3CHO$						
NITROGEN OXIDE(NO) + ETHOXY FREE RADICAL						
77 EAT/MIL2 — REACTION ORDER: 2	435-491	6.3(+12)	0	0±500	0.4	2.5
NOTE: EVALUATION						

$NO + CH_3CH_2O\cdot \rightarrow CH_3CH_2ONO$						
NITROGEN OXIDE(NO) + ETHOXY FREE RADICAL						
73 EAT/MCC — REACTION ORDER: 2	393-473	2.0(+13)	0	0±500	0.4	2.5
74 EAT/MIL	393-473	2.0(+13)	0	0±500	0.4	2.5
77 EAT/MIL2	435-491	2.0(+13)	0	0±500	0.4	2.5
NOTE: EVALUATION						

$NO + (CH_3)_2CHO\cdot \rightarrow HNO + (CH_3)_2CO$						
NITROGEN OXIDE(NO) + ETHOXY, 1-METHYL-, FREE RADICAL						
75 EAT/MCC — REACTION ORDER: 2	393-473	4.0(+12)	0	0±500	0.3	3.2
77 EAT/MIL1	403-433	6.3(+12)	0	0±500	0.4	2.5

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
NOTE: EVALUATION						

NO + $(CH_3)_2CHO\cdot$ → $(CH_3)_2CHONO$						
NITROGEN OXIDE(NO) + ETHOXY, 1-METHYL-, FREE RADICAL						
74 LAT/MIL REACTION ORDER: 2	393-473	2.5(+13)	0	0±500	0.4	2.5
75 LAT/MCC	393-473	2.5(+13)	0	0±500	0.4	2.5
77 LAT/MIL1	403-433	3.2(+13)	0	0±400	0.4	2.5
NOTE: EVALUATION						

NO + $(CH_3)_3C\cdot$ → HNO + $(CH_3)_2C{=}CH_2$						
NITROGEN OXIDE(NO) + ETHYL, 1,1-DIMETHYL-, FREE RADICAL						
74 CHO/MEN REACTION ORDER: 2	600	<3.2(+10)	-	-		
NOTE: UPPER LIMIT k						

NO + $(CH_3)_3C\cdot$ → $(CH_3)_3CNO$						
NITROGEN OXIDE(NO) + ETHYL, 1,1-DIMETHYL-, FREE RADICAL						
74 CHO/MEN REACTION ORDER: 2	600	3.5(+12)	-	-	0.5	1.5

NO + $CH_3CH_2CH(O\cdot)CH_3$ → HNO + $CH_3CH_2COCH_3$						
NITROGEN OXIDE(NO) + PROPOXY, 1-METHYL-, FREE RADICAL						
75 LAT/MCC REACTION ORDER: 2	393-473	4.0(+12)	0	0±500	0.3	3.2
76 LAT/MCC2	403-433	6.3(+12)	0	0±500	0.4	2.5
NOTE: EVALUATION						

NO + $CH_3CH_2CH(O\cdot)CH_3$ → $CH_3CH_2CH(CH_3)ONO$						
NITROGEN OXIDE(NO) + PROPOXY, 1-METHYL-, FREE RADICAL						
75 LAT/MCC REACTION ORDER: 2	393-473	2.5(+13)	0	0		
76 LAT/MCC2	403-433	2.5(+13)	0	0±400	0.4	2.5
NOTE: EVALUATION						

NO + $(CH_3)_3CO\cdot$ → $(CH_3)_3CONO$						
NITROGEN OXIDE(NO) + ETHOXY,1,1-DIMETHYL-, FREE RADICAL						
74 LAT/MIL REACTION ORDER: 2	393-473	2.5(+13)	0	0±500	0.4	2.5

NO + $(CH_3)_3CO\cdot$ → $(CH_3)_3CONO$						
NITROGEN OXIDE(NO) + ETHOXY,1,1-DIMETHYL-, FREE RADICAL						
75 LAT/MCC REACTION ORDER: 2	393-473	2.5(+13)	0	0±500	0.4	2.5
75 MEN/GOL	300	6.3(+12)	-	-		
NOTE: ESTIMATED k						
76 LAT/MIL	393-433	2.5(+13)	0	0±500		
NOTE: EVALUATION						

NO + M → N + O + M						
NITROGEN OXIDE						
73 MYE REACTION ORDER: 2 M: Ar	2600-6300	1.4(+14)	0	74700		

NO + M → products						
NITROGEN OXIDE(NO)						
75 TSU/MAC REACTION ORDER: 2 M: No	2700-4700	1.8(+11)	0.5	30458		

NO_2 + O → NO + O_2						
NITROGEN OXIDE(NO_2) + OXYGEN ATOM						
72 CLY/CRU REACTION ORDER: 2	298	3.6(+12)	-	-	0.9	1.1

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
72 GER/DEM	298	4.0(+12)	-	-	0.8	1.3
73 DAV/DER	230-339	5.5(+12)	0	0	0.9	1.1
73 SIA/WEG	240	6.3(+12)	-	-	0.8	1.2
	296	5.6(+12)	-	-	0.8	1.2
73 HAK/JOH	296	5.5(+12)	-	-		
NOTE: EVALUATION						
74 EIM/CLY	298	5.7(+12)	-	-	0.9	1.1
	298-1055	1.1(+14)	-0.52	0	0.7	1.4
74 STE/ALV k/k_{ref}: 6.0	298	-	-	-	0.9	1.1
NOTE: k_{ref}: $O_2O + O \rightarrow SO + SO$						

$NO_2 + O^*(^1D) \rightarrow NO + O_2$						
NITROGEN OXIDE(NO_2) + OXYGEN ATOM						
73 PEI/HUS2 REACTION ORDER: 2	300	1.4(+14)	-	-	0.9	1.1
73 HEI/HUS2 k/k_{ref}: 1.05	300	-	-	-		
NOTE: k_{ref}: $N_2O + O^*(^1D) \rightarrow$ products						
75 GAU/SNE k/k_{ref}: ~4.0	300	-	-	-		
NOTE: k_{ref}: $O_2 + O^*(^1D) \rightarrow O_2^*(^1\Sigma_g^+) + O$						
75 GAU/SNE	300	1.8(+14)	-	-		
NOTE: EVALUATION (APPROXIMATE k)						

$NO_2 + O + M \rightarrow NO_3 + M$						
NITROGEN OXIDE(NO_2) + OXYGEN ATOM						
73 HAK/JOH REACTION ORDER: 3 M: N_2	296	3.0(+16)	-	-		
NOTE: EVALUATION						
73 GAT/GIA REACTION ORDER: 2 M: N_2	300	6.0(+12)	-	-		
NOTE: LIMITING HIGH-PRESSURE k						
73 HUI REACTION ORDER: 3 M: Ar	263	1.4(+17)	-	-	0.7	1.3
M: Ar	298	7.6(+16)	-	-	0.7	1.3
75 GAI/TRO REACTION ORDER: 2 M: N_2	296	1.3(+13)	-	-	0.8	1.2
NOTE: LIMITING HIGH-PRESSURE k						
75 HIF/SCH M: N_2	295	1.3(+13)	-	-	0.8	1.2
NOTE: LIMITING HIGH-PRESSURE k (REEVALUATION)						
REACTION ORDER: 3	295	2.9(+16)	-	-	0.9	1.1
NOTE: M eff: N_2(1.0); LIMITING LOW-PRESSURE k (REEVALUATION)						

$NO_2 + O_3 \rightarrow NO_3 + O_2$						
NITROGEN OXIDE(NO_2) + OZONE						
73 GHO/ELL REACTION ORDER: 2	298	4.7(+7)	-	-	0.9	1.1
73 STE/NIK1	298	3.9(+7)	-	-	0.9	1.1
73 WU/MOR	299	1.3(+7)	-	-	0.9	1.2
74 BIC/SCH	289	2.0(+7)	-	-		
74 GRA/JOH	231-298	8.1(+10)	0	2466±30	0.9	1.1
74 DAV/PRU	263-343	5.4(+10)	0	2428±115	0.9	1.1
74 GHO/ELL	298	1.9(+7)	-	-	0.8	1.2
75 GRA	231-298	8.1(+10)	0	2466+30	0.9	1.1
74 HUI/HER	259-362	9.4(+10)	0	2509±76	0.7	1.3
76 GRA	231-298	8.1(+10)	0	2466+30	0.9	1.1

$NO_2 + H \rightarrow NO + OH$						
NITROGEN OXIDE(NO_2) + HYDROGEN ATOM						
76 WAG/WEL REACTION ORDER: 2	240-460	4.3(+14)	0	505±85	0.6	1.4
77 HEM/CLY	298	6.8(+13)	-	-	0.8	1.2

CHEMICAL REACTIONS		T/K	A	B	E/R (in °K)	k factors f	k factors F
77 CLY/MCN		298-653	2.9(+14)	0	174±31	0.8	1.2
$NO_2 + OH + M \rightarrow HONO_2 + M$							
NITROGEN OXIDE(NO_2) + HYDROXYL FREE RADICAL							
72 AND/KAU	REACTION ORDER: 3 M: Ar	297	3.6(+17)	-	-	0.7	1.3
	M: N_2	297	7.3(+17)	-	-	0.7	1.3
73 SIM/HEI2	REACTION ORDER: 2 M: H_2O	300-423	6.3(+12)	0	170		
NOTE: LIMITING HIGH-PRESSURE k (EVALUATION)							
72 SIM/HEI2	M: H_2O	300-423	4.0(+18)	0	0		
NOTE: TEMPERATURE INDEPENDENT k_0 (EVALUATION)							
72 WES/DEH4	M: He	273-395	7.3(+17)	-	-		
NOTE: k DECREASING WITHIN GIVEN T RANGE FROM $7.3X10^{17}$ TO $2.1x10^{17} cm^6 mol^{-2} s^{-1}$							
72 WES/DEH4	M: Ar	298	3.0(+17)	-	-		
74 AND/MAK	M: He	295	3.6(+17)	-	-	0.8	1.2
	M: Ar	295	3.6(+17)	-	-	0.8	1.2
NOTE: A NEGATIVE ACTIVATION ENERGY OF-1800±300 cal/mol (OR E/R=-906±150) WAS DETERMINED IN THE T-RANGE 295-439K							
	M: N_2	295	8.3(+17)	-	-	0.8	1.2
74 GLA/TRO1	M: He	295-1200	1.4(+25)	-2.98	0	0.6	1.6
NOTE: LIMITING LOW-PRESSURE k (EVALUATION: $k_1 * Kk_{-1}$) CONCENTRATION DEPENDENT ARRHENIUS EXPRESSION = k/[He]	REACTION ORDER: 2	295-1200	4.0(+14)	-0.85	0	0.6	1.6
NOTE: LIMITING HIGH-PRESSURE k (EVALUATION: $k_1 * Kk_{-1}$)	M: Ar REACTION ORDER: 3 M: Ar	295-1200	5.6(+24)	-2.9	0	0.6	1.6
NOTE: LIMITING LOW-PRESSURE k (EVALUATION: $k_1 * Kk_{-1}$). CONCENTRATION DEPENDENT ARRHENIUS EXPRESSION = k/[Ar]	M: N_2	622	3.0(+17)	-	-		
NOTE: LIMITING LOW-PRESSURE k (EVALUATION: $k_1 * Kk_{-1}$). CONCENTRATION DEPENDENT ARRHENIUS EXPRESSION = k/[N_2]	M: N_2	670	1.7(+17)	-	-		
NOTE: LIMITING LOW-PRESSURE k (EVALUATION: $k_1 * Kk_{-1}$). CONCENTRATION DEPENDENT ARRHENIUS EXPRESSION = k/[N_2]							
74 HOW/EVE	M: N_2	296	1.1(+18)	-	-		
75 GOL/MULI	REACTION ORDER: 2 M: H_2O	435	3.2(+12)	-	-		
NOTE: IN AN ATMOSPHERE OF WATER VAPOR							
75 HAR/WAY	REACTION ORDER: 3 M: Ar	298	5.4(+17)	-	-	0.7	1.3
	M: N_2	298	9.4(+17)	-	-	0.6	1.4
76 ANA/SMI	REACTION ORDER: 2 M: N_2	296	9.8(+12)	-	-		
NOTE: LIMITING HIGH-PRESSURE k	REACTION ORDER: 3 M: N_2	220-550	5.5(+16)	0	-818	0.8	1.2
NOTE: LIMITING LOW PRESSURE k	M: N_2	220-550	2.6(+24)	-2.6	0	0.8	1.2
NOTE: LIMITING LOW-PRESSURE k (ALTERNATIVE T-DEPENDENT EXPRESSION)							
	M: O_2	296	6.5(+17)	-	-		
NOTE: M eff: O_2(0.68); LIMITING LOW-PRESSURE k	M: He	296	3.3(+17)	-	-		
NOTE: M eff: He(0.34); LIMITING LOW-PRESSURE k	M: Ar	296	4.0(+17)	-	-		
NOTE: M eff: Ar(0.42); LIMITING LOW-PRESSURE k	M: N_2	296	9.6(+17)	-	-		

CHEMICAL REACTIONS		T/K	A	B	E/R (in °K)	k factors f	F
NOTE: M eff: N_2(1.0) LIMITING LOW-PRESSURE k							
	M: SF_6	296	2.4(+18)	-	-		
NOTE: M eff: SF_6(2.5); LIMITING LOW-PRESSURE k							
76 ATK/PER3 REACTION ORDER: 2	M: Ar	296	3.6(+12)	-	-	0.9	1.1
NOTE: AT 760 TORR							
	M: N_2	298	3.9(+12)	-	-	0.8	1.2
NOTE: AT 760 TORR							
		298	5.1(+12)	-	-		
NOTE: M=Ar, OR N_2(LIMITING HIGH-PRESSURE k)							
REACTION ORDER: 3	M: Ar	298	3.7(+17)	-	-	0.9	1.1
NOTE: LIMITING LOW-PRESSURE k							
77 ERI/FIE	M: N_2	213-300	5.4(+24)	-2.9	0	0.7	1.3
NOTE: k_0 (LOW PRESSURE)							
	M: He	300	3.6(+17)	-	-	0.6	1.4
NOTE: k_0 (LOW PRESSURE)							
77 ERI/FIE	M: CO_2	300	1.5(+18)	-	-	0.9	1.1
NOTE: k_0 (LOW PRESSURE)							

NO_2 + HO_2 → $HONO + O_2$							
NITROGEN OXIDE(NO_2) + HYDROPEROXYL FREE RADICAL							
74 SIM/HEI2 REACTION ORDER: 2		298	>1.8(+11)	-	-		
NOTE: LOWER LIMIT k							
75 CCX		300	7.2(+10)	-	-	0.7	1.3
75 CCX/DER1		296	7.2(+10)	-	-	0.8	1.3
NOTE: OPTIMIZATION							
77 HOW		300	<1.8(+9)	-	-		
NOTE: UPPER LIMIT k							
77 LEV/USE	k/k_{ref}: 0.043	297	-	-	-	0.5	1.5
NOTE: k_{ref}: NO + HO_2 → NO_2 + OH EVALUATION							
77 LEV/USE	k/k_{ref}: 0.7	297	-	-	-	0.4	1.6
NOTE: k_{ref}: NO_2 + HO_2(+M) → $HONO_2$(+M) EVALUATION							

NO_2 + HO_2 → $HONO_2$							
NITROGEN OXIDE(NO_2) + HYDROPEROXYL FREE RADICAL							
76 SIM/HEI REACTION ORDER: 2		296	5.9(+10)	-	-	0.6	1.4
NOTE: EVALUATION							
		245-328	2.5(+11)	0	0		
NOTE: EVALUATION							

NO_2 + HO_2 + M → $HONO_2$ + M							
NITROGEN OXIDE(NO_2) + HYDROPEROXYL FREE RADICAL							
77 HOW REACTION ORDER: 3	M: O_2	300	5.5(+16)	-	-	0.7	1.3
	M: He	300	3.6(+16)	-	-	0.7	1.3
	M: N_2	300	7.6(+16)	-	-	0.8	1.2
	M: NO_2	300	2.4(+17)	-	-	0.5	1.5

NO_2 + H_2O → $HONO$ + OH							
NITROGEN OXIDE(NO_2) + WATER							
76 LII REACTION ORDER: 2		1000-1400	8.3(+12)	0	21140		
NOTE: k_1*Kk_{-1}							

NO_2 + H_2O_2 → $HONO_2$ + 1/2H_2O + 1/4O_2 (overall)							
NITROGEN OXIDE(NO_2) + HYDROGEN PEROXIDE							

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
72 GRA/LIS REACTION ORDER: 2	298	<6.0(+5)	-	-		
NOTE: UPPER LIMIT K						

NO_2 + S → NO + SO						
NITROGEN OXIDE(NO_2) + SULFUR ATOM						
75 CLY/TOW REACTION ORDER: 2	298	3.7(+13)	-	-	0.8	1.2

NO_2 + SO → NO + SO_2						
NITROGEN OXIDE(NO_2) + SULFUR MONOXIDE						
71 MIY/TAK2 REACTION ORDER: 2	298	1.2(+16)	-	-	0.9	1.1

NO_2 + SO_2 → NO + SO_3						
NITROGEN OXIDE(NO_2) + SULFUR DIOXIDE						
71 ARM/CUL REACTION ORDER: 2	703-1193	6.3(+12)	0	13950		
77 FRE/PAL	430-1850	6.3(+12)	0	13600		
NOTE: EXTENDED VALIDITY OF k REPORTED IN 71 ARM/CUL (ABOVE) UP TO 2000 K						

NO_2 + N → N_2O + O						
NITROGEN OXIDE(NO_2) + NITROGEN ATOM						
75 CLY/MCD REACTION ORDER: 2	298	8.4(+11)	-	-	0.9	1.1

NO_2 + NO + H_2O → HONO + HNO						
NITROGEN OXIDE(NO_2) + NITROGEN OXIDE(NO) + WATER						
75 ENG/COR REACTION ORDER: 3	298-323	1.5(+11)	0	0	0.7	1.3
76 CHA/NOR	296	2.2(+10)	-	-	0.7	1.3

NO_2 + NO_2 → NO + NO_3						
NITROGEN OXIDE(NO_2)						
73 BIT/LEV REACTION ORDER: 2	1700-2400	3.2(+12)	0	12870	0.7	1.3
NOTE: EVALUATION						

NO_2 + NO_2 → NO + anti-NO_3						
NITROGEN OXIDE(NO_2)						
77 FRE/PAL REACTION ORDER: 2	1471-1855	3.2(+13)	0	17100		
NOTE: EVALUATION						

NO_2 + NO_2 + H_2O → HONO + HNO_2						
NITROGEN OXIDE(NO_2) + WATER						
74 ENG/COR REACTION ORDER: 3	298-323	1.0(+10)	0	-492±10	0.9	1.1

NO_2 + NO_2 + cy-CH_2CH_2O → products						
NITROGEN OXIDE(NO_2) + OXIRANE						
71 JAI REACTION ORDER: 3	298-373	1.3(+12)	0	1860		
NOTE: GIVEN WITH CAUTION						

NO_2 + NO_3 → NO + NO_2 + O_2						
NITROGEN OXIDE(NO_2) + NITROGEN OXIDE(NO_3)						
75 GRA REACTION ORDER: 2	298-329	1.5(+10)	0	1230±100	0.8	1.2
NOTE: k_1/k_{-1}						

NO_2 + NH_3 → HONO + NH_2						
NITROGEN OXIDE(NO_2) + AMMONIA						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
72 BED/THO REACTION ORDER: 2	615-660	4.3(+12)	0	13915±50	0.5	2.0

NO_2 + CO → NO + CO_2						
NITROGEN OXIDE(NO_2) + CARBON MONOXIDE						
76 MII REACTION ORDER: 2	950-1500	3.2(+13)	0	16100±650	0.6	1.8
77 FRE/PAL	1309-1940	2.2(+13)	0	14700±800	0.6	1.7
77 FRE/PAL	298-2000	8.9(+13)	0	17000	0.5	2.0
NOTE: BEST FIT (PREFERRED k)						

NO_2^* + CO → NO + CO_2						
NITROGEN MONOXIDE(NO_2) + CARBON MONOXIDE						
76 BEP/MAR REACTION ORDER: 2	298	7.2(+8)	-	-		
NOTE: AT 5600±10Å; UNREPORTED T ASSUMED TO BE 298K						
	298	1.3(+8)	-	-		
NOTE: AT 7500Å; UNREPORTED T ASSUMED TO BE 298K						

NO_2 + CH_3 → NO + CH_3O.						
NITROGEN OXIDE(NO_2) + METHYL FREE RADICAL						
74 GIA/TRO$_2$ REACTION ORDER: 2	1100-1400	1.3(+13)	0	0		

NO_2 + CH_3 → CH_3ONO						
NITROGEN OXIDE(NO_2) + METHYL FREE RADICAL						
72 DAV/COR REACTION ORDER: 2 k/k_{ref}: 2.17	295	-	-	-		
NOTE: k_{ref}: NO_2 + CH_3 → CH_3NO_2						
k/k_{ref}: [METHYL NITRITE]/[NITROMETHANE]						

NO_2 + CH_3 + M → CH_3NO_2 + M						
NITROGEN OXIDE(NO_2) + METHYL FREE RADICAL						
74 GIA/TRO$_2$ REACTION ORDER: 2 M: Ar	300-1400	6.3(+14)	-0.6	0		
NOTE: LIMITING HIGH-PRESSURE k						
REACTION ORDER: 3 M: Ar	300-1400	2.5(+35)	-6	0		
NOTE: LOW PRESSURE k						

NO_2 + CH_3O. → HONO + HCHO						
NITROGEN OXIDE(NO_2) + METHOXY FREE RADICAL						
77 BAR/DEN REACTION ORDER: 2 k/k_{ref}: 0.30	396-442	-	-	-	0.8	1.2
NOTE: k_{ref}: NO_2 + CH_3O.(+M) → CH_3ONO_2(+M)						
77 LAT/MIL3	440-473	5.0(+11)	0	0		
NOTE: EVALUATION						

NO_2 + CH_3O. → CH_3ONO_2						
NITROGEN OXIDE(NO_2) + METHOXY FREE RADICAL						
73 WIF/VIL REACTION ORDER: 2 k/k_{ref}: 0.92	298	-	-	-		
NOTE: k_{ref}: NO_2 + CH_3O. → HONO + HCHO + CH_3ONO_2						
77 BAT/MIL3	440-473	5.0(+12)	0	0		
NOTE: EVALUATION						

NO_2 + CH_3O.(+M) → CH_3ONO_2(+M)						
NITROGEN OXIDE(NO_2) + METHOXY FREE RADICAL						
77 BAR/DEN REACTION ORDER: 2 M: NO_2	396-442	6.3(+12)	0	0	0.3	3.2
NOTE: EVALUATION						

NO_2 + CH_3O_2. → $CH_3O_2NO_2$						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
NO_2 + CH_3O_2. → products NITROGEN OXIDE(NO_2) + METHYLDIOXY FREE RADICAL 73 SPI/VII REACTION ORDER: 2 k/k_{ref}: 0.75 NOTE: k_{ref}: NO_2 + CH_3O_2. → $HONO_2$ + HCHO + $CH_3O_2NO_2$	298	-	-	-	0.9	1.1
NO_2 + CH_3O_2. → products NITROGEN OXIDE(NO_2) + METHYLDIOXY FREE RADICAL 76 CEX/DER2 REACTION ORDER: 2 k/k_{ref}: 0.05 NOTE: APPROXIMATE RATIO. k_{ref}: NO + CH_3O_2. → NO_2 + CH_3O.	298	-	-	-		
NO_2 + CH_2=CH_2 → products NITROGEN OXIDE(NO_2) + ETHENE 71 JAI REACTION ORDER: 2	298-373	2.0(+6)	0	4100		
NO_2 + $CH_3C(O)OO$. → $CH_3C(O)OONO_2$ NITROGEN OXIDE(NO_2) + ETHYLDIOXY, 1-OXO-, FREE RADICAL 77 CEX/ROF REACTION ORDER: 2 k/k_{ref}: 0.54 NOTE: k_{ref}: NO + $CH_3C(O)OO$. → NO_2 + $CH_3C(O)O$.	294-328	-	-	-	0.7	1.3
	300	8.4(+11)	-	-	0.1	10.0
NOTE: GIVEN WITH CAUTION						
NO_2 + CH_3CHO → HONO + $CH_3C(O)$. NITROGEN OXIDE(NO_2) + ACETALDEHYDE 71 JAI REACTION ORDER: 2	298-373	1.6(+5)	0	3475		
72 EAV/COR	295	8.6(0)	-	-	0.9	1.1
NOTE: E= 1200 + 600 cal/mole (E/R= 6490±300K) REPORTED FOR T RANGE 295-395K						
NO_2 + CH_3CH_2O. → HONO + CH_3CHO NITROGEN OXIDE(NO_2) + ETHOXY FREE RADICAL 77 BAT/MIL2 REACTION ORDER: 2	435-491	4.0(+12)	0	0		
NOTE: EVALUATION						
NO_2 + CH_3CH_2O. → $CH_3CH_2ONO_2$ NITROGEN OXIDE(NO_2) + ETHOXY FREE RADICAL 77 BAT/MIL2 REACTION ORDER: 2	435-491	7.9(+12)	0	0		
NOTE: EVALUATION						
NO_2 + CH_3C≡CH → [CH_3C=$CH.NO_2$] NITROGEN OXIDE(NO_2) + PROPYNE 73 ASH/THO REACTION ORDER: 2	443-493	2.3(+8)	0	6425±80	0.8	1.2
NO_2 + CH_3CH=CH_2 → [CH_3CH=$CH_2.NO_2$] NITROGEN OXIDE(NO_2) + PROPENE 76 GEY/KOZ REACTION ORDER: 2	293-373	2.4(+5)	0	2820		
NO_2 + CH_3CI=CH_2 → products NITROGEN OXIDE(NO_2) + PROPENE 71 JAI REACTION ORDER: 2	298-373	3.2(+6)	0	3950		
NO_2 + $CH_3CH_2CH_2$. → NO + $CH_3CH_2CH_2O$. NITROGEN OXIDE(NO_2) + PROPYL FREE RADICAL 74 JAE/WAN REACTION ORDER: 2 k/k_{ref}: 2.2	298	-	-	-		
NOTE: k_{ref}: NO_2 + $CH_3CH_2CH_2$. → $CH_3CH_2CH_2NO_2$						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F

NO_2 + $CH_3CH_2CH_3$ → HNO_2 + $(CH_3)_2CH$.						
NITROGEN OXIDE(NO_2) + PROPANE						
76 TIT/BAL REACTION ORDER: 2	423-498	2.4(+11)	0	11375±60	0.9	1.1

NO_2 + $(CH_3)_2CO$ → $HONO$ + CH_3COCH_2.						
NITROGEN OXIDE(NO_2) + 2-PROPANONE						
71 JAF REACTION ORDER: 2	298-373	3.8(+5)	0	3590		

NO_2 + $CH_3CH_2CH_2O$. → $CH_3CH_2CH_2ONO_2$						
NITROGEN OXIDE(NO_2) + PROPOXY FREE RADICAL						
75 MEN/GOL REACTION ORDER: 2	300	3.2(+12)	-	-		
NOTE: ESTIMATED k						

NO_2 + CH_2=CHC≡CH → products						
NITROGEN OXIDE(NO_2) + 1-BUTEN-3-YNE						
75 GRY/ROZ REACTION ORDER: 2	273-333	8.8(+5)	0	1710		

NO_2 + CH_3C≡CCH_3 → $[CH_3C{=}CCH_3.NO_2]$						
NITROGEN OXIDE(NO_2) + 2-BUTYNE						
73 ASF/THO REACTION ORDER: 2	443-493	8.1(+8)	0	6030±95	0.8	1.2

NO_2 + CH_3CH_2CH=CH_2 → products						
NITROGEN OXIDE(NO_2) + 1-BUTENE						
71 JAF REACTION ORDER: 2	298-373	2.5(+6)	0	3680		

NO_2 + cis-CH_3CH=$CHCH_3$ → products						
NITROGEN OXIDE(NO_2) + cis-2-BUTENE						
71 JAF REACTION ORDER: 2	298-373	2.5(+5)	0	2740		

NO_2 + trans-CH_3CH=$CHCH_3$ → products						
NITROGEN OXIDE(NO_2) + trans-2-BUTENE						
71 JAF REACTION ORDER: 2	298-373	1.6(+6)	0	3220		

NO_2 + $(CH_3)_2C$=CH_2 → products						
NITROGEN OXIDE(NO_2) + 1-PROPENE, 2-METHYL-						
71 JAF REACTION ORDER: 2	298-373	4.0(+4)	0	2000		

NO_2 + $CH_3CH_2CH_2CHO$ → HNO_2 + $CH_3CH_2CH_2C(O)$.						
NITROGEN OXIDE(NO_2) + BUTANAL						
74 JAI/WAN REACTION ORDER: 2	295-390	2.5(+10)	0	6240		

NO_2 + $(CH_3)_3CO$. → $(CH_3)_3CONO_2$						
NITROGEN OXIDE(NO_2) + ETHOXY, 1,1-DIMETHYL-, FREE RADICAL						
76 EAT/NIL REACTION ORDER: 2	393-433	1.6(+13)	0	0		
NOTE: EVALUATION						

NO_2 + CH_2=$CH(CH_3)$=CH_2 → products						
NITROGEN OXIDE(NO_2) + 1,3-BUTADIENE, 2-METHYL-						
75 GRY/ROZ REACTION ORDER: 2	273-433	1.7(+7)	0	1060		

NO_2 + $CH_3CH_2CH_2CH$=CH_2 → products						
NITROGEN OXIDE(NO_2) + 1-PENTENE						

CHEMICAL REACTIONS	T/K	A	B	E/R, (in °K)	k factors f	k factors F
71 JAF REACTION ORDER: 2	298-373	1.6(•6)	0	3650		
NO_2 • $CH_3CH_2CH_2CH_2CH=CH_2$ → $[CH_3CH_2CH_2CH_2CH=CH_2.NO_2]$						
NITROGEN OXIDE(NO_2) • 1-HEXENE						
76 GRY/FOZ REACTION ORDER: 2	293-333	7.7(•7)	0	3520		
NO_3 • O → NO_2 • O_2						
NITROGEN OXIDE(NO_3) • OXYGEN ATOM						
75 GRA REACTION ORDER: 2	298-329	6.0(•12)	0	0	0.8	1.2
NO_3 • SO_2 → NO_2 • SO_3						
NITROGEN OXIDE(NO_3) • SULFUR DIOXIDE						
75 DAU/CAL REACTION ORDER: 2	300	<4.2(•3)	-	-		
NOTE: UPPER LIMIT k						
NO_3 • NO → NO_2 • NO_2						
NITROGEN OXIDE(NO_3) • NITROGEN OXIDE(NO)						
73 HAK/JOH REACTION ORDER: 2	296	5.2(•12)	-	-		
NOTE: EVALUATION						
74 GIA/TRO1	1000-1100	8.0(•12)	-	-	0.5	1.5
75 GRA REACTION ORDER: 2	297	1.1(•13)	-	-	0.8	1.2
NOTE: $k_1 \cdot K k_{-1}$						
NO_3 • NO_2 → NO_2 • NO • O_2						
NITROGEN OXIDE(NO_3) • NITROGEN OXIDE(NO_2)						
75 GRA REACTION ORDER: 2	298-329	1.5(•10)	0	1230±100	0.8	1.2
NOTE: $k_1 \cdot K k_{-1}$						
NO_3 • NO_3 → NO_2 • NO_2 • O_2						
NITROGEN OXIDE(NO_3)						
75 GRA REACTION ORDER: 2	298-329	5.1(•11)	0	2450±100	0.7	1.3
NO_3 • $CH_2=CH_2$ → products						
NITROGEN OXIDE(NO_3) • ETHENE						
75 JAP/NIK REACTION ORDER: 2	300	5.6(•8)	-	-	0.9	1.1
NO_3 • CH_3CHO → $HONO_2$ • $CH_3C(O)$.						
NITROGEN OXIDE(NO_3) • ACETALDEHYDE						
74 MCR/NIK REACTION ORDER: 2	300	7.2(•8)	-	-	0.7	1.3
NOTE: BEST FIT OF EXPERIMENTAL DATA						
NO_3 • $CH_3CH=CH_2$ → products						
NITROGEN OXIDE(NO_3) • PROPENE						
75 JAP/NIK REACTION ORDER: 2	300	3.2(•9)	-	-	0.9	1.1
NO_3 • $CD_3CL=CD_2$ → products						
NITROGEN OXIDE(NO_3) • PROPENE-D6						
75 JAP/NIK REACTION ORDER: 2	300	3.6(•9)	-	-	0.9	1.1
NO_3 • $CH_3CH_2CH=CH_2$ → products						
NITROGEN OXIDE(NO_3) • 1-BUTENE						
75 JAP/NIK REACTION ORDER: 2	300	4.7(•9)	-	-	0.9	1.1

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
NO_3 + cis-$CH_3CH{=}CHCH_3$ → products						
NITROGEN OXIDE(NO_3) + cis-2-BUTENE						
75 JAP/NIK REACTION ORDER: 2	300	1.1(+11)	-	-	0.9	1.1
NO_3 + trans-$CH_3CH{=}CHCH_3$ → products						
NITROGEN OXIDE(NO_3) + trans-2-BUTENE						
75 JAP/NIK REACTION ORDER: 2	300	8.4(+10)	-	-	0.9	1.1
NO_3 + $(CH_3)_2C{=}CH_2$ → products						
NITROGEN OXIDE(NO_3) + 1-PROPENE, 2-METHYL-						
75 JAP/NIK REACTION ORDER: 2	300	6.6(+10)	-	-	0.9	1.1
NO_3 + $CH_3CH{=}C(CH_3)_2$ → products						
NITROGEN OXIDE(NO_3) + 2-BUTENE, 2-METHYL-						
75 JAP/NIK REACTION ORDER: 2	300	3.3(+12)	-	-	0.9	1.1
NO_3 + $(CH_3)_2C{=}C(CH_3)_2$ → products						
NITROGEN OXIDE(NO_3) + 2-BUTENE, 2,3-DIMETHYL-						
75 JAP/NIK REACTION ORDER: 2	300	2.2(+13)	-	-	0.9	1.1
N_2O + O → N_2 + O_2						
NITROGEN OXIDE(N_2O) + OXYGEN ATOM						
72 SOL REACTION ORDER: 2	1000-3000	4.5(+13)	0	12130		
75 LAB/DEA	1850-2535	1.2(+13)	0	12630		
76 DEA	1950-3075	1.2(+13)	0	12630		
NOTE: EVALUATION						
76 MIL	1370-1655	-	-	-		
NOTE: k_{ref}: N_2O + O → NO + NO; k/k_{ref}: $3.63X10^{4}cm^{3}mol^{-1}$						
N_2O + $O^*(^1D)$ → N_2 + O_2						
NITROGEN OXIDE(N_2O) + OXYGEN ATOM						
71 GOL/GRE REACTION ORDER: 2 k/k_{ref}: 0.33	298	-	-	-		
NOTE: k_{ref}: N_2O + $O^*(^1D)$ → N_2 + O_2 + NO + NO. (AT 2288 A) k/k_{ref}: 0.37	298	-	-	-		
NOTE: k_{ref}: N_2O + $O^*(^1D)$ → N_2 + O_2 + NO + NO (AT 2537 A)						
72 GRE k/k_{ref}: 0.59	298	-	-	-	0.9	1.1
NOTE: k_{ref}: N_2O + $O^*(^1D)$ → NO + NO FOR COMPLETELY THERMALIZED $O^*(^1D)$, k/k_{ref} = 0.85±0.05						
72 SIM/GRE k/k_{ref}: 0.90	298	-	-	-	0.9	1.1
NOTE: k_{ref}: N_2O + $O^*(^1D)$ → NO + NO (RATE RATIO VALID FOR $O^*(^1D)$ ATOMS WITH NO EXCESS THERMAL ENERGY k/k_{ref}: 0.65	298	-	-	-	0.9	1.1
NOTE: k_{ref}: N_2O + $O^*(^1D)$ → NO + NO (RATE RATIO VALID FOR $O^*(^1D)$ ATOMS WITH TRANSLATIONAL ENERGY IN EXCESS OF 10 kcal/mol						
73 GEO/ELL k/k_{ref}: 0.7	298	-	-	-		
NOTE: k_{ref}: N_2O + $O^*(^1D)$ → NO + NO						
74 WIE/PAR k/k_{ref}: 1.0	298	-	-	-	0.8	1.2
NOTE: k_{ref}: N_2O + $O^*(^1D)$ → NO + NO						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
$N_2O + O^*(^1D) \rightarrow N_2 + O_2 + NO + NO$						
NITROGEN OXIDE(N_2O) + OXYGEN ATOM						
72 LOU/CVE REACTION ORDER: 2 k/k_{ref}: 1.25	296	-	-	-		
NOTE: k_{ref}: $CO_2 + O^*(^1D) \rightarrow CO_2 + O$						
72 FAR/SYM k/k_{ref}: 0.145	298	-	-	-		
NOTE: k_{ref}: $(CH_3)_4C. + O^*(^1D) \rightarrow$ products						
73 GHO/ELL k/k_{ref}: 3.23	298	-	-	-		
NOTE: $O_2 + O^*(^1D) \rightarrow O_2 + O$						
73 HEI/HUS2	300	1.3(+14)	-	-	0.9	1.1
75 DEV/NIP	2160-3400	5.2(+13)	0	12557	0.5	2.0
75 GAU/SNE k/k_{ref}: 3.3	300	-	-	-	0.8	1.2
NOTE: k_{ref}: $O_2 + O^*(^1D) \rightarrow O_2^*(^1\Sigma_g^+) + O$						
75 GAU/SNE	300	1.4(+14)	-	-		
NOTE: EVALUATION						
76 DAV/SAD	298	8.4(+13)	-	-	0.9	1.1
77 DAV/SCH	204-359	6.6(+13)	0	0	0.8	1.2
77 GEO/ELL	298	1.2(+14)	-	-		
NOTE: EVALUATION						

$N_2O + O \rightarrow NO + NO$						
NITROGEN OXIDE(N_2O) + OXYGEN ATOM						
71 LIP REACTION ORDER: 2 k/k_{ref}: 0.51	1400-2000	-	-	-		
NOTE: k_{ref}: $N_2O + O \rightarrow N_2 + O_2$						
72 SOI	1000-3000	4.5(+13)	0	12130		
73 LIP/MIL k/k_{ref}: 0.5	1300-1950	-	-	-		
NOTE: k_{ref}: $N_2O + O \rightarrow N_2 + O_2$						
73 MIL/MAT k/k_{ref}: 0.32	1169-1655	-	-	-		
NOTE: k_{ref}: $N_2O + O \rightarrow N_2 + O_2$						
75 BAB/DEA	1850-2535	1.2(+13)	0	12630		
76 DEA	1950-3075	1.2(+13)	0	12630		
NOTE: EVALUATION						
76 MII k/k_{ref}: 0.252	1216-1655	-	-	-		
NOTE: k_{ref}: $N_2O + O \rightarrow N_2 + O_2$						
77 MEN/HANI	1815-3365	6.2(+13)	0	12350	0.6	1.7

$N_2O + O^*(^1S) \rightarrow$ products						
NITROGEN OXIDE(N_2O) + OXYGEN ATOM						
76 SIA/BLA2 REACTION ORDER: 2	200-368	2.3(+13)	0	423±75	0.7	1.3

$N_2O + H \rightarrow N_2 + OH$						
NITROGEN OXIDE(N_2O) + HYDROGEN ATOM						
73 BAI/GET REACTION ORDER: 2 k/k_{ref}: 0.64	773	-	-	-		
NOTE: k_{ref}: $O_2 + H \rightarrow O + OH$						
73 LAL/GET	773	2.6(+9)	-	-	0.6	1.4
NOTE: EVALUATION						
73 LAL/GET	460-2500	1.6(+13)	0	7600±500		
NOTE: EVALUATION						
73 WAL1 k/k_{ref}: 0.64	773	-	-	-	0.9	1.1
NOTE: k_{ref}: $O_2 + H \rightarrow O + OH$						
	773	2.6(+10)	-	-	0.6	1.4
NOTE: EVALUATION						
	700-2500	7.6(+13)	0	7600±500		

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
NOTE: EVALUATION (PREFERRED k)						
75 AIE/HOY	718-1111	2.2(+14)	0	8710±350	0.7	1.3

$N_2O(v=3) + H \rightarrow N_2 + OH$						
NITROGEN OXIDE(N_2O) + HYDROGEN ATOM						
77 GIR/EGO REACTION ORDER: 2	298	<6.0(+10)	-	-		
NOTE: UPPER LIMIT k						

$N_2O + OH \rightarrow N_2 + HO_2$						
NITROGEN OXIDE(N_2O) + HYDROXYL FREE RADICAL						
76 BIE/ZET REACTION ORDER: 2	298	2.3(+7)	-	-	0.7	1.3
77 CHA/KAU	480	<2.4(+8)	-	-		
NOTE: UPPER LIMIT k						

$N_2O + OH(v=9) \rightarrow$ products						
NITROGEN OXIDE(N_2O) + HYDROXYL FREE RADICAL						
76 WOR/COL REACTION ORDER: 2	298	2.9(+10)	-	-	0.5	1.5
NOTE: UNREPORTED T ASSUMED TO BE 298K						

$N_2O + OH + M \rightarrow N_2 + HO_2 + M$						
NITROGEN OXIDE(N_2O) + HYDROXYL FREE RADICAL						
75 COK/MOL1 REACTION ORDER: 2 M: H_2O	440	<1.0(+10)	-	-		
NOTE: IN AN ATMOSPHERE OF WATER VAPOR; UPPER LIMIT k						

$N_2O + OH + M \rightarrow$ products						
NITROGEN OXIDE(N_2O) + HYDROXYL FREE RADICAL						
76 ATK/PER REACTION ORDER: 2	298-443	<1.2(+8)	-	-		
NOTE: LIMITING HIGH-PRESSURE k (UPPER LIMIT); (25-654 TORR)						

$N_2O + S^*(^1D) \rightarrow NO + NS$						
NITROGEN OXIDE(N_2O) + SULFUR ATOM						
72 LIT/DAL REACTION ORDER: 2 k/k_{ref}: ~0.1	300	-	-	-		
NOTE: k_{ref}: $CH_2{=}CH_2 + S^*(^1D) \rightarrow$ products						

$N_2O + N^*(^2D) \rightarrow NO + N_2$						
NITROGEN OXIDE(N_2O) + NITROGEN ATOM						
71 SIA/WOO REACTION ORDER: 2	237-365	2.2(+11)	0.5	400	0.9	1.1
72 HUS/KIR2	300	2.9(+12)	-	-	0.8	1.2

$N_2O + N^*(^2P) \rightarrow NO + N_2$						
NITROGEN OXIDE(N_2O) + NITROGEN ATOM						
72 HUS/KIR2 REACTION ORDER: 2	300	2.0(+12)	-	-	0.6	1.4

$N_2O + N^*(^2D) \rightarrow$ products						
NITROGEN OXIDE(N_2O) + NITROGEN ATOM						
71 LIN/KAU REACTION ORDER: 2	300	2.1(+12)	-	-	0.7	1.3

$N_2O + NO \rightarrow NO_2 + N_2$						
NITROGEN OXIDE(N_2O) + NITROGEN OXIDE(NO)						
73 BOK/SKA REACTION ORDER: 2	1050-2500	2.8(+14)	0	25170±1500	0.6	1.6
NOTE: EVALUATION						

$N_2O + C(^3P) \rightarrow$ products						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
NITROGEN OXIDE(N_2O) + CARBON ATOM						
75 HIS/YOU REACTION ORDER: 2	300	7.8(+12)	-	-	0.8	1.2

$N_2O + CO \rightarrow N_2 + CO_2$						
NITROGEN OXIDE(N_2O) + CARBON MONOXIDE						
73 MII/MAT REACTION ORDER: 2	1169-1655	2.1(+11)	0	8700±1160	0.4	2.3
76 MIL REACTION ORDER: 2	1169-1655	7.1(+11)	0	10570±1050	0.5	2.2

$N_2O + CH_3 \rightarrow N_2 + CH_3O$						
NITROGEN OXIDE(N_2O) + METHYL FREE RADICAL						
73 FAL/HOA REACTION ORDER: 2	873	1.4(+7)	-	-	0.8	1.2
77 BER/ZAM	1000-2000	1.0(+15)	0	14280		
NOTE: UPPER LIMIT (EVALUATION)						

$N_2O + M \rightarrow N_2 + O + M$						
NITROGEN OXIDE(N_2O)						
71 DIA REACTION ORDER: 2 M: Ar	1600-2500	2.9(+1)	0	27680		
NOTE: RATE CONSTANT EXPRESSED AS: $k=[M]2.9X10exp(-27680/T)cm^3mol^{-1}s^{-1}$						
71 LIP M: Kr	1400-2000	1.3(+13)	0	24560±2240	0.3	4.0
72 SPL M: N_2O	1000-3000	4.7(+14)	0	29200		
72 VER/KIS REACTION ORDER: 1 M: N_2	1250-1800	1.4(+11)	0	26575		
NOTE: LIMITING HIGH-PRESSURE k						
73 LIP/MIL REACTION ORDER: 2 M: Kr	1300-1950	1.3(+13)	0	22200		
73 VEM M: Ne	1800-2400	3.2(+13)	0	21640±2000	0.4	2.5
NOTE: LOW PRESSURE						
75 BAB/DEA M: Ar	1850-2535	7.8(+14)	0	28630		
75 DEV/NIP M: Ar	2160-2500	5.0(+14)	0	29200		
76 DEA	1950-3075	2.0(+14)	0	25860		
NOTE: EVALUATION						
77 MEM/HAN1	1815-3365	1.4(+14)	0	25810	0.5	1.5
NOTE: M IS Ar, Kr, N_2						

$N_2O + M \rightarrow$ products						
NITROGEN OXIDE(N_2O)						
71 LIP REACTION ORDER: 2 M: Kr	1400-2000	3.1(+12)	0	20500±1550	0.3	4.0
74 TRA		3.6(+14)	-	26725		
NOTE: k MEASURED IN SHOCK TUBE (UNSPECIFIED HIGH T RANGE)						
75 BAH/DEA	1850-2525	2.9(+14)	0	26350±620	0.8	1.3
76 DEA	1950-3075	1.1(+14)	0	24480±430	0.8	1.2
	1950-3075	5.2(+13)	0	22070±430	0.8	1.2
NOTE: 0.01% H_2 ADDED						

$N_2O_3 + H_2O \rightarrow HONO + HONO$						
NITROGEN OXIDE(N_2O_3) + WATER						
75 ENG/COR REACTION ORDER: 2	313-323	3.1(+14)	0	5133±1760	0.9	1.1
NOTE: EVALUATION						

$N_2O_4 + H_2O \rightarrow HONO + HONO_2$						
NITROGEN OXIDE(N_2O_4) + WATER						
74 ENG/COR REACTION ORDER: 2	298-323	6.0(+14)	0	6090±250	0.9	1.1

$N_2O_5 \rightarrow$ products						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
NITROGEN OXIDE(N_2O_5)						
72 DUT/BUN REACTION ORDER: 1	308	1.1(-4)	-	-	0.8	1.2
N_2O_5 + O → products						
NITROGEN OXIDE(N_2O_5) + OXYGEN ATOM						
75 GRA REACTION ORDER: 2	298	<1.2(+10)	-	-		
NOTE: UPPER LIMIT k						

N_2O_5 + H_2O → $HONO_2$ + $HONO_2$						
NITROGEN OXIDE(N_2O_5) + WATER						
73 MOR/NIK2 REACTION ORDER: 2	298	<7.8(+3)	-	-		
NOTE: UPPER LIMIT k						

N_2O_5 + SO_2 → H_2O_4 + SO_3						
NITROGEN OXIDE(N_2O_5) + SULFUR DIOXIDE						
75 DAU/CAL RAACTION ORDER: 2	300	<2.5(+1)	-	-		
NOTE: UPPER LIMIT k						

NH + NO → products						
IMIDOGEN FREE RADICAL + NITROGEN OXIDE(NO)						
71 GER/MUL REACTION ORDER: 2	298	2.3(+13)	-	-		
NOTE: UNREPORTED T ASSUMED TO BE 298K						
76 HAN/HOE	298	2.8(+13)	-	-	0.7	1.3
NOTE: UNREPORTED T ASSUMED TO BE 298 K						

$NH^*(a^1\Delta)$ + HN_3 → NH_2 + N_3						
IMIDOGEN FREE RADICAL + HYDRAZOIC ACID						
76 FAU/BAI REACTION ORDER: 2	298	5.6(+13)	-	-	0.9	1.1

$NH^*(a^1\Delta)$ + HN_3 → products						
IMIDOGEN FREE RADICAL + HYDRAZOIC ACID						
73 FAU/BAI REACTION ORDER: 2	298	1.5(+13)	-	-	0.6	1.4
NOTE: UNREPORTED T ASSUMED TO BE 298 K						

$NH^*(b^1\Sigma^+)$ + NH_3 → products						
IMIDOGEN FREE RADICAL + AMMONIA						
75 ZET/STU REACTION ORDER: 2	298	2.5(+11)	-	-	0.8	1.3

NH_2 + O → NH + OH + HNO + H (overall)						
AMIDOGEN FREE RADICAL + OXYGEN ATOM						
73 GER/HOY REACTION ORDER: 2	298	2.1(+12)	-	-		

NH_2 + H + M → NH_3 + M						
AMIDOGEN FREE RADICAL + HYDROGEN ATOM						
71 GER/MUL REACTION ORDER: 3	298	2.2(+18)	-	-		
NOTE: UNREPORTED T ASSUMED TO BE 298 K						

NH_2 + NO → N_2 + H_2O						
AMIDOGEN FREE RADICAL + NITROGEN OXIDE(NO)						
72 BED/THU REACTION ORDER: 2	615-660	-	-	-		
NOTE: k/k_{ref}: 0.005 exp(3221±500/T)						
k_{ref}: NH_2 + NO_2 → NH + HONO						
75 GOR/MUL2	300	1.2(+13)	-	-		
75 HAN/LAN	298	1.3(+13)	-	-	0.9	1.1

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
75 LES/KHE	298	1.1(+13)	-	-	0.8	1.2
$NH_2 + NO \rightarrow N_2 + H_2O^*$						
AMIDOGEN FREE RADICAL + NITROGEN OXIDE(NO)						
73 GEH/HOY REACTION ORDER: 2	298	5.0(+12)	-	-	0.8	1.2
$NH_2 + NO \rightarrow$ products						
AMIDOGEN FREE RADICAL + NITROGEN OXIDE(NO)						
71 GER/MUL REACTION ORDER: 2	298	1.6(+13)	-	-		
NOTE: UNREPORTED T ASSUMED TO BE 298 K						
$NH_2 + NH_2 \rightarrow NH_2NH_2$ (OR $N_2 + H_2 + H_2$)						
AMIDOGEN FREE RADICAL						
71 GOK/MUL REACTION ORDER: 2	298	6.2(+13)	-	-		
NOTE: UNREPORTED T ASSUMED TO BE 298 K						
$NH_2 + NH_2 \rightarrow NH_2NH_2$						
AMIDOGEN FREE RADICAL						
73 BAC/YOK REACTION ORDER: 2	573	4.7(+13)	-	-	0.6	1.4
$NH_2 + NH_2 + M \rightarrow NH_2NH_2 + M$						
AMIDOGEN FREE RADICAL						
71 GEH/HOY REACTION ORDER: 3 M: He	213-473	-	-	-		
NOTE: k_{ref}: $NH_2 + NH_2 \rightarrow NH + NH_3$; k/k_{ref}: 4.7×10^6 cm^{3}mol^{-1}						
77 KHE/SOU REACTION ORDER: 2 M: N_2	300-500	1.5(+13)	0	0±250	0.5	1.5
NOTE: LIMITING HIGH-PRESSURE k						
REACTION ORDER: 3 M: Ar	300-500	1.0(+18)	0	0±250	0.5	1.5
NOTE: LOW PRESSURE k (0 TO 20 TORR); M eff: Ar(0.4)						
M: N_2	300-500	2.5(+18)	0	0±250	0.5	1.5
NOTE: LOW PRESSURE k (0 TO 20 TORR); M eff: N_2(1.0)						
77 KHE/SOU M: NH_3	300-500	1.0(+19)	0	0±250	0.5	1.5
NOTE: LOW PRESSURE k (0 TO 20 TORR); M eff: NH_3(4.0)						
$NH_2 + NH_2NH_2 \rightarrow NH_3 + NH_2NH\cdot$						
AMIDOGEN FREE RADICAL + HYDRAZINE						
71 GEH/HOY REACTION ORDER: 2	300	3.1(+11)	-	-	0.9	1.1
$NH_2 + HCONH_2 \rightarrow NH_3 + \cdot C(O)NH_2$						
AMIDOGEN FREE RADICAL + FORMAMIDE						
73 BAC/YOK REACTION ORDER: 2	573	8.4(+9)	-	-		
$NH_2 + CH_3CH{=}CH_2 \rightarrow$ products						
AMIDOGEN FREE RADICAL + PROPENE						
76 LES/SOU REACTION ORDER: 2	300-500	2.9(+11)	0	2165±200		
$NH_3 + O \rightarrow NH_2 + OH$						
AMMONIA + OXYGEN ATOM						
74 DOV/NIP REACTION ORDER: 2	1620-1920	<1.0(+13)	0	3320		
NOTE: UPPER LIMIT k						
$NH_3 + O^*(^1D) \rightarrow NH_2 + OH$						
AMMONIA + OXYGEN ATOM						
74 DAV/SAD REACTION ORDER: 2	298	2.0(+14)	-	-	0.9	1.1

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
76 ELF/HUS	300	4.0(+14)	-	-	0.9	1.1
77 DAV/SCH	204-354	1.5(+14)	0	0	0.8	1.2

NH_3 + H → NH_2 + H_2						
AMMONIA + HYDROGEN ATOM						
74 DOV/NIP REACTION ORDER: 2	1500-2500	2.8(+13)	0	8760±650	0.7	1.4

NH_3 + OH → NH_2 + H_2O						
AMMONIA + HYDROXYL FREE RADICAL						
73 GEH/HOY REACTION ORDER: 2	298	1.7(+11)	-	-		
73 KUR	298	2.5(+10)	-	-	0.9	1.1
73 STU3	298	9.0(+10)	-	-	0.7	1.3
74 DOV/NIP	1620-1920	<8.0(+9)	0.68	554		
NOTE: UPPER LIMIT k						
74 BAC/HOY1	298-669	3.2(+12)	0	920	0.8	1.2
74 ZEL/SMI	230-490	1.4(+12)	0	805	0.9	1.1
75 COX/DER2	296	7.2(+10)	-	-	0.7	1.3
NOTE: EVALUATION						
75 SMI/ZEL	228-472	1.4(+12)	0	805	0.9	1.1
76 FER/ATK1	297-427	1.8(+12)	0	860±150		

NH_3 + OH + M → NH_2 + H_2O + M						
AMMONIA + HYDROXYL FREE RADICAL						
75 GOR/MUL1 REACTION ORDER: 2 M: H_2O	418	2.6(+11)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR						

NH_3 + NO_2 → NH_2 + HONO						
AMMONIA + NITROGEN OXIDE(NO_2)						
72 BED/THO REACTION ORDER: 2	615-660	4.0(+12)	0	13915±50	0.5	2.0

NH_3 + $NH^*(b^1\Sigma^+)$ → products						
AMMONIA + IMIDOGEN FREE RADICAL						
75 ZET/STU REACTION ORDER: 2	298	2.5(+11)	-	-	0.8	1.3

NH_3 + CH → products						
AMMONIA + METHYLIDYNE FREE RADICAL						
71 BOS/PER REACTION ORDER: 2	298	5.9(+10)	-	-	0.8	1.1

NH_3 + M → NH_2 + H + M						
AMMONIA						
72 HAL REACTION ORDER: 2 M: Ar	1989-2693	1.0(+14)	0	42385		
73 GEN/ZHI REACTION ORDER: 1 M: Ar	2200-2600	6.6(+12)	0	49320±2500	0.3	3.5
NOTE: LIMITING HIGH-PRESSURE k						
REACTION ORDER: 2 M: Ar	2300-3100	5.8(+15)	0	38750±2500	0.2	6.3
NOTE: LIMITING LOW-PRESSURE k						
73 VEM1 M: Ne	2300-3200	2.5(+14)	0	33200±2000	0.5	2.0

NH_3 + M → products						
AMMONIA						
72 HAL REACTION ORDER: 2 M: Ar	1989-2693	4.2(+15)	0	41983		
---						
cis-NH=NH + trans-NH=NH → N_2 + NH_2NH_2						
cis-DIAZENE + trans-DIAZENE						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
74 VID/WIL REACTION ORDER: 2 k/k_{ref}: 6.0	373	-	-	-	0.7	1.3
NOTE: k_{ref}: cis-NH=NH + CH_2=CH_2 → N_2 + CH_3CH_3. APPROXIMATE RATIO						
---						
cis-NH=NH + CH_2=CHCH=CH_2 → N_2 + CH_3CH_2CH=CH_2						
cis-DIAZENE + 1,3-BUTADIENE						
74 VID/WIL REACTION ORDER: 2 k/k_{ref}: 0.065	373	-	-	-	0.9	1.1
NOTE: k_{ref}: cis-NH=NH + CH_2=CH_2 → N_2 + CH_3CH_3						
---						
cis-NH=NH + cis-CH_3CH=$CHCH_3$ → N_2 + $CH_3CH_2CH_2CH_3$						
cis-DIAZENE + cis-2-BUTENE						
74 VID/WIL REACTION ORDER: 2 k/k_{ref}: 0.11	373	-	-	-	0.9	1.1
NOTE: k_{ref}: cis-NH=NH + CH_2=CH_2 → N_2 + CH_3CH_3						
---						
cis-NH=NH + trans-CH_3CH=$CHCH_3$ → N_2 + $CH_3CH_2CH_2CH_3$						
cis-DIAZENE + trans-2-BUTENE						
74 VID/WIL REACTION ORDER: 2 k/k_{ref}: 0.33	373	-	-	-	0.9	1.1
NOTE: k_{ref}: cis-NH=NH + CH_2=CH_2 → N_2 + CH_3CH_3						
---						
cis-NH=NH + $(CH_3)_2C$=$C(CH_3)_2$ → N_2 + $(CH_3)_2CHCH(CH_3)_2$						
cis-DIAZENE + 2-BUTENE, 2,3-DIMETHYL-						
74 VID/WIL REACTION ORDER: 2 k/k_{ref}: 0.02	373	-	-	-	0.5	1.5
NOTE: k_{ref}: cis-NH=NH + CH_2=CH_2 → N_2 + CH_3CH_3 APPROXIMATE RATIO						
---						
trans-NH=NH → N2 + H_2 + NH_2NH_2 (overall)						
trans-DIAZENE						
77 WIL/BAC REACTION ORDER: 1	296-433	3.0(0)	0	2115		
---						
trans-ND=ND → N2 + D_2 + ND_2ND_2 (overall)						
trans-DIAZENE-d_2						
77 WIL/BAC REACTION ORDER: 1	297-413	2.0(0)	0	2215		
---						
trans-NH=NH → cis-NH=NH						
trans-DIAZENE						
74 VID/WIL REACTION ORDER: 1	373	1.0(-2)	-	-		
77 WIL/BAC REACTION ORDER: 1	296-433	1.8(0)	0	2115		
---						
trans-ND=ND → cis-ND=ND						
trans-DIAZENE-d_2						
77 WIL/BAC	297-413	1.0(0)	0	2215		
---						
trans-NH=NH + cis-NH=NH → NH_2NH_2 + N_2						
trans-DIAZENE + cis-DIAZENE						
74 VID/WIL REACTION ORDER: 2 k/k_{ref}: 6.0	373	-	-	-	0.7	1.3
NOTE: k_{ref}: CH_2=CH_2 + cis-NH=NH → CH_3CH_3 + N_2 APPROXIMATE RATIO						

NH_2NH. + H → NH_2 + NH_2						
HYDRAZYL FREE RADICAL + HYDROGEN ATOM						
71 GEH/HOY REACTION ORDER: 2	300	1.6(+12)	-	-	0.5	1.5

NH_2NH_2 + H → NH_2NH. + H_2						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
HYDRAZINE + HYDROGEN ATOM						
71 FRA/JON REACTION ORDER: 2	300-540	1.5(+12)	0	650±100	0.8	1.2
71 GEB/HOY	213-473	1.3(+13)	0	1260		
75 YO	298	1.5(+11)	-	-		
76 STI/PAY	228-400	5.9(+12)	0	1200±50	0.9	1.1

NH_2NH_2 + OH → products						
HYDRAZINE + HYDROXYL FREE RADICAL						
74 HAC/HOY REACTION ORDER: 2	298	1.3(+13)	-	-	0.8	1.2

NH_2NH_2 + N → $NH_2NH_.$ + NH						
HYDRAZINE + NITROGEN ATOM						
75 YO REACTION ORDER: 2	298	2.7(+10)	-	-		

NH_2NH_2 + N → products						
HYDRAZINE + NITROGEN ATOM						
75 YO REACTION ORDER: 2	298-379	3.1(+12)	0	1158		

NH_2NH_2 + NH_2 → $NH_2NH_.$ + NH_3						
HYDRAZINE + AMIDOGEN FREE RADICAL						
71 GEF/HOY REACTION ORDER: 2	300	3.1(+11)	-	-	0.9	1.1

NH_2NH_2 + M → NH_2 + NH_2 + M						
HYDRAZINE						
74 GEN/ZHI REACTION ORDER: 1 M: Ar	1100-1400	4.0(+13)	0	26675±1000	0.4	2.5

HN_3 + H → N_2 + NH_2						
HYDRAZOIC ACID + HYDROGEN ATOM						
73 LEB/COM REACTION ORDER: 2	300-460	1.5(+13)	0	2315		

HN_3 + N → N_2H + N_2						
HYDRAZOIC ACID + NITROGEN ATOM						
73 LEB/COM REACTION ORDER: 2	298	3.0(+9)	-	-		

HN_3 + $NH^*(a^1\Delta)$ → N_3 + NH_2						
HYDRAZOIC ACID + IMIDOGEN FREE RADICAL						
76 PAU/BAI REACTION ORDER: 2	298	5.6(+13)	-	-	0.9	1.1

HN_3 + $NH^*(a^1\Delta)$ → products						
HYDRAZOIC ACID + IMIDOGEN FREE RADICAL						
73 PAU/BAI REACTION ORDER: 2	298	1.5(+13)	-	-	0.6	1.4
NOTE: UNREPORTED T ASSUMED TO BE 298 K						

HN_3 + M → $NH^*(^1\Delta)$ + N_2 + M						
HYDRAZOIC ACID						
72 ZAS/KOG REACTION ORDER: 1 M: Ar	1045-1450	1.8(+11)	0	20130		
NOTE: RATE CONSTANT EXPRESSED AS: $k[M]=1.8X10^{11}\exp(-20130/T)s^{-1}$						

HNO + H → NO + H_2						
NITROSYL HYDRIDE + HYDROGEN ATOM						
72 SHI REACTION ORDER: 2	2100	2.3(+12)	-	-	0.5	1.5

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
$HNO + OH \rightarrow NO + H_2O$						
NITROSYL HYDRIDE + HYDROXYL FREE RADICAL						
72 SMI REACTION ORDER: 2	2100	1.1(+13)	-	-	0.9	1.1
75 CAM/HAN2 k/k_{ref}: ≤4.4	425	-	-	-		
NOTE: k_{ref}: $HNO + O \rightarrow NO + OH$ (UPPER LIMIT RATIO)						

$HNO + HNO \rightarrow H_2O + N_2O$						
NITROSYL HYDRIDE						
73 WIE/HEI REACTION ORDER: 2 k/k_{ref}: 51.0	298-423	-	-	-		
NOTE: k_{ref}: $HNO + HNO \rightarrow H_2O_2 + N_2$						

$HONO + OH \rightarrow NO_2 + H_2O$						
NITROUS ACID + HYDROXYL FREE RADICAL						
74 CEX1 REACTION ORDER: 2 k/k_{ref}: 0.37	300	-	-	-	0.8	1.2
NOTE: k_{ref}: $NO + OH + M \rightarrow HONO + M$						
74 CEX1	300	1.1(+12)	-	-		
NOTE: EVALUATION						
74 CEX2	294	1.3(+12)	-	-	0.9	1.1
NOTE: EVALUATION						
75 CEX	300	1.3(+12)	-	-	0.9	1.1
75 CEX/DER2	298	2.2(+12)	-	-		
NOTE: EVALUATION						
76 CEX/DER1 k/k_{ref}: 945	298	-	-	-		
NOTE: k_{ref}: $H_2 + OH \rightarrow H + H_2O$						
76 CEX/DER1 REACTION ORDER: 2	298	4.0(+12)	-	-	0.9	1.1
NOTE: EVALUATION						
76 CEX/DER2 k/k_{ref}: 904	298	-	-	-	0.9	1.1
NOTE: k_{ref}: $CH_4 + OH \rightarrow CH_3\cdot + H_2O$						
76 CEX/DER3 k/k_{ref}: 0.32	296	-	-	-	0.9	1.1
NOTE: k_{ref}: $CH_3CHO + OH \rightarrow CH_3C(O)\cdot + H_2O$						
76 FAI	1000-1400	1.6(+12)	0	0	0.7	1.3
NOTE: ALTERNATIVE, T DEPENDENT k:						
$6.92 \times 10^{12} \exp(-1760/T) cm^3 mol^{-1} s^{-1}$						

$HONO + HONO \rightarrow NO + HO_2 + H_2O$						
NITROUS ACID						
75 ENG/COR REACTION ORDER: 2	313	1.1(+7)	-	-		
NOTE: $k_1 * k_{-1}^K$						
76 CHA/NOR	296	5.7(+5)	-	-	0.7	1.3

$HONO + HONO_2 \rightarrow NO_2 + NO_2 + H_2O$						
NITROUS ACID + NITRIC ACID						
77 KAI/WU REACTION ORDER: 2	300	9.3(+6)	-	-	0.8	1.2

$HONO + M \rightarrow OH + NO + M$						
NITROUS ACID						
76 FAI REACTION ORDER: 1 M: Ar	1000-1400	>5.5(+12)	0	24160		
NOTE: LIMITING HIGH PRESSURE k (LOWER LIMIT ESTIMATE)						

$HONO_2 + O \rightarrow NO_3 + OH$						
NITRIC ACID + OXYGEN ATOM						
72 MOR/SMI REACTION ORDER: 2	300	<7.8(+9)	-	-		
NOTE: UPPER LIMIT k						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
74 CHA/WAY	300	<1.8(*7)	-	-		
NOTE: UPPER LIMIT k						

$HONO_2$ + H → products						
NITRIC ACID + HYDROGEN ATOM						
74 CHA/WAY REACTION ORDER: 2	300	<1.2(*9)	-	-		
NOTE: UPPER LIMIT k						

$HONO_2$ + OH → NO_3 + H_2O						
NITRIC ACID + HYDROXYL FREE RADICAL						
72 MER/SMI REACTION ORDER: 2	300	7.8(*10)	-	-	0.6	1.4
74 GIA/TRO1	1000-1100	9.5(*10)	-	-	0.8	1.2
74 ZEL/SMI	240-405	5.4(*10)	0	0	0.8	1.2
75 MAR/KAU	270-470	5.4(*10)	0	0	0.9	1.1
75 SMI/ZEL	240-406	4.8(*10)	0	0	0.7	1.3

$HONO_2$ + NO → HONO + NO_2						
NITRIC ACID + NITROGEN OXIDE(NO)						
77 KAI/WU REACTION ORDER: 2	300	9.0(*3)	-	-		

$HONO_2$ + HONO → NO_2 + NO_2 + H_2O						
NITRIC ACID + NITRIC ACID						
77 KAI/WU REACTION ORDER: 2	300	9.3(*6)	-	-	0.8	1.2

$HONO_2$ + M → OH + NO_2 + M.						
NITRIC ACID						
73 GER/DEM REACTION ORDER: 2 M: He	1013-1170	1.4(*15)	0	16100±900	0.5	2.0
74 GIA/TRO1 REACTION ORDER: 1 M: Ar	900-1200	2.0	0	24660		
NOTE: LIMITING HIGH-PRESSURE k)						
(APPROXIMATE EXPERIMENTAL VALUE)	295-1200	1.3(*15)	-	24010	0.6	1.6
NOTE: LIMITING HIGH-PRESSURE k)						
(EVALUATION OVER EXTENDED T-RANGE)						
REACTION ORDER: 2 M: Ar	900-1200	2.2(*17)	0	20130		
NOTE: LIMITING LOW-PRESSURE k (APPROXIMATE EXPERIMENTAL VALUE)						
CONCENTRATION DEPENDENT ARRHENIUS EXPRESSION = k/[Ar]						
74 GIA/TRO1	295-1200	8.7(*24)	-2.0	24010	0.6	1.6
NOTE: LIMITING LOW-PRESSURE k						
[EVALUATION OVER EXTENDED T RANGE]						
CONCENTRATION DEPENDENT ARRHENIUS EXPRESSION = k[Ar]						

$HOONO_2$ → HO_2 + NO_2						
PEROXYNITRIC ACID						
77 GRA/WIN REACTION ORDER: 1	254-283	1.4(*14)	0	10420±250	0.9	1.1
77 SIM/HEI	245-328	6.0(*17)	0	13090		
NOTE: EVALUATION						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	F
$C(^3P) + O_2 \rightarrow CO + O$						
CARBON ATOM + OXYGEN MOLECULE						
75 HUS/YOU REACTION ORDER: 2	300	1.6(+13)	-	-	0.9	1.1
$C + H_2 \rightarrow CH + H$						
CARBON ATOM + HYDROGEN MOLECULE						
71 HUS/KIR1 REACTION ORDER: 2	300	1.6(+14)	-	-	0.9	1.1
NOTE: $C^*(2^1D_2)$ STATE.						
$C(^3P) + H_2 + M \rightarrow$ products						
CARBON ATOM + HYDROGEN MOLECULE						
75 HUS/YOU REACTION ORDER: 3 M: He	300	2.5(+16)	-	-	0.8	1.2
$C(^3P) + H_2O \rightarrow$ products						
CARBON ATOM + WATER						
75 HUS/YOU REACTION ORDER: 2	300	<6.0(+11)	-			
NOTE: UPPER LIMIT k						
$C + N + M \rightarrow CN^*(B) + M$						
CARBON ATOM + NITROGEN ATOM						
75 WAS/KLE REACTION ORDER: 3 M: Ar	298	3.4(+15)	-	-	0.7	1.3
NOTE: UNREPORTED T ASSUMED TO BE 298K						
$C(^3P) + NO \rightarrow$ products						
CARBON ATOM + NITROGEN OXIDE(NO)						
75 AUS/YOU REACTION ORDER: 2	300	2.9(+13)	-	-	0.8	1.2
$C(^3P) + N_2O \rightarrow$ products						
CARBON ATOM + NITROGEN OXIDE(N_2O)						
75 HUS/YOU REACTION ORDER: 2	300	7.8(+12)	-	-	0.8	1.2
$C + C + M \rightarrow C_2 + M$						
CARBON ATOM						
76 SLA REACTION ORDER: 3 M: Ar	5000-600	1.8(21)	-1.6	0	0.4	1.6
NOTE: EVALUATION BASED ON REVERSE REACTION MEASUREMNTS						
$C(^3P) + CO_2 \rightarrow$ products						
CARBON ATOM + CARBON DIOXIDE						
75 HUS/YOU REACTION ORDER: 2	300	<6.0(+8)	-	-		
NOTE: UPPER LIMIT k						
$C + CN \rightarrow C_2 + N$						
CARBON ATOM + CYANOGEN FREE RADICAL						
76 SLA REACTION ORDER: 2	5000-800	3.0(+14)	0	18120	0.5	1.5
NOTE: EVALUATION						
$C^*(^1S_0) + HC{\equiv}C{-}CHO \rightarrow$ products						
CARBON ATOM + 1,2-PROPADIENE-1,3-DIONE						
74 HUS/KIR REACTION ORDER: 2	300	6.0(+13)	-	-		
$C(^3P) + HC{\equiv}C{-}CHO \rightarrow$ products						
CARBON ATOM + 1,2-PROPADIENE-1,3-DIONE						
75 HUS/YOU REACTION ORDER: 2	300	1.1(+14)	-	-	0.9	1.1
$C^* + M \rightarrow$ products						
CARBON ATOM						
71 HUS/KIR2 REACTION ORDER: 2 M: O_2	300	1.6(+13)	-	-		
NOTE: $C^*(2^1D_2)$ STATE. APPROXIMATE k						
M: H_2O	300	1.0(+13)	-	-		
NOTE: $C^*(2^1D_2)$ STATE APPROXIMATE k.						
M: NO	300	2.8(+13)	-	-	0.7	1.3
NOTE: $C^*(2^1D_2)$ STATE						
M: N_2O	300	8.4(+13)	-	-	0.6	1.4
NOTE: $C^*(2^1D_2)$ STATE						

CHEMICAL REACTIONS		T/K	A	B	E/R (in °K)	k factors f	k factors F
	M: CO	300	9.6(+13)	-	-	0.6	1.4
NOTE: $C^*(2^1D_2)$ STATE							
	M: CO_2	300	2.2(+13)	-	-	0.5	1.5
NOTE: $C^*(2^1D_2)$ STATE							
	M: CH_4	300	1.3(+14)	-	-	0.8	1.2
NOTE: $C^*(2^1D_2)$ STATE							
		300	2.2(+14)	-	-		
NOTE: $C^*(2^1D_2)$ STATE. APPROXIMATE k [M: CH_2-CH_2.]							

$CO + O^*(^1D) \rightarrow CO_2$							
CARBON MONOXIDE + OXYGEN ATOM							
73 HEI/HUSI REACTION ORDER: 2		300	4.4(+13)	-	-	0.9	1.1
k/k_{ref}: 1.05		300	-	-	-		
NOTE: k_{ref}: $O_2 + O^*(^1D) \rightarrow$ products							

$CO + O + M \rightarrow CO_2 + M$							
CARBON MONOXIDE + OXYGEN ATOM							
71 STU/NIKI REACTION ORDER: 3	M: He	300	6.2(+11)	-	-	0.7	1.3
	M: N_2	300	8.0(+11)	-	-	0.7	1.3
	M: CO	300	1.2(+12)	-	-	0.7	1.3
71 MIY/TAKI	M: Ar	298	2.1(+16)	-	-	0.7	1.3
72 BAL/JAC	M: Ar	300-3500	3.0(+14)	0	1510		
NOTE: EVALUATION							
$CO + O + M \rightarrow CO_2 + M$							
72 DEM REACTION ORDER: 2	M: CO_2	298	9.8(+7)	-	-		
NOTE: k INCREASING FROM $9.8X10^7$ TO $3.5X10^8 cm^3 mol^{-1} s^{-1}$ BETWEEN 0.74 AND 42 ATM PRESSURE. HIPPLER AND TROE'S EXPRESSION USED.							
	M: CO_2	298	5.2(+7)	-	-		
NOTE: k INCREASING FROM $5.2X10^7$ TO $2.8X10^8 cm^3 mol^{-1} s^{-1}$ BETWEEN 0.74 AND 42 ATM PRESSURE. HIPPLER AND TROE'S EXPRESSION USED.							
72 SIM/BEI	M: N_2O	298-472	1.6(+10)	0	1460		
NOTE: LIMITING HIGH-PRESSURE k							
72 SIM/BEI REACTION ORDER: 3	M: N_2O	298-472	5.9(+15)	0	2065		
NOTE: LIMITING LOW-PRESSURE k							
72 SIA/WOO	M: N_2	296	8.3(+11)	-	-	0.8	1.2
	M: CO	250-370	2.4(+15)	0	2185±275	0.8	1.2
	M: CO_2	296	2.2(+12)	-	-	0.9	1.1
72 ZAB/HAR		1400-1500	<2.0(+14)	-	-		
NOTE: UPPER LIMIT k							
73 INN	M: Ar	296	3.6(+12)	-	-	0.8	1.2
	M: CO	296	1.6(+12)	-	-	0.8	1.2
73 GAI/GLA REACTION ORDER: 2	M: CO	300	<3.0(+8)	-	-		
NOTE: LIMITING HIGH-PRESSURE, UPPER LIMIT k							
73 INN REACTION ORDER: 3	M: CO_2	296	2.0(+12)	-	-	0.9	1.1
74 HAR/VAS	M: Ar	1500	<2.0(+14)	-	-		
NOTE: UPPER LIMIT k							
74 INN	M: CO_2	257-277	8.0(+14)	0	1780±410		
74 KEN	M: O_2	400-500	2.4(+12)	0	-1860		
NOTE: REEVALUATION							
74 WAG/ZAB	M: Ar	298-4000	1.0(+19)	-1.5	2520		
NOTE: LIMITING LOW-PRESSURE k							
76 WEI	M: Ar	2500-2900	3.0(+18)	-1.0	2000		

$CO + O_2 \rightarrow CO_2 + O$							
CARBON MONOXIDE + OXYGEN MOLECULE							
71 BEA/BEL1 REACTION ORDER: 2		1300-1900	1.6(+13)	0	20640	0.6	1.7
NOTE: EVALUATION							
76 WEI		2500-2900	2.5(+13)	0	24160		

$CO + O_3 \rightarrow CO_2 + O_2$							
CARBON MONOXIDE + OZONE							
72 ARI/WAR REACTION ORDER: 3		296	<2.4(-1)	-	-		

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
NOTE: UPPER LIMIT k						

$CO + O_3 \rightarrow$ products						
CARBON MONOXIDE + OZONE						
73 STE/NIK2 REACTION ORDER: 2	298	6.0(+2)	-	-		
NOTE: UPPER LIMIT k						

$CO + H + M \rightarrow CHO + M$						
CARBON MONOXIDE + HYDROGEN ATOM						
71 BEN/BIA M: H_2	298	<1.2(+14)	-	-		
NOTE: UPPER LIMIT k						
71 HIK/EYR REACTION ORDER: 3 M: H_2	298	4.0(+13)	-	-	0.8	1.2
M: Ar	298	2.6(+13)	-	-	0.8	1.2
72 AHU/MIC M: He	298	2.2(+13)	-	-	0.9	1.1
NOTE: M_{eff}: He(1.0)						
M: Ne	298	1.7(+13)	-	-	0.9	1.1
NOTE: M_{eff}: Ne(0.8)						
M: Ar	298	2.2(+13)	-	-	0.9	1.1
NOTE: M_{eff}: Ar(1.0)						
M: Kr	298	2.5(+13)	-	-	0.9	1C1
NOTE: M_{eff}: Kr(1.1)						
M: H_2	298	2.9(+13)	-	-	0.9	1.1
NOTE: M_{eff}: H_2(1.3)						
72 BAL/JAC M: H_2	773	2.3(+14)	-	-		
NOTE: EVALUATION						
73 AZA/AND M: Ar	298	4.0(+13)	-	-	0.5	1.5
M: CO	298	8.0(+13)	-	-	0.7	1.3
77 WAN M: H_2	298-373	-	-	100		

$CO + OH \rightarrow CO_2 + H$						
CARBON MONOXIDE + HYDROXYL FREE RADICAL						
71 ERA/BEL1 REACTION ORDER: 2	1300-1900	4.2(+11)	0	500±100	0.7	1.3
72 DIX	1050	2.4(+11)	-	-	0.9	1.1
NOTE: EVALUATION						
72 STU/NIK1	298	8.1(+10)	-	-	0.9	1.2
73 DAY/THO	1050	2.4(+11)	-	-	0.9	1.1
NOTE: EVALUATION						
73 GAR/MAL	1200-2500	4.0(+12)	0	4025	0.8	1.2
73 PEI/MAH1	1750	2.8(+11)	-	-		
73 SMI/ZEL1	300	8.7(+10)	-	-		
73 SMI/ZEL2	300	8.7(+10)	-	-		
NOTE: WITHIN THE 210-460 K RANGE, SLIGHT POSITIVE T DEPENDENCE, POSSIBLY CURVED						
73 WES/DEH1	298-915	8.0(+10)	-	-		
NOTE: NONLINEAR ARRHENIUS BEHAVIOUR; WITHIN THE GIVEN T RANGE, k INCREASES FROM 8.0×10^{10} TO 13.1×10^{10} $cm^3 mol^{-1} s^{-1}$						
74 DAV/FIS	220-373	1.3(+11)	0	80±40	0.9	1.1
74 HOW/PVE	296	9.4(+10)	-	-		
74 TRA/ROS2	300	7.5(+10)	-	-		
75 PEI/LAZ	1350-1750	4.7(+11)	0	0		
75 STE/ZEL	300	9.3(+10)	-	-	0.8	1.2
NOTE: NONLINAR ARRHENIUS BEHAVIOUR; WITHIN THE T RANGE 300-900K: log k=10.85(±0.08) $+ 4.0 \times 10^{-4} T (cm^3 mol^{-1} s^{-1})$						
75 TRA/ROS	300	7.5(+10)	-	-		
75 VAN/PEE	400-800	8.0(+10)	-	-		
NOTE: NONLINEAR ARRHENIUS BEHAVIOR; WITHIN THE GIVEN T RANGE, k INCREASES ONLY SLIGHTLY FROM 8.0×10^{10} $cm^3 mol^{-1} s^{-1}$						
REACTION ORDER: 2	1000-1800	2.3(+12)	0	2870		
76 ERA/CAP k/k_{ref}: 0.18	1300	-	-	-		
NOTE: k_{ref}: $CH_4 + OH \rightarrow CH_3 + H_2O$						
76 SIE/SIM1	217-276	-	-	-		
NOTE: k_{ref}: $H_2 + OH \rightarrow H + H_2O$ k/k_{ref}:0.20 exp(+1710/T) HIGH-PRESSURE LIMITING VALUE						
76 SIE/SIM1 k/k_{ref}: 14.0	298	-	-	-		
NOTE: k_{ref}: $H_2 + OH \rightarrow H + H_2O$; k/k_{ref} RATIO INCREASING FROM A LOW-PRESSURE LIMITING VALUE OF 14 TO A HIGH-PRESSURE LIMITING VALUE OF 50						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
76 CCX/DER1 k/k_{ref}: 38.6	298	-	-	-		
NØTE: KREF: $H_2 + ØH \rightarrow H + H_2Ø$	298	1.6(+11)	-	-	0.9	1.1
NØTE: EVALUATION 77 CHA/USE k/k_{ref}: 0.059	298	-	-	-		
NØTE: k_{ref}: $(CH_3)_3CH + ØH \rightarrow (CH_3)_3C\cdot + (CH_3)_2CHCH_2\cdot + H_2Ø$ (AT 100 TØRR)	298	-	-	-		
NØTE: k_{ref}: $(CH_3)_3CH + ØH \rightarrow (CH_3)_3C\cdot + (CH_3)_2CHCH_2\cdot$ (AT 700 TØRR)						

$CØ + ØH(V=1) \rightarrow CØ_2 + H$						
CARBØN MØNØXIDE + HYDRØXYL FREE RADICAL 77 SPE/GLA REACTIØN ØRDER: 2	295	<3.0(+12)	-	-		
NØTE: UPPER LIMIT k 77 SPE/END	295	1.8(+11)	-	-		
NØTE: UPPER LIMIT k						

$CØ + ØH + M \rightarrow CØ_2 + H + M$						
CARBØN MØNØXIDE + HYDRØXYL FREE RADICAL 75 GØR/MUL1 REACTIØN ØRDER: 2	298	9.1(+10)	-	-	0.9	1.1
NØTE: M=Ar(710TØRR) + $H_2Ø$ (10TØRR) + CØ (10TØRR) 76 ATK/PER M: Ar	299	9.3(+10)	-	-	0.9	1.1
NØTE: LIMITING HIGH-PRESSURE k (25-634TØRR)						
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76 SIE/SIM2 REACTIØN ØRDER: 2 M: H_2	298	2.1(+11)	-	-		
NØTE: LIMITING HIGH-PRESSURE k (EVALUATIØN) 77 CVE/PAR1 M: He	296	1.2(+11)	-	-	0.9	1.1
NØTE: LIMITING HIGH-PRESSURE k (50TØRR) M: SF_6	296	2.0(+11)	-	-	0.9	1.1
NØTE: LIMITING HIGH PRESSURE k (200 AND 350TØRR)						

$CØ + ØH + M \rightarrow$ products						
CARBØN MØNØXIDE + HYDRØXYL FREE RADICAL 77 PER/ATK2 REACTIØN ØRDER: 2 M: Ar	299	9.4(+10)	-	-	0.9	1.1
NØTE: IN PRESSURE RANGE 25 TØ 643TØRR M: SF_6	299	9.4(+10)	-	-	0.9	1.1
NØTE: PRESSURE-DEPENDENT k INCREASING FRØM $9.4X10^{10}$ TØ $2.1X10^{11}$ $cm^3 mol^{-1} s^{-1}$ WITHIN THE 25-604 TØRR. PRESSURE RANGE						

$CØ + HØ_2 \rightarrow CØ_2 + ØH$						
CARBØN MØNØXIDE + HYDRØPERØXYL FREE RADICAL 72 VAR/DAN REACTIØN ØRDER: 2	878-952	1.3(+14)	0	11600±1500		
72 WES/DEH1 k/k_{ref}: 0.06	298	-	-	-		
NØTE: k_{ref}: $H + HØ_2 \rightarrow ØH + ØH$ (EVALUATIØN) 73 GØK	298	<9.6(+7)	-	-		
NØTE: UPPER LIMIT k 73 LAV/PAY	300	<6.0(+3)	-	-		
NØTE: EVALUATIØN; UPPER LIMIT k 73 SIM/HEI1	373-473	<3.0(+6)	-	-		
NØTE: EVALUATIØN; UPPER LIMIT k 75 VAR/SAC	878-952	1.0(+14)	0	11600±1500	0.7	1.3
77 CØL/NAE	1110	5.6(+9)	-	-	0.3	4.0
NØTE: EVALUATIØN						

$CØ + S^*(^1D) \rightarrow$ products						
CARBØN MØNØXIDE + SULFUR ATØM 72 LIT/DAL REACTIØN ØRDER: 2 k/k_{ref}: 0.19	300	-	-	-		
NØTE: k_{ref}: $CH_2{=}CH_2 + S^*(^1D) \rightarrow$ products						

$CØ + {}^1SØ_2{}^* \rightarrow CØ_2 + SØ$						
CARBØN MØNØXIDE + SULFUR DIØXIDE 73 CEH/HEI REACTIØN ØRDER: 2	300	-	-	-		
NØTE: k_{ref}: $SØ_2 + {}^1SØ_2{}^* \rightarrow$ products; $k/k_{ref} = 5.0X10^{-3}$ (AT 2537A)	300	-	-	-		
NØTE: k_{ref}: $SØ_2 + {}^1SØ_2{}^* \rightarrow$ products; $k/k_{ref} = 1.5X10^{-3}$ (AT 3130A)						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
$CO + SO_2^{*} \rightarrow CO_2 + SO$						
CARBON MONOXIDE + SULFUR DIOXIDE 73 CEH/BEI REACTION ORDER: 2	300	-	-	-		
NOTE: k_{ref}: $SO_2^{*} \rightarrow$ products; $k/k_{ref} = 2.2X10^{-5}$ (3130 TO 3261A)						
SO_2^{*} IS A VIBRATIONALLY EXCITED SINGLET						

$CO + SO_2^{**} \rightarrow CO_2 + SO$						
CARBON MONOXIDE + SULFUR DIOXIDE 73 CEH/BEI REACTION ORDER: 2	300	-	-	-	0.7	1.4
NOTE: k_{ref}: $SO_2^{**} \rightarrow SO_2$; $k/k_{ref} = 1.8X10^{-5}$ (2537 TO 3261A)						
SO_2^{*} IS A CHEMICALLY ACTIVE TRIPLET						

$CO + SO_2 + M \rightarrow$ products						
CARBON MONOXIDE + SULFUR DIOXIDE 71 BAU/JEF REACTION ORDER: 2 M: Ar	1770-2453	2.7(+12)	0	24300±600	0.8	1.3
NOTE: AT 27-170 TORR PRESSURE						

$CO + NO_2 \rightarrow CO_2 + NO$						
CARBON MONOXIDE + NITROGEN OXIDE(NO_2)						
76 NIL REACTION ORDER: 2	950-1500	3.2(+13)	0	16100±650	0.6	1.8
77 FRE/PAL REACTION ORDER: 2	1309-1946	2.2(+13)	0	14700±800	0.6	1.7
77 FRE/PAL REACTION ORDER: 2	298-2000	8.9(+13)	0	17000	0.5	2.0
NOTE: BEST FIT (PREFERRED k)						

$CO + NO_2^{*} \rightarrow CO_2 + NO$						
CARBON MONOXIDE + NITROGEN MONOXIDE (NO_2)						
76 HER/MAR REACTION ORDER: 2	298	7.2(+8)	-	-		
NOTE: AT 5000±10A. UNREPORTED T ASSUMED TO BE 298K						
76 HER/MAR REACTION ORDER: 2	298	1.3(+8)	-	-		
NOTE: AT 7500A. UNREPORTED T ASSUMED TO BE 298K						

$CO + N_2O \rightarrow CO_2 + N_2$						
CARBON MONOXIDE + NITROGEN OXIDE(N_2O)						
73 NIL/MAT REACTION ORDER: 2	1169-1655	2.1(+11)	0	8700±1160	0.4	2.3
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76 NIL REACTION ORDER: 2	1169-1655	7.1(+11)	0	10570±1050	0.5	2.2

$CO + CH \rightarrow$ products						
CARBON MONOXIDE + METHYLIDYNE FREE RADICAL 71 BOS/PER REACTION ORDER: 2	298	2.9(+12)	-	-		

$CO + {}^{1}CH_2^{*} \rightarrow$ products						
CARBON MONOXIDE + METHYLENE FREE RADICAL 74 IAU/BAS REACTION ORDER: 2 M: He	298	5.4(+12)	-	-		
NOTE: LIMITING HIGH PRESSURE k. (UPPER LIMIT)						

$CO + {}^{3}CH_2 \rightarrow$ products						
CARBON MONOXIDE + METHYLENE FREE RADICAL 74 IAU/BAS REACTION ORDER: 2 M: He	298	6.0(+8)	-	-		
NOTE: $^{3}CH_2$: (GROUND STATE). LIMITING HIGH PRESSURE k.						

$CO + CH_3\cdot \rightarrow CH_3CO\cdot$						
CARBON MONOXIDE + METHYL FREE RADICAL 74 WAT/WIL REACTION ORDER: 2	260-296	1.6(+11)	0	3000±15	0.6	1.6

$CO + CH_3O\cdot \rightarrow CO_2 + CH_3\cdot$						
CARBON MONOXIDE + METHOXY FREE RADICAL 73 LIS/MAS REACTION ORDER: 2	396-426	1.6(+13)	0	5940±750	0.3	4.0

$CO + CH_3O\cdot \rightarrow$ products						
CARBON MONOXIDE + METHOXY FREE RADICAL 73 WIE/BEI REACTION ORDER: 2	298-423	-	-	-		
NOTE: k_{ref}: $NO + CH_3O\cdot \rightarrow HNO + HCHO + CH_3ONO^{*}$ k/k_{ref}: $=5X10^{-4}$						

$CO + CH_3CH_2\cdot \rightarrow CH_3CH_2C(O)\cdot$						
CARBON MONOXIDE + ETHYL FREE RADICAL						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
73 WAT/THØ REACTION ØRDER: 2	238-278	1.5(+11)	0	2420		
$C\emptyset_2 + \emptyset \rightarrow C\emptyset + \emptyset_2$						
CARBON DIOXIDE + OXYGEN ATOM						
74 BAB/DEA REACTION ØRDER: 2	3015-4675	4.8(+12)	0	18170±1460	0.6	1.6
$C\emptyset_2 + \emptyset^*(^1D) \rightarrow C\emptyset + \emptyset_2^*$						
CARBON DIOXIDE + OXYGEN ATOM						
73 HEI/HUSI REACTION ØRDER: 2	300	1.3(+4)	-	-	0.9	1.1
$C\emptyset_2 + \emptyset^*(^1D) \rightarrow C\emptyset + \emptyset_2^*$						
CARBON DIOXIDE + OXYGEN ATOM						
73 HEI/HUSI REACTION ØRDER: 2 k/k_{ref}: 3.1	300	-	-	-		
NOTE: k_{ref}: $C_2 + \emptyset^*(^1D) \rightarrow$ products						
$C\emptyset_2 + \emptyset + M \rightarrow C\emptyset_3 + M$						
CARBON DIOXIDE + OXYGEN ATOM						
71 STU/NIKI REACTION ØRDER: 3 M: CØ	300	<3.3(+12)	-	-		
NOTE: UPPER LIMIT k						
$C\emptyset_2 + \emptyset H(v=9) \rightarrow$ products						
CARBON DIOXIDE + HYDROXYL FREE RADICAL						
72 WEK/COL REACTION ØRDER: 2	298	1.4(+10)	-	-	0.6	1.4
NOTE: UNREPORTED T ASSUMED TO BE 298K						
$C\emptyset_2 + S^*(^1D) \rightarrow$ products						
CARBON DIOXIDE + SULFUR ATOM						
72 LIT/DAL REACTION ØRDER: 2 k/k_{ref}: 0.24	300	-	-	-		
NOTE: k_{ref}: $CH_2{=}CH_2 + S^*(^1D) \rightarrow$ products						
$C\emptyset_2 + N^*(^2D) \rightarrow$ products						
CARBON DIOXIDE + NITROGEN ATOM						
71 LIN/KAU REACTION ØRDER: 2	300	3.0(+11)	-	-	0.6	1.4
$C\emptyset_2 + C(^3P) \rightarrow$ products						
CARBON DIOXIDE + CARBON ATOM						
75 HES/YOU REACTION ØRDER: 2	300	<6.0(+8)	-	-		
NOTE: UPPER LIMIT k						
$C\emptyset_2 + {}^3CH_2 \rightarrow \emptyset_2 + HCH\emptyset$						
CARBON DIOXIDE + METHYLENE FREE RADICAL						
77 LAU/BAS REACTION ØRDER: 2	298	2.3(+10)	-	-	0.5	1.5
$C\emptyset_2 + CN \rightarrow C\emptyset + CN\emptyset$						
CARBON DIOXIDE + CYANOGEN FREE RADICAL						
75 HAY/IVE REACTION ØRDER: 2	1830-2400	3.7(+12)	0	0	0.9	1.1
$C\emptyset_2 + M \rightarrow C\emptyset + \emptyset + M$						
CARBON DIOXIDE						
73 DEA REACTION ØRDER: 2 M: Ar	3700-5600	6.3(+13)	0	42640±930	0.8	1.2
74 HAR/VAS M: Ar	3400-4400	2.7(+14)	0	53345		
NOTE: AT LOW PRESSURES						
74 WAG/ZAB REACTION ØRDER: 1 M: Ar	3000-3700	9.0(+12)	0	65300		
NOTE: LIMITING HIGH-PRESSURE k						
74 WAG/ZAB REACTION ØRDER: 2	3000-4600	5.1(+14)	0	55600		
NOTE: LIMITING LOW-PRESSURE k. CONCENTRATION DEPENDENT ARRHENIUS EXPRESSION = k[Ar]						
$CH + C\emptyset \rightarrow$ products						
METHYLIDYNE FREE RADICAL + CARBON MONOXIDE						
71 DES/PER REACTION ØRDER: 2	298	2.9(+12)	-	-		
$CH + \emptyset_2 \rightarrow$ products						
METHYLIDYNE FREE RADICAL + OXYGEN MOLECULE						
71 DES/PER REACTION ØRDER: 2	298	2.4(+13)	-	-		
NOTE: UPPER LIMIT k						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
$CH + H_2 \rightarrow$ products						
METHYLIDYNE FREE RADICAL + HYDROGEN MOLECULE						
71 BOS/PER REACTION ORDER: 2	298	1.05(+13)	-	-	0.9	1.1
$CH + H_2O \rightarrow$ products						
METHYLIDYNE FREE RADICAL + WATER						
71 BOS/PER REACTION ORDER: 2	298	2.7(+13)	-	-	0.9	1.2
$CH + N_2 \rightarrow$ products						
METHYLIDYNE FREE RADICAL + NITROGEN MOLECULE						
71 BOS/PER REACTION ORDER: 2	298	6.1(+11)	-	-	0.5	1.2
$CH + NH_3 \rightarrow$ products						
METHYLIDYNE FREE RADICAL + AMMONIA						
71 BOS/PER REACTION ORDER: 2	298	5.9(+10)	-	-	0.8	1.1
$CH + CH_4 \rightarrow$ products						
METHYLIDYNE FREE RADICAL + METHANE						
71 BOS/PER REACTION ORDER: 2	298	2.0(+13)	-	-	0.9	1.1
$CH + CH{\equiv}CH \rightarrow$ products						
METHYLIDYNE FREE RADICAL + ETHYNE						
71 BOS/PER REACTION ORDER: 2	298	4.5(+13)	-	-	0.9	1.2
$CH + CH_2{=}CH_2 \rightarrow$ products						
METHYLIDYNE FREE RADICAL + ETHENE						
71 BOS/PER REACTION ORDER: 2	298	6.9(+13)	-	-	0.9	1.1
$CH + CH_3CH_2CH_3 \rightarrow$ products						
METHYLIDYNE FREE RADICAL + PROPANE						
71 BOS/PER REACTION ORDER: 2	298	8.2(+13)	-	-	0.8	1.1
$CH + CH_3CH_2CH_2CH_3 \rightarrow$ products						
METHYLIDYNE FREE RADICAL + BUTANE						
71 BOS/PER REACTION ORDER: 2	298	7.8(+13)	-	-	0.9	1.1
$CH_2 + O \rightarrow CO + H + H$						
METHYLENE FREE RADICAL + OXYGEN ATOM						
73 JEN/BAY1 REACTION ORDER: 2 k/k_{ref}: 3.1	298	-	-	-		
NOTE: k_{ref}: $CH_2 + CH{\equiv}CH \rightarrow$ products						
$CH_2 + O_2 \rightarrow CO_2 + H + H$						
METHYLENE FREE RADICAL + OXYGEN MOLECULE						
73 PLE/MAH2 REACTION ORDER: 2	1200-1600	1.0(+14)	0	1860		
NOTE: EVALUATION						
$^1CH^* + O_2 \rightarrow$ products						
METHYLENE FREE RADICAL + OXYGEN MOLECULE						
74 LAU/BAS REACTION ORDER: 2 M: He	298	1.8(+13)	-	-		
NOTE: LIMITING HIGH PRESSURE k. (UPPER LIMIT)						
$CH_2 + O_2 \rightarrow$ products						
METHYLENE FREE RADICAL + OXYGEN MOLECULE						
73 JEN/BAY2 REACTION ORDER: 2	296	-	-	-	0.7	1.3
NOTE: k_{ref}: $CH_2 + O \rightarrow CO + H + H$						
74 LAU/BAS	298	9.0(+11)	-	-	0.9	1.1
NOTE: $^3CH_2$ (GROUND STATE). LIMITING HIGH PRESSURE k.						
75 PLE/VIN	2000	1.2(+13)	-	-		
77 PIL/ROH	298	7.2(+11)	-	-		
NOTE: $^3CH_2$ (GROUND STATE)						
$^1CH_2{}^* + H_2 \rightarrow CH_3 + H$						
METHYLENE FREE RADICAL + HYDROGEN MOLECULE						
77 PIL/ROH REACTION ORDER: 2	298	1.2(+13)	-	-		
NOTE: $^1CH_2{}^*(^1B_1)$ STATE						
$^3CH_2 + H \rightarrow CH_3 + H$						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
METHYLENE FREE RADICAL + HYDROGEN MOLECULE						
77 PIL/ROB REACTION ORDER: 2	298	3.0(+9)	-	-		
NOTE: $^{3}CH_2$ (GROUND STATE)						

$^{3}CH_2$ + NO → CH_2NO						
METHYLENE FREE RADICAL + NITROGEN OXIDE (NO)						
77 PIL/ROB REACTION ORDER: 2	298	6.0(+12)	-	-		
NOTE: $^{3}CH_2$ (GROUND STATE)						

$^{1}CH_2$ + NO → products						
METHYLENE FREE RADICAL + NITROGEN OXID (NO)						
74 LAU/BAS REACTION ORDER: 2 M: He	298	2.4(+13)	-	-		
NOTE: LIMITING HIGH PRESSURE k (UPPER LIMIT)						

$^{3}CH_2$ + NO → products						
METHYLENE FREE RADICAL + NITROGEN OXIDE (NO)						
74 LAU/BAS REACTION ORDER: 2 M: He	298	9.6(+12)	-	-	0.9	1.1
NOTE: $^{3}CH_2$ (GROUND STATE). LIMITING HIGH PRESSURE k.						

$^{1}CH_2$* + CO → products						
METHYLENE FREE RADICAL + CARBON MONOXIDE						
74 LAU/BAS REACTION ORDER: 2 M: He	298	5.4(+12)	-	-		
NOTE: LIMITING HIGH PRESSURE k. (UPPER LIMIT)						

$^{3}CH_2$ + CO → products						
METHYLENE FREE RADICAL + CARBON MONOXIDE						
74 LAU/BAS REACTION ORDER: 2	298	6.0(+8)	-	-		
NOTE: $^{3}CH_2$ (GROUND STATE). LIMITING HIGH PRESSURE k						
(UPPER LIMIT)						

$^{3}CH_2$ + CO_2 → HCHO + O_2						
METHYLENE FREE RADICAL + CARBON DIOXIDE						
77 LAU/BAS REACTION ORDER: 2	298	2.3(+10)	-	-	0.5	1.5

$^{3}CH_2$ + CH_3 → CH_2=CH_2 + H						
METHYLENE FREE RADICAL + METHYL FREE RADICAL						
75 PIL/ROB REACTION ORDER: 2	298	3.0(+13)	-	-	0.6	1.4
75 LAU/BAS1	295	6.0(P13)	-	-	0.8	1.3

$^{3}CH_2$ + CH≡CH → CH_2=C=CH_2 + CH_3C≡CH						
METHYLENE FREE RADICAL + ETHYNE						
74 LAU/BAS REACTION ORDER: 2	298	4.5(+12)	-	-	0.9	1.1
NOTE: $^{3}CH_2$ (GROUND STATE). LIMITING HIGH PRESSURE k						
77 PIL/ROB	298	2.4(+12)	-	-		
NOTE: $^{3}CH_2$ (GROUND STATE)						

CH_2 + CH_3CH_3 → $CH_3CH_2CH_3$						
METHYLENE FREE RADICAL + ETHANE						
73 HAL/CRU REACTION ORDER: 2	304	2.9(+12)	-	-		

$^{1}CH_2$* + CH_2=C=O → CH_2=CH_2 + CO						
METHYLENE FREE RADICAL + ETHENONE						
74 LAU/BAS REACTION ORDER: 2 M: He	298	1.9(+13)	-	-	0.6	1.4
NOTE: LIMITING HIGH PRESSURE k.						
METHYLENE FREE RADICAL + ETHENONE						
77 PIL/ROB	298	2.1(+12)	-	-		
77 PIL/ROB	298	1.8(+13)	-	-		
NOTE: $^{1}CH_2$*($^{1}B_1$) STATE						

CD_2 + CD_2=C=O → CD_2=CD_2 + CO						
METHYLENE-d_2 FREE RADICAL + ETHENONE-d_2						
71 HCN/KEL REACTION ORDER: 2	653	-	-	-		

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
NOTE: k_{ref}: $CD_2 + (CH_3)_4C \rightarrow CD_2H + (CH_3)_3CCH_2\cdot$						
$CH_2 + CH_3CH_2CH_3 \rightarrow CH_3CH_2CH_2CH_3$ METHYLENE FREE RADICAL + PROPANE 73 HAL/CRU REACTION ORDER: 2 NOTE: EDITOR'S CALCULATION BASED ON REPORTED 1.29 EFFICIENCY OF CH_2 INSERTION AT SECONDARY OVER PRIMARY CH BONDS IN PROPANE	304	2.7(+12)	-	-		
$^{1}CH_2^{*} + CH_3CH_2CH_3 \rightarrow CH_3CH_2CH_2CH_3$ METHYLENE FREE RADICAL + PROPANE 75 ZAB/CAR REACTION ORDER: 2 k/k_{ref}: 16.67 NOTE: $^{1}CH_2^{*}(^{1}A_1)$ STATE. k_{ref}: $CH_2^{*}(^{1}A_1) + M \rightarrow CH_2(^{3}B_1) + M$	298	-	-	-		
$CH_2 + CH_3CH_2CH_3 \rightarrow (CH_3)_3CH$ METHYLENE FREE RADICAL + PROPANE 73 HAL/CRU REACTION ORDER: 2 NOTE: EDITOR'S CALCULATION BASED REPORTED 1.29 EFFICIENCY OF CH_2 INSERTION AT SECONDARY OVER PRIMARY CH BONDS IN PROPANE	304	1.1(+12)	-	-		
$^{1}CH_2^{*} + CH_2{=}CHCH{=}CH_2 \rightarrow$ cis-, and trans-$CH_2{=}CHCH{=}CHCH_3$ + $CH_2{=}C(CH_3)CH{=}CH_2$ METHYLENE FREE RADICAL + 1,3-BUTADIENE 75 CRA/RGS REACTION ORDER: 2 k/k_{ref}: 0.14 NOTE: k_{ref}: $^{1}CH_2 + CH_2{=}CHCH{=}CH_2 \rightarrow$ cy-$[CH_2{=}CH]CHCH_2CH_2$ [CYCLOPROPANE, ETHENYL-]	298	-	-	-		
$^{1}CH^{*} + CH_3CH_2CH_2CH_3 \rightarrow (CH_3)_2CHCH_2CH_3^{*}$ METHYLENE FREE RADICAL + BUTANE 72 GRO/HAS REACTION ORDER: 2 k/k_{ref}: 0.89 NOTE: k_{ref}: $^{1}CH_2^{*} + CH_3CH_3 \rightarrow CH_3CH_2CH_3^{*}$	298	-	-	-		
$CH_2 + CH_3CH_2CH_2CH_3 \rightarrow CH_3CH_2CH_2CH_2CH_3$ METHYLENE FREE RADICAL + BUTANE 73 HAL/CRU REACTION ORDER: 2 NOTE: EDITOR'S CALCULATION BASED ON REPORTED 1.31 EFFICIENCY OF CH_2 INSERTION AT SECONDARY OVER PRIMARY CH BONDS IN BUTANE	304	2.6(+12)	-	-		
$CH_2 + CH_3CH_2CH_2CH_3 \rightarrow (CH_3)_2CHCH_2CH_3$ METHYLENE FREE RADICAL + BUTANE 73 HAL/CRU REACTION ORDER: 2 NOTE: EDITOR'S CALCULATION BASED ON REPORTED 1.31 EFFICIENCY OF CH_2 INSERTION AT SECONDARY OVER PRIMARY CH BONDS IN BUTANE	304	2.3(+12)	-	-		
$CH_2 + (CH_3)_3CH \rightarrow (CH_3)_2CHCH_2CH_3$ METHYLENE FREE RADICAL + PROPANE,2-METHYL- 73 HAL/CRU REACTION ORDER: 2 NOTE: EDITOR'S CALCULATION BASED ON REPORTED 1.33 EFFICIENCY OF CH_2 INSERTION AT TERTIARY OVER PRIMARY CH BONDS IN 2-METHYLPROPANE	304	3.9(+12)	-	-		
$CH_2 + (CH_3)_3CH \rightarrow (CH_3)_4C$ METHYLENE FREE RADICAL + PROPANE,2-METHYL- 73 HAL/ORU REACTION ORDER: 2 NOTE: EDITOR'S CALCULATION BASED ON REPORTED 1.33 EFFICIENCY OF CH_2 INSERTION AT TERTIARY OVER PRIMARY CH BONDS IN 2-METHYLPROPANE	304	5.9(+11)	-	-		
$^{1}CH_2^{*} + CH_3CH_2CH_2CH_2CH_3 \rightarrow CH_3(CH_2)_4CH_3$ METHYLENE FREE RADICAL + PENTANE 75 [illegible]H/CAR REACTION ORDER: 2 k/k_{ref}: 11.11	298	-	-	-		

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
NOTE: $^1CH_2{}^*(^1A_1)$ STATE. k_{ref}: $CH_2{}^*(^1A_1) + M \rightarrow CH(^3B_1) + M$						

$CD_2 + (CH_3)_4C \rightarrow CD_2H + (CH_3)_3CCH_2\cdot$						
METHYLENE-d_2 FREE RADICAL + PROPANE, 2,2-DIMETHYL-						
71 MCN/KEL REACTION ORDER: 2 k/k_{ref}: 2.1	576-706	-	-	-	0.8	1.2
NOTE: k_{ref}: $CD_2 + CD_2{\cdot}C{=}O \rightarrow CD_3 + \cdot CD{=}C{=}O$						

$CD_2 + (CH_3)_4C \rightarrow CD_2H + (CH_3)_3CCH_2\cdot$						
METHYLENE-d_2 FREE RADICAL + PROPANE, 2,2-DIMETHYL-						
71 MCN/KEL REACTION ORDER: 2	653	1.5(+11)	-	-	0.5	1.5
NOTE: EVALUATION						

$CH_3 + O \rightarrow HCHO + H$						
METHYL FREE RADICAL + OXYGEN ATOM						
72 NIK/MOR2 REACTION ORDER: 2	300	5.4(+13)	-	-		
73 MOR/NIK1 REACTION ORDER: 2	298	>1.8(+13)	-	-		
NOTE: UNREPORTED T ASSUMED TO BE 298K. LOWER LIMIT k						
73 PEE/MAH	1100-1900	1.3(+14)	0	1000		
73 WAS/BAY	297	7.4(+13)	-	-		
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74 SIA/PRU	300	1.1(+14)	-	-	0.8	1.2
75 BIO/LAZ	1550-1725	1.1(+14)	0	0		
75 DOW	1900-2400	1.0(+14)	0	0		
NOTE: INDIRECT MEASUREMENT						
76 WAS/BAY	259-341	6.0(+13)	0	0	0.8	1.2
76 TSU	1500-2000	6.0(+13)	0	0		

$CH_3 + O_2 \rightarrow HCHO + OH$						
METHYL FREE RADICAL + OXYGEN MOLECULE						
75 DOW REACTION ORDER: 2	1900-2400	1.2(+11)	0	5000		
NOTE: INDIRECT MEASUREMENT						
76 WAS/BAY	259-341	1.7(+11)	0	940±250	0.4	2.2
76 TSU	1500-2000	9.0(+11)	0	6000		

$CH_3\cdot + O_2 \rightarrow CH_3O\cdot + O$						
METHYL FREE RADICAL + OXYGEN MOLECULE						
75 BEA/BRO REACTION ORDER: 2	1200-1800	2.4(+13)	0	14500		

$CH_3 + O_2 + M \rightarrow CH_3O_2\cdot + M$						
METHYL FREE RADICAL + OXYGEN MOLECULE						
71 VAN/CAL REACTION ORDER: 2	295	1.1(+12)	-	-		
NOTE: LIMITING HIGH-PRESSURE k. GIVEN WITH CAUTION.						
M=$CH_3CH_2CH_3$						
72 EAS/JAM	295	3.1(+11)	-	-	0.9	1.1
NOTE: LIMITING HIGH PRESSURE k. M: N_2,OR $(CH_3)_4C$						
REACTION ORDER: 3	295	3.6(+17)	-	-	0.9	1.1
NOTE: LOW PRESSURE k. M=$(CH_3)_4C$						
M: N_2	295	9.4(+16)	-	-	0.9	1.1
NOTE: LOW PRESSURE k						
73 SOK/NIK M: He		3.9(+16)	-	-		
NOTE: LOW PRESSURE k						
REACTION ORDER: 2 M: He	453	1.5(+12)	-	-		
NOTE: LIMITING HIGH PRESSURE k						
75 LAU/BAS2	298	1.0(+12)	-	-		
NOTE: LIMITING HIGH PRESSURE k M:He,Ar,N_2.						
77 HCC/GHO M: N_2	295	1.3(+12)	-	-	0.8	1.2
NOTE: LIMITING HIGH PRESSURE k						
77 PAR REACTION ORDER: 3 M: N_2	298	1.1(+17)	-	-	0.7	1.3
NOTE: LOW PRESSURE k						
77 PAR REACTION ORDER: 2 M: N_2	298	7.2(+11)	-	-	0.3	1.7
NOTE: LIMITING HIGH PRESSURE k						
77 PAR REACTION ORDER: 3	298	5.4(+17)	-	-	0.5	1.5
NOTE: LOW PRESSURE k. M=$(CH_3)_4C$						

$CH_3 + O_3 \rightarrow HCHO + H + O_2$						
METHYL FREE RADICAL + OZONE						
75 SIM/HEI REACTION ORDER: 2	221-298	3.3(+12)	-	530		
NOTE: EVALUATION						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
$CH_3 \cdot + H \rightarrow CH_4$						
METHYL FREE RADICAL + HYDROGEN ATOM4						
72 JEN/JON REACTION ORDER: 2	303-603	1.2(+12)	0	25		
74 CAN/MAR	503-753	1.6(+12)	0	0	0.7	1.3
NOTE: AVERAGE OF THREE k,S AT 8,12, AND 16 TORR.						
77 CHE/LEE	308	1.5(14)	-	-		
77 CHE/YEH	308	2.0(+14)	-	-	0.6	1.5
NOTE: EXTRAPOLATED LIMITING HIGH PRESSURE k						
$CH_3 \cdot + H \cdot + M \rightarrow CH_4 + M$						
METHYL FREE RADICAL + HYDROGEN ATOM						
74 PRA/VEL REACTION ORDER: 3 M: He	295	5.3(+18)	-	-	0.8	1.2
M: N6	295	2.0(+20)	-	-	0.9	1.1
76 PRA/VEL1 M: He	321-521	6.9(+19)	-0.33	0	0.2	5.0
$CH_3 \cdot + H_2 \rightarrow CH_4 + H$						
METHYL FREE RADICAL + HYDROGEN MOLECULE						
72 SHA/WES REACTION ORDER: 2	398-718	-	-	-		
NOTE: k_{ref}: $CH_3 \cdot + D_2 \rightarrow CH_3D + D \cdot$ k/k_{ref}: 0.911 exp(+688/T)						
73 CIA/DOV2 REACTION ORDER: 2	1200-2000	1.5(+13)	0	7800	0.5	2.0
NOTE: EVALUATION BASED ON AN EXPERIMENTAL						
$k = (4.6 \pm 1.4) \times 10^{10} cm^3 mol^{-1} s^{-1}$ AT 1340K						
74 KOB/PAC	372-1370	7.9(+5)	2.0	4810		
$CH_3^* + H_2 \rightarrow CH_4 + H$						
73 TIN/WES k/k_{ref}: 0.75	298	-	-	-	0.7	1.3
NOTE: k_{ref}: $CH_3^* \cdot + CH_3Br \rightarrow CH_4 + .CH_2Br$						
$CH_3 \cdot + HD \rightarrow CH_4 + D$						
METHYL FREE RADICAL + DEUTERIUM HYDRIDE						
72 SHA/WES REACTION ORDER: 2	398-718	-	-	-		
NOTE: k_{ref}: $CH_3 \cdot + DH \rightarrow CH_3D + H \cdot$ k/k_{ref}: 0.283 exp(+970/T)						
$CH_3 \cdot + D_2 \rightarrow CH_3D + D$						
METHYL FREE RADICAL + DEUTERIUM MOLECUME						
76 PRA/RGG2 REACTION ORDER: 2	300-1118	1.6(+12)	0	6370±40	0.9	1.1
77 YAN k/k_{ref}: 0.34	1260-1390	-	-	-		
NOTE: k_{ref}: $CH_3 \cdot + CH_3CH{=}CH_2 \rightarrow CH_4 + .CH_2CH{=}CH_2$						
$CH_3^* \cdot + D_2 \rightarrow CH_3D + D$						
METHYL FREE RADICAL + DEUTERIUM MOLECULE						
73 TIN/WES REACTION ORDER: 2 k/k_{ref}: 0.05	298	-	-	-	0.9	1.1
NOTE: k_{ref}: $CH_3^* \cdot + CH_3Br \rightarrow CH_4 + .CH_2Br$						
$CD_3 \cdot + H_2 \rightarrow CD_3H + H$						
METHYL-d_3 FREE RADICAL + HYDROGEN MOLECULE						
72 SHA/WES REACTION ORDER: 2	398-718	-	-	-		
NOTE: k_{ref}: $CD_3 \cdot + D_2 \rightarrow CD_4 + D \cdot$ k/k_{ref}: 1.592 exp(+296/T)						
$CD_3^* + H_2 \rightarrow CD_3H + H$						
METHYL-d_3 FREE RADICAL + HYDROGEN MOLECULE						
73 TIN/WES REACTION ORDER: 2 k/k_{ref}: 0.093	298	-	-	-	0.9	1.1
NOTE: k_{ref}: $CD_3^* + CD_3Br \rightarrow CD_4 + CD_2Br$						
$CD_3 \cdot + HD \rightarrow CD_3H + D$						
METHYL-d_3 FREE RADICAL + DEUTERIUM HYDRIDE						
72 SHA/WES REACTION ORDER: 2	398-718	-	-	-		
NOTE: k_{ref}: $CD_3 \cdot + DH \rightarrow CD_4 + H \cdot$ k/k_{ref}: 0.932 exp(+275/T)						
$CD_3^* + D_2 \rightarrow CD_4 + D$						
METHYL-d_3 FREE RADICAL + DEUTERIUM MOLECULE						
73 TIN/WES REACTION ORDER: 2 k/k_{ref}: 2.15	298	-	-	-	0.6	1.4

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	F
NOTE: k_{ref}: $CD_3^{*} + H_2 \rightarrow CD_3H + H$						
$CH_3 + SO_2 + M \rightarrow CH_3SO_2 + M$						
METHYL FREE RADICAL + SULFUR DIOXIDE						
73 JAM/KER REACTION ORDER: 2	298	1.8(+11)	-	-	0.9	1.1
NOTE: LIMITING HIGH-PRESSURE k						
$CH_3 + NO \rightarrow CH_3NO$						
METHYL FREE RADICAL + NITROGEN OXIDE(NO)						
72 DAV/COR REACTION ORDER: 2 k/k_{ref}: 0.62	295	-	-	-		
NOTE: k_{ref}: $CH_3 + NO_2 \rightarrow CH_3NO_2$						
$CH_3 + NO + M \rightarrow CH_3NO + M$						
METHYL FREE RADICAL + NITROGEN OXIDE(NO)						
71 VAN/CAL REACTION ORDER: 2	295	1.0(+13)	-	-	0.8	1.2
NOTE: LIMITING HIGH-PRESSURE k. M=N_2, OR $CH_3CH_2CH_3$						
74 PRA/VEL REACTION ORDER: 3 M: He	295	1.0(+17)	-	-	0.9	1.1
74 TIT/BAL REACTION ORDER: 2	443	1.8(+12)	-	-	0.9	1.1
NOTE: LIMITING HIGH-PRESSURE k. M=$(CH_3)_2CO$.						
REACTION ORDER: 3	443	6.1(+18)	-	-		
NOTE: k_0 (LOW PRESSURE). M=$(CH_3)_2CO$						
75 LAU/BAS2 REACTION ORDER: 2	298	1.9(+13)	-	-		
NOTE: LIMITING HIGH PRESSURE k. M=He,Ar,N_2						
76 FIL/ROB	298	7.2(+12)	-	-	0.9	1.1
NOTE: LIMITING HIGH-PRESSURE k. M=Ar, or SF_6						
76 PRA/VEL2 REACTION ORDER: 3 M: He	325-521	7.2(+16)	0	-210±10	0.8	1.2
$CH_3 + NO_2 \rightarrow CH_3ONO$						
METHYL FREE RADICAL + NITROGEN OXIDE(NO_2)						
72 DAV/COR REACTION ORDER: 2 k/k_{ref}: 2.17	295	-	-	-		
NOTE: k_{ref}: $CH_3 + NO_2 \rightarrow CH_3NO_2$.						
k/k_{ref}: [METHYL NITRITES]/[NITRO METHANE]						
$CH_3 + NO_2 \rightarrow CH_3O. + NO$						
METHYL FREE RADICAL + NITROGEN OXIDE(NO_2)						
74 GLA/TRO2 REACTION ORDER: 2	1100-1400	1.3(+13)	0	0		
$CH_3 + NO_2 + M \rightarrow CH_3NO_2 + M$						
METHYL FREE RADICAL + NITROGEN OXIDE(NO_2)						
74 GLA/TRO2 REACTION ORDER: 2 M: Ar	300-1400	6.3(+14)	-0.6	0		
NOTE: LIMITING HIGH PRESSURE k						
REACTION ORDER: 3 M: Ar	300-1400	2.5(+35)	-6	0		
NOTE: LOW PRESSURE k						
$CH_3 + N_2O \rightarrow CH_3O + N_2$						
METHYL FREE RADICAL + NITROGEN OXIDE(N_2O)						
73 FAL/HOA REACTION ORDER: 2	873	1.4(+7)	-	-	0.8	1.2
77 BOR/ZAM REACTION ORDER: 2	1000-2000	1.0(+15)	0	14280		
NOTE: UPPER LIMIT k (EVALUATION)						
$CH_3 + CO \rightarrow CH_3O$						
METHYL FREE RADICAL + CARBON MONOXIDE						
74 WAT/WIL REACTION ORDER: 2	260-296	1.6(+11)	0	3000±15	0.6	1.6
$CH_3 + {}^3CH_2 \rightarrow H + CH_2{=}CH_2$						
METHYL FREE RADICAL + METHYLENE FREE RADICAL						
75 FIL/ROB REACTION ORDER: 2	298	3.0(+13)	-	-	0.6	1.4
75 LAU/BAS1	295	6.0(+13)	-	-	0.8	1.3
$CH_3^{*} + CH_3 \rightarrow CH_4 + CH_2$						
METHYL FREE RADICAL						
77 RIC/TRU REACTION ORDER: 2	298	<1.0(+14)	-	-		
NOTE: UPPER LIMIT k. UNREPORTED T ASSUMED TO BE 298K IN Ar CARRIER GAS						

CHEMICAL REACTIONS		T/K	A	B	E/R (in °K)	k factors f	F
$CH_3 + CH_3 \rightarrow CH_2{=}CH_2 + H_2$							
METHYL FREE RADICAL							
75 GAR/OWE	REACTION ORDER: 2	2000-2700	6.0(+16)	0	21700		
$CH_3\cdot + CH_3\cdot \rightarrow CH_3CH_3$							
METHYL FREE RADICAL							
72 TEN/JON	REACTION ORDER: 2	303-603	2.6(+13)	0	215		
73 EAY/BRO		295	2.4(+13)	-	-	0.9	1.1
NOTE: TENTATIVE k		298	2.7(+13)	-	-	0.9	1.1
74 PCH/LEI		295	3.3(+13)	-	-	0.9	1.1
76 CAL/MET		250-450	2.4(+13)	-	-	0.8	1.2
76 PAR/PAU							
$CD_3 + CD_3 \rightarrow CD_3CD_3$							
METHYL-d_3 FREE RADICAL							
76 CAL/MET	REACTION ORDER: 2	295	3.0(+13)	-	-	0.9	1.1
76 PAR/PAU		298	2.4(+13)	-	-	0.6	1.4
$CH_3 + CH_3 + M \rightarrow CH_3CH_3 + M$							
73 EAS/LAU	REACTION ORDER: 2 M: He	298	5.7(+13)	-	-	0.9	1.1
NOTE: LIMITING-HIGH-PRESSURE k							
73 TRU/RIC	M: N_2	313	2.4(+13)	-	-	0.9	1.1
NOTE: LIMITING HIGH-PRESSURE k							
74 JAM/SIM	M: Ar	298	3.4(+13)	-	-	0.9	1.1
NOTE: LIMITING HIGH-PRESSURE k							
76 GIA/QUA	M: Ar	1200-1500	1.0(+13)	0	0	0.6	1.4
NOTE: LIMITING HIGH-PRESSURE k							
77 GIA/QUA	M: Ar	1400	1.7(+13)	-	-	0.5	1.5
NOTE: LIMITING HIGH-PRESSURE k							
76 VAN	REACTION ORDER: 3 M: He	450	7.4(+21)	-	-		
NOTE: LOW PRESSURE k							
	M: Ar	1350	2.8(+19)	-	-	0.5	2.0
NOTE: LOW PRESSURE k							
77 HOC/GBO	REACTION ORDER: 2 M: N_2	295	3.1(+13)	-	-	0.8	1.2
NOTE: LIMITING HIGH PRESSURE k							
$CD_3 + CD_3 + M \rightarrow CD_3CD_3 + M$							
METHYL-d_3 FREE RADICAL							
76 GIA/QUA	REACTION ORDER: 2 M: Ar	1200-1500	1.3(+13)	0	0	0.6	1.4
NOTE: LIMITING HIGH-PRESSURE k							
	M: Ar	400	1.9(+13)	-	-	0.5	1.5
NOTE: LIMITING HIGH-PRESSURE k							
76 VAN	REACTION ORDER: 3 M: Ar	1350	7.7(+19)	-	-		
NOTE: LOW PRESSURE k							
$CH_3 + CH_3O_2\cdot \rightarrow CH_3O\cdot + CH_3O\cdot$							
METHYL FREE RADICAL + METHYLDIOXY FREE RADICAL							
77 PAR	REACTION ORDER: 2	298	3.6(+13)	-	-	0.8	1.2
$CD_3 + COS \rightarrow CD_3S\cdot + CO$							
METHYL-d_3 FREE RADICAL + CARBON OXIDE SULFIDE							
72 JAK/AHM	REACTION ORDER: 2	354-490	3.8(+11)	0	5710±175	0.6	1.8
NOTE: EVALUATION							
$CH_3 + CH_3N{=}NH \rightarrow CH_4 + CH_3N{=}N\cdot$							
METHYL FREE RADICAL + DIAZENE, METHYL-							
76 VID/WIL	REACTION ORDER: 2	294	1.3(+10)	-	-	0..	1.1
$CH_3\cdot + CH{\equiv}CH \rightarrow CH_3CH{=}CH\cdot$							
METHYL FREE RADICAL + ETHYNE							
77 HOL/KER	REACTION ORDER: 2	379-487	6.2(+11)	0	3880±750	0.2	6.3
NOTE: EVALUATION							
$CH_3 + CH_2{=}CH_2 \rightarrow CH_4 + CH_2{=}CH\cdot$							
METHYL FREE RADICAL + ETHENE							
76 CHE/BAC	REACTION ORDER: 2	1038	1.0(+9)	-	-		
NOTE: EVALUATION							
$CH_3\cdot + CH_2{=}CH_2 \rightarrow CH_3CH_2CH_2\cdot$							
METHYL FREE RADICAL + ETHENE							
72 [illegible]/WAL	REACTION ORDER: 2	335-424	-	-	-	0.9	1.1

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
NOTE: k_{ref}: CH_3 • CH_2=CHF → CH_3CH_2CHF.						
k/k_{ref}: $7.2X10^{2}$ exp(+468±100/T)	335-424	-	-	-	0.8	1.2
NOTE: k_{ref}: CH_3 • CH_2=CF_2 → $CH_3CH_2CF_2$.						
k/k_{ref}: $4.9X10^{1}$ exp(+2420±500/T)	335-424	-	-	-	0.8	1.2
NOTE: k_{ref}: CH_3• • CF_2=CF_2 → $CH_3CF_2CF_2$•						
k/k_{ref}: $8.3X10^{3}$ exp(-1.320±550/T)	335-424	-	-	-	0.9	1.1
NOTE: k_{ref}: CH_3 • CH_2=CHCl → CH_3CH_2CHCl.						
k/k_{ref}: $2.9X10^{2}$ exp(+940±250/T)	335-424	-	-	-	0.9	1.1
NOTE: k_{ref}: CH_3 • CH_2CH=CH_2 → $CH_3CH_2CH(.)CH_3$:						
k/k_{ref}: $1.1X10^{4}$ exp(+377±200/T)	350-500	2.1(+11)	0	3670±500	0.3	3.2
77 BOL/KER						
NOTE: EVALUATION						

CH_3 • CH_3CH_2• → $CH_3CH_2CH_3$						
METHYL FREE RADICAL • ETHYL FREE RADICAL						
72 TEN/JEN REACTION ORDER: 2	303-603	2.5(+13)	0	200		

CH_3 • CH_3CF_3 → CH_4 • CH_3CH_2•						
METHYL FREE RADICAL • ETHANE						
72 FAC/PUR2 REACTION ORDER: 2	920-1040	5.0(+14)	0	10830±2410	0.1	10.
73 CLA/DOV1	300-1800	5.5(-1)	4.0	4170±15	0.9	1.1
74 YAM/RYB	980-1130	3.0(+12)	0	6840±1100		
76 ERA/WES2	1055-1325	3.2(+13)	0	9000	0.6	1.8
76 CHE/BAC	1038	1.3(+10)	-	-	0.8	1.2
NOTE: MEASURED k VALUES ALSO AT T=880K, 995K AND 1068K.						
NON-ARRHENIUS BEHAVIOR						

CH_3 • CH_3CHO → CH_4 • $CH_3C(O)$.						
METHYL FREE RADICAL • ACETALDEHYDE						
71 BAL/LAN REACTION ORDER: 2	713-813	1.6(+12)	0	4125±250	0.6	1.4
NOTE: EVALUATION						

CH_3 • CH_3CHO → CH_4 • $CH_3C(O)$. • .CH_2CHO						
METHYL FREE RADICAL • ACETALDEHYDE						
76 BAR/BER REACTION ORDER: 2 k/k_{ref}: 2.7	785	-	-	-		
NOTE: k_{ref}: CH_3 • CH_3CDO → CH_3D • $CH_3C(O)$.						

CH_3• • CH_3CDO → CH_4 • .CH_2CDO						
METHYL FREE RADICAL • ACETALDEHYDE-1-d						
76 BAR/BER REACTION ORDER: 2 k/k_{ref}: 0.62	785	-	-	-		
NOTE: k_{ref}: CH_3 • CH_3CDO → CH_3D • $CH_3C(O)$.						

CH_3 • $(CH_3)_2O$ → CH_4 • .CH_2OCH_3						
METHYL FREE RADICAL • METHANE, OXYBIS-						
75 PAC REACTION ORDER: 2	782-936	3.2(+13)	0	7600±840	0.4	2.5
NOTE: CURVED ARRHENIUS PLOT OVER EXTENDED T RANGE 373-936K						

CH_3 • cy-CH_2CH_2S → CH_3S• • CH_2=CH_2						
METHYL FREE RADICAL • THIIRANE						
72 JAK/AHM REACTION ORDER: 2	304-478	7.1(+10)	0	3370±400	0.3	3.3
NOTE: EVALUATION						

CD_3 • cy-CH_2CH_2S → CD_3H • cy-CH_2=CH(.)S						
METHYL-d_3 FREE RADICAL • THIIRANE						
71 JAK/AHM REACTION ORDER: 2	303-477	2.2(+11)	0	4800±500	0.3	4.0
NOTE: EVALUATION						

CD_3 • cy-CH_2CH_2S → CD_3S• • CH_2=CH_2						
METHYL-d_3 FREE RADICAL • THIIRANE						
72 JAK/AHM REACTION ORDER: 2	303-477	5.9(+10)	0	3270±500	0.2	4.4
NOTE: EVALUATION						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
$CH_3 \cdot + (CH_3)_2S \rightarrow CH_4 + CH_3SCH_2\cdot$						
METHYL FREE RADICAL + METHANE, THIOBIS-						
76 ART/LEE REACTION ORDER: 2	393-518	4.2(+11)	0	4613±82		
$CH_3 \cdot + CH_3N{=}NCH_3 \rightarrow CH_4 + \cdot CH_2N{=}NCH_3$						
METHYL FREE RADICAL + DIAZENE, DIMETHYL-						
77 SCH/KNO		-	-	-	0.5	2.0
NOTE: k_{ref}: $CH_3 \cdot + CD_3COCOCD_3 \rightarrow CH_3D + \cdot CD_2COCOCD_3$						
k/k_{ref}: 1.0exp(+600±300/T)						
$CD_3 \cdot + CH_3N{=}NCH_3 \rightarrow CD_3H + \cdot CH_2N{=}NCH_3$						
METHYL-d_3 FREE RADICAL + DIAZENE, DIMETHYL-						
77 SCH/KNO REACTION ORDER: 2	524-565	-	-	-	0.5	2.0
NOTE: k_{ref}: $CD_3 \cdot + CD_3COCOCD_3 \rightarrow CD_4 + \cdot CD_2COCOCD_3$						
k/k_{ref}: 0.63exp(+750±300/T)						
$CH_3 \cdot + CH_2{=}C{=}CH_2 \rightarrow \cdot CH_2C(CH_3){=}CH_2$						
METHYL FREE RADICAL + 1,2-PROPADIENE						
73 TSA REACTION ORDER: 2	1190	1.6(+11)	0	2500		
$CH_3 \cdot + CH_3CH_2CH_3 \rightarrow CH_4 + CH_3CH_2CH_2\cdot + (CH_3)_2CH\cdot$						
METHYL FREE RADICAL + PROPANE						
75 CAM/MAR REACTION ORDER: 2	676-743	2.0(+12)	0	5690±820	0.3	3.0
	743-813	5.0(+15)	0	11600±900	0.3	3.0
75 LIF/FRE1	1050-1250	3.5(+12)	0	5185		
$CH_3 \cdot + CH_3COCHO \rightarrow CH_4 + CH_3C(O)\cdot + CO$						
METHYL FREE RADICAL + PROPANAL, 2-OXO-						
77 KYL/ORC REACTION ORDER: 2	353	1.4(+11)	0	3330±340	0.4	2.4
$CH_3 \cdot + (CH_3)_2CO \rightarrow CH_4 + \cdot CH_2COCH_3$						
METHYL FREE RADICAL + 2-PROPANONE						
72 SHA/WES REACTION ORDER: 2	398-718	-	-	-		
NOTE: k_{ref}: $CH_3 \cdot + D_2 \rightarrow CH_3D + D\cdot$ k/k_{ref}: 0.617 exp(+1020/T)						
	398-718	-	-	-		
NOTE: k_{ref}: $CH_3 \cdot + DH \rightarrow CH_3D + H\cdot$ k/k_{ref}=2.30 exp(+413/T)						
76 ART/LEE	393-518	4.1(+11)	0	4870±55	0.9	1.1
$CD_3 \cdot + (CH_3)_2CO \rightarrow CD_4 + \cdot CD_2COCH_3$						
METHYL-d_3 FREE RADICAL + 2-PROPANONE-1,1,1,3,3,3-d_6						
72 SHA/WES REACTION ORDER: 2	398-718	-	-	-		
NOTE: k_{ref}: $CD_3 \cdot + HD \rightarrow CD_3H + D\cdot$ k/k_{ref}: 1.47 exp(-340/T)						
$CH_3 \cdot + (CH_3)_2CO \rightarrow (CH_3)_3CO\cdot$						
METHYL FREE RADICAL + 2-PROPANONE						
71 CAD/TRO REACTION ORDER: 2	373-423	1.7(+9)	0	6770±900	0.1	10.0
NOTE: $k_1 = k_{-1}$ K						
$CH_3 \cdot + cy\text{-}(CH_3)CHCH_2S \rightarrow CH_4 + cy\text{-}[(CH_2\cdot)CH{=}CH_2]S$						
METHYL FREE RADICAL + THIIRANE, METHYL-						
72 JAK/AHM REACTION ORDER: 2	339-435	1.0(+11)	0	4160±440	0.3	3.0
NOTE: EVALUATION						
$CH_3 \cdot + cy\text{-}(CH_2)CHCH_2S \rightarrow CH_3S\cdot + CH_3CH{=}CH_2$						
METHYL FREE RADICAL + THIIRANE, METHYL-						
72 JAK/AHM REACTION ORDER: 2	339-435	2.1(+11)	0	3750±830	0.1	8.3
NOTE: EVALUATION						
$CH_3 \cdot + CH_2{=}CHCH{=}CH_2 \rightarrow CH_2{=}CHCH(CH_3)CH_2\cdot$						
METHYL FREE RADICAL + 1,3-BUTADIENE						
74 CAR/TAR REACTION ORDER: 2	298	-	-	6050±500		
$CH_3 \cdot + trans\text{-}CH_3CH{=}CHCH_3 \rightarrow CH_4 + \cdot CH_2CH{=}CHCH_3$						
METHYL FREE RADICAL + trans-2-BUTENE						
73 RIC/MAR REACTION ORDER: 2 k/k_{ref}: ~8.0	768	-	-	-		
NOTE: k_{ref}: $CH_3 \cdot + CH_3CHO \rightarrow CH_4 + CH_3C(O)\cdot$						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F

CH_3 • $.CH_2C(CH_3)=CH_2$ → $CH_3CH_2C(CH_3)=CH_2$						
METHYL FREE RADICAL • 2-PROPENYL, 2-METHYL-, FREE RADICAL						
73 TSA REACTION ORDER: 2	1020	2.0(+13)	-	-		

CH_3 • $(CH_3)_2C=CH_2$ → CH_4 • $.CH_2C(CH_3)=CH_2$						
METHYL FREE RADICAL • 1-PROPENE, 2-METHYL-						
73 KEN/MAR REACTION ORDER: 2	770-855	1.1(+14)	0	8860		
NOTE: EVALUATION						
73 KIC/MAR k/k_{ref}: ~5.0	768	-	-	-		
NOTE: k_{ref}: CH_3• • CH_3CHO → CH_4 • $CH_3C(O)$•.						
76 BEA/WES2	1055-1325	6.8(+13)	0	9860	0.6	1.6

CH_3 • $(CH_3)_3C$• → $(CH_3)_4C$						
METHYL FREE RADICAL • ETHYL, 1,1-DIMETHYL-, FREE RADICAL						
72 MAR/PUR REACTION ORDER: 2	756-845	7.9(+12)	0	0		
NOTE: EVALUATION						

CH_3 • $CH_3CH_2CH_2CH_3$ → CH_4 • $CH_3CH_2CH_2CH_2$•						
METHYL FREE RADICAL • BUTANE						
75 YAM REACTION ORDER: 2	980-1060	5.0(+11)	0	6845		
NOTE: EVALUATION						

CH_3 • $CH_3CH_2CH_2CH_3$ → CH_4 • $CH_3CH(.)CH_2CH_3$						
METHYL FREE RADICAL • BUTANE						
75 YAM REACTION ORDER: 2	980-1060	4.3(+11)	0	5285		
NOTE: EVALUATION						

CH_3 • $CH_3CH_2CH_2CH_3$ → CH_4 • $CH_3CH_2CH(.)CH_3$ • $CH_3CH_2CH_2CH_2$•						
METHYL FREE RADICAL • BUTANE						
75 YAM REACTION ORDER: 2	980-1060	3.2(+12)	0	5585±1000	0.4	2.6
72 PAC/PUR1	869-952	2.5(+14)	0	9160±1600	0.2	6.3
74 BUG/MAR	895-981	3.2(+13)	0	7430±1800	0.1	7.9
76 YAM/NAM	980-1060	3.2(+12)	0	5590±1000	0.4	2.6

CH_3 • $(CH_3)_3CH$ → CH_4 • $(CH_3)_2CHCH_2$•						
METHYL FREE RADICAL • PROPANE, 2-METHYL-						
73 KEN/MAR REACTION ORDER: 2	770-855	1.4(+13)	0	8200		
NOTE: EVALUATION						

CH_3 • $(CH_3)_3CH$ → CH_4 • $(CH_3)_3C$•						
METHYL FREE RADICAL • PROPANE, 2-METHYL-						
73 KEN/MAR REACTION ORDER: 2	770-855	3.2(+12)	0	6490		
NOTE: EVALUATION						

CH_3 • $CD_3COCOCD_3$ → CD_3 • $CH_3COCOCD_3$						
METHYL FREE RADICAL • 2,3-BUTANEDIONE-1,1,1,4,4,4-d_6						
77 SCH/KNO REACTION ORDER: 2	524-565	-	-	-	0.4	2.5
NOTE: k_{ref}: CH_3 • $CD_3COCOCD_3$ → $CD_3C(O)$• • CH_3COCD_3						
k/k_{ref}: 3.16exp(-3120±450/T)						

CH_3 • $CH_3COCOCH_3$ → CH_4 • $.CH_2COCOCH_3$						
METHYL FREE RADICAL • 2,3-BUTANEDIONE						
73 KNO/SCH REACTION ORDER: 2	240-277	3.2(+11)	0	4180		
NOTE: EVALUATION						
75 SCH/PLA	822-905	7.9(+11)	0	4730		

CH_3 • $CH_3COCOCH_3$ → CH_4 • $.CH_2COCOCH_3$						
METHYL FREE RADICAL • 2,3-BUTANEDIONE						
77 SCH/KNO REACTION ORDER: 2	524-565	-	-	-	0.3	3.2
NOTE: k_{ref}: CH_3 • $CD_3COCOCD_3$ → CH_3D • $.CD_2COCOCD_3$						
k/k_{ref}: 3.16exp(+300±430/T)						

CD_3 • $CH_3COCOCH_3$ → CD_3H • $.CH_2COCOCH_3$						
METHYL-d_3 FREE RADICAL • 2,3-BUTANEDIONE						
77 SCH/KNO REACTION ORDER: 2	524-565	-	-	-	0.8	1.3
NOTE: k_{ref}: CD_3 • $CD_2HCOCOCD_3$ → CD_3H • $.CD_2COCOCD_3$						
k/k_{ref}: 1.58exp(+900±400/T)						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
$CD_3 \cdot + CD_3COCOCD_3 \rightarrow CD_4 + \cdot CD_2COCOCD_3$						
METHYL-d_3 FREE RADICAL + 2,3-BUTANEDIONE-1,1,1,4,4,4-d_6						
77 SCH/KNO REACTION ORDER: 2	660-685	-	-	-	0.8	1.3
NOTE: k_{ref}: $CD_3 \cdot + CD_2HCOCOCD_3 \rightarrow CD_3H + \cdot CD_2COCOCD_3$						
k/k_{ref}: 4.0exp(-300±100/T)						
NOTE: k_{ref}: $CD_3 \cdot + CD_3COCOCD_3 \rightarrow CD_3C(O)\cdot + CD_3COCD_3$	660-685	-	-	-	0.6	1.6
k/k_{ref}: 10.0exp(-1360±300/T)						

$CH_3 \cdot + CH_3COCOCH_3 \rightarrow CH_3C(O)\cdot + (CH_3)_2CO$						
METHYL FREE RADICAL + 2,3-BUTANEDIONE						
73 KNO/SCH REACTION ORDER: 2	240-277	2.5(+10)	0	3220		
NOTE: EVALUATION						
75 SCH/PLA	822-905	1.6(+11)	0	4330		

$CH_3 \cdot + CD_3COCOCD_3 \rightarrow CD_3C(O)\cdot + CH_3COCD_3$						
METHYL FREE RADICAL + 2,3-BUTANEDIONE-1,1,1,4,4,4-d_6						
77 SCH/KNO REACTION ORDER: 2	524-565	-	-	-	0.4	2.5
NOTE: k_{ref}: $CD_3 \cdot + CD_3COCOCD_3 \rightarrow CD_3C(O)\cdot + CD_3COCD_3$						
k/k_{ref}: 0.5exp(-600±400/T)						

$CD_3 \cdot + CD_2HCOCOCD_3 \rightarrow CD_2HC(O)\cdot + (CD_3)_2CO$						
METHYL-d_3 FREE RADICAL + 2,3-BUTANEDIONE-1,1,1,4,4-d_5						
77 SCH/KNO REACTION ORDER: 2	660-685	-	-	-	0.6	1.6
NOTE: k_{ref}: $CD_3 \cdot + CD_3COCOCD_3 \rightarrow CD_3C(O)\cdot + CD_3COCD_3$						
k/k_{ref}: 0.2exp(+900±150/T)						

$CH_3\cdot + CD_3COCD_2CH_3 \rightarrow CH_3D + \cdot CD_2COCD_2CH_3 + CD_3COCD(\cdot)CH_3$						
METHYL FREE RADICAL + 2-BUTANONE-1,1,1,3,3-d_5						
74 SCH/DRE REACTION ORDER: 2	523-563	1.3(+11)	0	4505±275	0.6	1.6

$CH_3 \cdot + CH_3CH_2CH_2CH{=}CH_2 \rightarrow CH_3CH_2CH_2CH(\cdot)CH_2CH_3$						
$+ CH_3CH_2CH_2CH(CH_3)CH_2\cdot$						
METHYL FREE RADICAL + 1-PENTENE						
74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 1.0	923	-	-	-		
NOTE: k_{ref}: $CH_3 \cdot + CH_3CH_2CH_2CH{=}CH_2 \rightarrow CH_4 + CH_3CH_2CH(\cdot)CH{=}CH_2$						
$+ \cdot CH_2CH_2CH_2CH{=}CH_2 + CH_3CH(\cdot)CH_2CH{=}CH_2$						

$CH_3 \cdot + CH_3CH_2CH{=}CHCH_3 \rightarrow CH_3CH_2CH(\cdot)CH(CH_3)_2$						
$+ CH_3CH_2CH(CH_3)CH(\cdot)CH_3$						
METHYL FREE RADICAL + 2-PENTENE						
74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 0.2	923	-	-	-		
NOTE: k_{ref}: $CH_3 \cdot + CH_3CH_2CH{=}CHCH_3 \rightarrow CH_4 + CH_3CH_2CH{=}CHCH_2\cdot$						
$+ CH_3CH(\cdot)CH{=}CHCH_3 + \cdot CH_2CH_2CH{=}CHCH_3$						

$CH_3\cdot + CH_3CH_2CH_2CH_2CH_2\cdot \rightarrow CH_4 + CH_3CH_2CH_2CH{=}CH_2$						
METHYL FREE RADICAL + PENTYL FREE RADICAL						
71 WAT REACTION ORDER: 2 k/k_{ref}: ≥0.33	298	-	-	-		
NOTE: LOWER LIMIT ESTIMATE.						
k_{ref}: $CH_3 \cdot + CH_3CH_2CH_2CH_2CH_2\cdot \rightarrow CH_3(CH_2)_4CH_3$						

$CH_3 \cdot + (CH_3)_4C \rightarrow CH_4 + (CH_3)_3CCH_2\cdot$						
METHYL FREE RADICAL + PROPANE, 2,2-DIMETHYL-						
71 MCN/KEL REACTION ORDER: 2 k/k_{ref}: 6.7	576-706	-	-	-	0.9	1.1
NOTE: k_{ref}: $CH_3 \cdot + CD_2{=}C{=}O \rightarrow CH_3D + \cdot CD{=}C{=}O$						
73 PAC	793-953	3.2(+13)	0	8060±240	0.8	1.3
76 ERA/WEST	1030-1300	6.6(+14)	0	10825	0.6	1.7

$CH_3 \cdot + CH_3COCOCH_2CH_3 \rightarrow CH_4 + CH_3COCOCH(\cdot)CH_3$						
METHYL FREE RADICAL + 2,3-PENTANEDIONE						
74 SCH/KNO REACTION ORDER: 2 k/k_{ref}: 4.5	362-398	-	-	-		
NOTE: k_{ref}: $CH_3 \cdot + CH_3COCOCH_2CH_3 \rightarrow CH_4 + \cdot CH_2COCOCH_2CH_3$						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
$CH_3 \cdot + CH_3COCOCH_2CH_3 \rightarrow CH_4 + CH_3COCOCH_2CH_2\cdot$						
METHYL FREE RADICAL + 2,3-PENTANEDIONE						
74 SCH/KNO REACTION ORDER: 2 k/k_{ref}: 0.3	362-398	-	-	-		
NOTE: k_{ref}: $CH_3\cdot + CH_3COCOCH_2CH_3 \rightarrow CH_4 + \cdot CH_2COCOCH_2CH_3$						
$CH_3 \cdot + CH_3COCOCH_2CH_3 \rightarrow CH_4 + \cdot CH_2COCOCH_2CH_3$ + $CH_3COCOCH(\cdot)CH_3$ + $CH_3COCOCH_2CH_2\cdot$						
METHYL FREE RADICAL + 2,3-PENTANEDIONE						
74 SCH/KNO REACTION ORDER: 2	362-398	-	-	-	0.4	2.5
NOTE: k_{ref}: $CH_3\cdot + CH_3COCOCH_2CH_3 \rightarrow CH_3COCH_3 + CH_3CH_2C(O)$ k/k_{ref}: 25.12exp(-150±120/T)						
$CH_3 \cdot + CH_3CD_2COCD_2CH_3 \rightarrow CH_4 + \cdot CH_2CD_2COCD_2CH_3$						
METHYL FREE RADICAL + 3-PENTANONE-2,2,4,4-d_4						
72 SCH/WOL REACTION ORDER: 2	513-572	2.0(+11)	0	5540±450	0.3	3.2
$CH_3 \cdot + CH_3CD_2COCD_2CH_3 \rightarrow CH_3D + CH_3CD(\cdot)COCD_2CH_3$						
METHYL FREE RADICAL + 3-PROPANONE-2,2,4,4-d_4						
72 SCH/WOL REACTION ORDER: 2	513-572	1.3(+11)	0	4180±200	0.6	1.8
$CH_3 \cdot + CH_3CH_2CH_2C(CH_3)=CH_2 \rightarrow CH_3CH_2CH_2C(\cdot)(CH_3)CH_2CH_3$						
METHYL FREE RADICAL + 1-PENTENE, 2-METHYL-						
74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 5.0	923	-	-	-		
NOTE: k_{ref}: $CH_3\cdot + CH_3CH_2CH_2C(CH_3)=CH_2 \rightarrow CH_4 + CH_3CH_2CH_2C(CH_3)_2CH_2\cdot$						
$CH_3 \cdot + CH_3CH_2CH_2C(CH_3)=CH_2 \rightarrow CH_3CH_2CH_2C(\cdot)(CH_3)CH_2CH_3$ + $CH_3CH_2CH_2C(CH_3)_2CH_2\cdot$						
METHYL FREE RADICAL + 1-PENTENE, 2-METHYL-						
74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 0.6	923	-	-	-		
NOTE: k_{ref}: $CH_3\cdot + CH_3CH_2CH_2C(CH_3)=CH_2 \rightarrow CH_4$ + $CH_3CH_2CH(\cdot)C(CH_3)=CH_2$ + $\cdot CH_2CH_2CH_2C(CH_3)=CH_2$ + $CH_3CH_2CH_2C(CH_2\cdot)=CH_2$						
$CH_3 \cdot + CH_3CH_2CH=C(CH_3)_2 \rightarrow CH_3CH_2CH(CH_3)C(\cdot)(CH_3)_2$						
METHYL FREE RADICAL + 2-PENTENE, 2-METHYL-						
74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 1.0	923	-	-	-		
NOTE: $CH_3\cdot + CH_3CH_2CH=C(CH_3)_2 \rightarrow CH_3CH_2CH(\cdot)C(CH_3)_3$						
$CH_3 \cdot + CH_3CH_2CH=C(CH_3)_2 \rightarrow CH_3CH_2CH(CH_3)C(\cdot)(CH_3)_2$ + $CH_3CH_2CH(\cdot)C(CH_3)_3$						
METHYL FREE RADICAL + 2-PENTENE, 2-METHYL-						
74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 0.12	923	-	-	-		
NOTE: k_{ref}: $CH_3\cdot + CH_3CH_2CH=C(CH_3)_2 \rightarrow CH_4 + CH_3CH_2CH=C(CH_3)CH_2\cdot$ + $CH_3CH(\cdot)CH=CH=C(CH_3)_2$						
$CH_3 \cdot + CH_3(CH_2)_4CH_3 \rightarrow CH_4 + [C_6H_{13}\cdot]$						
METHYL FREE RADICAL + HEXANE						
76 YAM REACTION ORDER: 2	973-1088	4.2(+12)	0	5640		
$CH_3 \cdot + CH_3COCH_2CH_2COCH_3 \rightarrow CH_4 + \cdot CH_2COCH_2CH_2COCH_3$ + $CH_3COCH(\cdot)CH_2COCH_3$						
METHYL FREE RADICAL + 2,5-HEXANEDIONE						
75 KNO/SCH REACTION ORDER: 2	515-712	-	-	-		
NOTE: k_{ref}: $CH_3\cdot + CH_3COCH_2CH_2COCH_3 \rightarrow (CH_3)_2CO$ + $\cdot CH_2CH_2COCH_3$ k/k_{ref}: exp(+1630±10/T)						
$CH_4 \rightarrow CH_2 + H$						
METHANE						
72 NAP/SUE REACTION ORDER: 1	1750-2700	3.8(+13)	0	47100		

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
75 CHE/BAC REACTION ORDER: 1	995-1103	2.8(+16)	0	54150		
NOTE: LIMITING HIGH PRESSURE k						
$CH_4 + O \rightarrow CH_3 + OH$						
METHANE + OXYGEN ATOM						
71 AVR/KOLI REACTION ORDER: 2	373-583	3.3(+12)	0	3370±350	0.5	1.5
$CH_4 + O \rightarrow CH_3 + OH$						
METHANE + OXYGEN ATOM						
71 AVR/KOLI REACTION ORDER: 2	373-583	4.2(+13)	0	4630±350	0.5	1.5
75 ERA/BRO	1300-2000	1.9(+14)	0	5900		
77 ROT/JUS	1500-2250	4.1(+14)	0	7030		
$CH_4 + O^*(^1D) \rightarrow CH_3 + OH$						
METHANE + OXYGEN ATOM						
72 GRE REACTION ORDER: 2 k/k_{ref}: 2.28	298	-	-	-		
NOTE: k_{ref}: $N_2O + O^*(^1D) \rightarrow$ products:						
FOR COMPLETELY THERMALIZED $O^*(^1D)$, k/k_{ref}: 1.35±0.3						
72 GRE/HEI k/k_{ref}: 2.28	298	-	-	-	0.9	1.1
NOTE: $k_{ref} = k_2 + k_3$, WHERE k_2: $N_2O + O^*(^1D) \rightarrow N_2 + O_2$						
AND k_3: $N_2O + O^*(^1D) \rightarrow NO + NO$						
k/k_{ref}: 1.35	298	-	-	-	0.8	1.2
NOTE: $k_{ref} = k_2 + k_3$, WHERE $k_2 = N_2O + O^*(^1D) \rightarrow N_2 + O_2$						
AND k_3: $N_2O + O^*(^1D) \rightarrow NO + NO$						
73 HEI/HUS2	300	1.9(+14)	-	-	0.9	1.1
73 HEI/HUS2 REACTION ORDER: 2 k/k_{ref}: 1.41	300	-	-	-		
NOTE: k_{ref}: $N_2O + O^*(^1D) \rightarrow$ products						
75 GAU/SNE k/k_{ref}: 5.1	300	-	-	-	0.8	1.2
NOTE: k_{ref}: $O_2 + O^*(^1D) \rightarrow O_2^*(^1\Sigma_g^+) + O$	300	2.3(+14)	-	-		
NOTE: EVALUATION						
$CH_4 + O^*(^1D) \rightarrow CH_3 + OH + HCHO + H_2$						
METHANE + OXYGEN ATOM						
76 DAV/SAD REACTION ORDER: 2	298	7.8(+13)	-	-	0.8	1.2
77 DAV/SCH	198-357	8.4(+13)	0	0	0.7	1.3
$CH_4 + O^*(^1D) \rightarrow HCHO + H_2$						
METHANE + OXYGEN ATOM						
76 JAY/SIM REACTION ORDER: 2 k/k_{ref}: 0.11	298	-	-	-	0.8	1.2
NOTE: k_{ref}: $CH_4 + O^*(^1D) \rightarrow CH_3 + OH$						
$CH_4 + O_3 \rightarrow$ products						
METHANE + OZONE						
73 STE/NIK2 REACTION ORDER: 2	298	7.2(+2)	-	-		
NOTE: UPPER LIMIT k						
$CH_4 + H \rightarrow CH_3 + H_2$						
METHANE + HYDROGEN ATOM						
72 PEE/MAH REACTION ORDER: 2	1600	3.2(+12)	-	-	0.8	1.2
73 CIA/DCVI	300-1800	2.2(+4)	3.0	4400±20	0.9	1.1
75 ROT/JUS	1700-2300	7.2(+14)	0	7600		
$CH_4 + OH \rightarrow CH_3 + H_2O$						
METHANE + HYDROXYL FREE RADICAL						
72 LEE/MAH REACTION ORDER: 2	1100-1900	3.0(+13)	0	3020		
74 EAV/PIS		1.4(+12)	0	1710±90	0.9	1.1
74 MAK/KAU	290-440	2.3(+12)	0	1840±20	0.9	1.1
75 CVI/PAR	295	3.9(+9)	-	-	0.9	1.1
75 STU/ZEL	300-700	2.8(+12)	0	1860		
76 ZEL/STE	300-900	3.5(+3)	3.08	1010	0.8	1.2
77 HOW/LEVEI	296	5.7(+9)	-	-	0.9	1.1

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	F
76 CEX/DER1 k/k_{ref}: 1.04	298	-	-	-		
NOTE: k_{ref}: H_2 + OH → H + H_2O						
76 CEX/DER	298	4.6(+9)	-	-	0.9	1.1
NOTE: EVALUATION						

CH_4 + OH(v=n) → CH_3 + H_2O						
METHANE + HYDROXYL FREE RADICAL						
77 SPE/END REACTION ORDER: 2	295	1.8(+10)	-	-		
NOTE: UPPER LIMIT k_r						
72 WER/COL	298	8.4(+9)	-	-	0.9	1.1
NOTE: UNREPORTED T ASSUMED TO BE 298 K						

CH_4 + OH + M → CH_3 + H_2O + M						
METHANE + HYDROXYL FREE RADICAL						
75 GOR/MUL1 REACTION ORDER: 2 M: H_2O	381	1.6(+10)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR M: H_2O	416	3.3(+10)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR						

CDH_3 + OH + M → CH_3 + CDH_2 + DHO + H_2O + M						
METHANE-d + HYDROXYL FREE RADICAL						
75 GOR/MUL1 REACTION ORDER: 2 M: H_2O	416	2.2(+10)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR						

CD_2H_2 + OH + M → CD_2H· + CDH_2 + H_2O + DHO + M						
METHANE-d_2 + HYDROXYL FREE RADICAL						
75 GOR/MUL1 REACTION ORDER: 2 M: H_2O	416	1.8(+10)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR						

CD_3H + OH + M → CD_2H + CD_3 + DHO + H_2O + M						
METHANE-d_3 + HYDROXYL FREE RADICAL						
75 GOR/MUL1 REACTION ORDER: 2 M: H_2O	416	6.7(+9)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR						

CD_4 + OH + M → CD_3· + DHO + M						
METHANE-d_4 + HYDROXYL FREE RADICAL						
75 GOR/MUL1 REACTION ORDER: 2 M: H_2O	416	3.0(+9)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR						

CH_4 + $S^*(^1D)$ → CH_3SH						
METHANE + SULFUR ATOM						
72 LIT/DAL REACTION ORDER: 2 k/k_{ref}: 0.076	300	-	-	-		
NOTE: k_{ref}: $CH_2{=}CH_2$ + $S^*(^1D)$ → products						

CH_4 + CH → products						
METHANE + METHYLIDYNE FREE RADICAL						
71 BOS/PER REACTION ORDER: 2	298	2.0(+13)	-	-	0.9	1.1

CH_4 + CN → CH_3 + HCN						
METHANE + CYANOGEN FREE RADICAL						
72 BUL/C002 REACTION ORDER: 2	300-377	1.3(+13)	0	1005±100		
74 SCH/SCH	298-388	3.2(+13)	0	1460		
77 SCH/WAG	259-396	6.0(12)	0	870±300	0.5	1.5

CD_4 + CN → CD_3 + DCN						
METHANE-d_4 + CYANOGEN FREE RADICAL						
72 BUL/C002 REACTION ORDER: 2	300	2.4(+11)	-	-	0.8	1.2
NOTE: CN(0,0) BAND	300	3.5(+11)	-	-	0.9	1.1
NOTE: CN(4,4) BAND						

CH_4 + CN(v=1) → CH_3· + HCN						
METHANE + CYANOGEN FREE RADICAL						
77 SCH/WAG REACTION ORDER: 2	298	7.0(+11)	-	-		

CH_4 + CH≡C· → CH_3 + CH≡CH						

CHEMICAL REACTIONS	T/K	A	B	E/R, (in °K)	k factors f	k factors F
METHANE + ETHYNYL FREE RADICAL						
73 CUL/HUC REACTION ORDER: 2 k/k_{ref}: 0.016	298	-	-	-	0.7	1.3
NOTE: k_{ref}: $CH_3CBr + CH{\equiv}C\cdot \rightarrow Br + CH_3CC{\equiv}CH$						
$CH_4 + CH_3SCH_2\cdot \rightarrow CH_3\cdot + (CH_3)_2S$						
METHANE + METHYL, (METHYLTHIO)-, FREE RADICAL						
76 ART/LEE REACTION ORDER: 2	393-518	6.3(+11)	0	7662		
NOTE: EVALUATION BASED ON k^{-1} AND THERMODYNAMIC DATA						
$CH_4 + M \rightarrow CH_3 + H + M$						
METHANE						
71 HAB/TRO REACTION ORDER: 1 M: Ar	1850-2500	1.3(+15)	0	52300±1000		
NOTE: LIMITING HIGH PRESSURE k						
REACTION ORDER: 2 M: Ar	1850-2500	2.0(+17)	0	44300±1000		
NOTE: LOW PRESSURE k						
75 BOW REACTION ORDER: 2 M: Ar	1900-2400	1.4(+17)	0	44500		
NOTE: INDIRECT MEASUREMENT						
METHANE						
73 VOM2 REACTION ORDER: 2	2000-2700	4.0(+9)	0	31710±2500	0.3	3.2
NOTE: LOW PRESSURE k						
METHANE						
75 GAR/OWE	2000-2700	2.3(+14)	0	32500		
NOTE: H_2, Ne, Ar, Kr						
75 RET/JLS M: Ar	1700-2300	4.7(+17)	0	46900		
77 HEF/PAR M: Ar	2023-2721	2.2(+17)	0	45350		
$\cdot CHO + O \rightarrow CO + OH$						
METHYL, OXO-, FREE RADICAL + OXYGEN ATOM						
73 MAC/THR REACTION ORDER: 2 k/k_{ref}: 0.54	300	-	-	-		
NOTE: k_{ref}: $k_1(\cdot CHO + O \rightarrow CO + OH) + k_2(\cdot CHO + O \rightarrow CO_2 + H)$						
$\cdot CHO + O \rightarrow CO + OH^{\ddagger}(v=9)$						
METHYL, OXO-, FREE RADICAL + OXYGEN ATOM						
76 KRI REACTION ORDER: 2	298	3.6(+12)	-	-		
$\cdot CHO + O \rightarrow CO + OH + CO_2 + H$						
METHYL, OXO-, FREE RADICAL + OXYGEN ATOM						
74 WAS/MAR REACTION ORDER: 2	297	1.3(+14)	-	-	0.8	1.2
$\cdot CHO + O \rightarrow CO_2 + H$						
METHYL, OXO-, FREE RADICAL + OXYGEN ATOM						
72 WES/DEH3 REACTION ORDER: 2 k/k_{ref}: 0.73	298	-	-	-	0.8	1.2
NOTE: k_{ref}: $\cdot CHO + O \rightarrow CO + OH$						
73 MAC/THR k/k_{ref}: 0.46	300	-	-	-		
NOTE: k_{ref}: $k_1(\cdot CHO + O \rightarrow CO + OH) + k_2(\cdot CHO + O \rightarrow CO_2 + H)$						
$\cdot CHO + O_2 \rightarrow CO + HO_2\cdot$						
METHYL, OXO-, FREE RADICAL + OXYGEN MOLECULE						
72 FEE/MAH REACTION ORDER: 2	1600	3.0(+13)	-	-		
NOTE: TENTative k						
74 WAS/MAR	297	3.4(+12)	-	-	0.8	1.2
77 SHI/EBA	298	5.1(+12)	-	-	0.9	1.1
$\cdot CHO + O_2 \rightarrow CO_2 + OH$						
METHYL, OXO-, FREE RADICAL + OXYGEN MOLECULE						
76 OSI/HEI REACTION ORDER: 2 k/k_{ref}: ≤0.19	296	-	-	-		
NOTE: k_{ref}: $\cdot CHO + O_2 \rightarrow CO + HO_2\cdot$ UPPER LIMIT RATIO						
77 OSI k/k_{ref}: ≤0.19	296	-	-	-		
NOTE: k_{ref}: $\cdot CHO + O_2 \rightarrow CO + HO_2\cdot$ UPPER LIMIT RATIO						
$\cdot CHO + O_2 \rightarrow HCO_3$						
METHYL, OXO-, FREE RADICAL + OXYGEN MOLECULE						
76 OSI/HEI REACTION ORDER: 2 k/k_{ref}: 5.0	-	-	-	0.8	1.2	
NOTE: k_{ref}: $\cdot CHO + O_2 \rightarrow CO + HO_2$						
$\cdot CHO + O_2(+M) \rightarrow HCO_3(+M)$						
METHYL, OXO-, FREE RADICAL + OXYGEN MOLECULE						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
77 CSI REACTION ORDER: 2 k/k_{ref}: 5.0	-	-	-	0.8	1.2	
NOTE: k_{ref}: $\cdot CHO + O_2 \rightarrow CO + HO_2\cdot$						

$\cdot CHO + H \rightarrow CO + H_2$						
METHYL, OXO-, FREE RADICAL + HYDROGEN ATOM						
73 MAC/THR REACTION ORDER: 2 k/k_{ref}: 4.0	-	-	-			
NOTE: k_{ref}: $k_1(^1CHO\cdot + O \rightarrow CO + OH) + k_2(\cdot CHO + O \rightarrow CO_2 + H)$						

$\cdot CHO + M \rightarrow CO + H + M$						
METHYL, OXO-, FREE RADICAL						
76 TSU REACTION ORDER: 2 M: Ar	1500-2000	1.0(+14)	0	11100		

$\cdot CHO + NO \rightarrow CO + HNO$						
METHYL, OXO-, FREE RADICAL + NITROGEN OXIDE(NO)						
77 SHI/EBA REACTION ORDER: 2	298	3.4(+12)	-	-	0.8	1.2

$HCHO + O \rightarrow \cdot CHO + OH$						
FORMALDEHYDE + OXYGEN ATOM						
73 MAC/THR REACTION ORDER: 2	300	9.0(+10)	-	-	0.9	1.1

$HCHO + O \rightarrow$ products						
FORMALLEHYDE + OXYGEN ATOM						
74 CAD/WIC REACTION ORDER: 2		3.7(+12)	0	1200		
NOTE: UNSPECIFIED T RANGE NEAR 300 K.						

$HCHO + O_2 \rightarrow \cdot CHO + HO_2$						
FORMALDEHYDE + OXYGEN MOLECULE						
71 EAL/LAN REACTION ORDER: 2	713	1.3(+1)	-	-		
74 EAL/FUL	713-816	2.0(+13)	0	19580±750		

$HCHO + O_3 \rightarrow OH + HCHO_3 + HO_2\cdot + HCO_2$						
FORMALDEHYDE + OZONE						
76 BRA/HEI REACTION ORDER: 2	298	1.3	-	-		

$HCHO + H \rightarrow \cdot CHO + H_2$						
FORMALDEHYDE + HYDROGEN ATOM						
72 KID/DAV REACTION ORDER: 2	297	3.3(+10)	-	-	0.9	1.1
72 WES/DEH2	297-652	1.4(+13)	0	1900		
71 MOK/NIKI	298	8.4(+12)	-	-	0.7	1.3
71 MOR/NIK2 k/k_{ref}: 0.9	300	-	-	-		
NOTE: k_{ref}: $CH_3CH\cdot CH_2 + OH \rightarrow$ products						
72 PEE/MAH	1400-1800	2.3(+13)	0	0		
NOTE: TENTATIVE k.						
77 VAN/VAN	300-1600	3.9(+13)	0	705		
NOTE: EVALUATION						

$HCHO + HO_2 \rightarrow \cdot CHO + H_2O_2$						
FORMALDEHYDE + HYDROPEROXYL FREE RADICAL						
71 EAL/LAN REACTION ORDER: 2	713	1.4(+9)	-	-		
72 EAL/FUL	773	9.6(+8)	-	-		
NOTE: EVALUATION						

$HCHO + N \rightarrow$ products						
FORMALDEHYDE + NITROGEN ATOM						
71 WHI REACTION ORDER: 2	323-643	2.6(+12)	0	1810±300		

$HCHO + CH_3C(O)OO\cdot \rightarrow \cdot CHO + CH_3C(O)OOH$						
FORMALDEHYDE + ETHYLDIOXY, 1-OXO, FREE RADICAL						
74 DIX/SKI2 REACTION ORDER: 2 k/k_{ref}: 2.4	119-188	-	-	-		
NOTE: k_{ref}: $CH_3CHO + CH_3C(O)OO\cdot \rightarrow CH_2C(O)\cdot + CH_3C(O)OOH$						

$HCHO + M \rightarrow CO + H_2 + M$						
FORMALDEHYDE						
73 PEE/MAH1 REACTION ORDER: 2	1100-1900	2.1(+16)	0	17600±2500		
NOTE: M: C_2, H_2O, CO_2						
77 MIY/MOR	500-2090	2.1(+15)	0	17620		

$HCHO + M \rightarrow \cdot CHO + H + M$						
FORMALDEHYDE						
75 BEW REACTION ORDER: 2 M: Ar	1900-2400	1.0(+14)	0	18500		
NOTE: INDIRECT MEASUREMENT						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	F

$CH_3O.^*$ → HCHO + H						
METHOXY FREE RADICAL						
73 WIE/HEI REACTION ORDER: 1 k/k_{ref}: 1.94	298	-	-	-		
NOTE: k_{ref}: $CH_3O^*.$ + M → $CH_3O.$ + M (M=N_2)						

$CH_3O.$ + O_2 → HCHO + HO_2						
METHOXY FREE RADICAL + OXYGEN MOLECULE						
73 WIE/VIL REACTION ORDER: 2	298	-	-	-		
NOTE: k_{ref}: $CH_3O.$ + NO → HCHO + HNO + CH_3ONO						
k/k_{ref}=4.7X10^{-5}						
75 ALC/MIL	373	1.2(+9)	-	-		
NOTE: OPTIMIZATION						
75 GLA	296	-	-	-	0.9	1.1
NOTE: k_{ref}: $CH_3O.$ + NO → CH_3ONO						
k/k_{ref}=5.2X10^{-5}						
75 GLA	296	-	-	-	0.9	1.1
NOTE: k_{ref}: $CH_3O.$ + NO_2 → CH_3ONO_2						
k/k_{ref}<7.4X10^{-5}. UPPER LIMIT RATIO						
75 WIA/MEA	298	2.6(+9)	-	-	0.7	1.3
NOTE: EVALUATION						
75 MEN/GOL	300	3.5(+8)	-	-		
77 LAR/BEN	396-442	3.2(+11)	0	2000±1400	0.1	32

$CH_3O.$ + O_3 → products						
METHOXY FREE RADICAL + OZONE						
75 SIM/HEI REACTION ORDER: 2	298	1.2(+9)	-	-		
NOTE: UPPER LIMIT k						

$CH_3O.$ + H → CH_3 + OH						
METHOXY FREE RADICAL + HYDROGEN ATOM						
77 MCC/SLE REACTION ORDER: 2 k/k_{ref}: 0.69	223-398	-	-	-	0	2.0
NOTE: k_{ref}: $CH_3O.$ + H → HCHO + H_2 + CH_3 + OH						
(MOST PROBABLE RATIO)						

$CH_3O.$ + H → HCHO + H_2						
METHOXY FREE RADICAL + HYDROGEN ATOM						
77 MCC/SLE REACTION ORDER: 2 k/k_{ref}: 0.31	223-398	-	-	-	0.5	2.0
NOTE: k_{ref}: $CH_3O.$ + H → HCHO + H_2 + CH_3 + OH						
(MOST PROBABLE RATIO)						

$CH_3O.$ + NO → HCHO + HNO						
METHOXY FREE RADICAL + NITROGEN OXIDE(NO)						
73 WIE/VIL REACTION ORDER: 2 k/k_{ref}: 0.145	298	-	-	-		
NOTE: k_{ref}: $CH_3O.$ + NO → HCHO + HNO + CH_3ONO						
73 WIE/HEI k/k_{ref}: 0.145	298-423	-	-	-		
NOTE: k_{ref}: $CH_3O.$ + NO → HCHO + HNO + CH_3ONO^*						
75 BAT/MCC	393-473	4.0(+12)	0	0±500	0.3	3.2
75 GLA k/k_{ref}: 0.13	296	-	-	-		
NOTE: k_{ref}: $CH_3O.$ + NO → HCHO + HNO + CH_3ONO						
77 BAT/MIL3	440-473	2.0(+12)	0	0±500		
NOTE: EVALUATION						

$CH_3O.$ + NO → HCHO + HNO + CH_3ONO						
METHOXY FREE RADICAL + NITROGEN OXIDE(NO)						
73 WIE/VIL REACTION ORDER: 2 k/k_{ref}: 1.2	298	-	-	-		
NOTE: k_{ref}: $CH_3O.$ + NO_2 → HCHO + HONO + CH_3ONO_2						

$CH_3O.$ + NO → CH_3ONO						
METHOXY FREE RADICAL + NITROGEN OXIDE(NO)						
74 BAT/MIL REACTION ORDER: 2	393-473	1.3(+13)	0	0±500	0.4	2.5
75 BAT/MCC	393-473	1.3(+13)	0	0±500	0.4	2.5
77 BAT/MIL3	440-473	1.3(+13)	0	0±500	0.3	4.0

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
NOTE: EVALUATION						

$CH_3O\cdot + NO_2 \rightarrow HCHO + HONO$						
METHOXY FREE RADICAL + NITROGEN OXIDE(NO_2)						
77 EAR/BEN REACTION ORDER: 2 k/k_{ref}: 0.30	396-442	-	-	-	0.8	1.2
NOTE: k_{ref}: $CH_3O\cdot + NO_2 (+M) \rightarrow CH_3ONO_2 (+M)$						
77 EAT/MIL3	440-473	5.0(+11)	0	0		
NOTE: EVALUATION						

$CH_3O\cdot + NO_2 \rightarrow CH_3ONO_2$						
METHOXY FREE RADICAL + NITROGEN OXIDE(NO_2)						
73 WIE/VIL REACTION ORDER: 2 k/k_{ref}: 0.92	298	-	-	-		
NOTE: k_{ref}: $CH_3O\cdot + NO_2 \rightarrow HCHO + HONO + CH_3ONO_2$						
77 EAT/MIL3	440-473	5.0(+12)	0	0		
NOTE: EVALUATION						

$CH_3O\cdot + NO_2(+M) \rightarrow CH_3ONO_2(+M)$						
METHOXY FREE RADICAL + NITROGEN OXIDE(NO_2)						
77 EAR/BEN REACTION ORDER: 2	396-442	6.3(+12)	0	0	0.3	3.2
NOTE: EVALUATION						

$CH_3O\cdot + CO \rightarrow CH_3 + CO_2$						
METHOXY FREE RADICAL + CARBON MONOXIDE						
73 LIS/MAS REACTION ORDER: 2	396-426	1.6(+13)	0	5940±750	0.3	4.0

$CH_3O\cdot + CO \rightarrow$ products						
METHOXY FREE RADICAL + CARBON MONOXIDE						
73 WIE/HEI REACTION ORDER: 2	298-423	-	-	-		
NOTE: k_{ref}: $CH_3O\cdot + NO \rightarrow HCHO + HNO + CH_3ONO^{*}$						
k/k_{ref}: $\leq 5.10^{-4}$						

$CH_3O\cdot + CH_3O\cdot \rightarrow HCHO + CH_3OH$						
METHOXY FREE RADICAL						
73 SFO/HEI REACTION ORDER: 2 k/k_{ref}: 8.9	298	-	-	-	0.7	1.3
NOTE: k_{ref}: $CH_3O\cdot + CH_3O\cdot \rightarrow CH_3OOCH_3$						

$CH_3O\cdot + CH_3O\cdot \rightarrow CH_3OOCH_3$						
METHOXY FREE RADICAL						
76 EAT/MCCI REACTION ORDER: 2	383-413	2.0(+13)	0	0	0.3	3.2
NOTE: EVALUATION						

$CH_3O\cdot + CH_2{=}CH_2 \rightarrow CH_3OCH_2CH_2\cdot$						
METHOXY FREE RADICAL + ETHENE						
75 LIS/NAS REACTION ORDER: 2	300	3.7(+7)	-	-		

$CH_3O\cdot + CH_3CHO \rightarrow CH_3OH + CH_3C(O)\cdot$						
METHOXY FREE RADICAL + ACETALDEHYDE						
75 WIA/MEA REACTION ORDER: 2 k/k_{ref}: 15	298	-	-	-	0.7	1.3
NOTE: k_{ref}: $CH_3O\cdot + O_2 \rightarrow HCHO + HO_2$						

$CH_3O\cdot + CH_3OOCH_3 \rightarrow CH_3OH + HCHO + CH_3O\cdot$						
METHOXY FREE RADICAL + PEROXIDE, DIMETHYL-						
77 EAR/BEN REACTION ORDER: 2	391-432	5.0(+7)	0	0		
NOTE: GIVEN WITH CAUTION						

$CH_3O\cdot + (CH_3)_3C\cdot \rightarrow (CH_3)_3COCH_3$						
METHOXY FREE RADICAL + ETHYL, 1,1-DIMETHYL-, FREE RADICAL						
76 BAT/MCCI REACTION ORDER: 2	383-413	5.0(+12)	0	0		
NOTE: EVALUATION						

$CH_3O\cdot + (CH_3)_2CHCH(CH_3)_2 \rightarrow CH_3OH + (CH_3)_2CHC(\cdot)(CH_3)_2$						
METHOXY FREE RADICAL + BUTANE, 2,3-DIMETHYL-						
75 AIC/MIL REACTION ORDER: 2	373	4.0(+8)	-	-		
NOTE: OPTIMIZATION						

$CH_3O_2\cdot + O_2 \rightarrow$ products						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	F
METHYLDIOXY FREE RADICAL + OZONE 75 SIM/HEI — REACTION ORDER: 2 NOTE: UPPER LIMIT k	298	<1.4(+7)	-	-		
$CH_3O_2\cdot + NO \rightarrow CH_3O\cdot + NO_2$ METHYLDIOXY FREE RADICAL + NITROGEN OXIDE(NO) 74 SIM/BEI3 — REACTION ORDER: 2 k/k_{ref}: 2.2	298	-	-	-		
NOTE: k_{ref}: $CH_3O_2\cdot + NO_2 \rightarrow$ products 76 CEX/DER2	298	7.2(+11)	-	-		
NOTE: LOWER LIMIT ESTIMATE						
$CH_3O_2\cdot + NO \rightarrow CH_3O_2NO$ METHYLDIOXY FREE RADICAL + NITROGEN OXIDE(NO) 73 SPI/VIL — REACTION ORDER: 2 k/k_{ref}: 0.6	298	-	-	-	0.8	1.2
NOTE: k_{ref}: $CH_3O_2\cdot + NO \rightarrow HCHO + HONO + CH_3O_2NO$						
$CH_3O_2\cdot + NO_2 \rightarrow CH_3O_2NO_2$ METHYLDIOXY FREE RADICAL + NITROGEN OXIDE(NO_2) 73 SPI/VIL — REACTION ORDER: 2 k/k_{ref}: 0.75	298	-	-	-	0.9	1.1
NOTE: k_{ref}: $CH_3O_2\cdot + NO_2 \rightarrow HCHO + HONO_2 + CH_3O_2NO_2$						
$CH_3O_2\cdot + NO_2 \rightarrow$ products METHYLDIOXY FREE RADICAL + NITROGEN OXIDE(NO_2) 76 CEX/DER2 — REACTION ORDER: 2 k/k_{ref}: 0.05	298	-	-	-		
NOTE: APPROXIMATE RATIO, k_{ref}: $CH_3O_2\cdot + NO \rightarrow CH_3O\cdot + NO_2$						
$CH_3O_2\cdot + CH_3\cdot \rightarrow CH_3O\cdot + CH_3O\cdot$ METHYLDIOXY FREE RADICAL + METHYL FREE RADICAL 77 PAR — REACTION ORDER: 2	298	3.6(+13)	-	-	0.8	1.2
$CH_3O_2\cdot + CH_3O_2\cdot \rightarrow HCHO + CH_3OH + O_2$ METHYLDIOXY FREE RADICAL 75 PAR — REACTION ORDER: 2 NOTE: UNREPORTED T ASSUMED TO BE 298	298	1.5(+11)	-	-	0.9	1.1
$CH_3O_2\cdot + CH_3O_2\cdot \rightarrow CH_3O\cdot + CH_3O\cdot + O_2$ METHYLDIOXY FREE RADICAL 75 PAR — REACTION ORDER: 2 NOTE: UNREPORTED T ASSUMED TO BE 298	298	8.7(+10)	-	-	0.9	1.1
75 WEA/MEA — k/k_{ref}: 0.43	298	-	-	-		
NOTE: k_{ref}: $CH_3O_2\cdot + CH_3O_2\cdot \rightarrow$ products 75 AIC/MIL	373	2.3(+11)	-	-		
NOTE: OPTIMIZATION 77 PAR	298	9.6(+10)	-	-	0.7	1.3
$CH_3O_2\cdot + CH_3O_2\cdot \rightarrow CH_3OH + HCHO + O_2$ METHYLDIOXY FREE RADICAL 75 WEA/MEA — REACTION ORDER: 2 k/k_{ref}: 0.50	298	-	-	-		
NOTE: k_{ref}: $CH_3O_2\cdot + CH_3O_2\cdot \rightarrow$ products 75 AIC/MIL	373	2.4(+11)	-	-		
NOTE: OPTIMIZATION						
$CH_3O_2\cdot + CH_3O_2\cdot \rightarrow CH_3OOCH_3 + O_2$ METHYLDIOXY FREE RADICAL 75 WEA/MEA — REACTION ORDER: 2 k/k_{ref}: 0.07	298	-	-	-		
NOTE: k_{ref}: $CH_3O_2\cdot + CH_3O_2\cdot \rightarrow$ products						
$CH_3O_2\cdot + CH_3O_2\cdot \rightarrow CH_3OCH_3 + CH_3OH + HCHO + O_2$ METHYLDIOXY FREE RADICAL 77 PAR — REACTION ORDER: 2	298	1.8(+11)	-	-	0.7	1.3
$CH_3O_2\cdot + CH_3O_2\cdot \rightarrow$ products METHYLDIOXY FREE RADICAL 73 PAR/PAU — REACTION ORDER: 2 77 HOC/GHO	298 295	2.0(+11) 2.3(+11)	- -	- -	0.67 0.9	1.33 1.1

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
$CH_3O_2\cdot + (CH_3)_2CHO_2\cdot \rightarrow HCHO + (CH_3)_2CHOH + O_2$						
METHYLDIOXY FREE RADICAL + ETHYLDIOXY, 1-METHYL-, FREE RADICAL						
75 AIC/MIL REACTION ORDER: 2	373	6.2(+11)	-	-		
NOTE: OPTIMIZATION						
$CH_3O_2\cdot + (CH_3)_3CO_2\cdot \rightarrow HCHO + (CH_3)_3COH + O_2$						
METHYLDIOXY FREE RADICAL + ETHYLDIOXY, 1,1-DIMETHYL-, FREE RADICAL						
75 PAR REACTION ORDER: 2	298	3.0(+10)	-	-	0.5	1.5
NOTE: UNREPORTED T ASSUMED TO BE 298						
$CH_3O_2\cdot + (CH_3)_3CO_2\cdot \rightarrow CH_3O\cdot + (CH_3)_3CO\cdot + O_2$						
METHYLDIOXY FREE RADICAL + ETHYLDIOXY,1,1-DIMETHYL-, FREE RADICAL						
75 PAR REACTION ORDER: 2	298	3.0(+10)	-	-	0.5	1.5
NOTE: UNREPORTED T ASSUMED TO BE 298 K						
$CH_3O_2\cdot + (CH_3)_2CHCH(CH_3)_2 \rightarrow CH_3OOH + (CH_3)_2CHC(.)(CH_3)_2$						
METHYLDIOXY FREE RADICAL + BUTANE, 2,3-DIMETHYL-						
75 AIC/MIL REACTION ORDER: 2	373	1.6(+5)	-	-		
NOTE: OPTIMIZATION						
$CH_3OH + O \rightarrow HCHO + H_2O$						
METHANOL + OXYGEN ATOM						
71 AVR/KOL2 REACTION ORDER: 2	343-413	3.0(+11)	0	1410±350	0.5	1.5
$CH_3OH + O \rightarrow .CH_2OH + OH$						
METHANOL + OXYGEN ATOM						
71 AVR/KOL2 REACTION ORDER: 2	343-413	6.0(+12)	0	3320±350	0.5	1.5
72 LEE/MEA	273-438	1.7(+12)	0	1150±100	0.6	1.4
$CH_3OH + O^*(^1D) \rightarrow$ products						
METHANOL + OXYGEN ATOM						
75 OSI/SIM k/k_{ref}: 5.5	298-345	-	-	-	0.6	1.4
NOTE: k_{ref}: $N_2O + O^*(^1D) \rightarrow NO + NO + N_2 + O_2$						
77 OSI REACTION ORDER: 2 k/k_{ref}: 5.5	298-345	-	-	-	0.6	1.4
NOTE: k_{ref}: $N_2O + O^*(^1D) \rightarrow$ products						
$CH_3OH + H \rightarrow .CH_2OH + H_2$						
METHANOL + HYDROGEN ATOM						
74 MEA/KIM REACTION ORDER: 2	298-575	6.5(+12)	0	2740±75		
NOTE: FLOW DISCHARGE METHOD WITH ESR DETECTION						
k GIVEN WITH CAUTION						
$CH_3OH + D \rightarrow .CH_2OH + DH$						
METHANOL + DEUTERIUM ATOM						
74 MEA/KIM REACTION ORDER: 2	298-575	2.8(+13)	0	2620±50	0.9	1.1
NOTE: FLOW DISCHARGE METHOD WITH ESR DETECTION						
k GIVEN WITH CAUTION						
$CH_3OH + H \rightarrow$ products						
METHANOL + HYDROGEN ATOM						
71 ADE/WAG REACTION ORDER: 2	295-653	2.3(+13)	0	2670±150	0.9	1.1
73 ADE REACTION ORDER: 2	298-650	1.3(+13)	0	2670		
$CH_3OH + OH \rightarrow CH_3O\cdot + .CH_2OH + H_2O$						
METHANOL + HYDROXYL FREE RADICAL						
75 OSI/SIM REACTION ORDER: 2 k/k_{ref}: 0.63	298	-	-	-	0.8	1.2
NOTE: k_{ref}: $CO + OH \rightarrow CO_2 + H$						
k/k_{ref}: 0.98	345	-	-	-	0.8	1.2
NOTE: k_{ref}: $CO + OH \rightarrow CO_2 + H$						
$CH_3OH + OH \rightarrow .CH_2OH + H_2O$						
METHANOL + HYDROXYL FREE RADICAL						
76 CAM/MCL REACTION ORDER: 2	292	5.7(+13)	-	-	0.9	1.1
$CH_3OH + OH \rightarrow$ products						
METHANOL + HYDROXYL FREE RADICAL						
77 OSI REACTION ORDER: 2 k/k_{ref}: 0.63	298	-	-	-	0.8	1.2

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
NOTE: k_{ref}: CO + OH → products						
k/k_{ref}: 0.98	345	-	-	-	0.8	1.2
NOTE: k_{ref}: CO + OH → products						

CH_3OOH + H → products						
HYDROPEROXIDE, METHYL-, + HYDROGEN ATOM						
75 SIE/WAR2 REACTION ORDER: 2	250-358	1.7(+11)	0	956±100	0.7	1.3
77 SIE/WAR	250-358	1.7(+11)	0	935±95	0.7	1.3

CS + O → S + CO						
CARBON MONOSULFIDE FREE RADICAL + OXYGEN ATOM						
71 HAN/SMI REACTION ORDER: 2	298	8.4(+12)	-	-		
NOTE: EVALUATION						

CS + O → S + CO(v=n)						
CARBON MONOSULFIDE FREE RADICAL + OXYGEN ATOM						
72 HAN/RID REACTION ORDER: 2 k/k_{ref}: 0.1	298	-	-	-		
NOTE: k_{ref}: CS + O → S + CO(v=13).						
RATIO INCREASING FROM 0.1 TO 0.9 BETWEEN						
v=7 AND v=12, THEN DECREASING TO 0.3 FROM						
v=14 TO v=15. UNREPORTED T ASSUMED TO BE 298K						
75 SIA/GRA1	305	1.2(+13)	-	-	0.9	1.1
76 EID/BRE	300	1.4(+13)	-	-	0.8	1.2

CS_2 + O → CS + SO						
CARBON DISULFIDE + OXYGEN ATOM						
71 TAR REACTION ORDER: 2	298	1.4(+12)	-	-	0.9	1.1
75 WEI/TIM	218-293	1.7(+13)	0	645±36	0.9	1.1

CS_2 + O → COS + S						
CARBON DISULFIDE + OXYGEN ATOM						
74 SIA/GIL REACTION ORDER: 2 k/k_{ref}: 0.093	302	-	-	-		
NOTE: k_{ref}: CS_2 + O → products						
77 GRA/GUT REACTION ORDER: 2 k/k_{ref}: 0.098	249-500	-	-	-		
NOTE: k_{ref}: CS_2 + O → products.						
WITHIN THE GIVEN T RANGE, THE k/k_{ref} RATIO						
DECREASES FROM 0.098±0.004 TO 0.081±0.007						
77 GRA/GUT	249-500	1.7(+11)	-	-	0.9	1.2
NOTE: WITHIN THE GIVEN T RANGE, k INCREASES FROM						
$1.75X10^{11}$ TO $5.5X10^{11}$ $cm^3 mol^{-1} s^{-1}$						

CS_2 + O → products						
CARBON DISULFIDE + OXYGEN ATOM						
74 SIA/GIL REACTION ORDER: 2	302	2.4(+12)	-	-		

CS_2 + O → products						
CARBON DISULFIDE + OXYGEN ATOM						
77 GRA/GUT REACTION ORDER: 2	249-500	1.7(+12)	-	-	0.9	1.1
NOTE: NON LINEAR ARRHENIUS BEHAVIOR.						
WITHIN THE GIVEN T RANGE, k INCREASES FROM $1.7X10^{12}$						
TO $6.7X10^{12}$ $cm^3 mol^{-1} s^{-1}$						

CS_2 + M → products						
CARBON DISULFIDE						
74 TRA REACTION ORDER: 2		6.8(+14)	0	36000±700		
NOTE: k MEASURED IN SHOCK TUBE. UNSPECIFIED HIGH T RANGE						

COS + O → SO + CO						
CARBON OXIDE SULFIDE + OXYGEN ATOM						
71 KLE REACTION ORDER: 2	300-523	9.8(+12)	0	2265		
71 KLE/SIM	300-523	9.8(+12)	0	2265		
74 KLE/STI	263-502	9.9(+12)	0	2167±28	0.9	1.1
75 WEI/TIM	239-404	1.2(+13)	0	2150±35	0.8	1.2

COS + $O^{*}(^1D)$ → SO + CO						
CARBON OXIDE SULFIDE + OXYGEN ATOM						
75 GAU/SNE REACTION ORDER: 2 k/k_{ref}: 4.1	300	-	-	-	0.9	1.1
NOTE: k_{ref}: O_2 + $O^{*}(^1D)$ → $O_2^{*}(^1\Sigma_g^{+})$ + O						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
75 GAU/SNE	300	1.8(+14)	-	-		
NOTE: EVALUATION						

COS + H → CO + SH						
CARBON OXIDE SULFIDE + HYDROGEN ATOM						
72 KOM/SCH — REACTION ORDER: 2	298	1.3(+10)	-	-	0.8	1.3
75 TSU/YOK	300-525	9.1(+12)	0	1965±185	0.9	1.1
76 LEE	298-478	9.8(+13)	0	2775±40	0.9	1.1
77 LEE/STI	261-500	5.5(+12)	0	1940±55	0.8	1.2

COS + OH(v=0) → products						
CARBON OXIDE SULFIDE + HYDROXYL FREE RADICAL						
72 WOR/COL — REACTION ORDER: 2	298	1.5(+10)	-	-	0.4	1.6
NOTE: UNREPORTED T ASSUMED TO BE 298K						

COS + S → CO + S_2						
CARBON OXIDE SULFIDE + SULFUR ATOM						
72 JAK/AHM — REACTION ORDER: 2	298	1.1(+10)	-	-		
NOTE: EVALUATION						
74 KLE/DAV	233-245	9.2(+11)	0	1825±60	0.9	1.1

COS + $S^{*}(^{1}D)$ → CO + S_2						
CARBON OXIDE SULFIDE + SULFUR ATOM						
72 LIT/DAL — REACTION ORDER: 2 k/k_{ref}: 1.5	300	-	-	-	0.7	1.3
NOTE: k_{ref}: $CH_2{=}CH_2 + S^{*}(^{1}D)$ → products						

COS + CD_3 → CO + CD_3S.						
CARBON OXIDE SULFIDE + METHYL-d_3 FREE RADICAL						
72 JAK/AHM — REACTION ORDER: 2	354-490	3.8(+11)	0	5710±175	0.6	1.8
NOTE: EVALUATION						

COS + M → products						
CARBON OXIDE SULFIDE						
74 TKA — REACTION ORDER: 2		8.3(+14)	0	31700±650		
NOTE: k MEASURED IN SHOCK TUBE. UNSPECIFIED HIGH T RANGE						

$CH_3S.$ + cy-CH_2CH_2S → $CH_3S_2.$ + $CH_2{=}CH_2$						
METHYL, MERCAPTO-, FREE RADICAL + THIRANE						
72 JAK/AHM — REACTION ORDER: 2	304-478	3.2(+11)	0	4430		
NOTE: APPROXIMATE k						

CH_3SH + O → CH_3 + HS(O). + $CH_3S(O).$ + H + $CH_3S.$ + $CH_3O.$						
METHANETHIOL + OXYGEN ATOM						
76 SLA/GRA — REACTION ORDER: 2	300	1.1(+12)	-	-		

CN + O → N + CO						
CYANOGEN FREE RADICAL + OXYGEN ATOM						
75 ALB/BOY — REACTION ORDER: 2	298	1.2(+13)	-	-	0.7	1.3
NOTE: TEMPERATURE-INDEPENDENT WITHIN THE T RANGE 275-387K						
77 SCH/WOL	295	1.1(+13)	-	-	0.7	1.3

CN(v=n) + O → N + CO						
CYANOGEN FREE RADICAL + OXYGEN ATOM						
72 SCH/WOL2 — REACTION ORDER: 2	298	8.0(+12)	-	-		
NOTE: UNREPORTED T ASSUMED TO BE 298K.						
k UNCHANGED BETWEEN v=0 AND v=5, BUT DECREASING						
TO 6.0X10^{12} cm^{3} mol^{-1} s^{-1} FOR v=6						
73 SCH/SCH1	298	1.3(+13)	-	-		
NOTE: n=0 TO 6						
73 SCH/SCH1	298	6.3(+13)	-	-		
NOTE: v=7						

CN + O_2 → NCO + O						
CYANOGEN FREE RADICAL + OXYGEN MOLECULE						
72 BUL/COO1 — REACTION ORDER: 2	300-377	6.7(+12)	-	-		
NOTE: POSSIBLE SMALL NEGATIVE E						
74 SCH/SCH	299-388	3.2(+13)	0	500		
75 ALB/BOY	718-1111	3.2(+13)	0	510±170	0.7	1.3

CN(v=n) + O_2 → NCO + O						
CYANOGEN FREE RADICAL + OXYGEN MOLECULE						
72 SCH/WOL2 — REACTION ORDER: 2	298	4.7(+12)	-	-		
NOTE: UNREPORTED T, ASSUMED TO BE 298K. k DECREASING TO						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
$1.8X10^{12} cm^3 mol^{-1} s^{-1}$ BETWEEN v=0 AND v=6						
$CN(v=0) + e_2 \rightarrow NO + O$						
CYANOGEN FREE RADICAL + OXYGEN MOLECULE						
73 SCH/SCH1 REACTION ORDER: 2	298	6.3(+12)	-	-		
NOTE: k DECREASES MONOTONICALLY FROM v=0 TO v=7: $k(v=7) = 1.6X10^{12} cm^3 mol^{-1} s^{-1}$						
$CN + H_2 \rightarrow HCN + H$						
CYANOGEN FREE RADICAL + HYDROGEN MOLECULE						
74 SCH/SCH REACTION ORDER: 2	298-388	6.3(+13)	0	2670		
$CN + H_2 \rightarrow HCN + H$						
CYANOGEN FREE RADICAL + HYDROGEN MOLECULE						
75 ALE/HOY REACTION ORDER: 2	718-1111	6.0(+13)	0	2670±300	0.7	1.3
77 SCH/WAG	259-396	6.0(+13)	0	2670±300	0.7	1.3
$CN + N \rightarrow C + N_2$						
CYANOGEN FREE RADICAL + NITROGEN ATOM						
76 SIA REACTION ORDER: 2	5000-8000	4.4(+14)	0	4530	0.5	1.5
NOTE: EVALUATION						
$CN + NO \rightarrow N_2 + CO$						
CYANOGEN FREE RADICAL + NITROGEN OXIDE (NO)						
75 MUL/PHI REACTION ORDER: 2	1500	7.3(+12)	-	-		
$CN + C \rightarrow N + C_2$						
CYANOGEN FREE RADICAL + CARBON ATOM						
76 SIA REACTION ORDER: 2	5000-8000	3.0(+14)	0	18120	0.5	1.5
NOTE: EVALUATION						
$CN + CO_2 \rightarrow CNO + CO$						
CYANOGEN FREE RADICAL + CARBON DIOXIDE						
75 BAY/IVE REACTION ORDER: 2	1830-2400	3.7(+12)	0	0	0.9	1.1
$CN + CH_4 \rightarrow HCN + CH_3$						
CYANOGEN FREE RADICAL + METHANE						
72 BUL/C602 REACTION ORDER: 2	300-377	1.3(+13)	0	1005±100		
74 SCH/SCH	298-388	3.2(+13)	0	1460		
77 SCH/WAG	259-396	6.0(12)	0	870±300	0.5	1.5
$CN + CD_4 \rightarrow DCN + CD_3$						
CYANOGEN FREE RADICAL + METHANE-d_4						
72 BUL/C602 REACTION ORDER: 2	300	2.4(+11)	-	-	0.8	1.2
NOTE: CN(0,0) BAND						
NOTE: CN(4,4) BAND	300	3.5(+11)	-	-	0.9	1.1
$CN(v=n) + CH_4 \rightarrow HCN + CH_3$						
CYANOGEN FREE RADICAL + METHANE						
77 SCH/WAG REACTION ORDER: 2	298	7.0(+11)	-	-		
NOTE: v=1						
$CN + CH{\equiv}CH \rightarrow$ products						
CYANOGEN FREE RADICAL + ETHYNE						
77 SCH/WAG REACTION ORDER: 2	259-396	3.0(+13)	0	0	0.7	1.3
$CN(v=1) + CH{\equiv}CH \rightarrow$ products						
CYANOGEN FREE RADICAL + ETHYNE						
77 SCH/WAG REACTION ORDER: 2	298	1.5(+14)	-	-		
NOTE: LOWER LIMIT k						
$CN + CH_2{=}CH_2 \rightarrow$ products						
CYANOGEN FREE RADICAL + ETHENE						
77 SCH/WAG REACTION ORDER: 2	259-396	3.0(+13)	0	0	0.8	1.2
$CN(v=n) + CH_2{=}CH_2 \rightarrow$ products						
CYANOGEN FREE RADICAL + ETHENE						
77 SCH/WAG REACTION ORDER: 2	298	6.5(+13)	-	-		
NOTE: v=1						
$CN + CH_3CH_3 \rightarrow HCN + CH_3CH_2$						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
CYANOGEN FREE RADICAL + ETHANE						
72 BUL/COO$_2$ REACTION ORDER: 2	300-415	1.5(+13)	0	0		
NOTE: ALTERNATIVE EXPRESSION: $k=2.4\times10^{13}\exp(-192/T)cm^3mol^{-1}s^{-1}$						
74 SCH/SCH REACTION ORDER: 2	298	7.9(+12)	-	-		
$CN + NCCN \rightarrow [.C_3N_3]$						
CYANOGEN FREE RADICAL + ETHANEDINITRILE						
72 BUL/COO1 REACTION ORDER: 2	300-377	5.6(+11)	0	1576		
$CN + CH_3CH_2CH_3 \rightarrow HCN + (CH_3)_2CH\cdot + CH_3CH_2CH_2\cdot$						
CYANOGEN FREE RADICAL + PROPANE						
72 BUL/COO$_2$ REACTION ORDER: 2	300	3.2(+13)	-	-	0.8	1.2
$CN + M \rightarrow C + N + M$						
CYANOGEN FREE RADICAL						
76 SLA REACTION ORDER: 2 M: Ar	4400-1300	1.2(+14)	0	71000±5500	0.7	1.3
$CH_2{=}N{=}N + H \rightarrow N_2 + CH_3$						
METHANE, DIAZO-, + HYDROGEN ATOM						
72 NIB/MOR2 REACTION ORDER: 2	300	9.6(+12)	-	-		
$CH_3N{=}N\cdot \rightarrow CH_3 + N_2$						
DIAZENYL, METHYL-						
76 VIB/WIL REACTION ORDER: 1	295	>3.0(+6)	-	-		
$CH_3N{=}NH + CH_3 \rightarrow CH_3N{=}N\cdot + CH_4$						
DIAZENE, METHYL-, + METHYL FREE RADICAL						
76 VID/WIL REACTION ORDER: 2	294	1.3(+10)	-	-	0.9	1.1
$CH_3NHNH_2 \rightarrow CH_2{=}NH + NH_3$						
HYDRAZINE, METHYL-						
72 GOL/SOL REACTION ORDER: 1	943-1263	1.6(+13)	0	27180		
$CH_3NHNH_2 \rightarrow CH_3N{=}NH + H_2$						
HYDRAZINE, METHYL-						
72 GOL/SOL REACTION ORDER: 1	943-1263	3.2(+13)	0	28690		
$NCO + O \rightarrow CO + NO$						
CYANATO FREE RADICAL + OXYGEN ATOM						
74 SCH/SCH REACTION ORDER: 2	298	8.9(+12)	-	-		
$NH_2C(O)\cdot + NH_2C(O)\cdot \rightarrow NH_2COCONH_2 + HNCO + HCONH_2$						
AMIDOGEN, FORMYL-, FREE RADICAL						
73 YOK/OAC REACTION ORDER: 2	578	3.1(+13)	-	-	0.7	1.3
$NH_2C(O)\cdot + M \rightarrow NH_2 + CO + M$						
AMIDOGEN, FORMYL-, FREE RADICAL						
73 YOK/OAC REACTION ORDER: 1	578	5.9(+12)	-	-	0.7	1.3
NOTE: LIMITING HIGH-PRESSURE k. M=$HCONH_2$						
73 YOK/OAC	578	1.0(+17)	-	-		
NOTE: k_0(LOW PRESSURE). M=$HCONH_2$						
$CH_3NO^{\#} \rightarrow CH_3 + NO$						
METHANE, NITROSO-						
74 TIT/DAL REACTION ORDER: 1	443	2.0(+7)	-	-		
$HCONH_2 + NH_2 \rightarrow .C(O)NH_2 + NH_3$						
FORMAMIDE + AMIDOGEN FREE RADICAL						
73 EAC/YOK REACTION ORDER: 2	573	8.4(+9)	-	-		
$CH_3ONO \rightarrow HCHO + HNO$						
NITROUS ACID METHYL ESTER						
75 EAT/NCC REACTION ORDER: 1	393-473	1.0(+10)	0	16000		
77 EAT/MIL3	440-473	4.0(+13)	0	19380±500	0.3	4.0
NOTE: EVALUATION						
$CH_3ONO \rightarrow CH_3O\cdot + NO$						
NITROUS ACID METHYL ESTER						
74 EAT/MIL REACTION ORDER: 1	393-473	6.3(+15)	0	20730±500	0.4	2.5

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
75 EAT/MCC 77 EAT/MIL3	393-473 440-473	6.3(+15) 6.3(+15)	0 0	20735±500 20740±500	0.4 0.3	2.5 4.3
$CH_3ONO + e \rightarrow HCHO + OH + NO$ NITROUS ACID METHYL ESTER + OXYGEN ATOM 75 DAV/THR — REACTION ORDER: 2	300-410	1.4(+13)	0	2620±240		
$CH_3ONO + e_3 \rightarrow CH_3ONO_2 + O_2$ NITROUS ACID METHYL ESTER + OZONE 76 HAS/FRE — REACTION ORDER: 2	298-352	4.1(+11)	0	5315±172	0.6	1.7
$CH_3ONO + H \rightarrow CH_3O. + HNO + .CH_2ONO + H_2$ NITROUS ACID METHYL ESTER + HYDROGEN ATOM 77 MEE/SLE — REACTION ORDER: 2 NOTE: k IS (53±5)% OF k(OVERALL) (SEE BELOW)	223-398	1.4(+11)	0	956±55	0.8	1.2
$CH_3ONO + H \rightarrow CH_3OH + NO$ NITROUS ACID METHYL ESTER + HYDROGEN ATOM 77 MEO/SLE — REACTION ORDER: 2 NOTE: k IS(47±5)% OF k(OVERALL) (SEE BELOW)	223-398	1.2(+11)	0	956±55	0.8	1.2
$CH_3ONO + H \rightarrow CH_3OH + NO + .CH_2ONO + H_2 + CH_3O. + HNO$ NITROUS ACID METHYL ESTER + HYDROGEN ATOM 77 MEO/SLE — REACTION ORDER: 2 NOTE: OVERALL REACTION	223-398	2.6(+11)	0	956±55	0.8	1.2
$CH_3ONO + OH \rightarrow$ products NITROUS ACID METHYL ESTER + HYDROXYL FREE RADICAL 75 CAM/GOO2 — REACTION ORDER: 2 NOTE: EVALUATION	292	8.0(+11)	-	-	0.9	1.1
$CH_3ONO_2 \rightarrow CH_3O. + NO_2$ NITRIC ACID METHYL ESTER 77 EAT/MIL3 — REACTION ORDER: 1 NOTE: EVALUATION	440-473	5.0(+15)	0	20400±500	0.3	4.3
$CH_3NO_2 + e \rightarrow CH_3O. + NO_2$ (OR $.CH_2NO_2 + OH$) METHANE, NITRO-, + OXYGEN ATOM 75 CAM/GOO1 — REACTION ORDER: 2	295	1.9(+9)	-	-	0.8	1.2
$CH_3NO_2 + H \rightarrow$ products METHANE, NITRO-, + HYDROGEN ATOM 75 SLE/WAR2 — REACTION ORDER: 2	298-398	1.6(+12)	0	1760±125	0.6	1.4
$CH_3NO_2 + OH \rightarrow$ products METHANE, NITRO-, + HYDROXYL FREE RADICAL 75 CAM/GOO2 — REACTION ORDER: 2 NOTE: EVALUATION	292	5.5(+11)	-	-	0.9	1.1
$CH_3NO_2 + M \rightarrow CH_3. + NO_2 + M$ METHANE, NITRO- 72 GLA/TRO — REACTION ORDER: 1 M: Ar NOTE: LIMITING HIGH PRESSURE k	900-1400	1.3(+13)	0	29440±250		
$CH_3NO_2 + M \rightarrow CH_3. + NO_2 + M$ METHANE, NITRO- 72 GLA/TRO — REACTION ORDER: 2 M: Ar NOTE: LOW PRESSURE k	900-1400	1.3(+17)	0	21140		
$CH_3O_2NO + CH_3O_2NO + O_2 \rightarrow CH_3ONO_2 + CH_3ONO_2 + O_2$ PEROXYNITROUS ACID METHYL ESTER + MOLECULE 73 SPI/VIL — REACTION ORDER: 3	298	3.8(+13)	-	-		
$C_2 + M \rightarrow C + C + M$ CARBON DIMER 75 BEC/MAC — REACTION ORDER: 2 M: Ar	4860-6920	3.7(+14)	0	69900±7100	0.5	1.9
$C_2O + O \rightarrow CO + CO$ CARBON OXIDE(C_2O) + OXYGEN ATOM 72 SHA/MAS — REACTION ORDER: 2	300	5.7(+13)	-	-	0.6	1.6

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	F
$CH{\equiv}C\cdot + O_2 \rightarrow CH{\equiv}O\cdot + CO_2$ ETHYNYL FREE RADICAL + OXYGEN MOLECULE 72 MAT/SLA REACTION ORDER: 2	1100-2100	-	-	12600±5000		
$CH{\equiv}C\cdot + O_2 \rightarrow \cdot CHO{\equiv}O + CO$ ETHYNYL FREE RADICAL + OXYGEN MOLECULE 72 MAT/SLA REACTION ORDER: 2	1100-2100	-	-	5500±5000		
$CH{\equiv}C\cdot + H_2 \rightarrow CH{\equiv}CH + H\cdot$ ETHYNYL FREE RADICAL + HYDROGEN MOLECULE 74 YAM/LAV REACTION ORDER: 2 NOTE: $k_1 = k_{-1}$	1063-1233	6.0(+12)	0	3270	0.4	1.25
$CH{\equiv}C\cdot + CH_4 \rightarrow CH{\equiv}CH + CH_3\cdot$ ETHYNYL FREE RADICAL + METHANE 73 CUL/HUC REACTION ORDER: 2 k/k_{ref}: 0.016 NOTE: k_{ref}: $CH{\equiv}C\cdot + CH{\equiv}CBr \rightarrow CH{\equiv}CC{\equiv}CH + Br\cdot$	298	-	-	-	0.7	1.3
$CH{\equiv}C\cdot + CH{\equiv}CH \rightarrow CH{\equiv}CC{\equiv}CH + H\cdot$ ETHYNYL FREE RADICAL + ETHYNE 73 CUL/HUC REACTION ORDER: 2	298	1.0(+11)	0	1500		
$CH{\equiv}C\cdot + CD{\equiv}CD \rightarrow CH{\equiv}CC{\equiv}CD + D\cdot$ ETHYNYL FREE RADICAL + ETHYNE-d_2 73 CUL/HUC REACTION ORDER: 2 k/k_{ref}: 2.8 NOTE: k_{ref}: $CH{\equiv}C\cdot$ $CD{\equiv}CD \rightarrow CH{\equiv}CD + CD{\equiv}C\cdot$	298	-	-	-	0.1	1.9
$CH{\equiv}C\cdot + CD{\equiv}CD \rightarrow CH{\equiv}CC{\equiv}CD + D\cdot$ ETHYNYL FREE RADICAL + ETHYNE-d_2 73 CUL/HUC REACTION ORDER: 2 k/k_{ref}: 0.67 NOTE: k_{ref}: $CH{\equiv}C\cdot + CH{\equiv}CBr \rightarrow CH{\equiv}CC{\equiv}CH + Br$	298	-	-	-	0.9	1.2
$CH{\equiv}C\cdot + CH_3CH_3 \rightarrow CH{\equiv}CH + CH_3CH_2\cdot$ ETHYNYL FREE RADICAL + ETHANE 73 CUL/HUC REACTION ORDER: 2 k/k_{ref}: 0.54 NOTE: k_{ref}: $CH{\equiv}C\cdot + CH{\equiv}CBr \rightarrow CH{\equiv}CC{\equiv}CH + Br\cdot$	298	-	-	-	0.9	1.1
$CH{\equiv}C\cdot + CH_3C{\equiv}CH \rightarrow CH{\equiv}CH + \cdot CH_2C{\equiv}CH$ ETHYNYL FREE RADICAL + 1-PROPYNE 73 CUL/HUC REACTION ORDER: 2 k/k_{ref}: 25.0 NOTE: k_{ref}: $CH{\equiv}C\cdot + CH_3C{\equiv}CH \rightarrow CH{\equiv}CC{\equiv}CCH_3 + H$	298	-	-	-	0.9	1.1
$CH{\equiv}C\cdot + CH_3C{\equiv}CH \rightarrow CH{\equiv}CC{\equiv}CH + CH_3\cdot$ ETHYNYL FREE RADICAL + 1-PROPYNE 73 CUL/HUC REACTION ORDER: 2 k/k_{ref}: 9.9 NOTE: k_{ref}: $CH{\equiv}C\cdot + CH_3C{\equiv}CH \rightarrow CH{\equiv}CC{\equiv}CCH_3 + H$	298	-	-	-	0.9	1.1
$CH{\equiv}C\cdot + CH_3C{\equiv}CH \rightarrow CH{\equiv}CC{\equiv}CCH_3 + H\cdot$ ETHYNYL FREE RADICAL + 1-PROPYNE 73 CUL/HUC REACTION ORDER: 2 k/k_{ref}: 0.2 NOTE: k_{ref}: $CH{\equiv}C\cdot + CH{\equiv}CBr \rightarrow CH{\equiv}CH + \cdot C{\equiv}CBr$	298	-	-	-	0.7	1.7
$CH{\equiv}C\cdot + CH_3C{\equiv}CH \rightarrow CH{\equiv}CC{\equiv}CCH_3 + H$ ETHYNYL FREE RADICAL + 1-PROPYNE 73 CUL/HUC REACTION ORDER: 2 k/k_{ref}: 0.043 NOTE: k_{ref}: $CH{\equiv}C\cdot + CH{\equiv}CBr \rightarrow CH{\equiv}CC{\equiv}CH + Br\cdot$	298	-	-	-	0.9	1.2
$CH{\equiv}C\cdot + CH{\equiv}CC{\equiv}CH \rightarrow CH{\equiv}CH + CH{\equiv}CC{\equiv}C\cdot$ ETHYNYL FREE RADICAL + 1,3-BUTADIYNE 73 CUL/HUC REACTION ORDER: 2 k/k_{ref}: 1.1 NOTE: k_{ref}: $CH{\equiv}C\cdot + CH{\equiv}CC{\equiv}CH \rightarrow CH{\equiv}CC{\equiv}CC{\equiv}CH + H$	298	-	-	-	0.8	1.2
$CH{\equiv}C\cdot + CH{\equiv}CC{\equiv}CH \rightarrow CH{\equiv}CC{\equiv}CC{\equiv}CH + H$ ETHYNYL FREE RADICAL + 1,3-BUTADIYNE						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
73 CUL/HUC REACTION ORDER: 2 k/k_{ref}: 1.67	298	-	-	-	0.8	1.2
NOTE: k_{ref}: $CH{\equiv}C\cdot + CH{\equiv}CBr \rightarrow CH{\equiv}CH + \cdot C{\equiv}CBr$						
$CH{\equiv}C\cdot + (CH_3)_4C \rightarrow CH{\equiv}CH + (CH_3)_3CCH_2\cdot$						
ETHYNYL FREE RADICAL + PROPANE, 2,2-DIMETHYL-						
73 CUL/HUC REACTION ORDER: 2 k/k_{ref}: 0.91	298	-	-	-	0.9	1.1
NOTE: k_{ref}: $CH{\equiv}C\cdot + CH{\equiv}CBr \rightarrow CH{\equiv}CC{\equiv}CH + Br\cdot$						
$CH{\equiv}CH \rightarrow CH{\equiv}C\cdot + H$						
ETHYNE						
74 ALT REACTION ORDER: 1	1700-2000	1.0(+15)	0	55360		
$CH{\equiv}CH + O \rightarrow CH_2 + CO$						
ETHYNE + OXYGEN ATOM						
73 CAE/GLA REACTION ORDER: 2	300	1.3(+11)	-	-		
NOTE: UPPER LIMIT k.						
73 FIE/MAH2	1200-1700	5.2(+13)	0	1860		
77 VAN/VAN	700-1430	6.7(+13)	0	2000		
NOTE: EVALUATION						
$CH{\equiv}CH + O \rightarrow$ products						
ETHYNE + OXYGEN ATOM						
71 STU/NIK2 REACTION ORDER: 2	300	7.8(+10)	-	-	0.9	1.1
77 WES/DEH	297	7.2(+10)	-	-	0.9	1.1
$CD{\equiv}CD + O \rightarrow$ products						
ETHYNE-d_2 + OXYGEN ATOM						
71 STU/NIK2 REACTION ORDER: 2	300	7.8(+10)	-	-	0.9	1.1
$CH{\equiv}CH + O + M \rightarrow CH_2{=}C{=}O + M$						
ETHYNE + OXYGEN ATOM						
73 CAE/GLA REACTION ORDER: 2 M: N_2	300	1.7(+11)	-	-		
NOTE: LIMITING HIGH-PRESSURE, UPPER LIMIT k						
$CH{\equiv}CH + O_3 \rightarrow$ products						
ETHYNE + OZONE						
71 DEM REACTION ORDER: 2	294	1.8(+4)	-	-	0.8	1.2
73 STE/NIK2	298	5.2(+4)	-	-	0.9	1.1
76 PAT/ATK	297	2.3(+4)	-	-	0.8	1.2
$CH{\equiv}CH + H \rightarrow CH{\equiv}C\cdot + H_2$						
ETHYNE + HYDROGEN ATOM						
74 YAM/LAV REACTION ORDER: 2	1063-1233	4.8(+13)	0	8260±2000	0.4	2.5
$CH{\equiv}CH + D \rightarrow CH{\equiv}CD + H$						
ETHYNE + DEUTERIUM ATOM						
71 LOY/WAG REACTION ORDER: 2	200-465	3.1(+13)	0	1860±100		
76 KEI/LYN	298	7.3(+10)	-	-	0.9	1.1
NOTE: AVERAGE k FOR PRESSURE RANGE 1-6.7TORR.						
$CD{\equiv}CD + H \rightarrow CH{\equiv}CD + D$						
ETHYNE-d_2 + HYDROGEN ATOM						
71 LOY/WAG REACTION ORDER: 2	300-470	2.0(+13)	0	2670±250		
$CH{\equiv}CH + H \rightarrow CH_2{=}CH\cdot$						
ETHYNE + HYDROGEN ATOM						
71 CSB REACTION ORDER: 2	298	2.7(+10)	-	-		
76 KEI/LYN	298	6.3(+9)	-	-	0.9	1.1
NOTE: PRESSURE-DEPENDENT k, INCREASING FROM 6.3×10^{9} TO 1.3×10^{10} $cm^3 mol^{-1} s^{-1}$ WITHIN THE 1-10 TORR PRESSURE RANGE						
$CD{\equiv}CD + D \rightarrow CD_2{=}CD\cdot$						
ETHYNE-d_2 + DEUTERIUM ATOM						
76 KEI/LYN REACTION ORDER: 2	298	6.6(+9)	-	-	0.9	1.1
NOTE: PRESSURE DEPENDENT k, INCREASING FROM 6.6×10^{9} TO 1.1×10^{10} $cm^3 mol^{-1} s^{-1}$ WITHIN THE 1-56 TORR PRESSURE RANGE						
$CH{\equiv}CH + F \rightarrow$ products						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
ETHYNE + HYDROGEN ATOM						
76 KEI/LYN REACTION ORDER: 2	298	2.7(+10)	-	-	0.9	1.1
NOTE: PRESSURE DEPENDENT k_o INCREASING FROM $2.7X10^{10}$ TO $1.1X10^{11}$ $cm^3mol^{-1}s^{-1}$ WITHIN THE 6-7.42 TORR PRESSURE RANGE						
CD≡CD + H → products						
ETHYNE-d_2 + HYDROGEN ATOM						
76 KEI/LYN REACTION ORDER: 2	298	4.0(+10)	-	-	0.9	1.1
NOTE: PRESSURE DEPENDENT k_o INCREASING FROM $4.0X10^{10}$ TO $5.8X10^{10}$ $cm^3mol^{-1}s^{-1}$ WITHIN THE 1.2-5.6 TORR PRESSURE RANGE (IN EXCESS C_2D_2)						
CD≡CD + H → products						
ETHYNE-d_2 + HYDROGEN ATOM						
76 KEI/LYN REACTION ORDER: 2	298	2.2(+10)	-	-	0.9	1.1
NOTE: PRESSURE DEPENDENT k_o INCREASING FROM $2.2X10^{10}$ TO $3.5X10^{10}$ $cm^3mol^{-1}s^{-1}$ WITHIN THE 1-5 TORR PRESSURE RANGE (IN EXCESS H)						
CH≡CH + H + M → CH_2=CH. + M						
ETHYNE + HYDROGEN ATOM						
76 PAY/STI REACTION ORDER: 2 M: He	193-400	5.5(+12)	0	1210±70		
NOTE: LIMITING HIGH PRESSURE k						
CH≡CH + D_2 → CHD=CHD						
ETHYNE + DEUTERIUM MOLECULE						
77 CGU2 REACTION ORDER: 2	1000-1600	4.9(+11)	0	17565±300	0.7	1.3
71 VAN/VAN REACTION ORDER: 2	650-1100	5.5(+13)	0	6900		
CH≡CH + OH → CH_3 + CO						
ETHYNE + HYDROXYL FREE RADICAL						
77 VAN/VAN REACTION ORDER: 2	650-1110	5.5(+13)	0	6900		
NOTE: EVALUATION						
CH≡CH + OH → CH≡CO. + H_2						
ETHYNE + HYDROXYL FREE RADICAL						
71 BRE/GLA REACTION ORDER: 2	295	1.1(+11)	-	-	0.7	1.3
CH≡CH + OH → CH_2=C=O + H						
ETHYNE + HYDROXYL FREE RADICAL						
77 VAN/VAN REACTION ORDER: 2	570-850	3.2(+11)	0	100		
NOTE: EVALUATION						
CH≡CH + OH → products						
ETHYNE + HYDROXYL FREE RADICAL						
73 SMI/ZEL1 REACTION ORDER: 2	210-460	1.2(+12)	0	250		
74 FAS/CAR	298	1.2(+11)	-	-		
CH≡CH + OH + M → products						
ETHYNE + HYDROXYL FREE RADICAL						
77 FIR/ATK2 REACTION ORDER: 2 M: Ar	288-422	1.2(+12)	0	310±200		
NOTE: AT PRESSURES ≥200 TORR.						
CH≡CH + OH + M → products						
ETHYNE + HYDROXYL FREE RADICAL						
75 DAV/FIS REACTION ORDER: 2 M: He	300	9.9(+10)	-	-	0.9	1.1
NOTE: PRESSURE INDEPENDENT k						
CH≡CH + S → cy-CH=CHS						
ETHYNE + SULFUR ATOM						
71 STR/G'C REACTION ORDER: 2	298-450	-	-	-		
NOTE: k/k_{ref}: 6.2exp(-1007/T); k_{ref}: CH_2=CH_2 + S → cy-CH_2CH_2S CONVENTIONAL PHOTOLYSIS METHOD						
CH≡CH + SO_2 → products						
ETHYNE + SULFUR DIOXIDE						
71 FIF/MOR REACTION ORDER: 2	1500-2150	3.2(+10)	0.5	20535		
NOTE: GIVEN WITH CAUTION.						
CH≡CH + CH → products						
ETHYNE + METHYLIDYNE FREE RADICAL						
71 BOS/PER REACTION ORDER: 2	298	4.5(+13)	-	-	0.9	1.2

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
$CH{\equiv}CH + {}^3CH_2 \rightarrow CH_3C{\equiv}CH + CH_2{=}C{=}CH_2$						
ETHYNE + METHYLENE FREE RADICAL						
74 LAU/BAS REACTION ORDER: 2	298	4.5(+12)	-	-	0.9	1.1
NOTE: $^3CH_2$ (GROUND STATE). LIMITING HIGH PRESSURE k.						
77 FIL/ROB	298	2.4(+12)	-	-		
NOTE: $^3CH_2$ (GROUND STATE)						
$CH{\equiv}CH + CH_3\cdot \rightarrow CH_3CH{=}CH$						
ETHYNE + METHYL FREE RADICAL						
77 HEI/KER REACTION ORDER: 2	379-487	6.2(+11)	0	3880±750	0.2	6.3
NOTE: EVALUATION						
$CH{\equiv}CH + CN \rightarrow$ products						
ETHYNE + CYANOGEN FREE RADICAL						
77 SCH/WAG REACTION ORDER: 2	259-396	3.0(+13)	0	0	0.7	1.3
$CH{\equiv}CH + CN(v{=}1) \rightarrow$ products						
ETHYNE + CYANOGEN FREE RADICAL						
77 SCH/WAG REACTION ORDER: 2	298	1.5(+14)	-	-		
NOTE: LOWER LIMIT k.						
$CH{\equiv}CH + CH{\equiv}C\cdot \rightarrow H + CH{\equiv}CC{\equiv}CH$						
ETHYNE + ETHYNYL FREE RADICAL						
73 CUL/HUC REACTION ORDER: 2	298	1.0(+11)	-	1500		
$CD{\equiv}CD + CH{\equiv}C\cdot \rightarrow D\cdot + CH{\equiv}CC{\equiv}CD$						
ETHYNE-d_2 + ETHYNYL FREE RADICAL						
73 CUL/HUC REACTION ORDER: 2 k/k_{ref}: 2.8	298	-	-	-	0.1	1.9
NOTE: k_{ref}: $CD{\equiv}CD + CH{\equiv}C\cdot \rightarrow CD{\equiv}C\cdot + CH{\equiv}CD$						
k/k_{ref}: 0.67	298	-	-	-	0.9	1.2
NOTE: k_{ref}: $CH{\equiv}CBr + CH{\equiv}C\cdot \rightarrow Br + CH{\equiv}CC{\equiv}CH$						
$CH{\equiv}CH + CH{\equiv}CH \rightarrow CH_2{=}CHC{\equiv}CH$						
ETHYNE						
77 OGU1 REACTION ORDER: 2	1000-1670	2.5(+14)	0	23350±700	0.5	1.8
77 OGU2	1000-1600	1.5(+14)	0	22250±750	0.6	1.4
$CH{\equiv}CH + \cdot CH{=}C{=}C \rightarrow$ products						
ETHYNE + ETHENYL, 2-OXO-, FREE RADICAL						
73 JEN/BAY REACTION ORDER: 2	298	5.0(+8)	-	-		
NOTE: UPPER LIMIT k						
$CH_2{=}CH\cdot + CH_2{=}CH\cdot \rightarrow CH{\equiv}CH + CH_2{=}CH_2$						
ETHENYL FREE RADICAL						
73 MAC/CUR REACTION ORDER: 2	298	3.2(+12)	-	-	0.9	1.1
$CH_2{=}CH\cdot + M \rightarrow CH{\equiv}CH + H + M$						
ETHENYL FREE RADICAL						
73 PEE/MAH2 REACTION ORDER: 2	1500	2.0(+12)	-	-		
NOTE: EVALUATION						
$CH_2{=}CH_2 + O \rightarrow CH_2 + HCHO$						
ETHENE + OXYGEN ATOM						
73 PEE/MAH2 REACTION ORDER: 2	1200-1600	2.5(+13)	0	2520		
NOTE: EVALUATION						
$CH_2{=}CH_2 + O \rightarrow CH_3\cdot + CHO\cdot$						
ETHENE + OXYGEN ATOM						
73 GAE/GLA REACTION ORDER: 2	300	7.0(+11)	-	-		
NOTE: GIVEN WITH CAUTION						
73 HUI	232-500	3.3(+12)	0	569±16	0.9	1.1
73 KUR/HUI	298	4.8(+11)	-	-	0.9	1.1
73 PEE/MAH2	1200-1700	2.3(+13)	0	1360		
74 PRU/SLA REACTION ORDER: 2 k/k_{ref}: 0.95	300	-	-	-		
NOTE: k_{ref}: $CH_2{=}CH_2 + O \rightarrow$ products						
$CD_2{=}CD_2 + O \rightarrow CD_3 + CDO$						
ETHENE-D_4 + OXYGEN ATOM						
73 KUR/HUI REACTION ORDER: 2	298	4.9(+11)	-	-	0.9	1.1

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F

$CH_2{=}CH_2 + O \rightarrow CH_2{=}C{=}O + H_2$						
ETHENE + OXYGEN ATOM						
74 FRU/SLA REACTION ORDER: 2	300	2.3(+10)	-	-	0.8	1.2

$CH_2{=}CH_2 + O \rightarrow cy\text{-}CH_2CH_2O$						
ETHENE + OXYGEN ATOM						
74 FUR/ATK REACTION ORDER: 2	298	4.3(+11)	-	-	0.9	1.1
76 SIN/CVE	298-480	7.0(+12)	0	845±50	0.9	1.1

$CH_2{=}CH_2 + O \rightarrow$ products						
ETHENE + OXYGEN ATOM						
71 ATK/CVE REACTION ORDER: 2	298	3.0(+11)	-	-	0.9	1.1
71 STU/NIK2	300	3.8(+10)	-	-	0.8	1.1
74 MCC k/k_{ref}: 0.042	298	-	-	-	0.8	1.2
NOTE: k_{ref}: $(CH_3)2C{=}CH_2 + O \rightarrow$ products						
72 ATK/CVE	298-473	8.1(+12)	0	975±50	0.9	1.1
72 IAV/HUI	232-500	3.3(+12)	0	570±16	0.9	1.1
72 STU/NIK3	298	3.8(+11)	-	-	0.9	1.1
74 SIA/PRU	300	4.6(+12)	-	-		
74 ATK/PITI	300-392	3.4(+12)	0	640±100		
74 ATK/PIT2	301	4.0(+11)	-	-	0.9	1.1
77 ATK/PITI	298-439	5.6(+12)	0	742±100		

$CD_2{=}CD_2 + O \rightarrow$ products						
ETHENE-d_4 + OXYGEN ATOM						
72 STU/NIK3 REACTION ORDER: 2	298	3.4(+11)	-	-	0.9	1.1

$CH_2{=}CH_2 + O + M \rightarrow$ products						
ETHENE + OXYGEN ATOM						
73 CAE/GLA REACTION ORDER: 2 M: N_2	300	7.0(+11)	-	-		
NOTE: LIMITING HIGH-PRESSURE k. GIVEN WITH CAUTION.						

$CH_2{=}CH_2 + O_3 \rightarrow [CH_2{=}CH_2{\cdot}O_3]$						
ETHENE + OZONE						
76 TOB/TOB REACTION ORDER: 2	303	1.02(+6)	-	-	0.9	1.1

$CH_2{=}CH_2 + O_3 \rightarrow$ products						
ETHENE + OZONE						
73 STE/WU REACTION ORDER: 2	299	9.3(+5)	-	-	0.9	1.1
74 BIC/SCH	280-360	7.2(+9)	0	2500±100		
74 FIN/PIT	298	1.0(+6)	-	-	0.	2.0
NOTE: IN O_2 CARRIER GAS.						
74 FIN/PIT	298	5.0(+6)	-	-	0.6	1.4
NOTE: IN N_2 CARRIER GAS						
74 BER/HUI	235-362	5.4(+9)	0	2557±167	0.4	1.6
74 JAP/WU	298	1.1(+6)	-	-	0.9	1.1
76 JAP/WU	299	1.1(+6)	-	-	0.9	1.1
76 WII	298	8.8(+5)	-	-		

$CD_2{=}CD_2 + O_3 \rightarrow$ products						
ETHENE-d_4 + OZONE						
74 JAP/WU REACTION ORDER: 2	298	1.4(+6)	-	-	0.9	1.1

$CH_2{=}CH_2 + H \rightarrow CH_2{=}CH\cdot + H_2$						
ETHENE + HYDROGEN ATOM						
72 FAL/SUN REACTION ORDER: 2 k/k_{ref}: ≤0.0003	298	-	-	-		
NOTE: k_{ref}: $CH_2{=}CH_2 + H \rightarrow CH_3CH_2$ [UPPER LIMIT k]						
73 FIE/MAH2	1200-1700	1.1(+14)	0	4280		
NOTE: EVALUATION						
74 YAM2	1093-1213	1.9(+13)	0	5185±1000	0.4	1.25
77 JUS/ROT	1700-2000	5.0(+15)	0	11500		
NOTE: TENTATIVE k						

$CD_2{=}CD_2 + H \rightarrow CD_2{=}CDH + D$						
ETHENE-d_4 + HYDROGEN ATOM						
74 YAM1	1000-1200	6.8(+12)	-	-	0.7	1.4
NOTE: AVERAGED k OVER GIVEN T RANGE						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
$CH_2{=}CH_2 + H \rightarrow CH_3CH_2\cdot$						
ETHENE + HYDROGEN ATOM						
71 GSD — REACTION ORDER: 2	298	3.7(+11)	-	-		
72 TEN/JON	303-603	7.9(+11)	0	365		
$CH_2{=}CH_2 + H \rightarrow CH_3CH_2^*\cdot$						
ETHENE + HYDROGEN ATOM						
75 MIH/SCH — REACTION ORDER: 2	295	7.5(+11)	-	-	0.9	1.1
$CH_2{=}CH_2 + H \rightarrow CH_3CH_2^\ddagger\cdot$						
ETHENE + HYDROGEN ATOM						
77 WAN — REACTION ORDER: 2	298-373	-	-	1000		
$CH_2{=}CH_2 + D \rightarrow CH_2DCH_2\cdot$						
ETHENE + DEUTERIUM ATOM						
75 COW/MIC — REACTION ORDER: 2	297	4.6(+11)	-	-	0.9	1.1
NOTE: IN EXCESS D. PRESSURE INDEPENDENT k WITHIN THE 1.5 TORR RANGE	297	4.7(+11)	-	-	0.9	1.1
NOTE: IN EXCESS $CH_2{=}CH_2$ STABLE k WITHIN THE 1-1.8 TORR. PRESSURE RANGE, BUT INCREASING TO 7.3×10^{11} $cm^3mol^{-1}s^{-1}$ AT 4.2 TORR.						
$CH_2{=}CH_2 + D \rightarrow CH_2DCH_2\cdot^*$						
ETHENE + DEUTERIUM ATOM						
75 MIH/SCH — REACTION ORDER: 2	295	5.2(+11)	-	-	0.9	1.1
$CD_2{=}CD_2 + H \rightarrow CD_2HCD_2\cdot$						
ETHENE-d_4 + HYDROGEN ATOM						
71 GSP — REACTION ORDER: 2	298	5.4(+11)	-	-		
75 COW/MIC	297	4.2(+11)	-	-		
NOTE: IN EXCESS H, AT 1 TORR. k INCREASING TO 5.9×10^{11} $cm^3mol^{-1}s^{-1}$ AT 4.9 TORR						
$CD_2{=}CD_2 + H \rightarrow CD_2HCD_2\cdot^*$						
ETHENE-d_4 + HYDROGEN ATOM						
75 MIH/SCH — REACTION ORDER: 2	295	6.9(+11)	-	-	0.9	1.1
$CD_2{=}CD_2 + D \rightarrow CD_3CD_2\cdot$						
ETHENE-d_4 + DEUTERIUM ATOM						
71 GSP — REACTION ORDER: 2	298	4.4(+11)	-	-		
75 COW/MIC	297	1.3(+11)	-	-		
NOTE: IN EXCESS D, AT 1 TORR. k INCREASING TO 2.8×10^{11} $cm^3mol^{-1}s^{-1}$ AT 5 TORR						
$CD_2{=}CD_2 + D \rightarrow CD_3CD_2^*\cdot$						
ETHENE-d_4 + DEUTERIUM ATOM						
75 MIH/SCH — REACTION ORDER: 2	295	5.1(+11)	-	-	0.9	1.1
$CH_2{=}CH_2 + H \rightarrow$ products						
ETHENE + HYDROGEN ATOM						
74 LAU/LUE — REACTION ORDER: 2	298	2.5(+11)	-	-		
$CH_2{=}CH_2 + H + M \rightarrow CH_3CH_2\cdot + M$						
ETHENE + HYDROGEN ATOM						
71 COW/KLI — REACTION ORDER: 2	298	2.3(+11)	-	-	0.7	1.3
NOTE: STEADY STATE PHOTOLYSIS METHOD. 10-15 TORR. PRESSURE M=Ne,Ar						
71 BIR/EYR	298	5.5(+11)	-	-	0.9	1.1
NOTE: LIMITING HIGH PRESSURE K. M=H_2, OR Ar						
73 MIC/OSB	298	9.7(+11)	-	-	0.8	1.2
NOTE: LIMITING HIGH-PRESSURE K.						
$CH_2{=}CH_2 + OH \rightarrow CH_2{=}CH\cdot + H_2O$						
ETHENE + HYDROXYL FREE RADICAL						
76 PEA/CAP — REACTION ORDER: 2 k/k_{ref}: 2.33	1300	-	-	-		
NOTE: k_{ref}: $CH_4 + OH \rightarrow CH_3\cdot + H_2O$						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	F
76 MEA/HEI k/k_{ref}: 0.26	298	-	-	-		
NOTE: k_{ref}: $CH_2{=}CH_2 + OH \rightarrow {\cdot}CH_2CH_2OH + CH_2{=}CH\cdot + H_2O$						
$CH_2{=}CH_2 + OH \rightarrow$ products						
ETHENE + HYDROXYL FREE RADICAL						
71 MCK/NIK2 REACTION ORDER: 2 k/k_{ref}: 0.1	300	-	-	-		
NOTE: k_{ref}: $CH_3CH{=}CH_2 + OH \rightarrow$ products						
71 MCK/STE	300	1.1(+12)	-	-	0.7	1.3
73 ERA/HAC	298	1.0(+12)	-	-	0.7	1.3
73 SIM/ZEL1	210-460	4.5(+12)	0	110		
73 STU1	298	1.8(+12)	-	-	0.7	1.3
75 PAS/CAR	300	1.4(+12)	-	-	0.9	1.1
75 COX	300	5.7(+12)	-	-	0.9	1.1
76 ILE/DAR2	305	5.2(+12)	-	-	0.8	1.2
NOTE: EVALUATION						
$CH_2{=}CH_2 + OH + M \rightarrow {\cdot}CH_2CH_2OH + M$						
ETHENE + HYDROXYL FREE RADICAL						
77 ATK/PER2 REACTION ORDER: 2 M: Ar	299-425	1.3(+12)	0	390±150		
NOTE: LIMITING HIGH PRESSURE k.						
77 CVE/PAR2	296	6.0(+12)	-	-	0.8	1.2
NOTE: LIMITING HIGH PRESSURE k.						
$CH_2{=}CH_2 + OH + M \rightarrow$ products						
ETHENE + HYDROXYL FREE RADICAL						
75 DAV/FIS REACTION ORDER: 2 M: He	300	3.2(+12)	-	-	0.9	1.1
NOTE: LIMITING HIGH PRESSURE k.						
75 GER/MUL1 M: H_2O	381	3.8(+12)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR.						
	416	4.4(+12)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR.						
76 BEW M: He	296	2.4(+12)	-	-		
NOTE: LIMITING HIGH PRESSURE k.						
$CH_2{=}CH_2 + HO_2 \rightarrow$ cy-$CH_2CH_2O + OH$						
ETHENE + HYDROPEROXYL FREE RADICAL						
73 WAL2 REACTION ORDER: 2 k/k_{ref}: 0.016	773	-	-	-	0.9	1.1
NOTE: k_{ref}: $HCHO + HO_2 \rightarrow {\cdot}CHO + H_2O_2$						
73 WAL2	773	1.5(+7)	-	-		
NOTE: EVALUATION						
$CH_2{=}CH_2 + S \rightarrow$ cy-CH_2CH_2S						
ETHENE + SULFUR ATOM						
71 COX/VAN REACTION ORDER: 2	298	9.0(+11)	-	-	0.9	1.1
NOTE: FLASH PHOTOLYSIS METHOD						
71 STR/O'C k/k_{ref}: 1.0	298-450	-	-	-		
NOTE: k_{ref}: $CH_2{=}CH_2 + S \rightarrow$ cy-CH_2CH_2S						
CONVENTIONAL PHOTOLYSIS METHOD						
72 DAV/KLE2	218-442	4.3(+12)	0	795±40	0.9	1.1
$CD_2{=}CH_2 + S \rightarrow$ cy-CD_2CH_2S						
ETHENE-1,1-d_2 + SULFUR ATOM						
71 STR/O'C REACTION ORDER: 2 k/k_{ref}: 1.07	298-450	-	-	-		
NOTE: k_{ref}: $CH_2{=}CH_2 + S \rightarrow$ cy-CH_2CH_2S						
CONVENTIONAL PHOTOLYSIS METHOD						
cis-CHD=CHD + S → cy-CHDCHS						
cis-ETHENE-1,2-d_2 + SULFUR ATOM						
71 STR/O'C REACTION ORDER: 2 k/k_{ref}: 1.04	298-450	-	-	-		
NOTE: k_{ref}: $CH_2{=}CH_2 + S \rightarrow$ cy-CH_2CH_2S						
CONVENTIONAL PHOTOLYSIS METHOD						
$CD_2{=}CD_2 + S \rightarrow$ cy-CD_2CD_2S						
ETHENE-d_4 + SULFUR ATOM						
71 STR/O'C REACTION ORDER: 2 k/k_{ref}: 1.14	298-450	-	-	-		
NOTE: k_{ref}: $CH_2{=}CH_2 + S \rightarrow$ cy-CH_2CH_2S						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
CONVENTIONAL PHOTOLYSIS METHOD						
$CH_2{=}CH_2 + NO_2 \rightarrow$ products						
ETHENE + NITROGEN OXIDE(NO_2)						
71 JAF REACTION ORDER: 2	298-373	2.0(+6)	0	4100		
$CH_2{=}CH_2 + NO_3 \rightarrow$ products						
ETHENE + NITROGEN OXIDE (NO_3)						
75 JAP/NIK REACTION ORDER: 2	300	5.6(+8)	-	-	0.9	1.1
$CH_2{=}CH_2 + CH \rightarrow$ products						
ETHENE + METHYLIDYNE FREE RADICAL						
71 BOS/PER REACTION ORDER: 2	298	6.9(+13)	-	-	0.9	1.1
$CH_2{=}CH_2 + CH_3\cdot \rightarrow CH_2{=}CH\cdot + CH_4$						
ETHENE + METHYL FREE RADICAL						
76 CHE/BAC REACTION ORDER: 2	1038	1.0(+9)	-	-		
NOTE: EVALUATION						
$CH_2{=}CH_2 + CH_3\cdot \rightarrow CH_3CH_2CH_2\cdot$						
ETHENE + METHYL FREE RADICAL						
72 TED/WAL REACTION ORDER: 2	335-424	-	-	-	0.9	1.1
NOTE: k_{ref}: $CH_2{=}CHF + CH_3\cdot \rightarrow CH_3CH_2CHF$						
k/k_{ref}: $7.2X10^{2}exp(+468\pm100/T)$ REACTION ORDER: 2	335-424	-	-	-	0.8	1.2
NOTE: k_{ref}: $CH_2{=}CF_2 + CH_3\cdot \rightarrow CH_3CH_2CF_2$						
k/k_{ref}: $4.9X10^{1}exp(+2420\pm500/T)$	335-424	-	-	-	0.8	1.2
NOTE: k_{ref}: $CF_2{=}CF_2 + CH_3\cdot \rightarrow CH_3CF_2CF_2$						
k/k_{ref}: $8.3X10^{3}exp(-1320\pm550/T)$	335-424	-	-	-	0.9	1.1
NOTE: k_{ref}: $CH_2{=}CHCL + CH_3\cdot \rightarrow CH_3CH_2CHCl$						
k/k_{ref}: $2.9X10^{2}exp(+940\pm250/T)$	335-424	-	-	-	0.9	1.1
NOTE: k_{ref}: $CH_3CH{=}CH_2 + CH_3\cdot \rightarrow CH_3CH_2CH(.)CH_2\cdot$						
k/k_{ref}: $1.1X10^{4}exp(+377+200/T)$	350-500	2.1(+11)	0	3670±500	0.3	3.2
77 HCL/KER						
NOTE: EVALUATION						
$CH_2{=}CH_2 + CH_3O\cdot \rightarrow CH_3OCH_2CH_2\cdot$						
ETHENE + METHOXY FREE RADICAL						
75 TIS/MAS REACTION ORDER: 2	300	3.7(+7)	-	-		
$CH_2{=}CH_2 + CN \rightarrow$ products						
ETHENE + CYANOGEN FREE RADICAL						
77 SCH/WAG REACTION ORDER: 2	259-396	3.0(+13)	0	0	0.8	1.2
77 SCH/WAG	298	6.5(+13)	-	-		
NOTE: $.CN^{\ddagger}(v=1)$						
$CH_2{=}CH_2 + CH_2{=}CH_2 \rightarrow cy\text{-}CH_2CH_2CH_2CH_2$						
ETHENE						
72 QUI/KNE REACTION ORDER: 2	723-786	6.9(+10)	0	22040		
$CH_2{=}CH_2 + cis\text{-}CH_3CH{=}CHCH_3 \rightarrow cis\text{-}CH_3CH(.)CH(CH_3)CH_2CH_2\cdot$						
ETHENE + cis-2-BUTENE						
77 SCA/BAC REACTION ORDER: 2	663-703	1.5(+12)	0	24360	0.9	1.1
NOTE: BASED ON EXPERIMENTAL VALUES FOR Ea AND FOUR K.S						
$CH_2{=}CH_2 + trans\text{-}CH_3CH{=}CHCH_3 \rightarrow trans\text{-}CH_3CH(.)CH(CH_3)CH_2CH_2\cdot$						
ETHENE + trans-2-BUTENE						
77 SCA/BAC REACTION ORDER: 2	663-703	4.1(+12)	0	24660	0.9	1.1
NOTE: BASED ON EXPERIMENTAL VALUES FOR Ea AND FOUR k.s.						
77 SCA/BAC k/k_{ref}: 1.80	663-703	-	-	-	0.9	1.1
NOTE: k_{ref}: $CH_2{=}CH_2 + cis\text{-}CH_3CH{=}CHCH_3 \rightarrow$						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	F
cis-$CH_3CH(.)CH(CH_3)CH_2CH_2$.						
$CH_2{=}CH_2 + M \rightarrow CH_2{=}CH. + H + M$						
ETHENE						
73 ROT/JUS REACTION ORDER: 2 M: Ar	1675-2210	1.8(+17)	0	39000		
$CH_2{=}CH_2 + M \rightarrow CH{\equiv}CH + H_2 + M$						
ETHENE						
77 JUS/ROT REACTION ORDER: 2 M: Ar	1700-2200	2.6(+17)	0	39900±500	0.8	1.2
$CH_2{=}CH_2 + M \rightarrow CH_2{=}CH. + H + M$						
ETHENE						
77 JUS/ROT REACTION ORDER: 2 M: Ar	1700-2200	3.8(+17)	0	49400±900	0.5	1.5
$CH_3CH_2. + O_2 \rightarrow CH_2{=}CH_2 + HO_2.$						
ETHYL FREE RADICAL + OXYGEN MOLECULE						
71 BAL/LAN REACTION ORDER: 2	713	8.2(+10)	-	-		
$CH_3CH_2. + H \rightarrow CH_3. + CH_3.$						
ETHYL FREE RADICAL + HYDROGEN ATOM						
72 TEN/JON REACTION ORDER: 2	303-603	1.1(+14)	0	435		
74 CAM/MAR	503-753	3.7(+13)	0	0		
74 PRA/VEL1	295	4.3(+13)	-	-	0.9	1.1
76 PRA/VEL	321-521	6.6(+13)	0	112±35	0.9	1.1
$CH_3CH_2. + H \rightarrow CH_2{=}CH_2 + H_2$						
ETHYL FREE RADICAL + HYDROGEN ATOM						
74 CAM/MAR REACTION ORDER: 2	503-753	1.7(+12)	0	0		
$CH_3CH_2. + H_2 \rightarrow CH_3CH_3 + H.$						
ETHYL FREE RADICAL + HYDROGEN MOLECULE						
71 BAL/LAN REACTION ORDER: 2	713	2.2(+8)	-	-		
$CH_3CH_2. + D_2 \rightarrow CH_3CH_2D + D.$						
ETHYL FREE RADICAL + DEUTERIUM MOLECULE						
71 BAL/LAN REACTION ORDER: 2	713	8.3(+7)	-	-		
$CH_3CH_2. + NO \rightarrow CH_3CH_2NO$						
ETHYL FREE RADICAL + NITROGEN OXIDE(NO)						
74 PRA/VEL REACTION ORDER: 2	295	1.2(+11)	-	-	0.9	1.1
$CH_3CH_2. + NO \rightarrow CH_3CH_2NO$						
ETHYL FREE RADICAL + NITROGEN OXIDE(NO)						
76 PRA/VEL2 REACTION ORDER: 2	325-521	1.4(+11)	0	0	0.6	1.6
$CH_3CH_2. + CO \rightarrow CH_3CH_2C(O).$						
ETHYL FREE RADICAL + CARBON MONOXIDE						
73 WAT/TRO REACTION ORDER: 2	238-378	1.5(+11)	0	2420		
$CH_3CH_2. + CH_3 \rightarrow CH_3CH_2CH_3$						
ETHYL FREE RADICAL + METHYL FREE RADICAL						
72 TEN/JON REACTION ORDER: 2	303-603	2.5(+13)	0	200		
$CH_3CH_2. + CH_3CH_2. \rightarrow CH_2{=}CH_2 + CH_3CH_3$						
ETHYL FREE RADICAL						
71 BAL/SUN REACTION ORDER: 2 k/k_{ref}: 0.14	298	-	-	-		
NOTE: k_{ref}: $CH_3CH_2. + CH_3CH_2. \rightarrow CH_3CH_2CH_2CH_3$						
75 HOO/SIM k/k_{ref}: 0.15	298-173	-	-	-		
NOTE: k_{ref}: $CH_3CH_2. + CH_3CH_2. \rightarrow CH_3CH_2CH_2CH_3$						
$CH_3CH_2. + CH_3CH_2. \rightarrow CH_3CH_2CH_2CH_3$						
ETHYL FREE RADICAL						
72 TEN/JON REACTION ORDER: 2	303-603	7.6(+12)	0	95		
72 BIA/DEN2	350-410	4.0(+11)	0	0±100		
NOTE: EVALUATION						
72 MAR/PUR	350-950	2.5(+11)	0	0		
NOTE: EVALUATION						
72 PAC/PUR1	951	3.2(+11)	-	-		
NOTE: EVALUATION						
74 HUG/MAR	895-981	4.0(+11)	0	0		

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
NOTE: EVALUATION 75 HUG/MAR	693-803	2.5(+11)	0	0		
NOTE: EVALUATION 76 GOL/CHO	860	4.5(+12)	-	-		
NOTE: LOW PRESSURE k 76 PAR/QUI	298	7.8(+12)	-	-	0.8	1.2
$CH_3CH_2\cdot + CH_3CH_2NO \rightarrow (CH_3CH_2)_2NO\cdot$ ETHYL FREE RADICAL + ETHANE, NITROSO- 72 TAN/LAM REACTION ORDER: 2	329	≥1.4(+10)	-	-		
NOTE: LOWER LIMIT k.						
$CH_3CH_2\cdot + CH_2{=}CHCH_2CH_2\cdot \rightarrow CH_2{=}CH_2 + CH_3CH_3 + CH_2{=}CHCH_2CH_3 + CH_2{=}CHCH{=}CH_2$ ETHYL FREE RADICAL + 3-BUTENYL FREE RADICAL 75 STE/RAB REACTION ORDER: 2 k/k_{ref}: 0.30	298	-	-	-	0.8	1.2
NOTE: k_{ref}: $CH_3CH_2\cdot + CH_2{=}CHCH_2CH_2\cdot \rightarrow CH_2{=}CHCH_2CH_2CH_2CH_3$						
$CH_3CH_2\cdot + CH_3CH_2CH_2CH_3 \rightarrow CH_3CH_3 + CH_3CH_2CH(\cdot)CH_3 + CH_3CH_2CH_2CH_2\cdot$ ETHYL FREE RADICAL + BUTANE 72 PAC/PUR1 REACTION ORDER: 2 74 HUG/MAR 76 YAM/NAM	869-952 895-981 980-1060	3.2(+13) 7.9(+13) 3.2(+12)	0 0 0	10120±860 11160±810 6440±1360	0.4 0.4 0.3	2.5 2.5 3.5
$CH_3CH_2\cdot + CH_3COCOCH_3 \rightarrow CH_3\cdot + CH_3CH_2COCOCH_3$ ETHYL FREE RADICAL + 2,3-BUTANEDIONE 76 SCH/KNO REACTION ORDER: 2	525-556	2.5(+8)	0	3575±300	0.5	2.0
$CH_3CH_2\cdot + CH_3COCOCH_3 \rightarrow CH_3CH_3 + \cdot CH_2COCOCH_3$ ETHYL FREE RADICAL + 2,3-BUTANEDIONE 76 SCH/KNO REACTION ORDER: 2	525-556	4.0(+12)	0	5390±1560	0.1	16.0
$CH_3CH_2\cdot + CH_3COCOCH_3 \rightarrow CH_3CH_2COCH_3 + CH_3C(O)\cdot$ ETHYL FREE RADICAL + 2,3-BUTANEDIONE 76 SCH/KNO REACTION ORDER: 2	525-556	4.0(+8)	0	2970±300	0.5	2.0
$CH_3CH_2\cdot + CH_3CF_2N{=}NCH_2CH_3 \rightarrow CH_3CH_3 + \cdot CH_2CH_2N{=}NCH_2CH_3$ ETHYL FREE RADICAL + DIAZENE, DIETHYL- 76 SCH/KNO REACTION ORDER: 2	525-556	7.9(+11)	0	3775±1350	0.1	10.0
$CH_3CH_2\cdot + CH_3CH{=}CHCH_2CH_2\cdot \rightarrow CH_2{=}CH_2 + CH_3CH{=}CHCH_2CH_3$ ETHYL FREE RADICAL + 3-PENTENYL FREE RADICAL 75 STE/RAB REACTION ORDER: 2 k/k_{ref}: 0.093	298	-	-	-	0.9	1.1
NOTE: k_{ref}: $CH_3CH_2\cdot + CH_3CH{=}CHCH_2CH_2\cdot \rightarrow CH_3CH{=}CHCH_2CH_2CH_2CH_3$						
$CH_3CH_2\cdot + CH_3CH{=}CHCH_2CH_2\cdot \rightarrow CH_3CH_3 + cis\text{-}CH_3CH{=}CHCH{=}CH_2$ ETHYE FREE RADICAL + 3-PENTENYL FREE RADICAL 75 STE/RAB REACTION ORDER: 2 k/k_{ref}: 0.087	298	-	-	-	0.9	1.1
NOTE: k_{ref}: $CH_3CH_2\cdot + CH_3CH{=}CHCH_2CH_2\cdot \rightarrow CH_3CH{=}CHCH_2CH_2CH_2CH_3$						
$CH_3CH_2\cdot + CH_3COCOCH_2CH_3 \rightarrow CH_3CH_3 + CH_3COCOCH(\cdot)CH_3$ ETHYL FREE RADICAL + 2,3-PENTANEDIONE 74 SCH/KNO REACTION ORDER: 2 k/k_{ref}: 4.5	362-398	-	-	-		
NOTE: k_{ref}: $CH_3CH_2\cdot + CH_3COCOCH_2CH_3 \rightarrow CH_3CH_3 + \cdot CH_2COCOCH_2CH_3$						
$CH_3CH_2\cdot + CH_3COCOCH_2CH_3 \rightarrow CH_3CH_3 + CH_3COCOCH_2CH_2\cdot$ ETHYL FREE RADICAL + 2,3-PENTANEDIONE 74 SCH/KNO REACTION ORDER: 2 k/k_{ref}: 0.3	362-398	-	-	-		
NOTE: k_{ref}: $CH_3CH_2\cdot + CH_3COCOCH_2CH_3 \rightarrow CH_3CH_3 + \cdot CH_2COCOCH_2CH_3$						
$CH_3CH_2\cdot + CH_3COCOCH_2CH_3 \rightarrow CH_3CH_3 + \cdot CH_2COCOCH_2CH_3 + CH_3COCOCH(\cdot)CH_3 + CH_3COCOCH_2CH_2\cdot$ ETHYL FREE RADICAL + 2,3-PENTANEDIONE 74 SCH/KNO REACTION ORDER: 2	362-398	-	-	-	0.2	6.3
NOTE: k_{ref}: $CH_3CH_2\cdot + CH_3COCOCH_2CH_3 \rightarrow CH_3CH_2COCH_2CH_3 + CH_3C(O)\cdot$						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	F
k/k_{ref}: 50.12exp(-1410±1160/T)						
$CH_3CH_2\cdot + CH_3(CH_2)_4CH_3 \rightarrow CH_3CH_3 + [C_6H_{13}\cdot]$						
ETHYL FREE RADICAL + HEXANE						
76 YAM REACTION ORDER: 2	973-1088	1.8(+13)	0	8050		
$CH_3CH_3 \rightarrow CH_3\cdot + CH_3\cdot$						
ETHANE						
72 FAC/PUR2 REACTION ORDER: 1	920-1040	5.0(+16)	0	44510		
76 CLA/QUI	778-878	1.2(+16)	0	43530±250	0.7	1.4
$CH_3CH_3^* \rightarrow CH_3 + CH_3$						
ETHANE						
76 SBI/OBI REACTION ORDER: 1	298	5.0(+9)	-	-		
NOTE: k(1630A°)=1.2k(1630A°)						
$CD_3CD_3 \rightarrow CD_3\cdot + CD_3\cdot$						
ETHANE-D6						
76 CLA/QUI REACTION ORDER: 1	778-878	3.2(+16)	0	44270±120	0.9	1.2
$CH_3CH_3 \rightarrow$ products						
ETHANE						
71 ILL/WEL REACTION ORDER: 1	993-1097	4.6(+15)	0	36635		
72 ILL/SZA	933-1097	6.4(+14)	0	34700	0.9	1.1
74 EAK/NOV	973-1123	1.4(+16)	0	38850±1500		
$CH_3CH_3 + O \rightarrow CH_2 + HCHO + H_2$						
ETHANE + OXYGEN ATOM						
71 AVR/KOL1 REACTION ORDER: 2	313-523	1.2(+12)	0	2160±350	0.5	1.5
$CH_3CH_3 + O \rightarrow CH_3CH_2\cdot + OH$						
ETHANE + OXYGEN ATOM						
71 AVR/KOL1 REACTION ORDER: 2	313-523	2.3(+13)	0	3780±350	0.5	1.5
71 PAP/ASH	300-365	2.8(+13)	0	3270±125	0.7	1.5
$CH_3CH_3 + O^*(^1D) \rightarrow CH_3CH_2\cdot + OH$						
ETHANE + OXYGEN ATOM						
76 FIE/HUS REACTION ORDER: 2	300	4.4(+14)	-	-	0.9	1.1
$CH_3CH_3 + O \rightarrow$ products						
ETHANE + OXYGEN ATOM						
73 GAE/GLA REACTION ORDER: 2	300	2.7(+12)	-	-		
NOTE: GIVEN WITH CAUTION						
$CH_3CH_3 + O^*(^1D) \rightarrow$ products						
ETHANE + OXYGEN ATOM						
74 MIC/PAR REACTION ORDER: 2 k/k_{ref}: 0.512	300	-	-	-	0.9	1.1
NOTE: k_{ref}: $(CH_3)_4C + O^*(^1D) \rightarrow$ products						
$CH_3CH_3 + O + M \rightarrow$ products						
ETHANE + OXYGEN ATOM						
73 GAE/GLA REACTION ORDER: 2 M: N_2	300	2.9(+12)	-	-		
NOTE: LIMITING HIGH-PRESSURE k. GIVEN WITH CAUTION						
$CH_3CH_3 + H \rightarrow CH_3CH_2\cdot + H_2$						
ETHANE + HYDROGEN ATOM						
72 KAI/KOR REACTION ORDER: 2	1073-1173	3.3(+12)	-	-	0.2	1.8
73 CLA/DOV1	300-1800	5.4(+2)	3.5	2620±35	0.9	1.1
74 CAM/MAR	290-1290	1.3(+14)	0	4720±110	0.8	1.2
NOTE: RECOMMENDED k						
74 CAM/MAR	503-753	1.9(+14)	0	4920±190	0.7	1.3
74 KAI/SHE	1023-1123	2.4(+12)	-	-	0.7	1.3
75 NAM/SHE	800-900	1.5(+11)	-	-	0.7	1.3
$CH_3CH_3 + OH \rightarrow CH_3CH_2\cdot + H_2O$						
ETHANE + HYDROXYL FREE RADICAL						
75 OVE/PAR REACTION ORDER: 2	295	1.6(+11)	-	-	0.9	1.1
75 BUC/BOO k/k_{ref}: 9.6	653	-	-	-	0.9	1.1
NOTE: k_{ref}: $CH_4 + OH \rightarrow CH_3\cdot + H_2O$						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
76 HOW/EVE2 76 EBA/CAP k/k_{ref}: 2.88	296 1300	1.7(+11) -	- -	- -	0.8	1.2
NOTE: k_{ref}: $CH_4 + OH \rightarrow CH_3\cdot + H_2O$						

$CH_3CH_3 + OH + M \rightarrow CH_3CH_2\cdot + H_2O + M$ ETHANE + HYDROXYL FREE RADICAL 75 GOR/MUL1 REACTION ORDER: 2 M: H_2O	381	4.0(+11)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR 75 GOR/MUL1 M: H_2O	416	4.8(+11)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR.						

$CH_3CH_3 + HO_2\cdot \rightarrow CH_3CH_2\cdot + H_2O_2$ ETHANE + HYDROPEROXYL FREE RADICAL 71 BAL/LAN REACTION ORDER: 2 k/k_{ref}: 0.028	713	-	-	-		
NOTE: k_{ref}: $CH_3CH_3 + HCHO \rightarrow$ products						

$CH_3CH_3 + HO_2 \rightarrow CH_3CH_2\cdot + H_2O_2$ ETHANE + HYDROPEROXYL FREE RADICAL 73 BAL/FUL k/k_{ref}: 0.03	773	-	-	-		
NOTE: k_{ref}: $HCHO + HO_2 \rightarrow .CHO + H_2O_2$	773	3.0(+7)	-	-		
NOTE: EVALUATION						

$CH_3CH_3 + S^*(^1D) \rightarrow$ products ETHANE + SULFUR ATOM 72 LIT/DAL REACTION ORDER: 2 k/k_{ref}: 0.17	300	-	-	-		
NOTE: k_{ref}: $CH_2{\cdot}CH_2 + S^*(^1D) \rightarrow$ products						

$CH_3CH_3 + CH_2 \rightarrow CH_3CH_2CH_3$ ETHANE + METHYLENE FREE RADICAL 73 BAL/CRU REACTION ORDER: 2	304	2.9(+12)	-	-		

$CH_3CH_3 + CH_3\cdot \rightarrow CH_3CH_2\cdot + CH_4$ ETHANE + METHYL FREE RADICAL 72 PAC/PUR2 REACTION ORDER: 2 73 CIA/DEV1 ETHANE + METHYL FREE RADICAL 74 YAM/RYD 76 EBA/WES2 76 CRE/BAC	920-1040 300-1800 980-1130 1055-1325 1038	5.0(+14) 5.5(-1) 3.0(+12) 3.2(+13) 1.3(+10)	0 4.0 0 0 -	10830±2410 4170±15 6840±1100 9000 -	0.1 0.9 0.6 0.8	10. 1.1 1.8 1.2
NOTE: MEASURED k VALUES ALSO AT T=880K, 995K AND 1068K. NON-ARRHENIUS BEHAVIOUR						

$CH_3CH_3 + CN \rightarrow CH_3CH_2\cdot + HCN$ ETHANE + CYANOGEN FREE RADICAL 72 BUL/COO$_2$ REACTION ORDER: 2	300-415	1.5(+13)	0	0		
NOTE: ALTERNATIVE EXPRESSION: $k=2.4\times10^{13}\exp(-192/T)cm^3mol^{-1}s^{-1}$ 74 SCH/SCH	298	7.9(+12)	-	-		

$CH_3CH_3 + CH{\equiv}C\cdot \rightarrow CH_3CH_2\cdot + CH{\equiv}CH$ ETHANE + ETHYNYL FREE RADICAL 73 CUL/HUC REACTION ORDER: 2 k/k_{ref}: 0.54	298	-	-	-	0.9	1.1
NOTE: k_{ref}: $CH{\equiv}CBr + CH{\equiv}C\cdot \rightarrow Br + CH{\equiv}CC{\equiv}CH$						

$CH_3CH_3 + CH_3CH_2O\cdot \rightarrow CH_3CH_2\cdot + CH_3CH_2OH$ ETHANE + ETHOXY FREE RADICAL 74 MES/POL REACTION ORDER: 2	593	-	-	-	0.8	1.2
NOTE: k_{ref}: $CH_3CH_2O\cdot \rightarrow HCHO + CH_3$ [k/k_{ref}: $7.0\times10^{-6}cm^3mol^{-1}$]						

$CH_3CH_3 + (CH_3)_2CH\cdot \rightarrow CH_3CH_2\cdot + CH_3CH_2CH_3$ ETHANE + ETHYL, 1-METHYL-, FREE RADICAL 74 SZI/MAR REACTION ORDER: 2	496-548	2.5(+10)	0	6990±400	0.4	2.5

$CH_3CH_3 \quad M \rightarrow CH_3\cdot + CH_3\cdot + M$ ETHANE						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
73 BUR/SKI REACTION ORDER: 1 M: Ar	1000-1500	7.9(+16)	0	45050		
NOTE: LIMITING HIGH PRESSURE k						

$\cdot CH{=}C{-}O \cdot + e \rightarrow CO + CO + H$						
ETHENYL, 2-OXO-, FREE RADICAL + OXYGEN ATOM						
73 JEN/BAY1 REACTION ORDER: 2	298	1.2(+12)	-	-	0.7	1.3

$\cdot CH{=}C{-}O \cdot + e \rightarrow$ products						
ETENYL, 2-OXO-, FREE RADICAL + OXYGEN ATOM						
73 JEN/BAY2 REACTION ORDER: 2	296	2.2(+10)	-	-	0.5	1.5

$\cdot CH{=}C{-}O \cdot + e_2 \rightarrow$ products						
ETHENYL, 2-OXO-, FREE RADICAL + OXYGEN MOLECULE						
73 JEN/BAY2 REACTION ORDER: 2 k/k_{ref}: 0.018	296	-	-	-	0.8	1.2
NOTE: k_{ref}: $\cdot CH{=}C{-}O \cdot + O \rightarrow$ products						

	296	2.2(+10)	-	-	0.5	1.5
NOTE: EVALUATION						

$\cdot CH{=}C{-}O \cdot + CH{\equiv}CH \rightarrow$ products						
ETHENYL, 2-OXO-, FREE RADICAL + ETHYNE						
73 JEN/BAY1 REACTION ORDER: 2	298	5.0(+8)	-	-		
NOTE: UPPER LIMIT k						

$CH_2{=}C{=}O + O \rightarrow \cdot CHO + \cdot CHO$						
ETHENONE + OXYGEN ATOM						
74 MAC/THR2 REACTION ORDER: 2	293	3.4(+11)	-	-	0.9	1.1

$CH_2{=}C{=}O + e \rightarrow$ products						
ETHENONE + OXYGEN ATOM						
73 JEN/BAY2 REACTION ORDER: 2	296	1.7(+11)	-	-	0.8	1.2
75 GAF/ATK1	296	2.8(+11)	-	-	0.9	1.1
NOTE: EVALUATION						

$CH_2{=}C{=}O + H \rightarrow CO + CH_3\cdot$						
ETHENONE + HYDROGEN ATOM						
75 SLE/WAR1 REACTION ORDER: 2	218-363	3.6(+12)	0	1180±100	0.6	1.4

$CH_2{=}C{=}O + CH \rightarrow HCHO + \cdot CHO$						
ETHENONE + HYDROXYL FREE RADICAL						
77 VAN/VAN REACTION ORDER: 2	480-1000	2.8(+13)	0	0		
NOTE: EVALUATION						

$CD_2{=}C{=}O + CD_2 \rightarrow CO + CD_2{=}CD_2$						
ETHENONE-d_2 + METHYLENE-d_2 FREE RADICAL						
71 MCN/KEL REACTION ORDER: 2 k/k_{ref}: 6.6	653	-	-	-		
NOTE: k_{ref}: $(CH_3)_4C + CD_2 \rightarrow (CH_3)_3CCH_2\cdot + CD_2H$						

$CH_2{=}C{=}O + {}^1CH_2{}^*: \rightarrow CO + CH_2{=}CH_2$						
ETHENONE + METHYLENE FREE RADICAL						
74 LAU/BAS REACTION ORDER: 2	298	1.9(+13)	-	-	0.6	1.4
NOTE: LIMITING HIGH PRESSURE k.						
77 FIL/REB	298	2.1(+12)	-	-		
	298	1.8(+13)	-	-		
NOTE: ${}^1CH_2{}^*$: ($^1B_1$) STATE						

$CH_2{=}C{=}O + CH_2{=}C{=}O \rightarrow$ cy-$C_4H_4O_2$						
ETHENONE						
72 BIA/DAV REACTION ORDER: 2	498-596	1.8(+8)	0	37240		

$CH_2{=}C{=}O + CH_3COOH \rightarrow (CH_3CO)_2O$						
ETHENONE + ACETIC ACID						
76 BIA/VAY REACTION ORDER: 2	368-489	1.3(+9)	0	6000±110	0.8	1.3

$CH_2{=}C{=}O + CH_3CH_2COOH \rightarrow CH_3CH_2C(O)OC(O)CH_3$						
ETHENONE + PROPANOIC ACID						
76 BIA/VAY REACTION ORDER: 2	368-489	1.7(+9)	0	6100±90	0.8	1.2

$CH_2{=}C{=}O + CH_3CH_2CH_2COOH \rightarrow CH_3CH_2CH_2C(O)OC(O)CH_3$						
ETHENONE + BUTANOIC ACID						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
76 ELA/VAY REACTION ORDER: 2	428	1.3(+3)	-	-		
CH_2=C=O + $(CH_3)_2CHCOOH$ → $(CH_3)_2CHC(O)OC(O)CH_3$						
ETHENONE + PROPANOIC ACID, 2-METHYL-						
76 ELA/VAY REACTION ORDER: 2	428	1.6(+3)	-	-		
CH_2=C=O + $(CH_3)_3CCOOH$ → $(CH_3)_3CC(O)OC(O)CH_3$						
ETHENONE + PROPANOIC ACID, 2,2-DIMETHYL-						
76 ELA/VAY REACTION ORDER: 2	368-489	1.5(+9)	0	5750±100	0.8	1.3
CH_2=C=O + $(CH_3)_3CCH_2COOH$ → $(CH_3)_3CCH_2C(O)OC(O)CH_3$						
ETHENONE + BUTANOIC ACID, 3,3-DIMETHYL-						
76 ELA/VAY REACTION ORDER: 2	428	1.6(+3)	-	-		
$CH_3C(O)$. → CH_3 + CO						
ETHYL, OXO-, FREE RADICAL						
73 FRE/VIN REACTION ORDER: 1	326	1.9(+1)	-	-	0.8	1.2
76 WAT/WIL	333-413	1.6(+13)	0	8650±250	0.5	2.5
$CH_3C(O)$. + O_2 → $CH_3C(O)OO$.						
ETHYL, 1-OXO-, FREE RADICAL + OXYGEN MOLECULE						
74 DIX/SKI REACTION ORDER: 2	336-357	1.2(+10)	-	-	0.7	1.3
$CH_3C(O)$. + H → CH_3. + .CHO						
ETHYL, 1-OXO-, FREE RADICAL + HYDROGEN ATOM						
75 SIE/WAR1 REACTION ORDER: 2 k/k_{ref}: 0.37	298	-	-	-		
NOTE: k_{ref}: $CH_3C(O)$. + H → CH_2=C=O + H + CH_3. + .CHO						
$CH_3C(O)$. + H → CH_2=C=O + H_2						
ETHYL, 1-OXO-, FREE RADICAL + HYDROGEN ATOM						
75 SIE/WAR1 REACTION ORDER: 2 k/k_{ref}: 0.63	298	-	-	-		
NOTE: k_{ref}: $CH_3C(O)$. + M → CH_2=C=O + H_2 + CH_3. + .CHO						
$CH_3C(O)$. + CH_2=CHCH=CH_2 → $CH_3COCH_2CH(.)CH$=CH_2						
ETHYL, 1-OXO-, FREE RADICAL + 1,3-BUTADIENE						
73 ENC/LIS REACTION ORDER: 2	333-397	-	-	-		
NOTE: k_{ref}: $CH_3C(O)$. (+M) → CH_3. + CO(+M)						
k/k_{ref}: $1.6X10^{3}\exp(+5280\pm500/T)$						
$CH_3C(O)$. + M → CH_3. + CO + M						
ETHYL, 1-OXO-, FREE RADICAL						
74 SZI/WAL REACTION ORDER: 1	507	2.0(+13)	0	10970±900	0.6	1.6
NOTE: EVALUATION. LIMITING HIGH PRESSURE k. M=N_2. Ar, cy-C_4H_8						
$CH_3C(O)OO$. + NO → CH_3. + CO_2 + NO_2						
ETHYLDIOXY, 1-OXO-, FREE RADICAL + NITROGEN OXIDE(NO)						
76 COX/DER3 REACTION ORDER: 2 k/k_{ref}: 1.7	296	-	-	-		
NOTE: k_{ref}: $CH_3C(O)O_2$. + NO_2 → $CH_3C(O)O_2NO_2$						
$CH_3C(O)OO$. + NO → $CH_3C(O)O$. + NO_2						
ETHYLDIOXY, 1-OXO-, FREE RADICAL + NITROGEN OXIDE (NO)						
77 COX/ROF REACTION ORDER: 2	300	1.6(+12)	-	-		
NOTE: EVALUATION						
77 HEN/KEN	298-318	2.0(12)	-	-		
$CH_3C(O)OO$. + NO_2 → $CH_3C(O)OONO_2$						
ETHYLDIOXY, 1-OXO-, FREE RADICAL + NITROGEN OXIDE (NO_2)						
77 COX/ROF REACTION ORDER: 2 k/k_{ref}: 0.54	294-328	-	-	-	0.7	1.3
NOTE: k_{ref}: $CH_3C(O)OO$. + NO → $CH_3C(O)O$. + NO_2						
77 COX/ROF	300	8.4(+11)	-	-	0.1	10.0
NOTE: GIVEN WITH CAUTION						
$CH_3C(O)OO$. + HCHO → $CH_3C(O)OOH$ + .CHO						
ETHYLDIOXY, 1-OXO-, FREE RADICAL + FORMALDEHYDE						
74 DIX/SKI2 REACTION ORDER: 2 k/k_{ref}: 2.4	119-188	-	-	-		
NOTE: k_{ref}: $CH_3C(O)OO$. + CH_3CHO → $CH_3C(O)OOH$ + $CH_3C(O)$.						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
$CH_3C(O)OO\cdot + CH_3CH{=}CH_2 \rightarrow CH_3\cdot + CO_2 + cy\text{-}(CH_3)CHCH_2O$						
ETHYLDIOXY, 1-OXO-, FREE RADICAL + PROPENE						
77 DIA/WAD REACTION ORDER: 2	393	6.4(+6)	-	-	0.9	1.1
$CH_3C(O)OO\cdot + CH_3CH_2CH{=}CH_2 \rightarrow CH_3\cdot + CO_2 + cy\text{-}(CH_3CH_2)CHCH_2O$						
ETHYLDIOXY, 1-OXO-, FREE RADICAL + 1-BUTENE						
74 DIA/WAD REACTION ORDER: 2	393	3.5(+7)	-	-		
75 SEL/WAD	357-410	8.7(+10)	0	3480±420	0.3	3.0
$CH_3C(O)OO\cdot + cis\text{-}CH_3CH{=}CHCH_3 \rightarrow CH_3\cdot + CO_2 + cy\text{-}(CH_3)CHCH(CH_3)O$						
ETHYLDIOXY, 1-OXO-, FREE RADICAL + cis-2-BUTENE						
72 RAY/WAD REACTION ORDER: 2	457	2.0(+9)	-	-		
NOTE: EVALUATION						
75 DIA/SEL	393	7.5(+7)	-	-	0.9	1.1
$CH_3C(O)OO\cdot + trans\text{-}CH_3CH{=}CHCH_3 \rightarrow CH_3\cdot + CO_2 + cy\text{-}(CH_3)CHCH(CH_3)O$						
ETHYLDIOXY, 1-OXO-, FREE RADICAL + trans-2-BUTENE						
75 DIA/SEL REACTION ORDER: 2	393	1.2(+8)	-	-	0.9	1.1
$CH_3C(O)OO\cdot + (CH_3)_2C{=}CH_2 \rightarrow CH_3\cdot + CO_2 + cy\text{-}[(CH_3)_2]CCH_2O$						
ETHYLDIOXY, 1-OXO-, FREE RADICAL + 1-PROPENE, 2-METHYL-						
75 SEL/WAD REACTION ORDER: 2	357-410	1.9(+11)	0	3010±1410		
$CH_3C(O)OO\cdot + cis\text{-}CH_3CH_2CH{=}CHCH_3 \rightarrow CH_3\cdot + CO_2 + cy\text{-}(CH_3CH_2)CHCH(CH_3)O$						
ETHYLDIOXY, 1-OXO-, FREE RADICAL + cis-2-PENTENE						
77 DIA/WAD REACTION ORDER: 2	393	1.4(+8)	-	-	0.4	1.6
$CH_3C(O)OO\cdot + trans\text{-}CH_3CH_2CH{=}CHCH_3 \rightarrow CH_3\cdot + CO_2 + cy\text{-}(CH_3CH_2)CHCH(CH_3)O$						
ETHYLDIOXY, 1-OXO-, FREE RADICAL + trans-2-PENTENE						
77 DIA/WAD REACTION ORDER: 2	393	1.4(+8)	-	-	0.4	1.6
$CH_3C(O)OO\cdot + CH_3CH_2C(CH_3){=}CH_2 \rightarrow CH_3\cdot + CO_2 + cy\text{-}[(CH_3CH_2)C(CH_2)]CH_2O$						
ETHYLDIOXY, 1-OXO-, FREE RADICAL + 1-BUTENE, 2-METHYL-						
74 DIA/WAD REACTION ORDER: 2	393	5.0(+8)	-	-		
77 DIA/WAD	393	1.5(+8)	-	-	0.9	1.1
$CH_3C(O)OO\cdot + (CH_3)_2CHCH{=}CH_2 \rightarrow CH_3\cdot + CO_2 + cy\text{-}[(CH_3)_2CH]CHCH_2O$						
ETHYLDIOXY, 1-OXO-, FREE RADICAL + 1-BUTENE, 3-METHYL-						
77 DIA/WAD REACTION ORDER: 2	393	1.3(+7)	-	-	0.5	1.5
$CH_3C(O)OO\cdot + CH_3CH{=}C(CH_3)_2 \rightarrow CH_3\cdot + CO_2 + cy\text{-}(CH_3)CHC(CH_3)_2O$						
ETHYLDIOXY, 1-OXO-, FREE RADICAL + 2-BUTENE, 2-METHYL-						
77 DIA/WAD REACTION ORDER: 2	370-410	1.2(+11)	0	1965±110	0.8	1.3
$CH_3C(O)OO\cdot + CH_3CH_2CH_2CH_2CH{=}CH_2 \rightarrow CH_3\cdot + CO_2 + cy\text{-}(CH_3CH_2CH_2CH_2)CHCH_2O$						
ETHYLDIOXY, 1-OXO-, FREE RADICAL + 1-HEXENE						
77 DIA/WAD REACTION ORDER: 2	393	2.2(+7)	-	-	0.6	1.4
$CH_3CHO \rightarrow CH_3\cdot + .CHO$						
ACETALDEHYDE						
73 BAR/MAR REACTION ORDER: 1	768-813	3.9(+16)	0	40100±700	0.2	1.8
75 CEL/NAE	800-1225	7.1(+15)	0	41160±500	0.7	1.6
$CH_3CHO + O \rightarrow CH_2 + HCHO + CO + CO_2 + H_2$						
74 MAC/THR1	300	2.9(+11)	-	-	0.9	1.1
77 SIN/IRW	298-472	7.2(+12)	0	986±77	0.8	1.2
$CH_3CHO + O_2 \rightarrow CH_3C(O)\cdot + HO_2$						
ACETALDEHYDE + OXYGEN MOLECULE						
77 CEL/NAE REACTION ORDER: 2	1030-1115	2.0(+13)	0.5	21240±600	0.5	2.0

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
$CH_3CHO + e_2 + M \rightarrow CH_3C(O)OOH + N$						
ACETALDEHYDE + OXYGEN MOLECULE						
76 BRY/LEV REACTION ORDER: 3 M: O_3	393-473	5.0(+17)	0	7550±850	0.1	7
$CH_3CHO + e_3 \rightarrow$ products						
ACETALDEHYDE + OZONE						
73 STE/NIK2 REACTION ORDER: 2	298	2.0(+4)	-	-	0.9	1.1
$CH_3CHO + H \rightarrow CH_3C(O). + H_2$						
ACETALDEHYDE + HYDROGEN ATOM						
73 ADE/WAG1 REACTION ORDER: 2	295-389	2.6(+12)	0	1310±75	0.9	1.1
75 STE/WAR1 k/k_{ref}: 0.46	298	-	-	-		
NOTE: k_{ref}: $CH_2{=}C{=}O + H \rightarrow CH_3. + CO$						
ACETALDEHYDE + HYDROGEN ATOM						
73 WHY/MIC2	298-500	1.3(+13)	0	1660±60	0.8	1.2
$CH_3CHO + eH \rightarrow CH_3C(O). + H_2O$						
ACETALDEHYDE + HYDROXYL FREE RADICAL						
71 MCR/NIK2 REACTION ORDER: 2 k/k_{ref}: 0.9	300	-	-	-		
NOTE: k_{ref}: $CH_3CH{=}CH_2 + eH \rightarrow$ products						
71 MCR/STE	300	9.0(+12)	-	-	0.7	1.3
76 CCX/DER	296	1.2(+13)	-	-		
NOTE: UPPER LIMIT k						
$CH_3CHO + HO_2 \rightarrow CH_3C(O). + H_2O_2$						
ACETALDEHYDE + HYDROPEROXYL FREE RADICAL						
77 CCL/NAE REACTION ORDER: 2	1030-1115	1.7(+12)	0	5350	0.3	4.0
NOTE: EVALUATION						
$CH_3CHO + NO_2 \rightarrow CH_3C(O). + HCNO$						
ACETALDEHYDE + NITROGEN OXIDE(NO_2)						
71 JAF REACTION ORDER: 2	298-373	1.6(+5)	0	3475		
72 DAV/CGR	295	8.6(0)	-	-	0.9	1.1
NOTE: E=12900±600cal/mole(E/R=6490±300°K) REPORTED FOR T RANGE 295-395K						
$CH_3CHO + NO_3 \rightarrow CH_3C(O). + HONO_2$						
ACETALDEHYDE + NITROGEN OXIDE (NO_3)						
74 MCR/NIK REACTION ORDER: 2	300	7.2(+8)	-	-	0.7	1.3
NOTE: BEST FIT OF EXPERIMENTAL DATA						
$CH_3CHO + CH_3. \rightarrow CH_3C(O). + CH_4$						
ACETALDEHYDE + METHYL FREE RADICAL						
71 DAL/DAN REACTION ORDER: 2	713-813	1.6(+12)	0	4125±250		
NOTE: EVALUATION						
$CH_3CHO + CH_3. \rightarrow CH_3C(O). + .CH_2CHO + CH_4$						
ACETALDEHYDE + METHYL FREE RADICAL						
76 DAR/DER REACTION ORDER: 2 k/k_{ref}: 2.7	785	-	-	-		
NOTE: k_{ref}: $CH_3CDO + CH_3. \rightarrow .CH_3C(O). + CH_3D$						
$CH_3CDO + CH_3. \rightarrow .CH_2CDO + CH_4$						
ACETALDEHYDE-1-d + METHYL FREE RADICAL						
76 DAR/DER REACTION ORDER: 2 k/k_{ref}: 0.62	785	-	-	-		
NOTE: k_{ref}: $CH_3CDO + CH_3. \rightarrow CH_3C(O). + CH_3D$						
$CH_3CHO + CH_3O. \rightarrow CH_3C(O). + CH_3OH$						
ACETALDEHYDE + METHOXY FREE RADICAL						
75 WIA/MEA REACTION ORDER: 2 k/k_{ref}: 1.5	298	-	-	-	0.7	1.3
NOTE: k_{ref}: $O_2 + CH_3O. \rightarrow HO_2. + HCHO$						
$CH_3CHO + M \rightarrow CH_3 + .CHO + M$						
ACETALDEHYDE						
75 BEN/SPI REACTION ORDER: 1 M: Ar	1400-1600	1.2(+16)	0	41140±480		
NOTE: LIMITING HIGH-PRESSURE k.						
76 SPIN/WAG M: Ar	1350-1650	1.2(+16)	0	41150±500		
NOTE: LIMITING HIGH PRESSURE k.						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	F

$cy\text{-}CH_2CH_2O + NO_2 + NO_2 \rightarrow$ products						
OXIRANE + NITROGEN OXIDE(NO_2)						
71 JAF REACTION ORDER: 3	298-373	1.3(+12)	0	1860		
NOTE: GIVEN WITH CAUTION						

$cy\text{-}CH_2CH_2S + H \rightarrow CH_2{=}CH_2 + SH$						
THYIRANE + HYDROGEN ATOM						
77 LEE/STI REACTION ORDER: 2	223-423	1.7(+13)	0	946±12	0.9	1.1

$CH_3COOH + CH_2{=}C{=}O \rightarrow (CH_3CO)_2O$						
ACETIC ACID + ETHENONE						
76 BIA/VAY REACTION ORDER: 2	368-489	1.3(+9)	0	6000±110	0.8	1.3

$CH_3C(O)OOH + CH_3CH{=}CH_2 \rightarrow CH_3COOH + cy\text{-}(CH_3)CHCH_2O$						
ETHANEPEROXOIC ACID + PROPENE						
77 DIA/WAD REACTION ORDER: 2	393	2.3(0)	-	-	0.6	1.4

$CH_3C(O)OOH + CH_3CH_2CH{=}CH_2 \rightarrow CH_3COOH + cy\text{-}(CH_3CH_2)CHCH_2O$						
ETHANEPEROXOIC ACID + 1-BUTENE						
75 SEL/WAD REACTION ORDER: 2	357-410	4.8(+11)	0	9920±1240	0.04	25.0

$CH_3C(O)OOH + cis\text{-}CH_3CH{=}CHCH_3 \rightarrow CH_3COOH + cy\text{-}(CH_3)CHCH(CH_3)O$						
ETHANEPEROXOIC ACID + cis-2-BUTENE						
75 DIA/SEL REACTION ORDER: 2	393	3.2(+1)	-	-	0.6	1.4

$CH_3C(O)OOH + trans\text{-}CH_3CH{=}CHCH_3 \rightarrow CH_3COOH + cy\text{-}(CH_3)CHCH(CH_3)O$						
ETHANEPEROXOIC ACID + trans-2-BUTENE						
75 DIA/SEL REACTION ORDER: 2	393	3.2(+1)	-	-	0.6	1.4

$CH_3C(O)OOH + CH_3CH{=}C(CH_3)_2 \rightarrow CH_3COOH + cy\text{-}(CH_3)CHC(CH_3)_2O$						
ETHANEPEROXOIC ACID + 1-PROPENE, 2-METHYL-						
75 SEL/WAD REACTION ORDER: 2	357-410	4.3(+10)	0	7940±1630		

$CH_3C(O)OOH + cis\text{-}CH_3CH_2CH{=}CHCH_3 \rightarrow CH_3COOH + cy\text{-}(CH_3CH_2)CHCH(CH_3)O$						
ETHANEPEROXOIC ACID + cis-2-PENTENE						
77 DIA/WAD REACTION ORDER: 2	393	4.3(+1)	-	-	0.6	1.4

$CH_3C(O)OOH + trans\text{-}CH_3CH_2CH{=}CHCH_3 \rightarrow CH_3COOH + cy\text{-}(CH_3CH_2)CHCH(CH_3)O$						
ETHANEPEROXOIC ACID + trans-2-PENTENE						
77 DIA/WAD REACTION ORDER: 2	393	4.3(+1)	-	-	0.6	1.4

$CH_3C(O)OOH + CH_3CH_2C(CH_3){=}CH_2 \rightarrow CH_3COOH + cy\text{-}[(CH_3CH_2)C(CH_3)]CH_2O$						
ETHANEPEROXOIC ACID + 1-BUTENE, 2-METHYL-						
77 DIA/WAD REACTION ORDER: 2	393	6.0(+1)	-	-	0.6	1.4

$CH_3C(O)OOH + (CH_3)_2CHCH{=}CH_2 \rightarrow CH_3COOH + cy\text{-}[(CH_3)_2CH]CHCH_2O$						
ETHANEPEROXOIC ACID + 1-BUTENE, 3-METHYL-						
77 DIA/WAD REACTION ORDER: 2	393	1.0(+1)	-	-	0.8	1.2

$CH_3C(O)OOH + (CH_3)_2C{=}CHCH_3 \rightarrow CH_3COOH + cy\text{-}[(CH_3)_2]CCH(CH_3)O$						
ETHANEPEROXOIC ACID + 2-BUTENE, 2-METHYL-						
77 DIA/WAD REACTION ORDER: 2	370-410	1.7(+11)	0	7410±290	0.5	2.1

$CH_3C(O)OOH + CH_3CH_2CH_2CH_2CH{=}CH_2 \rightarrow CH_3COOH + cy\text{-}(CH_3CH_2CH_2)CHCH_2O$						
ETHANEPEROXOIC ACID + 1-HEXENE						
77 DIA/WAD REACTION ORDER: 2	393	2.1(+1)	-	-	0.4	1.6

$CH_3CH_2O\cdot \rightarrow CH_3 + HCHO$						
ETHOXY FREE RADICAL						
77 EAT/MIL2 REACTION ORDER: 1	435-491	1.0(+15)	0	10870		
NOTE: EVALUATION						

$CH_3CH_2O\cdot \rightarrow CH_3CHO + H$						
ETHOXY FREE RADICAL						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
77 EAT/MIL2 REACTION ORDER: 1	435-491	2.5(+14)	0	11780		
NOTE: EVALUATION						
$CH_3CH_2O\cdot + NO \rightarrow CH_3CHO + HNO$						
ETHOXY FREE RADICAL + NITROGEN OXIDE (NO)						
77 EAT/MIL2 REACTION ORDER: 2	435-491	6.3(+12)	0	0±500	0.4	2.5
NOTE: EVALUATION						
$CH_3CH_2O\cdot + NO \rightarrow CH_3CH_2ONO$						
ETHOXY FREE RADICAL + NITROGEN OXIDE (NO)						
73 EAT/MCC REACTION ORDER: 2	393-473	2.0(+13)	0	0±500	0.4	2.5
74 EAT/MIL	393-473	2.0(+13)	0	0±500	0.4	2.5
77 EAT/MIL2	435-491	2.0(+13)	0	0±500	0.4	2.5
NOTE: EVALUATION						
$CH_3CH_2O\cdot + NO_2 \rightarrow CH_3CHO + HONO$						
ETHOXY FREE RADICAL + NITROGEN OXIDE (NO_2)						
77 EAT/MIL2 REACTION ORDER: 2	435-491	4.0(+12)	0	0		
NOTE: EVALUATION						
$CH_3CH_2O\cdot + NO_2 \rightarrow CH_3CH_2ONO_2$						
ETHOXY FREE RADICAL + NITROGEN OXIDE (NO_2)						
77 EAT/MIL2 REACTION ORDER: 2	435-491	7.9(+12)	0	0		
NOTE: EVALUATION						
$CH_3CH_2O\cdot + CH_3CH_3 \rightarrow CH_3CH_2OH + CH_3CH_2\cdot$						
ETHOXY FREE RADICAL + ETHANE						
74 MES/POL REACTION ORDER: 2	593	-	-	-	0.9	1.2
NOTE: k_{ref}: $CH_3CH_2O\cdot \rightarrow HCHO + CH_3$						
k/k_{ref}: $7.0X10^{-6} cm^3 mol^{-1}$						
$\cdot CH_2CH_2OH + HO_2\cdot \rightarrow CH_3CH_2OH + O_2$						
ETHYL, 2-HYDROXY-, FREE RADICAL + HYDROPEROXYL FREE RADICAL						
76 MEA/HEI REACTION ORDER: 2 k/k_{ref}: 1.2	298	-	-	-		
NOTE: k_{ref}: $\cdot CH_2CH_2OH + HO_2\cdot \rightarrow HCHO + HCHO + H_2O$						
$CH_3CH_2O_2\cdot \rightarrow HCHO + CH_3O\cdot$						
ETHYLDIOXY FREE RADICAL						
74 MES/POL REACTION ORDER: 1 k/k_{ref}: 13.4	593	-	-	-		
NOTE: k_{ref}: $CH_3CH_2O_2\cdot \rightarrow CH_3CHO + OH$						
$CH_3CH_2OH + O \rightarrow HCHO + CH_2 + H_2O$						
ETHANOL + OXYGEN ATOM						
71 AVR/KOL2 REACTION ORDER: 2	343-523	3.4(+11)	0	1335		
$CH_3CH_2OH + O \rightarrow CH_3CHO + H_2O$						
ETHANOL + OXYGEN ATOM						
71 AVR/KOL2 REACTION ORDER: 2	343-413	7.5(+11)	0	1485		
$CH_3CH_2OH + O \rightarrow \cdot CH_2CH_2OH + CH_3CH_2O\cdot + OH$						
ETHANOL + OXYGEN ATOM						
71 AVR/KOL2 REACTION ORDER: 2	343-413	1.9(+13)	0	2945		
$CH_3CH_2OH + H \rightarrow CH_3CH_2\cdot + H_2O$						
ETHANOL + HYDROGEN ATOM						
73 ADE/WAG2 REACTION ORDER: 2	295-700	5.9(+11)	0	1736		
NOTE: GIVEN WITH CAUTION						
$CH_3CH_2OH + H \rightarrow CH_3CH(\cdot)OH + H_2$						
ETHANOL + HYDROGEN ATOM						
73 ADE/WAG2 REACTION ORDER: 2	295-700	4.4(+12)	0	2300		
$CH_3CH_2OH + H \rightarrow$ products						
ETHANOL + HYDROGEN ATOM						
73 ADE/WAG2 REACTION ORDER: 2	295-700	4.2(+12)	0	2115±150	0.9	1.1
$CH_3CH_2OH + OH \rightarrow \cdot CH_2CH_2OH + H_2O$						
ETHANOL + HYDROXYL FREE RADICAL						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
76 CAM/MCL REACTION ORDER: 2	292	1.8(+12)	-	-	0.9	1.1
$(CH_3)_2O \rightarrow CH_3O\cdot + CH_3$ METHANE, OXYBIS- 75 PAC 77 ABO/NAE REACTION ORDER: 1	782-936 1063-1223	1.0(+15) 2.2(+15)	0 0	38250±960 38550	0.3	3.2
$(CH_3)_2O + O \rightarrow CH_3OCH_2\cdot + OH$ METHANE, OXYBIS-, + OXYGEN ATOM 72 LEE/MEA REACTION ORDER: 2	217-366	5.0(+12)	0	1435±100	0.8	1.2
$(CH_3)_2O + H \rightarrow CH_3OCH_2\cdot + H_2$ METHANE, OXYBIS-, + HYDROGEN ATOM 74 MEA/KIM REACTION ORDER: 2 NOTE: FLOW DISCHARGE METHOD WITH MASS SPECTROMETRIC DETECTION.	300-404	1.3(+13)	0	2360±50	0.6	1.4
$(CH_3)_2O + D \rightarrow CH_3OCH_2\cdot + DH$ METHANE, OXYBIS-, + DEUTERIUM ATOM 74 MEA/KIM REACTION ORDER: 2 NOTE: FLOW DISCHARGE METHOD WITH ESR DETECTION. k GIVEN WITH CAUTION	198-363	4.1(+13)	0	2230±50	0.8	1.2
$CH_3OCH_3 + OH \rightarrow \cdot CH_2OCH_3 + H_2O$ METHANE, OXYBIS-, + HYDROXYL FREE RADICAL 77 PER/ATK1 REACTION ORDER: 2	299-427	7.8(+12)	0	390±150		
$(CH_3)_2O + CH_3 \rightarrow \cdot CH_2OCH_3 + CH_4$ METHANE, OXYBIS-, + METHYL FREE RADICAL 75 PAC REACTION ORDER: 2 NOTE: CURVED ARRHENIUS PLOT OVER EXTENDED T RANGE 373-936K	782-936	3.2(+13)	0	7600±840	0.4	2.5
$CH_3OOCH_3 \rightarrow CH_3O\cdot + CH_3O$ PEROXIDE, DIMETHYL- 76 BAT/MCC1 REACTION ORDER: 1 73 LIS/MAS NOTE: EVALUATION 77 BAR/BEN	383-413 400 391-432	3.2(+15) 3.3(-4) 5.0(+15)	0 - 0	18600±100 - 18670±450	0.3 0.3	3.2 3.2
$CH_3OOCH_3 + CH_3O\cdot \rightarrow CH_3O\cdot + HCHO + CH_3OH$ PEROXIDE, DIMETHYL-, + METHOXY FREE RADICAL 77 BAR/BEN REACTION ORDER: 2 NOTE: GIVEN WITH CAUTION	391-432	5.0(+7)	0	0		
$cy\text{-}CH_2CH_2S \rightarrow CH_2{=}CH_2 + SO$ THIIRANE + OXYGEN ATOM 76 LEE/TIM REACTION ORDER: 2	268-424	8.1(+12)	0	18±20	0.9	1.1
$cy\text{-}CH_2SCH_2 + O \rightarrow cy\text{-}CH_2SCH\cdot + OH$ THIIRANE + OXYGEN ATOM 76 LEE REACTION ORDER: 2	298-478	8.1(+12)	0	-18±20		
$cy\text{-}CH_2CH_2S + H \rightarrow CH_2{=}CH_2 + SH$ THIIRANE + HYDROGEN ATOM 75 YOK/AHM REACTION ORDER: 2	300-425	5.7(+13)	0	978±88	0.9	1.1
$cy\text{-}CH_2SCH_2 + H \rightarrow cy\text{-}CH_2SCH\cdot + H_2$ THIIRANE + HYDROGEN ATOM 76 LEE REACTION ORDER: 2	298	7.1(+11)	-	-	0.8	1.2
$cy\text{-}CH_2CH_2S + S \rightarrow CH_2{=}CH_2 + S_2$ THIIRANE + SULFUR ATOM 71 STK/O'C REACTION ORDER: 2 NOTE: k/k_{ref}: 8.3exp(+906/T) k_{ref}: $CH_2{=}CH_2 + S \rightarrow cy\text{-}CH_2CH_2S$ CONVENTIONAL PHOTOLYSIS METHOD	298-450	-	-	-		
73 KLE/DAV1	298-355	2.7(+13)	0	0	0.9	1.1
$cy\text{-}CH_2CH_2S + CH_3 \rightarrow CH_2{=}CH_2 + CH_3S\cdot$ THIIRANE + METHYL FREE RADICAL 72 JAK/AHM REACTION ORDER: 2 NOTE: EVALUATION	304-478	7.1(+10)	0	3370±400	0.3	3.3

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
$cy\text{-}CH_2CH_2S + CD_3 \rightarrow CH_2{=}CH_2 + CD_3S.$						
THIIRANE + METHYL-d_3 FREE RADICAL						
72 JAK/AHM REACTION ORDER: 2	303-477	5.9(+10)	0	3270±500	0.2	4.4
NOTE: EVALUATION						
$cy\text{-}CH_2CH_2S + CD_3 \rightarrow cy\text{-}CH_2{=}CH(.)S + CD_3H$						
THIIRANE + METHYL-d_3 FREE RADICAL						
71 JAK/AHM REACTION ORDER: 2	303-477	2.2(+11)	0	4800±500	0.3	4.0
NOTE: EVALUATION						
$cy\text{-}CH_2CH_2S + CH_3S. \rightarrow CH_2{=}CH_2 + CH_3S_2.$						
THIIRANE + METHYL, MERCAPTO-, FREE RADICAL						
72 JAK/AHM REACTION ORDER: 2	304-478	3.2(+11)	0	443C		
NOTE: APPROXIMATE k						
$CH_3SCH_2. + CH_4 \rightarrow (CH_3)_2S + CH_3.$						
METHYL, (METHYLTHIO)-, FREE RADICAL + METHANE						
76 ART/LEE REACTION ORDER: 2	393-518	6.3(+11)	0	7662		
NOTE: EVALUATION BASED ON k^{-1} AND THERMODYNAMIC DATA						
$CH_3CH_2SH + O \rightarrow CH_3CH_2. + MS(O). + CH_3CH_2S(O). + H$						
ETHANETHIOL + OXYGEN ATOM						
76 SLA/GRA REACTION ORDER: 2	300	1.7(+12)	-	-		
$(CH_3)_2S + O \rightarrow CH_3S(O). + CH_3$						
METHANE, THIOBIS-, + OXYGEN ATOM						
76 LEE/TIM REACTION ORDER: 2	268-424	8.6(+12)	0	-366±16	0.9	1.1
76 SLA/GRA	300	3.8(+13)	-	-		
$(CH_3)_2S + O \rightarrow$ products						
METHANE, THIOBIS-, + OXYGEN ATOM						
74 CAD/WIC REACTION ORDER: 2		3.3(+11)	-	-		
$(CH_3)_2S + H \rightarrow CH_3SCH_2. + H_2$						
METHANE, THIOBIS-, + HYDROGEN ATOM						
76 LEE REACTION ORDER: 2	300	9.0(+10)	-	-	0.7	1.3
$(CH_3)_2S + CH_3. \rightarrow CH_3SCH_2. + CH_4$						
METHANE, THIOBIS-, + METHYL FREE RADICAL						
76 ART/LEE REACTION ORDER: 2	393-518	4.2(+11)	0	4613±82	0.8	1.2
$CH_3CN + O \rightarrow OCN + CH_3$						
ACETONITRILE + OXYGEN ATOM						
77 LCN/TIM REACTION ORDER: 2	383-500	4.8(+11)	0	2400±100	0.8	1.2
REACTION ORDER: 2 k/k_{ref}: 1.2	383	-	-	-	0.7	1.3
NOTE: k_{ref}: $CD_3CN + O \rightarrow OCN + CD_3$						
k/k_{ref}: 1.5	423	-	-	-	0.6	1.4
NOTE: k_{ref}: $CD_3CN + O \rightarrow OCN + CD_3$						
$CH_3C(O)O_2NO_2 \rightarrow CH_3C(O)O_2. + NO_2$						
PEROXIDE, ACETYL NITRO-						
77 HEN/KEN REACTION ORDER: 1	298-313	1.9(+16)	0	13540±450	0.5	1.8
$NCCN + M \rightarrow CN + CN + M$						
ETHANE DINITRILE						
73 FUE/TAD REACTION ORDER: 2 M: Ar	2200-370	6.7(+16)	0	49640±610	0.8	1.2
$NCCN + CN \rightarrow [.C_3N_3]$						
ETHANE DINITRILE + CYANOGEN FREE RADICAL						
72 HUE/COO1 REACTION ORDER: 2	300-377	5.6(+11)	0	1576		
$CH_3N{=}NCH_3 \rightarrow CH_3. + CH_3. + N_2$						
DIAZENE, DIMETHYL-						
75 CAM/MAR REACTION ORDER: 1	676-813	2.0(+13)	0	22750±500	0.5	2.0
$CH_3N{=}NCH_3 + CH_3 \rightarrow CH_3N{=}NCH_2. + CH_4$						
DIAZINE, DIMETHYL + METHYL FREE RADICAL						
77 SCH/KNO REACTION ORDER: 2	524-565	-	-	-	0.5	2.0
NOTE: k_{ref}: $CD_3COCOCD_3 + CH_3 \rightarrow CD_3COCOCD_2. + CH_3D$						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
k/k_{ref}: 1.9exp(+600±300/T)						
$CH_3N{=}NCH_3 + CD_3 \rightarrow CH_3N{=}NCH_2\cdot + CD_3H$						
DIAZENE, DIMETHYL-, + METHYL-d_3 FREE RADICAL						
77 SCH/KNØ REACTION ØRDER: 2	524-565	-	-	-	0.5	2.0
NØTE: k_{ref}: $CD_3CØCØCD_3 + CD_3 \rightarrow CD_3CØCØCD_2\cdot + CD_4$						
k/k_{ref}: 0.63exp(+750±300/T)						
$(CH_3)_2NNH_2 \rightarrow (CH_3)_2N\cdot + NH_2$						
HYDRAZINE, 1,1-DIMETHYL-						
72 GØL/SØL REACTION ØRDER: 1	869-1076	4.0(+17)	0	31710		
$CH_3NHNHCH_3 \rightarrow CH_3N{=}NCH_3 + H_2$						
HYDRAZINE, 1,2-DIMETHYL-						
72 GØL/SØL REACTION ØRDER: 1	910-1271	3.2(+13)	0	28690		
$CH_3C(Ø)ØØNØ_2 \rightarrow CH_3C(Ø)ØØ\cdot + NØ_2$						
PERØXIDE, ACETYL NITRØ-						
77 CØX/RØF REACTION ØRDER: 1	294-328	7.9(+14)	0	12500±400	0.3	4.0
$CH_3C(Ø)ØØNØ_2 + ØH \rightarrow$ products						
PERØXIDE, ACETYL NITRØ-, + HYDRØXYL FREE RADICAL						
77 WIN/LLØ REACTION ØRDER: 2	299	≤1.0(+11)	-	-		
NØTE: UPPER LIMIT k						
$CH_3CH_2NØ + CH_3CH_2\cdot \rightarrow (CH_3CH_2)_2NØ\cdot$						
ETHANE, NITRØSØ-, + ETHYL FREE RADICAL						
72 TAN/LAM REACTION ØRDER: 2	329	>1.4(+10)	-	-		
NØTE: LØWER LIMIT k						
$CH_3CH_2NØ + CH_3CH_2NØ \rightarrow (CH_3CH_2NØ)_2$						
ETHANE, NITRØSØ-						
72 TAN/LAM REACTION ØRDER: 2	314	3.0(+4)	-	-	0.9	1.1
$CH_3CH_2ØNØ \rightarrow CH_3CHØ + HNØ$						
NITRØUS ACID ETHYL ESTER						
75 IAT/MCC	393-473	6.3(+13)	0	18875		
77 BAT/MIL2 REACTION ØRDER: 1	435-491	5.0(+13)	0	18873		
$CH_3CH_2ØNØ \rightarrow CH_3CH_2Ø\cdot + NØ$						
NITRØUS ACID ETHYL ESTER						
74 BAT/MIL REACTION ØRDER: 1	393-473	1.0(+16)	0	21040±450	0.4	2.5
NITRØUS ACID ETHYL ESTER						
75 BAT/MCC	393-473	1.0(+16)	0	21037±450	0.4	2.5
77 BAT/MIL2	435-491	1.0(+16)	0	21040±450	0.4	2.5
$CH_3CH_2ØNØ + Ø \rightarrow CH_3CHØ + ØH + NØ$						
NITRØUS ACID ETHYL ESTER + ØXYGEN ATØM						
75 DAV/THR REACTION ØRDER: 2	300-410	2.6(+13)	0	2440±240		
$CH_3CH_2ØNØ + Ø_3 \rightarrow CH_3CH_2ØNØ_2 + Ø_2$						
NITRØUS ACID ETHYL ESTER + ØZØNE						
76 HAS/FRE REACTION ØRDER: 2	298-352	1.9(+8)	0	2351±116	0.7	1.4
$CH_3CH_2ØNØ_2 \rightarrow CH_3CH_2\cdot + NØ_2$						
NITRIC ACID ETHYL ESTER						
77 BAT/MIL2 REACTION ØRDER: 1	435-491	1.0(+16)	0	20130		
$ØC{=}C{=}CØ + Ø \rightarrow CØ + CØ + CØ$						
1,2-PRØPADIENE-1,3-DIØNE + ØXYGEN ATØM						
74 PIL/WAG REACTION ØRDER: 2	250-450	1.0(+13)	0	1100±170	0.8	1.2
$ØC{=}C{=}CØ + Ø^*(^1D) \rightarrow CØ + CØ + CØ$						
1,2-PRØPADIENE -1,3-DIØNE + ØXYGEN ATØM						
73 HEI/HUS2 REACTION ØRDER: 2	300	2.4(+14)	-	-	0.9	1.1
$ØC{=}C{=}CØ + H \rightarrow ØC{=}CH\cdot + CØ$						
1,2-PRØPADIENE-1,3-DIØNE + HYDRØGEN ATØM						
77 FAU/WAG1 REACTION ØRDER: 2	295-480	1.7(+13)	0	1480±180	0.6	1.4
$Ø{-}C{=}C{=}C{=}Ø + ØH \rightarrow \cdot CH{=}C{=}Ø + CØ_2$						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
1,2-PROPADIENE-1,3-DIONE + HYDROXYL FREE RADICAL 77 FAU/WAG2 REACTION ORDER: 2	295-480	7.0(+12)	0	620±160	0.6	1.4
$OC{=}C{=}CO + C(^3P) \rightarrow$ products 1,2-PROPADIENE-1,3-DIONE + CARBON ATOM 75 HUS/YOU REACTION ORDER: 2	300	1.1(+14)	-	-		
$OC{=}C{=}CO + C^*(^1S_0) \rightarrow$ products 1,2-PROPADIENE-1,3-DIONE + CARBON ATOM 74 HUS/KIR REACTOR ORDER: 2	300	6.0(+13)	-	-		
$CH_3C{\equiv}CH + e \rightarrow$ cy-[$(CH_3)C{=}CH$]O* 1-PROPYNE + OXYGEN ATOM 73 HER REACTION ORDER: 2	275-360	1.6(13)	0	1010		
$CH_3C{\equiv}CH + e \rightarrow$ products PROPYNE + OXYGEN ATOM 75 AER/COX REACTION ORDER: 2	298-600	1.4(+13)	0	980±350	0.7	1.3
$CH_3C{\equiv}CH + e_3 \rightarrow$ products 1-PROPYNE + OZONE 71 DEM REACTION ORDER: 2	294	1.3(+4)	-	-	0.5	1.5
$CH_3C{\equiv}CH + H \rightarrow CH_3C(.){=}CH_2$* PROPYNE + HYDROGEN ATOM 72 WAG/ZEL2 REACTION ORDER: 2	195-503	6.5(+12)	0	1000±100	0.8	1.2
$CH_3C{\equiv}CH + H \rightarrow CH_3CH{=}CH.$* PROPYNE + HYDROGEN ATOM 72 WAG/ZEL2 REACTION ORDER: 2	195-503	5.8(+12)	0	1560±125	0.8	1.2
$CH_3C{\equiv}CH + H \rightarrow CH_3CH{=}CH. + CH_3C(.){=}CH_2$ PROPYNE + HYDROGEN ATOM 76 WHY/PAY REACTION ORDER: 2	215-460	3.6(+13)	0	1235±50	0.8	1.2
$CH_3C{\equiv}CH + OH \rightarrow$ products PROPYNE + HYDROXYL FREE RADICAL 73 BEA/HAC REACTION ORDER: 2	298	5.7(+11)	-	-	0.8	1.2
$CH_3C{\equiv}CH + S \rightarrow$ cy-$(CH_3)C{=}CHS$ 1-PROPYNE + SULFUR ATOM 71 SIP/O'C REACTION ORDER: 2 NOTE: k/k_{ref}: 6.2 exp(-453/T) k_{ref}: $CH_2{=}CH_2 + S \rightarrow$ cy-CH_2CH_2S CONVENTIONAL PHOTOLYSIS METHOD	298-450	-	-	-		
$CH_3C{\equiv}CH + NO_2 \rightarrow [CH_3C{=}CH.NO_2]$ PROPYNE + NITROGEN OXIDE (NO_2) 73 ASH/THO REACTION ORDER: 2	443-493	2.3(+8)	0	6425±80	0.8	1.2
$CH_3C{\equiv}CH + CH{\equiv}C. \rightarrow H + CH{\equiv}CC{\equiv}CCH_3$ 1-PROPYNE + ETHYNYL FREE RADICAL 73 CUL/HUC REACTION ORDER: 2 k/k_{ref}: 0.2	298	-	-	-	0.7	1.7
NOTE: $CH{\equiv}CBr + CH{\equiv}C. \rightarrow .C{\equiv}CBr + CH{\equiv}CH$ k/k_{ref}: 0.043	298	-	-	-	0.9	1.2
NOTE: k_{ref}: $CH{\equiv}CBr + CH{\equiv}C. \rightarrow Br + CH{\equiv}CC{\equiv}CH$						
$CH_3C{\equiv}CH + CH{\equiv}C. \rightarrow CH_3 + CH{\equiv}CC{\equiv}CH$ 1-PROPYNE + ETHYNYL FREE RADICAL 73 CUL/HUC REACTION ORDER: 2 k/k_{ref}: 9.9	298	-	-	-	0.9	1.1
NOTE: k_{ref}: $CH_3C{\equiv}CH + CH{\equiv}C. \rightarrow H + CH{\equiv}CC{\equiv}CCH_3$						
$CH_3C{\equiv}CH + CH{\equiv}C. \rightarrow .CH_2C{\equiv}CH + CH{=}CH$ 1-PROPYNE + ETHYNYL FREE RADICAL 73 CUL/HUC REACTION ORDER: 2 k/k_{ref}: 25.0	298	-	-	-	0.9	1.1
NOTE: k_{ref}: $CH_3C{\equiv}CH + CH{\equiv}C. \rightarrow H + CH{\equiv}CC{\equiv}CCH_3$						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
$CH_2{=}C{=}CH_2 + O \rightarrow CH_2{=}CH_2 + CO$						
1,2-PROPADIENE + OXYGEN ATOM						
72 HER/WAG REACTION ORDER: 2	275-375	7.8(+12)	0	805	0.7	1.3
$CH_2{=}C{=}CH_2 + O \rightarrow cy\text{-}(CH_2{=}C)CH_2O^*$						
1,2-PROPADIENE						
73 HER REACTION ORDER: 2	275-360	7.8(+12)	0	806		
$CH_2{=}C{=}CH_2 + O \rightarrow$ products						
1,2-PROPADIENE + OXYGEN ATOM						
74 HAV REACTION ORDER: 2 k/k_{ref}: 0.66	298	-	-	-		
NOTE: k_{ref}: $CH_3CH_2CH{=}CH_2 + O \rightarrow$ products k/k_{ref}: 0.197	298	-	-	-		
NOTE: k_{ref}: $(CH_3)_2C{=}CH_2 + O \rightarrow$ products						
77 ATK/PIT2	297-439	1.2(+13)	-	883±100	0.9	1.1
$CH_2{=}C{=}CH_2 + O_3 \rightarrow [CH_2{=}C{=}CH_2.O_3]$						
1,2-PROPADIENE + OZONE						
74 JOB/JOB REACTION ORDER: 2	499-598	1.0(+9)	0	2770±500	0.2	5.0
$CH_2{=}C{=}CH_2 + H \rightarrow CH_3C(.){=}CH_2^*$						
1,2-PROPADIENE + HYDROGEN ATOM						
72 WAG/ZEL3 REACTION ORDER: 2	273-470	8.5(+12)	0	1000±100	0.8	1.2
$CH_2{=}C{=}CH_2 + H \rightarrow .CH_2CH{=}CH_2^*$						
1,2-PROPADIENE + HYDROGEN ATOM						
72 WAG/ZEL3 REACTION ORDER: 2	273-470	4.0(+12)	0	1360±200	0.5	1.5
$CH_2{=}C{=}CH_2 + OH \rightarrow$ products						
1,2-PROPADIENE + HYDROXYL FREE RADICAL						
73 BRA/HAC REACTION ORDER: 2	298	2.7(+12)	-	-	0.4	1.6
$CH_2{=}C{=}CH_2 + OH \rightarrow$ products						
1,2-PROPADIENE + HYDROXYL FREE RADICAL						
77 ATK/PER3 REACTION ORDER: 2	299-424	3.4(+12)	0	-153±150	0.9	1.1
$CH_2{=}C{=}CH_2 + CH_3 \rightarrow .CH_2C(CH_3){=}CH_2$						
1,2-PROPADIENE + METHYL FREE RADICAL						
73 ISA REACTION ORDER: 2	1100	1.6(+11)	0	2500		
$CH_2{=}C{=}CH_2 + M \rightarrow CH_3C{\equiv}CH + M$						
1,2-PROPADIENE						
75 BRA/WES REACTION ORDER: 1 M: Ar	1440-1700	3.0(+14)	0	46670±1920	0.3	3.6
NOTE: LIMITING HIGH PRESSURE k						
$CH_2{=}C{=}CH_2 + M \rightarrow CH_3C{\equiv}CH + M$						
1,2-PROPADIENE						
75 LIF/FRE2 REACTION ORDER: 1 M: Ar	1030-1220	1.5(+13)	0	30400±1550	0.3	4.0
$CH_3CH{=}CH.^* \rightarrow .CH_2CH{=}CH_2^*$						
1-PROPENYL FREE RADICAL						
74 LEU/MUR REACTION ORDER: 1	402 453	4.1(+7) 8.4(+7)	- -	- -		
$CH_3CH{=}CH_2 \rightarrow$ products						
PROPENE						
74 BAK/NOV REACTION ORDER: 1	973-1123	2.3(+14)	0	37140±1500		
$CH_3CH{=}CH_2 + O \rightarrow CH_2 + CH_3CHO$						
PROPENE + OXYGEN ATOM						
71 AVR/KOL1 REACTION ORDER: 2	361-483	5.1(+10)	0	750		
$CH_3CH{=}CH_2 + O \rightarrow CH_2{=}C{:} + H_2 + HCHO$						
PROPENE + OXYGEN ATOM						
71 AVR/KOL1 REACTION ORDER: 2	361-483	5.4(+11)	0	1260		
$CH_3CH{=}CH_2 + e \rightarrow .CH_2CH{=}CH_2 + OH$						
PROPENE + OXYGEN ATOM						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
71 AVR/KØL1 REACTION ØRDER: 2	373-583	7.2(+12)	0	2720		
$CH_3CH{=}CH_2 + e \rightarrow cy\text{-}(CH_3)CHCH_2e$						
PRØPENE + ØXYGEN ATØM						
72 KUR1 REACTION ØRDER: 2	201-424	2.5(+12)	0	38±22	0.9	1.1
74 FUR/ATK	298	2.0(+12)	-	-	0.9	1.1
76 SIN/CVE	298-480	7.6(+12)	0	363±20	0.9	1.1
$CH_3CH{=}CH_2 + e \rightarrow cy\text{-}(CH_3)CHCH_2e^*$						
PRØPENE + ØXYGEN ATØM						
73 HER REACTION ØRDER: 2	275-360	4.2(+12)	0	253		
$CH_3CH{=}CH_2 + e \rightarrow$ products						
PRØPENE + ØXYGEN ATØM						
71 ATK/CVE REACTION ØRDER: 2	298	1.2(+12)	-	-	0.9	1.1
71 STU/NIK2	300	2.2(+11)	-	-	0.9	1.1
72 ATK/CVE	298-473	6.7(+12)	0	520±50	0.9	1.1
74 ATK/PIT1	300-392	2.1(+12)	0	0±150		
74 ATK/PIT2	300	2.0(+12)	-	-	0.9	1.1
77 ATK/PIT1	298-439	6.3(+12)	0	260±100		
74 MCC k/k_{ref}: 0.2	298	-	-	-	0.7	1.3
NØTE: k_{ref}: $(CH_3)_2C{=}CH_2 + Ø \rightarrow$ products						
$CH_3CH{=}CH_2 + e_3 \rightarrow$ products						
PRØPENE + ØZØNE						
72 CØX/PEN REACTION ØRDER: 2	295	7.6(+6)	-	-		
73 STE/WU	299	7.5(+6)	-	-	0.9	1.1
74 BEC/SCH	280-360	6.6(+9)	0	1970±100		
74 HER/HUI	235-362	3.7(+9)	0	1897±109	0.6	1.4
74 JAP/WU	298	7.8(+6)	-	-		
76 WIL	298	5.8(+6)	-	-		
$CD_3CD{=}CD_2 + e_3 \rightarrow$ products						
PRØPENE-d_6 + $Ø_3$						
74 JAP/WU REACTION ØRDER: 2	298	9.1(+6)	-	-	0.9	1.1
$CH_3CH{=}CH_2 + H \rightarrow CH_2{=}CH_2 + CH_3$						
PRØPENE + HYDRØGEN ATØM						
72 KAL/KØK REACTION ØRDER: 2	1073-117	4.5(+12)	-	-	0.8	1.2
$CH_3CH{=}CH_2 + H \rightarrow .CH_2CH{=}CH_2 + H_2$						
PRØPENE + HYDRØGEN ATØM						
72 EAL/SUN REACTION ØRDER: 2 k/k_{ref}: 0.002	298	-	-	-		
NØTE: k_{ref}: $CH_3CH{=}CH_2 + H \rightarrow (CH_3)_2CH. + CH_3CH_2CH_2.$						
$CH_3CH{=}CH_2 + H \rightarrow CH_3CH_2CH_2.^*$						
PRØPENE + HYDRØGEN ATØM						
72 WAG/ZEL1 REACTION ØRDER: 2	195-390	4.4(+12)	0	1385±100	0.9	1.1
$CH_3CH{=}CH_2 + H \rightarrow (CH_3)_2CH.^*$						
PRØPENE + HYDRØGEN ATØM						
72 WAG/ZEL1 REACTION ØRDER: 2	195-390	5.4(+12)	0	630±50	0.9	1.1
74 IAU/BUE k/k_{ref}: 1.79	298	-	-	-	0.9	1.1
NØTE: k_{ref}: $CH_2{=}CH_2 + H \rightarrow CH_3CH_2^*.$						
$CH_3CH{=}CH_2 + H \rightarrow CH_3CH(.)CH_3^* + CH_3CH_2CH_2.^*$						
PRØPENE + HYDRØGEN ATØM						
75 MIH/SCH REACTION ØRDER: 2	295	1.0(+12)	-	-	0.9	1.1
$CH_3CH{=}CH_2 + D \rightarrow CH_3CHDCH_2.$						
PRØPENE + DEUTERIUM ATØM						
77 YAN REACTION ØRDER: 2 k/k_{ref}: 0.65	1260-136	-	-	-	0.8	1.2
NØTE: k_{ref}: $CH_3CH{=}CH_2 + D \rightarrow CH_3CH(.)CH_2D$						
$CH_3CH{=}C$ + D $\rightarrow CH_3CH(.)CH_2D^* + CH_3CHDCH_2.^*$						
PRØPENE + DEUTERIUM ATØM						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
75 MIH/SCH — REACTION ORDER: 2	295	6.9(+11)	-	-	0.9	1.1
$CH_3CH{=}CH_2 + H + M \rightarrow (CH_3)_2CH\cdot + CH_3CH_2CH_2\cdot + M$						
PROPENE + HYDROGEN ATOM						
71 COW/KEI — REACTION ORDER: 2 M: He	298	4.0(+11)	-	-	0.9	1.1
NOTE: DISCHARGE FLOW METHOD. k INCREASING TO $4.8 \times 10^{11} cm^3 mol^{-1} s^{-1}$ FROM 1 to 5 torr PRESSURE.	298	5.7(+11)	-	-	0.9	1.1
NOTE: STEADY STATE PHOTOLYSIS METHOD. 10-15 torr PRESSURE. M = Ne, Ar						
71 DAB/NIK	298	4.6(+11)	-	-	0.9	1.1
NOTE: 1.0 to 2.4 torr. He PRESSURE.						
$CH_3CH{=}CH_2 + D + M \rightarrow CH_3CH(\cdot)CH_2D + CH_3CHDCH_2\cdot + M$						
PROPENE + DEUTERIUM ATOM						
71 DAB/NIK — REACTION ORDER: 2 M: He	298	6.2(+11)	-	-	0.9	1.1
NOTE: 0.6 to 2.2 torr. He PRESSURE.						
$CH_3CH{=}CH_2 + OH \rightarrow \cdot CH_2CH{=}CH_2 + H_2O$						
PROPENE + HYDROXYL FREE RADICAL						
73 GOR — REACTION ORDER: 2	298	8.3(+12)	-	-	0.8	1.2
74 GER/VOL	298	8.1(+12)	-	-	0.7	1.3
$CH_3CH{=}CH_2 + OH \rightarrow$ products						
PROPENE + HYDROXYL FREE RADICAL						
71 MER/NIK2 — REACTION ORDER: 2 k/k_{ref}: 1.0	300	-	-	-		
NOTE: k_{ref}: $CH_3CH{=}CH_2 + OH \rightarrow$ products						
71 MER/STE	300	1.0(+13)	-	-	0.7	1.3
73 SIM/HEI — REACTION ORDER: 2 k/k_{ref}: 75.0	373	-	-	-	0.9	1.1
NOTE: k_{ref}: $CO + OH \rightarrow CO_2 + H$						
k/k_{ref}: 55.0	473	-	-	-	0.9	1.1
NOTE: k_{ref}: $CO + OH \rightarrow CO_2 + H$						
73 SIM/HEI2	373-473	8.2(+12)	0	50		
NOTE: EVALUATION						
73 ERA/HAC	298	3.0(+12)	-	-	0.7	1.3
73 STU	298	8.7(+12)	-	-	0.8	1.2
75 ATK/PIT	297-425	2.5(+12)	0	-545±150		
75 PAS/CAR	300	3.0(+12)	-	-	0.8	1.2
75 CEX	300	2.2(+13)	-	-	0.9	1.1
76 ILE/DAR	305	1.8(+13)	-	-	0.8	1.2
NOTE: EVALUATION						
76 WIN/ILE	305	1.5(+13)	-	-	0.9	1.1
NOTE: EVALUATION						
$CD_3CD{=}CD_2 + OH \rightarrow$ products						
PROPENE-d_6 + HYDROXYL FREE RADICAL						
71 MER/NIK2 — REACTION ORDER: 2 k/kref: 1.1	300	-	-	-		
NOTE: k_{ref}: $CH_3CH{=}CH_2 + OH \rightarrow$ products						
73 STU — REACTION ORDER: 2	298	1.0(+13)	-	-		
$CH_3CH{=}CH_2 + OH + M \rightarrow$ products						
PROPENE + HYDROXYL FREE RADICAL						
75 GOR/MUL1 — REACTION ORDER: 2 M: H_2O	381	8.6(+12)	-	-	0.9	1.1
	416	1.2(+13)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR.						
$CH_3CH{=}CH_2 + S \rightarrow$ cy-$(CH_3)CHCH_2S$						
PROPENE + SULFUR ATOM						
71 COW/VAN — REACTION ORDER: 2	298	6.0(+12)	-	-	0.8	1.2
NOTE: FLASH PHOTOLYSIS METHOD						
71 STR/O'C	298-450	-	-	-		
NOTE: k/k_{ref}: 1.0 exp(+574/T); k_{ref}: $CH_2{=}CH_2 + S \rightarrow$ cy-CH_2CH_2S						
CONVENTIONAL PHOTOLYSIS METHOD						
71 KIE/DAV2	214-500	3.6(+12)	0	190±45	0.2	5.2
$CH_3CH{=}CH_2 + NO_2 \rightarrow [CH_3CH{=}CH_2.NO_2]$						
PROPENE + NITROGEN OXIDE (NO_2)						
75 GRY/ROZ — REACTION ORDER: 2	293-373	2.4(+5)	0	2820		

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
$CH_3CH{=}CH_2 + NO_2 \rightarrow$ products PROPENE + NITROGEN OXIDE (NO_2) 71 JAF — REACTION ORDER: 2	298-373	3.2(+6)	0	3950		
$CH_3CH{=}CH_2 + NO_3 \rightarrow$ products PROPENE + NITROGEN OXIDE (NO_3) 75 JAP/NIK — REACTION ORDER: 2	300	3.2(+9)	-	-	0.9	1.1
$CD_3CD{=}CD_2 + NO_3 \rightarrow$ products PROPENE-d_6 + NITROGEN OXIDE (NO_3) 75 JAP/NIK — REACTION ORDER: 2	300	3.6(+9)	-	-	0.9	1.1
$CH_3CH{=}CH_2 + NH_2 \rightarrow$ products PROPENE + AMIDOGEN FREE RADICAL 76 LES/SOU — REACTION ORDER: 2	300-500	2.9(+11)	0	2165±200		
$CH_3CH{=}CH_2 + CH_3C(O)OO\cdot \rightarrow cy\text{-}(CH_3)CHCH_2O + CH_3 + CO_2$ PROPENE + ETHYLDIOXY, 1-OXO-, FREE RADICAL 77 DIA/WAD — REACTION ORDER: 2	393	6.4(+6)	-	-	0.9	1.1
$CH_3CH{=}CH_2 + CH_3C(O)OOH \rightarrow cy\text{-}(CH_3)CHCH_2O + CH_3COOH$ PROPENE + ETHANEPEROXOIC ACID 77 DIA/WAD — REACTION ORDER: 2	393	2.3(0)	-	-	0.6	1.4
$CH_3CH{=}CH_2 + CH_3CH{=}CH_2 \rightarrow \cdot CH_2CH{=}CH_2 + (CH_3)_2CH\cdot$ PROPENE 73 SIM/BAC — REACTION ORDER: 2	743-803	2.5(+13)	0	21890		
$CH_3CH{=}CH_2 + M \rightarrow CH_3 + CH_2{=}CH\cdot + M$ PROPENE 75 BUR — REACTION ORDER: 2 M: Ar NOTE: CONCENTRATION DEPENDENT k WITH ARRHENIUS EXPRESSION = k/[Ar]	1160-1700	1.0(+13)	0	37250±500	0.3	3.2
$cy\text{-}CH_2CH_2CH_2 + O \rightarrow cy\text{-}CH_2CH_2CH\cdot + OH$ CYCLOPROPANE + OXYGEN ATOM 76 LEE — REACTION ORDER: 2	298-478	3.3(+12)	0	3120±60	0.9	1.1
$CH_3CH_2CH_2\cdot \rightarrow CH_3 + CH_2{=}CH_2$ PROPYL FREE RADICAL 75 CAM/MAR — REACTION ORDER: 1	676-813	1.3(+12)	0	16360±960	0.3	3.0
$CH_3CH_2CH_2\cdot + O_2 \rightarrow CH_3CH{=}CH_2 + HO_2$ PROPYL FREE RADICAL + OXYGEN MOLECULE 71 EAK/BAL — REACTION ORDER: 2 71 EAL/LAN — REACTION ORDER: 2	753 723	3.8(+10) 5.8(+10)	- -	- -		
$CH_3CH_2CH_2\cdot + O_2 \rightarrow CH_3CH_2CHO + OH$ PROPYL FREE RADICAL + OXYGEN MOLECULE 71 EAK/BAL — REACTION ORDER: 2	753	1.1(+8)	-	-		
$CH_3CH_2CH_2\cdot + O_2 \rightarrow cy\text{-}(CH_3)CHCH_2O + OH$ PROPYL FREE RADICAL + OXYGEN MOLECULE 71 EAK/BAL — REACTION ORDER: 2	753	3.1(+9)	-	-		
$CH_3CH_2CH_2\cdot + NO_2 \rightarrow CH_3CH_2CH_2O\cdot + NO$ PROPYL FREE RADICAL + NITROGEN OXIDE (NO_2) 74 JAP/WAN — REACTION ORDER: 2 k/k_{ref}: 2.2 NOTE: k_{ref}: $CH_3CH_2CH_2\cdot + NO_2 \rightarrow CH_3CH_2CH_2NO_2$	298	-	-	-		
$CH_3CH_2CH_2\cdot + (CH_3)_2CH\cdot \rightarrow CH_3CH{=}CH_2 + CH_3CH_2CH_3$ PROPYL FREE RADICAL + ETHYL, 1-METHYL-, FREE RADICAL 71 EAI/SUN — REACTION ORDER: 2 k/k_{ref}: 0.41 NOTE: k_{ref}: $CH_3CH_2CH_2\cdot + (CH_3)_2CH\cdot \rightarrow (CH_3)_2CHCH_2CH_2CH_3$	298	-	-	-		
$CH_3CH_2CH_2\cdot + M \rightarrow CH_3 + CH_2{=}CH_2 + M$ PROPYL FREE RADICAL 71 [illegible]AP/LAI — REACTION ORDER: 1	525-623	2.5(+14)	0	16410±250		

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
NOTE: LIMITING HIGH-PRESSURE k. M = $CH_3CH_2CH_3$						
REACTION ORDER: 2	525-623	2.5(+7)	0	8560±250		
NOTE: LIMITING LOW-PRESSURE k. M = $CH_3CH_2CH_3$						

$(CH_3)_2CH\cdot \rightarrow H + CH_3CH{=}CH_2$						
ETHYL, 1-METHYL-, FREE RADICAL						
75 CAM/MAR REACTION ORDER: 1	676-813	2.5(+13)	0	20600±1200	0.2	5.0

$(CH_3)_2CH\cdot + O_2 \rightarrow CH_3CH{=}CH_2 + HO_2\cdot$						
ETHYL, 1-METHYL-, FREE RADICAL + OXYGEN MOLECULE						
76 EAL/CLE REACTION ORDER: 2 k/k_{ref}: 3060.	713	-	-	-	0.9	1.1
NOTE: k_{ref}: $(CH_3)_2CH\cdot + H_2 \rightarrow CH_3CH_2CH_3 + H$						
k/k_{ref}: 7680.	713	-	-	-	0.9	1.1
NOTE: k_{ref}: $(CH_3)_2CH\cdot + D_2 \rightarrow CH_3CHDCH_3 + D$						

$(CH_3)_2CH\cdot + H_2 \rightarrow CH_3CH_2CH_3 + H$						
ETHYL, 1-METHYL-, FREE RADICAL + HYDROGEN MOLECULE						
76 EAL/CLE REACTION ORDER: 2 k/k_{ref}: 2.51	713	-	-	-	0.9	1.1
NOTE: k_{ref}: $(CH_3)_2CH\cdot + D_2 \rightarrow CH_3CHDCH_3 + D$						

$(CH_3)_2CH\cdot + CH_3CH_3 \rightarrow CH_3CH_2CH_3 + CH_3CH_2\cdot$						
ETHYL, 1-METHYL-, FREE RADICAL + ETHANE						
74 SZI/MAR REACTION ORDER: 2	496-548	2.5(+10)	0	6990±400	0.4	2.5

$(CH_3)_2CH\cdot + CH_3CH_2CH_2\cdot \rightarrow CH_3CH{=}CH_2 + CH_3CH_2CH_3$						
ETHYL, 1-METHYL-, FREE RADICAL + PROPYL FREE RADICAL						
71 FAI/SUN REACTION ORDER: 2 k/k_{ref}: 0.41	298	-	-	-		
NOTE: k_{ref}: $(CH_3)_2CH\cdot + CH_3CH_2CH_2\cdot \rightarrow (CH_3)_2CHCH_2CH_2CH_3$						

$(CH_3)_2CH\cdot + (CH_3)_2CH\cdot \rightarrow CH_3CH{=}CH_2 + CH_3CH_2CH_3$						
ETHYL, 1-METHYL-, FREE RADICAL						
71 FAI/SUN REACTION ORDER: 2 k/k_{ref}: 0.69	298	-	-	-		
NOTE: k_{ref}: $(CH_3)_2CH\cdot + (CH_3)_2CH\cdot \rightarrow (CH_3)_2CHCH(CH_3)_2$						
77 MCK/TUR k/k_{ref}: 0.5	518-573	-	-	-	0.9	1.1
NOTE: k_{ref}: $(CH_3)_2CH\cdot + (CH_3)_2CH\cdot \rightarrow (CH_3)_2CHCH(CH_3)_2$						

$(CH_3)_2CH\cdot + (CH_3)_2CH\cdot \rightarrow (CH_3)_2CHCH(CH_3)_2$						
ETHYL, 1-METHYL-, FREE RADICAL						
72 HIA/BEN REACTION ORDER: 2	415	4.0(+11)	-	-	0.8	1.3
74 GEL/FIS	683-808	3.2(+12)	0	0	0.6	1.6
76 FAK/QUI	298	5.0(+12)	-	-	0.6	1.4

$(CH_3)_2CH\cdot + (CH_3)_2CHCHO \rightarrow CH_3CH_2CH_3 + (CH_3)_2CHC(O)\cdot$						
$+ (CH_3)_2C(\cdot)CHO$						
ETHYL, 1-METHYL-, FREE RADICAL + PROPANAL, 2-METHYL-						
76 BAL/CLE REACTION ORDER: 2 k/k_{ref}: 0.0032	713	-	-	-	0.9	1.1
NOTE: k_{ref}: $(CH_3)_2CH\cdot + O_2 \rightarrow CH_3CH{=}CH_2 + HO_2\cdot$						

$(CH_3)_2CH\cdot + M \rightarrow H + CH_3CH{=}CH_2 + M$						
ETHYL, 1-METHYL-, FREE RADICAL						
71 PAP/LAI REACTION ORDER: 1	525-623	2.0(+14)	0	19480		
NOTE: LIMITING HIGH-PRESSURE k. M = $CH_3CH_2CH_3$						

$CH_3CH_2CH_3\cdot \rightarrow CH_3\cdot + CH_3CH_2\cdot$						
PROPANE						
72 GRO/HAS REACTION ORDER: 1	298	4.7(+8)	-	-	0.7	1.3

$CH_3CH_2CH_3 \rightarrow$ products						
PROPANE						
72 ILL/SZA REACTION ORDER: 1	910-1075	6.4(+13)	0	31800	0.9	1.1
74 EAK/NOV	973-1123	3.5(+12)	0	28740±1000		

$CH_3CH_2CH_3 + O \rightarrow (CH_3)_2CH\cdot + CH_3CH_2CH_2\cdot + OH$						
PROPANE + OXYGEN ATOM						
75 BAR/BUR REACTION ORDER: 2	329	3.9(+10)	-	-	0.8	1.2

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
$CH_3CH_2CH_3 + O^*(^1D) \rightarrow (CH_3)_2CH\cdot + CH_3CH_2CH_2\cdot + OH$						
PROPANE + OXYGEN ATOM						
76 FIE/HUS REACTION ORDER: 2	300	5.7(+14)	-	-	0.9	1.1
$CH_3CH_2CH_3 + O^*(^1D) \rightarrow$ products						
PROPANE + OXYGEN ATOM						
74 NIC/PAR REACTION ORDER: 2 k/k_{ref}: 0.652	300	-	-	-	0.9	1.1
NOTE: k_{ref}: $(CH_3)_4C + O^*(^1D) \rightarrow$ products						
75 GAU/SNE k/k_{ref}: 10.8	300	-	-	-	0.8	1.2
NOTE: k_{ref}: $O_2 + O^*(^1D) \rightarrow O_2^*(^1\Sigma_g^+)$	300	4.8(+14)	-	-		
NOTE: EVALUATION						
$CH_3CH_2CH_3 + H \rightarrow (CH_3)_2CH\cdot + CH_3CH_2CH_2\cdot + H_2$						
PROPANE + HYDROGEN ATOM						
76 SHE/KAL REACTION ORDER: 2	1123	3.7(+12)	-	-		
77 LED/VIL	295	1.5(+8)	-	-		
$CH_3CH_2CH_3 + OH \rightarrow (CH_3)_2CH\cdot + CH_3CH_2CH_2\cdot + H_2O$						
PROPANE + HYDROXYL FREE RADICAL						
73 GOR REACTION ORDER: 2	298	1.2(+12)	-	-	0.9	1.1
74 GOE/VOL	298	1.3(+12)	-	-	0.7	1.3
75 HAR/BUR	329	1.2(+12)	-	-	0.9	1.1
75 OVE/PAR	295	1.2(+12)	-	-	0.9	1.1
75 HUC/BOO k/k_{ref}: 2.18	653	-	-	-	0.9	1.1
NOTE: k_{ref}: $CH_3CH_3 + OH \rightarrow CH_3CH_2\cdot + H_2O$						
$CH_3CH_2CH_3 + CH \rightarrow$ products						
PROPANE + HYDROXYL FREE RADICAL						
73 ERA/HAC REACTION ORDER: 2	298	5.0(+11)	-	-	0.8	1.2
$CH_3CH_2CH_3 + OH + M \rightarrow (CH_3)_2CH\cdot + CH_3CH_2CH_2\cdot + H_2O + M$						
PROPANE + HYDROXYL FREE RADICAL						
75 GOR/MUL1 REACTION ORDER: 2 M: H_2O	381	1.3(+12)	-	-	0.9	1.1
	416	1.2(+12)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR						
$CH_3CH_2CH_3 + HO_2 \rightarrow CH_3CH_2CH_2\cdot + H_2O_2$						
PROPANE + HYDROPEROXYL FREE RADICAL						
73 EAL/FUL REACTION ORDER: 2 k/k_{ref}: 0.03	773	-	-	-		
NOTE: k_{ref}: $HCHO + HO_2 \rightarrow \cdot CHO + H_2O_2$	773	3.1(+7)	-	-		
NOTE: EVALUATION						
$CH_3CH_2CH_3 + HO_2 \rightarrow (CH_3)_2CH\cdot + H_2O_2$						
PROPANE + HYDROPEROXYL FREE RADICAL						
73 EAL/FUL REACTION ORDER: 2 k/k_{ref}: 0.048	773	-	-	-		
NOTE: k_{ref}: $HCHO + HO_2 \rightarrow \cdot CHO + H_2O_2$	773	4.8(+7)	-	-		
NOTE: EVALUATION						
$CH_3CH_2CH_3 + HO_2 \rightarrow (CH_3)_2CH\cdot + CH_3CH_2CH_2\cdot + H_2O_2$						
PROPANE + HYDROPEROXYL FREE RADICAL						
71 EAL/LAN REACTION ORDER: 2 k/k_{ref}: 0.088	713	-	-	-		
NOTE: k_{ref}: $CH_3CH_2CH_3 + HCHO \rightarrow$ products						
$CH_3CH_2CH_3 + NO_2 \rightarrow (CH_3)_2CH\cdot + HONO$						
PROPANE + NITROGEN OXIDE (NO_2)						
76 TIT/BAL REACTION ORDER: 2	423-498	2.4(+11)	0	11375±60	0.9	1.1
$CH_3CH_2CH_3 + CH \rightarrow$ products						
PROPANE + METHYLIDYNE FREE RADICAL						
71 BOS/PER REACTION ORDER: 2	298	8.2(+13)	-	-	0.8	1.1

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
$CH_3CH_2CH_3 + CH_2^* \rightarrow CH_3CH_2CH_2CH_3$						
PROPANE + METHYLENE FREE RADICAL						
75 ZAB/CAR REACTION ORDER: 2 k/k_{ref}: 16.67	298	-	-	-		
NOTE: $^1CH_2^*(^1A_1)$ STATE. k_{ref}: $CH_2^*(^1A_1) + M \rightarrow CH_2(^3B_1) + M$						
$CH_3CH_2CH_3 + CH_2 \rightarrow CH_3CH_2CH_2CH_3$						
PROPANE + METHYLENE FREE RADICAL						
73 HAL/CRU REACTION ORDER: 2	304	2.7(+12)	-	-		
NOTE: EDITOR'S CALCULATION BASED ON REPORTED 1.2S EFFICIENCY OF CH_2 INSERTION AT SECONDARY OVER PRIMARY CH BONDS IN PROPANE						
$CH_3CH_2CH_3 + CH_2 \rightarrow (CH_3)_3CH$						
PROPANE + METHYLENE FREE RADICAL						
73 HAL/CRU REACTION ORDER: 2	304	1.1(+12)	-	-		
NOTE: EDITOR'S CALCULATION BASED ON REPORTED 1.2S EFFICIENCY OF CH_2 INSERTION AT SECONDARY OVER PRIMARY CH BONDS IN PROPANE						
$CH_3CH_2CH_3 + CH_3 \rightarrow CH_3CH_2CH_2\cdot + (CH_3)_2CH\cdot + CH_4$						
PROPANE + METHYL FREE RADICAL						
75 CAM/MAR REACTION ORDER: 2	676-743	2.0(+12)	0	5690±820	0.3	3.0
$CH_3CH_2CH_3 + CH_3 \rightarrow CH_3CH_2CH_2\cdot + (CH_3)_2CH\cdot + CH_4$						
PROPANE + METHYL FREE RADICAL						
75 CAM/MAR REACTION ORDER: 2	743-813	5.0(+15)	0	11600±900	0.3	3.0
$CH_3CH_2CH_3 + CH_3 \rightarrow (CH_3)_2CH\cdot + CH_3CH_2CH_2\cdot + CH_4$						
PROPANE + METHYL FREE RADICAL						
75 LIF/FRE1 REACTION ORDER: 2	1050-1250	3.5(+12)	0	5185		
$CH_3CH_2CH_3 + CN \rightarrow (CH_3)_2CH\cdot + CH_3CH_2CH_2\cdot + HCN$						
PROPANE + CYANOGEN FREE RADICAL						
72 BUL/COO2 REACTION ORDER: 2	300	3.2(+13)	-	-	0.8	1.2
$CH_2{=}CHCHO + O \rightarrow$ products						
2-PROPENAL + OXYGEN ATOM						
72 CAD/LIN REACTION ORDER: 2	300-480	4.7(+12)	0	1000±150	0.7	1.3
75 GAF/ATK1	296	2.3(+11)	-	-	0.9	1.1
75 GAF/ATK2	296-423	1.4(+13)	0	1210±135	0.9	1.1
$CH_3COCHO + O_3 \rightarrow$ products						
PROPANAL, 2-OXO-, + OZONE						
76 PAT/ATK REACTION ORDER: 2	297	6.6(+2)	-	-	0.5	1.5
$CH_3COCHO + CH_3 \rightarrow CH_3C(O)\cdot + CO + CH_4$						
PROPANAL, 2-OXO-, + METHYL FREE RADICAL						
77 KYL/OKC REACTION ORDER: 2	353	1.4(+11)	0	3330±340	0.4	2.4
$CH_3CH_2C(O)\cdot \rightarrow CH_3CH_2\cdot + CO$						
PROPYL, 1-OXO-, FREE RADICAL						
73 WAT/THO REACTION ORDER: 1	238-278	5.9(+12)	0	7250		
$CH_2{=}CHCH_2OH + OH + M \rightarrow$ products						
2-PROPEN-1-OL + HYDROXYL FREE RADICAL						
75 GOR/MUL1 REACTION ORDER: 2 M: H_2O	440	1.6(+13)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR						
$CH_3CH_2CHO + O \rightarrow CH_3CH_2C(O)\cdot + OH$						
PROPANAL + OXYGEN ATOM						
77 SIN/IKW REACTION ORDER: 2	298-472	7.8(+12)	0	870±33	0.9	1.1
$CH_3CH_2CHO + O \rightarrow$ products						
PROPANAL + OXYGEN ATOM						
72 CAD/LIN REACTION ORDER: 2	300-480	8.5(+13)	0	1910±250	0.7	1.3
$CH_3CH_2CHO + O_2 \rightarrow CH_3CH_2C(O)\cdot + HO_2$						
PROPANAL + OXYGEN MOLECULE						
71 BAL/LAN REACTION ORDER: 2	713	7.6(+1)	-	-		

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
$CH_3CH_2CHO + OH \rightarrow CH_3CH_2C(O). + H_2O$						
PROPANAL + HYDROXYL FREE RADICAL						
71 MCR/NIK2 reaction order; 2 k/k_{ref}: 1.8	300	-	-	-		
NOTE: k_{ref}: $CH_3CH{=}CH_2 + OH \rightarrow$ products						
$CH_3CH_2CHO + OH \rightarrow CH_3CH_2C(O). + H_2O$						
PROPANAL + HYDROXYL FREE RADICAL						
72 VCL/GOR REACTION ORDER: 2	298	2.3(+12)	-	-	0.6	1.4
$CH_3CH_2CHO + HO_2 \rightarrow CH_3CH_2C(O). + H_2O_2$.						
PROPANAL + HYDROPEROXYL FREE RADICAL						
71 EAL/LAN REACTION ORDER: 2	713	1.8(+9)	-	-		
$(CH_3)_2CO + O \rightarrow CH_3COCH_2. + OH$						
2-PROPANONE + OXYGEN ATOM						
72 AZA/GYU REACTION ORDER: 2	873	8.4(+10)	-	-		
76 LEE	298-478	1.9(+12)	0	2540±100	0.8	1.2
$(CH_3)_2CO + O \rightarrow .CH_2COCH_3 + OH$						
2-PROPANONE + OXYGEN ATOM						
77 LEE/TIN REACTION ORDER: 2	298-478	1.9(+12)	0	2540±90	0.8	1.2
$(CH_3)_2CO + H \rightarrow CH_3COCH_2. + H_2$						
2-PROPANONE + HYDROGEN ATOM						
72 AZA/GYU REACTION ORDER: 2	843-928	2.3(+14)	0	7000±750	0.6	1.4
$(CH_3)_2CO + NO_2 \rightarrow CH_3COCH_2. + HONO$						
2-PROPANONE + NITROGEN OXIDE (NO_2)						
71 JAF REACTION ORDER: 2	298-373	3.8(+5)	0	3590		
$(CH_3)_2CO + CH_3 \rightarrow .CH_2COCH_3 + CH_4$						
2-PROPANONE + METHYL FREE RADICAL						
72 SHA/WES REACTION ORDER: 2	398-718	-	-	-		
NOTE: k_{ref}: HD + CH_3. H + CH_3D; k/k_{ref}: 2.30exp(+413/T)						
72 SHA/WES	398-718	-	-	-		
NOTE: k_{ref}: $D_2 + CH_3. \rightarrow D + CH_3D$; k/k_{ref}: 0.617exp(+1020/T)						
76 ART/LEE	398-518	4.1(+11)	0	4870±55	0.9	1.1
$(CD_3)_2CO + CD_3 \rightarrow .CD_2COCD_3 + CD_4$						
2-PROPANONE-1,1,1,3,3,3-d_6 + METHYL D_3 FREE RADICAL						
72 SHA/WES REACTION ORDER: 2	398-718	-	-	-		
NOTE: k_{ref}: DH + $CD_3 \rightarrow D + CD_3H$; k/k_{ref}: 1.47exp(-340/T)						
$(CH_3)_2CO + CH_3 \rightarrow (CH_3)_3CO.$						
2-PROPANONE + METHYL FREE RADICAL						
71 CAD/TRO REACTION ORDER: 2	373-423	1.7(+9)	0	6770±900	0.1	10.0
NOTE: k_1 + k-1K						
$(CH_3)_2CO + M \rightarrow CH_3 + CH_3C(O). + M$						
2-PROPANONE						
75 ERN/SPI REACTION ORDER: 1 M = Ar	1400-1600	2.0(+16)	0	40660±1440		
76 SPI/WAG	1350-1650	2.7(+16)	0	41150±1450		
NOTE: LIMITING HIGH PRESSURE k.						
$CH_2{=}CHOCH_3 + O \rightarrow$ products						
ETHENE, METHOXY-, + OXYGEN ATOM						
77 ATK/PIT2 REACTION ORDER: 2	297-439	3.8(+12)	0	-38±100	0.9	1.1
$CH_2{=}CHOCH_3 + OH \rightarrow$ products						
ETHENE, METHOXY-, + HYDROXYL FREE RADICAL						
77 PER/ATK REACTION ORDER: 2	299-427	3.7(+12)	0	-511±150		
$HCOOCH_2CH_3 \rightarrow$ products						
FORMIC ACID ETHYLESTER						
71 BLA/SAN REACTION ORDER: 1	830-903	2.2(+12)	0	24210±250		
$CH_3CH_2CO + CH_2{=}C{=}O \rightarrow CH_3CH_2C(O)OC(O)CH_3$						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
PROPANOIC ACID + ETHENONE						
76 BLA/VAY REACTION ORDER: 2	368-489	1.7(+9)	0	6100±90	0.8	1.2
$CH_3CH_2CH_2O. + NO_2 \rightarrow CH_3CH_2CH_2ONO_2$						
PROPOXY FREE RADICAL + NITROGEN OXIDE (NO_2)						
75 MEN/GOL REACTION ORDER: 2	300	3.2(+12)	-	-		
NOTE: ESTIMATED k						
$(CH_3)_2CHO. \rightarrow CH_3CHO + CH_3.$						
ETHOXY, 1-METHYL-, FREE RADICAL						
75 BAT/MCC REACTION ORDER: 1	393-473	2.5(+14)	0	8605		
$(CH_3)_2CHO. + NO \rightarrow (CH_3)_2CO + HNO$						
ETHOXY, 1-METHYL-, FREE RADICAL + NITROGEN OXIDE(NO)						
75 BAT/MCC REACTION ORDER: 2	393-473	4.0(+12)	0	0±500	0.3	3.2
$(CH_3)_2CHO. + NO \rightarrow (CH_3)_2CO + HNO$						
ETHOXY, 1-METHYL-, FREE RADICAL + NITROGEN OXIDE(NO)						
77 BAT/MIL1 REACTION ORDER: 2	403-433	6.3(+12)	0	0±500	0.4	2.5
NOTE: EVALUATION						
$(CH_3)_2CHO. + NO \rightarrow (CH_3)_2CHONO$						
ETHOXY, 1-METHYL-, FREE RADICAL + NITROGEN OXIDE(NO)						
74 BAT/MIL REACTION ORDER: 2	393-473	2.5(+13)	0	0±500	0.4	2.5
75 BAT/MCC	393-473	2.5(+13)	0	0±500	0.4	2.5
77 BAT/MIL1	403-433	3.2(+13)	0	0±400	0.4	2.5
NOTE: EVALUATION						
$(CH_3)_2CHO_2. + CH_3O_2. \rightarrow (CH_3)_2CHOH + HCHO + O_2$						
ETHYLDIOXY, 1-METHYL-, FREE RADICAL + METHYLDIOXY FREE RADICAL						
75 AIC/MIL REACTION ORDER: 2	373	6.2(+11)	-	-		
NOTE: OPTIMIZATION						
$(CH_3)_2CHO_2. + (CH_3)_2CHC(O_2.)(CH_3)_2 \rightarrow$ products						
ETHYLDIOXY, 1-METHYL-, FREE RADICAL + PROPYLDIOXY,1,1,2-TRIMETHYL-, FREE RADICAL						
75 AIC/MIL REACTION ORDER: 2	373	6.2(+11)	-	-		
NOTE: OPTIMIZATION						
$CH_3CH_2CH_2OH \rightarrow CH_3CH_2CHO + H_2 + CH_3CH{=}CH_2 + H_2O$						
1-PROPANOL						
71 GEN/LEW REACTION ORDER: 1	753-833	6.8(+5)	0	13270		
$CH_3CH_2CH_2OH + OH \rightarrow [.C_3H_6OH] + H_2O$						
1-PROPANOL + HYDROXYL FREE RADICAL						
76 CAM/MCL REACTION ORDER: 2	292	2.3(+12)	-	-	0.9	1.1
$(CH_3)_2CHOH \rightarrow CH_3CH{=}CH_2 + H_2O$						
2-PROPANOL						
71 TRE REACTION ORDER: 1	721-801	1.3(+13)	0	24300±1800	0.9	1.1
$(CH_3)_2CHOH \rightarrow (CH_3)_2CO + H_2$						
2-PROPANOL						
71 TRE REACTION ORDER: 1	721-801	1.0(+14)	0	29040±1000	0.9	1.1
$(CH_3)_2CHOH \rightarrow (CH_3)_2CO + H_2 + CH_3CH{=}CH_2 + H_2O$						
2-PROPANOL						
71 GEN/LEW REACTION ORDER: 1	753-833	1.1(+5)	0	12580		
$(CH_3)_2CHOH + OH \rightarrow$ products						
2-PROPANOL + HYDROXYL FREE RADICAL						
76 LIG/DARI REACTION ORDER: 2	305	4.3(+12)	-	-	0.7	1.3
NOTE: EVALUATION						
$cy\text{-}(CH_3)CHCH_2S + S \rightarrow CH_3CH{=}CH_2 + S_2$						
THIIRANE, METHYL-, + SULFUR ATOM						
71 STR/O'C REACTION ORDER: 2	298-450	-	-	-		
NOTE: k/k_{ref}: 8.4 exp(+1057/T); k_{ref}: $CH_2{=}CH_2 + S \rightarrow cy\text{-}CH_2CH_2S$						
CONVENTIONAL PHOTOLYSIS METHOD						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
cy-(CH_3)$CHCH_2S$ + CH_3 → $CH_3CH{=}CH_2$ + CH_3S.						
THIIRANE, METHYL-, + methyl free radical						
72 JAK/AHM REACTION ORDER: 2	339-435	2.1(+11)	0	3750±830	0.1	8.3
NOTE: EVALUATION						
cy-(CH_3)$CHCH_2S$ + CH_3 → cy-[(CH_2.)$CH{=}CH_2$]S + CH_4						
THIIRANE, METHYL-, + methyl free radical						
72 JAK/AHM REACTION ORDER: 2	339-435	1.0(+11)	0	4160±440	0.3	3.0
NOTE: EVALUATION						
CH_3CH_2CN → $CH_2{=}CH_2$ + HCN						
PROPANENITRILE						
73 LAS/EMO REACTION ORDER: 1	803-943	1.3(+13)	0	34970±200	0.9	1.1
$(CH_3)_2CHONO$ → $(CH_3)_2CO$ + HNO						
NITROUS ACID 1-METHYLETHYL ESTER						
75 BAT/MCC REACTION ORDER: 1	393-473	1.3(+9)	0	13435		
77 BAT/MIL1	403-433	2.5(+9)	0	13600		
$(CH_3)_2CHONO$ → $(CH_3)_2CHO$. + NO						
NITROUS ACID 1-METHYLETHYL ESTER						
75 BAT/MCC REACTION ORDER: 1	393-473	1.6(+16)	0	20635±400	0.4	2.5
74 BAT/NIL	393-473	1.6(+16)	0	20630±400	0.4	2.5
77 BAT/MIL1	403-433	1.6(+16)	0	20635±400	0.4	2.5
$CH_3CH_2CH_2ONO_2$ → $CH_3CH_2CH_2O$. + NO_2						
NITRIC ACID, PROPYL ESTER						
75 MEN/GOL REACTION ORDER: 1	300	3.2(+16)	0	20130		
CH≡CC≡CH + O → products						
1,3-BUTADIYNE + OXYGEN ATOM						
73 JON/BAY2 REACTION ORDER: 2	296	1.6(+12)	-	-	0.7	1.3
75 HOM/SCH	297-343	8.0(+13)	0	1230		
CH≡CC≡CH + H → [CH≡CCH-CH. + CH≡CC(.)=CH_2]*						
1,3-BUTADIYNE + HYDROGEN ATOM						
75 SCH/WAR REACTION ORDER: 2	298	1.3(+12)	-	-		
CH≡CC≡CH + CH≡C. → H + CH≡CC≡CC≡CH						
1,3-BUTADIYNE + ETHYNYL FREE RADICAL						
73 CUL/HUC REACTION ORDER: 2 k/k_{ref}: 1.67	298	-	-	-	0.8	1.2
NOTE: k_{ref}: CH≡CBr + CH≡C. → .C≡CBr + CH≡CH						
CH≡CC≡CH + CH≡C. → CH≡CC≡C. + CH≡CH						
1,3-BUTADIYNE + ETHYNYL FREE RADICAL						
73 CUL/HUC REACTION ORDER: 2 k/k_{ref}: 1.1	298	-	-	-	0.8	1.2
NOTE: k_{ref}: CH≡CC≡CH + CH≡C. → H + CH≡CC≡CC≡CH						
$CH_2{=}CHC{\equiv}CH$ + O → products						
1-BUTEN-3-YNE + OXYGEN ATOM						
75 ECM/SCH REACTION ORDER: 2	295	3.0(+12)	-	-	0.9	1.1
$CH_2{=}CHC{\equiv}CH$ + NO_2 → products						
1-BUTEN-3-YNE + NITROGEN OXIDE (NO_2)						
75 GRY/ROZ REACTION ORDER: 2	273-333	8.8(+5)	0	1710		
$CH_2{=}CHC{\equiv}CH^{\#}$ + M → $CH_2{=}CHC{\equiv}CH$ + M						
1-BUTEN-3-YNE						
75 SCH/WAR REACTION ORDER: 2 M: H_2	298	2.0(+12)	-	-		
$CH_3CH_2C{\equiv}CH$ + O → CH_3CH_2CH: + CO						
1-BUTYNE + OXYGEN ATOM						
75 BER/WAG1 REACTION ORDER: 2	290-357	1.7(+13)	0	400		
$CH_3CH_2C{\equiv}CH$ + O_3 → products						
1-BUTYNE + OZONE						
7[illegible] REACTION ORDER: 2	294	2.4(+4)	-	-	0.7	1.3

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
$CH_3C{\equiv}CCH_3 + O \rightarrow (CH_3)_2C{:} + CO$						
2-BUTYNE + OXYGEN ATOM						
75 HER/WAG2 REACTION ORDER: 2	290-360	6.0(+13)	0	453		
NOTE: GIVEN WITH CAUTION						
$CH_3C{\equiv}CCH_3 + O_3 \rightarrow$ products						
2-BUTYNE + OZONE						
71 DIM REACTION ORDER: 2	294	2.0(+4)	-	-	0.8	1.2
$CH_3C{\equiv}CCH_3 + S \rightarrow cy\text{-}(CH_3)C{=}C(CH_3)S$						
2-BUTYNE + SULFUR ATOM						
71 STR/O'C REACTION ORDER: 2	298-450	-	-	-		
NOTE: k/k_{ref}: 2.7exp(+654/T)						
k_{ref}: $CH_2{=}CH_2 + S \rightarrow cy\text{-}CH_2CH_2S$						
CONVENTIONAL PHOTOLYSIS METHOD						
$CH_3C{\equiv}CCH_3 + NO_2 \rightarrow [CH_3C{\equiv}CCH_3.NO_2]$						
2-BUTYNE + NITROGEN OXIDE (NO_2)						
73 ASH/THO REACTION ORDER: 2	443-493	8.1(+8)	0	6030+95	0.8	1.2
$CH_3CH{=}C{=}CH_2 + O \rightarrow$ products						
1,2-BUTADIENE + OXYGEN ATOM						
74 HAV REACTION ORDER: 2 k/k_{ref}: 1.39	298	-	-	-		
NOTE: k_{ref}: $CH_3CH_2CH{=}CH_2 + O \rightarrow$ products						
REACTION ORDER: 2 k/k_{ref}: 0.43	298	-	-	-		
NOTE: k_{ref}: $(CH_3)_2C{=}CH_2 + O \rightarrow$ products						
$CH_2{=}CHCH{=}CH_2 + O \rightarrow$ products						
1,3-BUTADIENE + OXYGEN ATOM						
74 MCC REACTION ORDER: 2 k/k_{ref}: 0.96	298	-	-	-		
NOTE: k_{ref}: $(CH_3)_2C{=}CH_2 + O \rightarrow$ products						
77 ATK/PIT2 REACTION ORDER: 2	297-439	2.0(+13)	0	53±100	0.9	1.1
$CH_2{=}CHCH{=}CH_2 + O_3 \rightarrow [CH_2{=}CHCH{=}CH_2.O_3]$						
1,3-BUTADIENE + OZONE						
75 TOB/TOB REACTION ORDER: 2	273-343	6.3(+10)	0	2920±400	0.3	3.0
$CH_2{=}CHCH{=}CH_2 + O_3 \rightarrow$ products						
1,3-BUTADIENE + OZONE						
74 BIC/SCH REACTION ORDER: 2	280-360	3.3(+10)	0	2680±100		
74 JAP/WU	298	5.1(+6)	-	-	0.9	1.1
$CH_2{=}CHCH{=}CH_2 + H + M \rightarrow CH_3CH(.)CH{=}CH_2 + .CH_2CH_2CH{=}CH_2 + M$						
1,3-BUTADIENE + HYDROGEN ATOM						
71 DAB/NIK REACTION ORDER: 2 M: He	298	5.0(+12)	-	-	0.9	1.1
NOTE: 1.3 TORR. He PRESSURE						
$CH_2{=}CHCH{=}CH_2 + D + M \rightarrow CH_2DCH(.)CH{=}CH_2 + .CH_2CHDCH{=}CH_2 + M$						
1,3-BUTADIENE + DEUTERIUM ATOM						
71 DAB/NIK REACTION ORDER: 2 M: He	298	3.2(+12)	-	-	0.9	1.1
NOTE: 1.6 TO 2.6 TORR. He PRESSURE						
$CH_2{=}CHCH{=}CH_2 + OH \rightarrow$ products						
1,3-BUTADIENE + HYDROXYL FREE RADICAL						
76 LIE/DAR REACTION ORDER: 2	305	4.6(+13)	-	-	0.8	1.2
NOTE: EVALUATION						
77 ATK/PER3	299-424	8.7(+12)	0	-468±150	0.9	1.1
$CH_2{=}CHCH{=}CH_2 + S \rightarrow cy\text{-}(CH_2{=}C)CHCH_2S$						
1,3-BUTADIENE + SULFUR ATOM						
71 STR/O'C REACTION ORDER: 2	298-450	-	-	-		
NOTE: k/k_{ref}: 2.4exp(+1027/T)						
k_{ref}: $CH_2{=}CH_2 + S \rightarrow cy\text{-}CH_2CH_2S$						
CONVENTIONAL PHOTOLYSIS METHOD						
$CH_2{=}CHCH{=}CH_2 + cis\text{-}NH{=}NH \rightarrow CH_3CH_2CH{=}CH_2 + N_2$						
1,3-BUTADIENE + cis-DIAZENE						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
74 VID/WIL REACTION ORDER; 2 k/k_{ref}: 0.065	373	-	-	-		
NOTE: k_{ref}: $CH_2{=}CH_2$ + cis-NH=NH → CH_3CH_3 + N_2						
$CH_2{=}CHCH{=}CH_2$ + $^1CH_2{}^*$ → cis-, AND trans-$CH_2{=}CHCH{=}CHCH_3$ + $CH_2{=}C(CH_3)CH{=}CH_2$						
1,3-BUTADIENE + METHYLENE FREE RADICALS						
75 CRA/ROS REACTION ORDER: 2 k/k_{ref}: 0.14	298	-	-	-		
NOTE: k_{ref}: $CH_2{=}CHCH{=}CH_2$ + $^1CH_2{}^*$ → cy-$[CH_2{=}CH]CHCH_2CH_2$						
$CH_2{=}CHCH{=}CH_2$ + $CH_3{\cdot}$ → $CH_2{=}CHCH(CH_3)CH_2{\cdot}$						
1,3-BUTADIENE + METHYL FREE RADICAL						
74 CAR/TAR REACTION ORDER: 2	298	-	-	6050±500		
$CH_2{=}CHCH{=}CH_2$ + $CH_3C(O){\cdot}$ → $CH_3COCH_2CH(\cdot)CH{=}CH_2$						
1,3-BUTADIENE + ETHYL, 1-OXO-, FREE RADICAL						
73 ENC/LIS REACTION ORDER: 2	333-397	-	-	-		
NOTE: k_{ref}: $CH_3C(O){\cdot}$ (+ M) → $CH_3{\cdot}$ + CO (+ M)						
k/k_{ref}: $1.6 \times 10^3 \exp(+5280\pm500/T)$						
$CH_2{=}CHCH{=}CH_2$ + $CH_2{=}CHCH{=}CH_2$ → cy-$(CH{=}CHCH_2CH_2CH{=}CHCH_2CH_2)$, (Z,Z)						
1,3-BUTADIENE						
77 BUY/LUY REACTION ORDER: 2	464-557	4.5(+10)	0	14315±50	0.9	1.1
NOTE: (ZZ) IS NOTATION FOR cis, cis-1,5-CYCLOCTADIENE						
$CH_2{=}CHCH{=}CH_2$ + $CH_2{=}CHCH{=}CH_2$ → cy-$[CH{=}CHCH_2CH(CH{=}CH_2)CH_2CH_2]$						
1,3-BUTADIENE						
77 BUY/LUY REACTION ORDER: 2	464-557	8.9(+9)	0	12345±60	0.9	1.1
$CH_3CH_2CH{=}CH_2{\cdot}{}^*$ → $\cdot CH_2CH_2CH{=}CH_2{}^*$						
1-BUTENYL FREE RADICAL						
76 IBU/TSU REACTION ORDER: 1	348	1.0(+9)	-	-		
	396	1.1(+9)	-	-		
trans-$CH_3CH{=}CHCH_2{\cdot}$[→trans-$CH_3CH(\cdot)CH{=}CH_2$] → cis-$CH_3CH{=}CHCH_2{\cdot}$[→cis-$CH_3CH(\cdot)CH{=}CH_2$]						
trans-2-BUTENYL[→trans-2-PROPYL, 1-METHYL-] FREE RADICAL						
72 GCR/WAL REACTION ORDER: 1	363	5.00(+4)	-	-		
NOTE: EVALUATION (TENTATIVE VALUE)						
$CH_2{=}CHCH_2CH_2{\cdot}{}^*$ → $CH_3CH(\cdot)CH{=}CH_2{}^*$						
3-BUTENYL FREE RADICAL						
76 IBU/TSU REACTION ORDER: 1	348	3.5(+7)	-	-		
	396	6.2(+7)	-	-		
$CH_2{=}CHCH_2CH_2{\cdot}$ + $CH_3CH_2{\cdot}$ → $CH_2{=}CHCH_2CH_3$ + $CH_2{=}CHCH{=}CH_2$ + $CH_2{=}CH_2$ + CH_3CH_3						
3-BUTENYL FREE RADICAL + ETHYL FREE RADICAL						
75 STE/RAB REACTION ORDER: 2 k/k_{ref}: 0.30	298	-	-	-	0.8	1.2
NOTE: k_{ref}: $CH_2{=}CHCH_2CH_2{\cdot}$ + $CH_3CH_2{\cdot}$ → $CH_2{=}CHCH_2CH_2CH_2CH_3$						
trans-$CH_3CH(\cdot)CH{=}CH_2{\cdot}$[→trans-$CH_3CH{=}CHCH_2{\cdot}$] → cis-$CH_3CH(\cdot)CH{=}CH_2{\cdot}$[→cis-$CH_3CH{=}CHCH_2{\cdot}$]						
trans-2 PROPENYL, 1-METHYL-, [trans-2-BUTENYL] FREE RADICAL						
72 GCR/WAL REACTION ORDER: 1	363	5.0(+4)	-	-		
NOTE: EVALUATION (TENTATIVE VALUE)						
$\cdot CH_2C(CH_3){=}CH_2$ → $CH_2{=}C{=}CH_2$ + $CH_3{\cdot}$						
2-PROPENYL, 2-METHYL-, FREE RADICAL						
73 TSA REACTION ORDER: 1	1050	2.0(+13)	0	25200		
$\cdot CH_2C(CH_3){=}CH_2$ + $CH_3{\cdot}$ → $CH_3CH_2C(CH_3){=}CH_2$						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
2-PROPENYL, 2-METHYL-, FREE RADICAL + METHYL FREE RADICAL						
73 TSA REACTION ORDER: 2	1020	2.0(+13)	-	-		
$\cdot CH_2C(CH_3)=CH_2 + \cdot CH_2C(CH_3)=CH_2 \rightarrow CH_2=C(CH_3)CH_2CH_2C(CH_3)=CH_2$						
2-PROPENYL, 2-METHYL-, FREE RADICAL						
73 EAY/BRØ REACTION ØRDER: 2	295	2.6(+13)	-	-	0.9	1.1
$CH_3CH_2CH=CH_2 \rightarrow$ products						
1-BUTENE						
73 SHI/KIN2 REACTION ØRDER: 1	829-1040	1.3(+13)	0	29695		
$CH_3CH_2CH=CH_2 + Ø \rightarrow [C_4H_7\cdot] + ØH$						
1-BUTENE + ØXYGEN ATØM						
72 BUI/HER2 REACTION ØRDER: 2	190-491	9.6(+12)	0	990±215	0.4	1.6
$CH_3CH_2CH=CH_2 + Ø \rightarrow cy\text{-}(CH_3CH_2)CHCH_2Ø$						
1-BUTENE + ØXYGEN ATØM						
72 BUI/HER2 REACTION ØRDER: 2	190-491	2.2(+12)	0	25±105	0.5	1.5
74 FUR/ATK	298	2.4(+12)	-	-	0.9	1.1
76 SIN/CVE	298-480	7.2(+12)	0	332+23	0.9	1.1
$CH_3CH_2CH=CH_2 + Ø \rightarrow$ products						
1-BUTENE + ØXYGEN ATØM						
71 ATK/CVE REACTION ØRDER: 2	298	1.6(+12)	-	-	0.9	1.1
71 BUI/HER	259-493	8.8(+12)	0	382±30	0.9	1.1
72 ATK/CVE	298-473	6.1(+12)	0	410±50	0.9	1.1
74 HAU k/k_{ref}: 0.23	298	-	-	-		
NØTE: k_{ref}: $(CH_3)_2C=CH_2 + Ø \rightarrow$ products						
74 MCC k/k_{ref}: 0.18	298	-	-	-	0.6	1.4
NØTE: k_{ref}: $(CH_3)_2C=CH_2 + Ø \rightarrow$ products						
77 ATK/PIT1	298-439	8.4(+12)	0	-335±100		
$CH_3CH_2CH=CH_2 + Ø_3 \rightarrow$ products						
1-BUTENE + ØZØNE						
74 JAP/WU REACTION ØRDER: 2	298	7.5(+6)	-	-	0.9	1.1
75 BUI/HER	225-363	1.8(+9)	0	1686±20	0.9	1.1
NØTE: IN 0.0075 TØRR. ØF $Ø_2$ AS SCAVENGER						
76 WIL	298	5.6(+6)	-	-		
$CH_3CH_2CH=CH_2 + H \rightarrow CH_3CH(\cdot)CH=CH_2 + H_2$						
1-BUTENE + HYDRØGEN ATØM						
72 FAL/SUN REACTION ØRDER: 2 k/k_{ref}: 0.016	298	-	-	-		
NØTE: k_{ref}: $CH_3CH_2CH=CH_2 + H \rightarrow CH_3CH_2CH(\cdot)CH_3 + CH_3CH_2CH_2CH_2\cdot$						
$CH_3CH_2CH=CH_2 + H \rightarrow CH_3CH_2CH(\cdot)CH_3$						
1-BUTENE + HYDRØGEN ATØM						
74 SHI/AMA REACTION ØRDER: 2 k/k_{ref}: 3.0	923	-	-	-		
NØTE: k_{ref}: $CH_3CH_2CH=CH_2 + H \rightarrow CH_3CH_2CH_2CH_2\cdot$						
$CH_3CH_2CH=CH_2 + H \rightarrow CH_3CH_2CH(\cdot)CH_3 + CH_3CH_2CH_2CH_2\cdot$						
1-BUTENE + HYDRØGEN ATØM						
74 SHI/AMA REACTION ØRDER: 2 k/k_{ref}: 15.0	923	-	-	-		
NØTE: k_{ref}: $CH_3CH_2CH=CH_2 + H \rightarrow CH_3CH(\cdot)CH=CH_2 + \cdot CH_2CH_2CH=CH_2 + H_2$						
$CH_3CH_2CH=CH_2 + H + M \rightarrow CH_3CH_2CH(\cdot)CH_3 + CH_3CH_2CH_2CH_2\cdot + M$						
1-BUTENE + HYDRØGEN ATØM						
71 CEW/KEI REACTION ØRDER: 2 M: He	298	6.8(+11)	-	-	0.9	1.1
NØTE: DISCHARGE FLØW METHØD. (2.9 TØRR PRESSURE)	298	7.8(+11)	-	-	0.9	1.1
NØTE: STEADY STATE PHØTØLYSIS METHØD. 10-15 TØRR PRESSURE. (M=Ne, Ar)						
71 DAB/NIK M: He	298	8.3(+11)	-	-	0.9	1.1
NØTE: 0.4 TØ 2.8 TØRR. He PRESSURE						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
$CH_3CH_2CH{=}CH_2 + D + M \rightarrow CH_3CH_2CH(.)CH_2D + CH_3CH_2CHDCH_2. + M$						
1-BUTENE + DEUTERIUM ATOM						
71 DAB/NIK REACTION ORDER: 2 M: He	298	8.3(+11)	-	-	0.9	1.1
NOTE: 0.6 TO 2.6 TORR. He PRESSURE						
$CH_3CH_2CH{=}CH_2 + OH \rightarrow$ products						
1-BUTENE + HYDROXYL FREE RADICAL						
71 MCK/NIK2 REACTION ORDER: 2 k/k_{ref}: 2.4	300	-	-	-		
NOTE: k/k_{ref}: $CH_3CH{=}CH_2 + OH \rightarrow$ products						
75 PAS/CAR	300	9.0(+12)	-	-		
75 ATK/PIT	297-425	4.6(+12)	0	-470±150	0.9	1.1
$CH_3CH_2CH{=}CH_2 + S \rightarrow cy\text{-}(CH_3CH_2)CHCH_2S$						
1-BUTENE + SULFUR ATOM						
71 CHN/VAN REACTION ORDER: 2	298	9.0(+12)	-	-	0.9	1.1
NOTE: FLASH PHOTOLYSIS METHOD						
71 STR/0°C	298-450	-	-	-		
NOTE: k/k_{ref}: 0.75exp(+866/T)						
k_{ref}: $CH_2{=}CH_2 + S \rightarrow cy\text{-}CH_2CH_2S$						
CONVENTAIONAL PHOTOLYSIS METHOD						
73 KIE/DAV2	216-475	4.5(+12)	0	180±45	0.1	14.0
$CH_3CH_2CH{=}CH_2 + NO_2 \rightarrow$ products						
1-BUTENE + NITROGEN OXIDE (NO_2)						
71 JAF REACTION ORDER: 2	298-373	2.5(+6)	0	3680		
$CH_3CH_2CH{=}CH_2 + NO_3 \rightarrow$ products						
1-BUTENE + NITROGEN OXIDE (NO_3)						
75 JAP/NIK REACTION ORDER: 2	300	4.7(+9)	-	-	0.9	1.1
$CH_3CH_2CH{=}CH_2 + CH_3C(O)OO. \rightarrow cy\text{-}(CH_3CH_2)CHCH_2O + CH_3. + CO_2$						
1-BUTENE + ETHYL DIOXY. 1-OXO-, FREE RADICAL						
74 DIA/WAD REACTION ORDER: 2	393	3.5(+7)	-	-		
75 SEL/WAD	357-410	8.7(+10)	0	3480±420	0.3	3.0
$CH_3CH_2CH{=}CH_2 + CH_3C(O)OOH \rightarrow cy\text{-}(CH_3CH_2)CHCH_2O + CH_3COOH$						
1-BUTENE + ETHANEPEROXOIC ACID						
75 SEL/WAD REACTION ORDER: 2	357-410	4.8(+11)	0	9920±1240	0.1	25.0
$CH_3CH{=}CHCH_3 + O_3 \rightarrow$ products						
2-BUTENE + OZONE						
74 BIC/SCH REACTION ORDER: 2	280-360	5.7(+9)	0	1150±75		
NOTE: cis-and trans-2-BUTENE MIXTURE						
$CH_3CH{=}CHCH_3 + H \rightarrow CH_3CH(.)CH_2CH_3$						
2-BUTENE + HYDROGEN ATOM						
74 SHI/ANA REACTION ORDER: 2 k/k_{ref}: 5.0	923	-	-	-		
NOTE: k_{ref}: $CH_3CH{=}CHCH_3 + H \rightarrow .CH_2CH{=}CHCH_3 + H_2$						
$CH_3CH{=}CHCH_3 + H \rightarrow CH_3CH_2CH(.)CH_3^{\#}$						
2-BUTENE + HYDROGEN ATOM						
74 LAU/BUE REACTION ORDER: 2 k/k_{ref}: 0.83	298	-	-	-	0.9	1.2
NOTE: k_{ref}: $CH_2{=}CH_2 + H \rightarrow CH_3CH_2.^{\#}$						
$cis\text{-}CH_3CH{=}CHCH_3 \rightarrow CH_2{=}CHCH_2. + CH_3$						
cis-2-BUTENE						
74 JEF/BAU REACTION ORDER: 1	1150-1325	1.0(+16)	0	40260	0.3	4.0
$cis\text{-}CH_3CH{=}CHCH_3 \rightarrow CH_2{=}CHCH{=}CH_2 + H_2$						
cis-2-BUTENE						
76 AIF/GOL REACTION ORDER: 1	1100-1300	1.0(+13)	0	32700±100	0.3	4.0
76 MAS/RIC REACTION ORDER: 1	480-550	1.0(+13)	0	32965±1000	0.3	3.2
$cis\text{-}CH_3CH{=}CHCH_3 \rightarrow trans\text{-}CH_3CH{=}CHCH_3$						
cis-2-BUTENE						
76 MAS/RIC REACTION ORDER: 1	480-550	4.0(+13)	0	31200±500	0.5	2.0

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
cis-$CH_3CH{=}CHCH_3$ + O → cy-$(CH_3)CHCH(CH_3)O$						
cis-2-BUTENE + OXYGEN ATOM						
74 FUR/ATK REACTION ORDER: 2	298	9.0(+12)	-	-	0.8	1.2
76 SIN/CVE	298-480	6.7(+12)	0	-135±13	0.9	1.1
cis-$CH_3CH{=}CHCH_3$ + O → products						
cis-2-BUTENE + OXYGEN ATOM						
73 DAV/HUI REACTION ORDER: 2	268-443	5.8(+12)	0	-161±32	0.9	1.1
74 HAU k/k_{ref}: 0.95	298	-	-	-		
NOTE: k_{ref}: $(CH_3)_2C{=}CH_2$ + O → products						
74 MCC k/k_{ref}: 0.79	298	-	-	-	0.7	1.3
NOTE: k_{ref}: $(CH_3)_2C{=}CH_2$ + O → products						
77 ATK/PIT	298-439	7.3(+12)	0	-118±100		
cis-$CH_3CH{=}CHCH_3$ + $O_2{}^*(^1\Delta_g)$ → $CH_2{=}CHCH(CH_3)OOH$						
cis-2-BUTENE + OXYGEN MOLECULE						
75 ASH/OGR REACTION ORDER: 2	300-500	1.3(+11)	0	3255±140	0.7	1.4
cis-$CH_3CH{=}CHCH_3$ + O_3 → products						
cis-2-BUTENE + OZONE						
74 FIN/PIT REACTION ORDER: 2	298	6.3(+7)	-	-	0.7	1.3
NOTE: IN O_2 CARRIER GAS						
74 FIN/PIT	298	1.5(+8)	-	-	0.9	1.1
NOTE: IN N_2 CARRIER GAS						
74 JAP/WU	298	9.7(+7)	-	-	0.9	1.1
75 BUI/HER	225-336	1.9(+9)	0	956±54	0.8	1.2
NOTE: IN 0.0075 TORR. OF O_2 AS SCAVENGER						
76 WIL	298	7.3(+6)	-	-		
cis-$CH_3CH{=}CHCH_3$ + H → $.CH_2CH{=}CHCH_3$ + H_2						
cis-2-BUTENE + HYDROGEN ATOM						
72 FAL/SUN REACTION ORDER: 2 k/k_{ref}: 0.015	298	-	-	-		
NOTE: k_{ref}: cis-$CH_3CH{=}CHCH_3$ + H → $CH_3CH_2CH(.)CH_3$						
cis-$CH_3CH{=}CHCH_3$ + H + M → $CH_3CH_2CH(.)CH_3$ + M						
cis-2-BUTENE + HYDROGEN ATOM						
71 COW/KEI REACTION ORDER: 2 M: He	298	3.9(+11)	-	-	0.9	1.1
NOTE: DISCHARGE FLOW METHOD. 3.2 TORR PRESSURE						
M: He	298	2.4(+11)	-	-	0.8	1.2
NOTE: STEADY STATE PHOTOLYSIS METHOD 10-15 TORR PRESSURE						
71 LAB/NIK M: He	298	4.7(+11)	-	-	0.9	1.1
NOTE: 1.1 TO 2.8 TORR. He PRESSURE						
M: He	298	4.1(+11)	-	-	0.9	1.1
NOTE: 0.6 TO 2.6 TORR. He PRESSURE						
cis-$CH_3CH{=}CHCH_3$ + OH → products						
cis-2-BUTENE + HYDROXYL FREE RADICAL						
71 MER/NIK2 REACTION ORDER: 2 k/k_{ref}: 3.6	300	-	-	-		
NOTE: k_{ref}: $CH_3CH{=}CH_2$ + OH → products						
75 ATK/PIT REACTION ORDER: 2	297-425	6.3(+12)	0	-490±150		
76 LLO/DAR	305	3.9(+13)	-	-	0.8	1.2
NOTE: EVALUATION						
76 WIN/LLO	305	3.7(+13)	-	-	0.8	1.2
NOTE: EVALUATION						
cis-$CH_3CH{=}CHCH_3$ + S → cy-$(CH_3)CHCH(CH_3)S$						
cis-2-BUTENE + SULFUR ATOM						
71 STR/O'C REACTION ORDER: 2	298	-	-	-		
NOTE: k/k_{ref}: 0.53exp(+105/T)						
k_{ref}: $CH_2{=}CH_2$ + S → cy-CH_2CH_2S						
CONVENTIONAL PHOTOLYSIS METHOD						
cis-$CH_3CH{=}CHCH_3$ + S → products						
cis-2-BUTENE + SULFUR ATOM						
73 DAV/KLE REACTION ORDER: 2	219-500	2.8(+12)	0	-116±45	0.9	1.1
cis-$CH_3CH{=}CHCH_3$ + $SO_2{}^*(^3B_1)$ → [cis-$CH_3CH{=}CHCH_3.SO_2$]*						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
cis-2-BUTENE + SULFUR DIOXIDE 74 DEM/CAL REACTION ORDER: 2	294	1.3(+14)	-	-	0.9	1.1
$cis\text{-}CH_3CH{=}CHCH_3 + NO_2 \rightarrow$ products cis-2-BUTENE + NITROGEN OXIDE (NO_2) 71 JAF REACTION ORDER: 2	298-373	2.5(+5)	0	2740		
$cis\text{-}CH_3CH{=}CHCH_3 + NO_3 \rightarrow$ products cis-2-BUTENE + NITROGEN OXIDE (NO_3) 75 JAP/NIK REACTION ORDER: 2	300	1.1(+11)	-	-	0.9	1.1
$cis\text{-}CH_3CH{=}CHCH_3 + cis\text{-}NH{=}N \rightarrow CH_3CH_2CH_2CH_3 + N_2$ cis-2-BUTENE + cis-DIAZENE 74 VID/WIL REACTION ORDER: 2 k/k_{ref}: 0.11	373	-	-	-	0.9	1.1
NOTE: k_{ref}: $CH_2{=}CH_2 + cis\text{-}NH{=}NH \rightarrow CH_3CH_3 + N_2$						
$cis\text{-}CH_3CH{=}CHCH_3 + CH_2{=}CH_2 \rightarrow cis\text{-}CH_3CH(\cdot)CH(CH_3)CH_2CH_2\cdot$ cis-2-BUTENE + ETHENE 77 SAC/BAC REACTION ORDER: 2	663-703	1.5(+12)	0	24360	0.9	1.1
NOTE: BASED ON EXPERIMENTAL VALUES FOR Ea AND FOUR k's						
$cis\text{-}CH_3CH{=}CHCH_3 + CH_3C(O)OO\cdot \rightarrow cy\text{-}(CH_3)CHCH(CH_3)O + CH_3\cdot + CO_2$ cis-2-BUTENE + ETHYLDIOXY, 1-OXO-, FREE RADICAL 72 RAY/WAD REACTION ORDER: 2	457	2.0(+9)	-	-		
NOTE: EVALUATION 75 DIA/SEL	393	7.5(+7)	-	-	0.9	1.1
$cis\text{-}CH_3CH{=}CHCH_3 + CH_3C(O)OOH \rightarrow cy\text{-}(CH_3)CHCH(CH_3)O + CH_3COOH$ cis-2-BUTENE + ETHANEPEROXOIC ACID 75 DIA/SEL REACTION ORDER: 2	393	3.2(+1)	-	-	0.6	1.4
$cis\text{-}CH_3CH{=}CHCH_3 + M \rightarrow trans\text{-}CH_3CH{=}CHCH_3 + M$ cis-2-BUTENE 74 SPR/AKI REACTION ORDER: 2 M: NO_2	298-366	7.2(+10)	0	5940		
$cis\text{-}CH_3CH{=}CHCH_3 + M^* \rightarrow trans\text{-}CH_3CH{=}CHCH_3 + M$ cis-2-butene 73 COX REACTION ORDER: 2	296	1.6(+14)	-	-	0.9	1.1
NOTE: M^* is $^3SO_2{}^*$ (59% trans ISOMER FORMED)						
$trans\text{-}CH_3CH{=}CHCH_3 \rightarrow CH_3\cdot + CH_2{=}CHCH_2$ trans-2-BUTENE 74 JEF/BAU REACTION ORDER: 1	1150-1325	1.0(+16)	0	40260	0.3	4.0
$trans\text{-}CH_3CH{=}CHCH_3 + O \rightarrow$ products trans-2-BUTENE + OXYGEN ATOM 74 MCC REACTION ORDER: 2 k/k_{ref}:1.25	298	-	-	-	0.7	1.3
NOTE: k_{ref}: $(CH_3)_2C{=}CH_2 + O \rightarrow$ products 77 ATK/PITI	298-439	1.4(+13)	0	-10±100		
$trans\text{-}CH_3CH{=}CHCH_3 + O_2{}^*(^1\Delta_g) \rightarrow CH_2{=}CHCH(CH_3)OOH$ trans-2-BUTENE + OXYGEN MOLECULE 75 ASH/OGR REACTION ORDER: 2	300-500	1.6(+11)	0	3665±180	0.7	1.5
$trans\text{-}CH_3CH{=}CHCH_3 + O_3 \rightarrow$ products trans-2-BUTENE + OZONE 73 STE/WU REACTION ORDER: 2	299	1.7(+8)	-	-	0.9	1.1
74 JAP/WU	298	1.6(+8)	-	-	0.9	1.1
75 HUI/HER	255-363	3.6(+9)	0	1051±43	0.9	1.2
NOTE: IN 0.0075 TORR. OF O_2 AS SCAVENGER						
76 JAP/WU	299	1.5(+8)	-	-	0.9	1.1
$trans\text{-}CH_3CH{=}CHCH_3 + H \rightarrow \cdot CH_2CH{=}CHCH_3 + H_2$ trans-2-BUTENE + HYDROGEN ATOM 76 PAL/SHN REACTION ORDER: 2 k/k_{ref}: 0.009	298	-	-	-		
NOTE: k_{ref}: $trans\text{-}CH_3CH{=}CHCH_3 + H \rightarrow CH_3CH_2CH(\cdot)CH_3$						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
$trans\text{-}CH_3CH{=}CHCH_3 + H + M \rightarrow CH_3CH_2CH(.)CH_3 + M$						
trans-2-BUTENE + HYDROGEN ATOM						
71 COW/KEI REACTION ORDER: 2 M: He	298	4.3(+11)	-	-	0.9	1.1
NOTE: DISCHARGE FLOW METHOD. 1.8 TORR PRESSURE	298	3.3(+11)	-	-	0.7	1.3
NOTE: STEADY STATE PHOTOLYSIS METHOD 10-15 TORR PRESSURE (M=Ne,Ar)						
71 DAB/NIK	298	5.4(+11)	-	-	0.9	1.1
NOTE: 0.4 TO 1.9 TORR He PRESSURE	298	4.7(+11)	-	-	0.9	1.1
NOTE: 0.7 TO 2.2 TORR He PRESSURE						
$trans\text{-}CH_3CH{=}CHCH_3 + OH \rightarrow$ products						
trans-2-BUTENE + HYDROXYL FREE RADICAL						
71 MER/NIK2 REACTION ORDER: 2 k/k_{ref}: 4.2	300	-	-	-		
NOTE: k_{ref}: $CH_3CH_3CH_2 + OH \rightarrow$ products						
75 FAS/CAR REACTION ORDER: 2	300	7.2(+12)	-	-	0.2	1.8
75 ATK/PIT	297-425	6.7(+12)	0	-550±150		
75 COX	300	6.4(+13)	-	-	0.7	1.3
$trans\text{-}CH_3CH{=}CHCH_3 + S \rightarrow cy\text{-}(CH_3)CHCH(CH_3)S$						
trans-2-BUTENE + SULFUR ATOM						
71 CON/VAN REACTION ORDER: 2	298	1.2(+13)	-	-	0.8	1.2
NOTE: FLASH PHOTOLYSIS METHOD						
71 SIR/O'C	298-450	-	-	-		
NOTE: k/k_{ref}: 0.65exp(+1010/T)						
k_{ref}: $CH_2CH_2 + S \rightarrow cy\text{-}CH_2CH_2S$						
CONVENTIONAL PHOTOLYSIS METHOD						
$trans\text{-}CH_3CH{=}CHCH_3 + SO_2{}^*({}^3B_1) \rightarrow [trans\text{-}CH_3CH{=}CHCH_3 . SO_2{}^*]$						
trans-2-BUTENE + SULFUR DIOXIDE						
74 DEM/CAL REACTION ORDER: 2	294	1.2(+14)	-	-	0.9	1.1
$trans\text{-}CH_3CH{=}CHCH_3 + NO_2 \rightarrow$ products						
trans-2-BUTENE + NITROGEN OXIDE (NO_2)						
71 JAF REACTION ORDER: 2	298-373	1.6(+6)	0	3220		
$trans\text{-}CH_3CH{=}CHCH_3 + NO_3 \rightarrow$ products						
trans-2-BUTENE + NITROGEN OXIDE (NO_3)						
75 JAP/NIK REACTION ORDER: 2	300	8.4(+10)	-	-	0.9	1.1
$trans\text{-}CH_3CH{=}CHCH_3 + cis\text{-}NH{=}NH \rightarrow CH_3CH_2CH_2CH_3 + N_2$						
trans-2-BUTENE + cis-DIAZENE						
74 VID/WIL REACTION ORDER: 2 k/k_{ref}: 0.33	373	-	-	-	0.9	1.1
NOTE: k_{ref}: $CH_2{=}CH_2 + cis\text{-}NH{=}NH \rightarrow CH_3CH_3 + N_2$						
$trans\text{-}CH_3CH{=}CHCH_3 + CH_3. \rightarrow .CH_2CH{=}CHCH_3 + CH_4$						
trans-2-BUTENE + METHYL FREE RADICAL						
73 KIC/MAR REACTION ORDER: 2 k/k_{ref}: ~8.0	768	-	-	-		
NOTE: k_{ref}: $CH_3CHO + CH_3. \rightarrow CH_3C(O). + CH_4$						
$trans\text{-}CH_3CH{=}CHCH_3 + CH_2{=}CH_2 \rightarrow trans\text{-}CH_3CH(.)CH(CH_3)CH_2CH_2.$						
trans-2-BUTENE + ETHENE						
77 SCA/BAC REACTION ORDER: 2	663-703	4.1(+12)	0	24660	0.9	1.1
NOTE: BASED ON EXPERIMENTAL VALUES FOR Ea AND FOUR k's						
$trans\text{-}CH_3CH{=}CHCH_3 + CH_2{=}CH_2 \rightarrow trans\text{-}CH_3CH(.)CH(CH_3)CH_2CH_2.$						
trans-2-BUTENE + ETHENE						
77 SCA/BAC REACTION ORDER: 2 k/k_{ref}: 1.80	663-703	-	-	-	0.9	1.1
NOTE: k_{ref}: $cis\text{-}CH_3CH{=}CHCH_3 + CH_2{=}CH_2 \rightarrow cis\text{-}CH_3CH(.)CH(CH_3)CH_2CH_2.$						
$trans\text{-}CH_3CH{=}CHCH_3 + CH_3C(O)OO. \rightarrow cy\text{-}(CH_3)CHCH(CH_3)O + CH_3O. + CO_2$						
trans-2-BUTENE + ETHYLDIOXY, 1-OXO-, FREE RADICAL						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
75 DIA/SEL REACTION ORDER: 2	393	1.2(+8)	-	-	0.9	1.1
$trans\text{-}CH_3CH{=}CHCH_3 + CH_3C(O)OOH \rightarrow cy\text{-}(CH_3)CHCH(CH_3)O + CH_3COOH$						
trans-2-BUTENE + ETHANEPEROXOIC ACID						
75 DIA/SEL REACTION ORDER: 2	393	3.2(+1)	-	-	0.6	1.4
$trans\text{-}CH_3CH{=}CHCH_3 + M \rightarrow cis\text{-}CH_3CH{=}CHCH_3 + M$						
trans-2-BUTENE						
74 SPR/AKI REACTION ORDER: 2 M: NO_2	297-370	4.5(+10)	0	6140		
$trans\text{-}CH_3CH{=}CHCH_3 + M^{*} \rightarrow cis\text{-}CH_3CH{=}CHCH_3 + M$						
trans-2-BUTENE						
73 COX REACTION ORDER: 2	296	2.4(+14)	-	-	0.9	1.1
NOTE: M^{*} IS $^{3}SO_2^{*}$ (41% cis-ISOMER IS FORMED)						
$(CH_3)_2C{=}CH_2 \rightarrow CH_3\cdot + CH_2CH{=}CH_2$						
1-PROPENE, 2-METHYL-						
76 BRA/WES2 REACTION ORDER: 1	1055-1325	1.8(+18)	0	45100	0.8	1.2
$(CH_3)_2C{=}CH_2 \rightarrow$ products						
1-PROPENE, 2-METHYL-						
74 EAK/NOV REACTION ORDER: 1	973-1123	1.1(+16)	0	38750±1250		
$(CH_3)_2C{=}CH_2 + O \rightarrow cy\text{-}(CH_3)_2CCH_2O$						
1-PROPENE, 2-METHYL-, + OXYGEN ATOM						
74 FUR/ATK REACTION ORDER: 2	298	9.9(+12)	-	-	0.9	1.1
76 SIN/CVE	298-480	8.7(+12)	0	-51±22	0.9	1.1
$(CH_3)_2C{=}CH_2 + O \rightarrow$ products						
PROPENE, 2-METHYL-, + OXYGEN ATOM						
71 ATK/CVE REACTION ORDER: 2	298	6.2(+12)	-	-	0.8	1.2
72 ATK/CVE	298-473	6.3(+12)	0	0±200	0.8	1.2
77 ATK/PIT1	298-439	1.1(+13)	0	43±100		
$(CH_3)_2C{=}CHD + O \rightarrow$ products						
PROPENE-1-d_1, 2-METHYL + OXYGEN ATOM						
76 HAV/HUN REACTION ORDER: 2 k/k_{ref}: 1.03	298-302	-	-	-	0.9	1.1
NOTE: k_{ref}: $(CH_3)_2C{=}CH_2 + O \rightarrow$ products						
$(CH_3)_2C{=}CD_2 + O \rightarrow$ products						
PROPENE-1,1-d_2, 2-METHYL + OXYGEN ATOM						
76 HAV/HUN REACTION ORDER: 2 k/k_{ref}: 1.05	298-302	-	-	-	0.9	1.1
NOTE: k_{ref}: $(CH_3)_2C{=}CH_2 + O \rightarrow$ products						
$(CH_3)_2C{=}CH_2 + O_3 \rightarrow$ products						
1-PROPENE, 2-METHYL-, + OZONE						
74 BEC/SCH REACTION ORDER: 2	283	1.1(+7)	-	-		
74 FIN/PIT	298	5.4(+6)	-	-	0.6	1.4
NOTE: IN O_2 CARRIER GAS	298	3.6(+7)	-	-	0.8	1.2
NOTE: IN N_2 CARRIER GAS						
74 JAP/WU	298	8.2(+6)	-	-	0.9	1.1
75 BER/HUI	225-363	1.9(+9)	0	1671±23	0.9	1.1
NOTE: IN 0.0075 TORR. OF O_2 AS SCAVENGER						
76 WIL	298	7.4(+6)	-	-		
$(CH_3)_2C{=}CH_2 + H \rightarrow \cdot CH_2C(CH_3){=}CH_2 + H_2$						
1-PROPENE, 2-METHYL-, + HYDROGEN ATOM						
76 BRA/WES2 REACTION ORDER: 2	1055-1325	-	-	-	0.7	1.5
NOTE: k_{ref}: $(CH_3)_2C{=}CH_2 + H \rightarrow (CH_3)_3C\cdot$						
k/k_{ref}: $6.8 \times 10^{-2} \exp(2400/T)$						
$(CH_3)_2C{=}CH_2 + H \rightarrow (CH_3)_3C\cdot$						
1-PROPENE, 2-METHYL-, + HYDROGEN ATOM						
76 BRA/WES1 REACTION ORDER: 2	1030-1300	1.6(+13)	0	760	0.5	1.9

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	F
$(CH_3)_2C{=}CH_2 + H + M \rightarrow (CH_3)_3C. + (CH_3)_2CHCH_2. + M$						
1-PROPENE, 2-METHYL-, + HYDROGEN ATOM						
71 COW/KEI REACTION ORDER: 2	298	2.0(+12)	-	-	0.7	1.3
NOTE: STEADY STATE PHOTOLYSIS METHOD						
10-15 TORR PRESSURE. (M=Ne,Ar)						
$(CH_3)_2C{=}CH_2 + D + M \rightarrow (CH_3)_2C(.)CH_2D + (CH_3)_2CHDCH_2. + M$						
1-PROPENE, 2-METHYL-, + DEUTERIUM ATOM						
71 DAE/NIK REACTION ORDER: 2 M: He	298	2.0(+12)	-	-	0.9	1.1
NOTE: 1.0 TO 2.2 TORR He PRESSURE						
$(CH_3)_2C{=}CH_2 + H \rightarrow (CH_3)_3C.$						
1-PROPENE, 2-METHYL-, + HYDROXYL FREE RADICAL						
71 MER/NIK2 REACTION ORDER: 2 k/k_{ref}: 3.8	300	-	-	-		
NOTE: k_{ref}: $CH_3CH{=}CH_2 + OH \rightarrow$ products						
75 AIK/PIT	297-425	5.5(+12)	0	-500±150		
$(CH_3)_2C{=}CH_2 + S \rightarrow$ cy-$[(CH_3)_2]CCH_2S$						
1-PROPENE, 2-METHYL-, + SULFUR ATOM						
71 CON/VAN REACTION ORDER: 2	298	3.6(+13)	-	-	0.9	1.1
NOTE: FLASH PHOTOLYSIS METHOD						
71 STR/O'C	298-450	-	-	-		
NOTE: k/k_{ref}: 0.97exp(+1190/T)						
CONVENTIONAL PHOTOLYSIS METHOD						
$(CH_3)_2C{=}CH_2 + NO_2 \rightarrow$ products						
1-PROPENE, 2-METHYL-, + NITROGEN OXIDE (NO_2)						
71 JAF REACTION ORDER: 2	298-373	4.0(+4)	0	2000		
$(CH_3)_2C{=}CH_2 + NO_3 \rightarrow$ products						
1-PROPENE, 2-METHYL-, + NITROGEN OXIDE (NO_3)						
75 JAP/NIK REACTION ORDER: 2	300	6.6(+10)	-	-	0.9	1.1
$(CH_3)_2C{=}CH_2 + CH_3. \rightarrow .CH_2C(CH_3){=}CH_2 + CH_4$						
1-PROPENE, 2-METHYL-, + METHYL FREE RADICAL						
73 KON/MAR REACTION ORDER: 2	770-855	1.1(+14)	0	8860		
NOTE: EVALUATION						
73 RIC/MAR REACTION ORDER: 2 k/k_{ref}: ≈5.0	768	-	-	-		
NOTE: k_{ref}: $CH_3CHO + CH_3. \rightarrow CH_3C(O). + CH_4$						
76 BRA/WES2	1055-1325	6.8(+13)	0	9860	0.6	1.6
$(CH_3)_2C{=}CH_2 + CH_3C(O)OO. \rightarrow$ cy-$[(CH_3)_2]CCH_2O + CH_3. + CO_2$						
1-PROPENE, 2-METHYL-, + ETHYLDIOXY, 1-OXO-, FREE RADICAL						
75 SEL/WAD REACTION ORDER: 2	357-410	1.9(+11)	0	3010±1410	0.7	1.4
$(CH_3)_2C{=}CH_2 + CH_3C(O)OOH \rightarrow$ cy-$[(CH_3)_2]CCH_2O + CH_3COOH$						
1-PROPENE, 2-METHYL-, + ETHANE PEROXOIC ACID						
75 SEL/WAD REACTION ORDER: 2	357-410	4.3(+10)	0	7940±1630	0.1	68.0
$CH_3CH_2CH_2CH_2. + O_2 \rightarrow CH_3CH_2CH{=}CH_2 + HO_2.$						
BUTYL FREE RADICAL + OXYGEN MOLECULE						
71 BAK/BAL REACTION ORDER: 2	753	2.8(+11)	-	-		
75 BAK/BAL2	753	2.7(+11)	-	-		
$CH_3CH_2CH_2CH_2. + O_2 \rightarrow$ cy-$CH_2CH_2CH_2CH_2O + OH$						
BUTYL FREE RADICAL + OXYGEN MOLECULE						
75 BAK/BAL3 REACTION ORDER: 2	753	2.6(+10)	-	-		
$CH_3CH_2CH_2CH_2. + CH_3CH_2CH(.)CH_3 \rightarrow CH_3CH_2CH{=}CH_2 + CH_3CH_2CH_2CH_3$						
BUTYL FREE RADICAL + PROPYL, 1-METHYL-, FREE RADICAL						
71 BAL/SUN REACTION ORDER: 2 k/k_{ref}: 0.45	298	-	-	-		
NOTE: k_{ref}: $CH_3CH_2CH_2CH_2. + CH_3CH_2CH(.)CH_3 \rightarrow CH_3CH_2CH(CH_3)CH_2CH_2CH_2CH_3$						
$CH_3CH_2CH(.)CH_3 + O_2 \rightarrow CH_3CH_2CH{=}CH_2 + HO_2.$						
PROPYL, 1-METHYL-, FREE RADICAL + OXYGEN MOLECULE						
75 BAK/BAL2 REACTION ORDER: 2	753	5.1(+10)	-	-		

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	F

$CH_3CH_2CH(.)CH_3 + O_2 \rightarrow$ cis-$CH_3CH{=}CHCH_3 + HO_2\cdot$						
PROPYL, 1-METHYL-, FREE RADICAL + OXYGEN MOLECULE						
71 EAK/BAL REACTION ORDER: 2	753	1.2(+11)	-	-		
75 EAK/BAL2	753	4.3(+10)	-	-		

$CH_3CH_2CH(.)CH_3 + O_2 \rightarrow$ trans-$CH_3CH{=}CHCH_3 + HO_2\cdot$						
PROPYL, 1-METHYL-, FREE RADICAL + OXYGEN MOLECULE						
71 EAK/BAL REACTION ORDER: 2	753	2.1(+11)	-	-		
75 EAK/BAL2	753	7.8(+10)	-	-		

$CH_3CH_2CH(.)CH_3 + O_2 \rightarrow CH_3CH_2COCH_3 + OH$						
PROPYL, 1-METHYL-, FREE RADICAL + OXYGEN MOLECULE						
71 EAK/BAL REACTION ORDER: 2	753	2.3(+9)	-	-		
75 EAK/BAL3	753	9.4(+8)	-	-		

$CH_3CH_2CH(.)CH_3 + O_2 \rightarrow$ cy-$(CH_3CH_2)CHCH_2O + OH$						
PROPYL, 1-METHYL-, FREE RADICAL + OXYGEN MOLECULE						
75 EAK/BAL3 REACTION ORDER: 2	753	1.2(+9)	-	-	0.7	1.3

$CH_3CH_2CH(.)CH_3 + O_2 \rightarrow$ cis-[cy-$(CH_3)CHCH(CH_3)O$] + OH						
PROPYL, 1-METHYL-, FREE RADICAL + OXYGEN MOLECULE						
75 EAK/BAL3 REACTION ORDER: 2	753	4.8(+9)	-	-		

$CH_3CH_2CH(.)CH_3 + O_2 \rightarrow$ trans-[cy-$(CH_3)CHCH(CH_3)O$] + OH						
PROPYL, 1-METHYL-, FREE RADICAL + OXYGEN MOLECULE						
75 EAK/BAL3 REACTION ORDER: 2	753	1.0(+10)	-	-		

$CH_3CH_2CH(.)CH_3 + CH_3CH_2CH_2CH_2\cdot \rightarrow$ $CH_3CH_2CH{=}CH_2 + CH_3CH_2CH_2CH_3$						
PROPYL, 1-METHYL-, FREE RADICAL + BUTYL FREE RADICAL						
71 FAL/SUN REACTION ORDER: 2 k/k_{ref}: 0.45	298	-	-	-		
NOTE: k/k_{ref}: $CH_3CH_2CH(.)CH_3 + CH_3CH_2CH_2CH_2\cdot \rightarrow$ $CH_3CH_2CH(CH_3)CH_2CH_2CH_2CH_3$						

$CH_3CH_2CH(.)CH_3 + CH_3CH_2CH(.)CH_3 \rightarrow$ $CH_3CH_2CH{=}CH_2 + CH_3CH_2CH_2CH_3$						
PROPYL, 1-METHYL-, FREE RADICAL						
71 FAL/SUN REACTION ORDER: 2 k/k_{ref}: 0.41	298	-	-	-		
NOTE: k_{ref}: $CH_3CH_2CH(.)CH_3 + CH_3CH_2CH(.)CH_3 \rightarrow$ $CH_3CH_2CH(CH_3)CH(CH_3)CH_2CH_3$						

$CH_3CH_2CH(.)CH_3 + CH_3CH_2CH(.)CH_3 \rightarrow$ cis-, and trans-$CH_3CH{=}CHCH_3 + CH_3CH_2CH_2CH_3$						
PROPYL, 1-METHYL-, FREE RADICAL						
71 FAL/SUN REACTION ORDER: 2 k/k_{ref}: 0.36	298	-	-	-		
NOTE: k_{ref}: $CH_3CH_2CH(.)CH_3 + CH_3CH_2CH(.)CH_3 \rightarrow$ $CH_3CH_2CH(CH_3)CH(CH_3)CH_2CH_3$						

$CH_3CH_2CH(.)CH_3 + CH_3CH_2CH(.)CH_3 \rightarrow CH_3CH_2CH{=}CH_2$ + cis-, and trans-$CH_3CH{=}CHCH_3 + CH_3CH_2CH_2CH_3$						
PROPYL, 1-METHYL-, FREE RADICAL						
71 FAL/SUN REACTION ORDER: 2 k/k_{ref}: 0.77	298	-	-	-		
NOTE: k_{ref}: $CH_3CH_2CH(.)CH_3 + CH_3CH_2CH(.)CH_3 \rightarrow$ $CH_3CH_2CH(CH_3)CH(CH_3)CH_2CH_3$						

$(CH_3)_2CHCH_2\cdot + O_2 \rightarrow (CH_3)_2C{=}CH_2 + HO_2\cdot$						
PROPYL, 2-METHYL-, FREE RADICAL + OXYGEN MOLECULE						
76 EAK/BAL REACTION ORDER: 2	753	2.3(+10)	-	-		

$(CH_3)_2CHCH_2\cdot + O_2 \rightarrow (CH_3)_2CHCHO + OH$						
PROPYL, 2-METHYL-, FREE RADICAL + OXYGEN MOLECULE						
71 EAK/BAL REACTION ORDER: 2	753	2.3(+9)	-	-		

$(CH_3)_3C\cdot \quad CH_3\cdot + CH_3CH{=}CH_2$						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	F
ETHYL, 1,1-DIMETHYL-, FREE RADICAL						
76 ERA/WES2 REACTION ORDER: 1 k/k_{ref}: 1.8	1200	-	-	-	0.7	1.4
NOTE: k_{ref}: $(CH_3)_3C\cdot \rightarrow CH_3CH_2\cdot + CH_2{=}CH_2$						
$(CH_3)_3C\cdot + NO \rightarrow (CH_3)_2C{=}CH_2 + HNO$						
ETHYL, 1,1-DIMETHYL-, FREE RADICAL + NITROGEN OXIDE(NO)						
74 CHO/MEN REACTION ORDER: 2	600	≤3.2(+10)	-	-		
NOTE: UPPER LIMIT k						
$(CH_3)_3C\cdot + NO \rightarrow (CH_3)_3CNO$						
ETHYL, 1,1-DIMEHTYL-, FREE RADICAL + NITROGEN OXIDE(NO)						
74 CHO/MEN REACTION ORDER: 2	600	3.5(+12)	-	-	0.5	1.5
$(CH_3)_3C\cdot + CH_3\cdot \rightarrow (CH_3)_4C$						
ETHYL, 1,1-DIMETHYL-, FREE RADICAL + METHYL FREE RADICAL						
72 MAR/PUR REACTION ORDER: 2	756-845	7.9(+12)	0	0		
NOTE: EVALUATION						
$(CH_3)_3C\cdot + CH_3O\cdot \rightarrow (CH_3)_3COCH_3$						
ETHYL, 1,1-DIMETHYL-, FREE RADICAL + METHOXY FREE RADICAL						
76 EAT/MCC1 REACTION ORDER: 2	383-413	5.0(+12)	0	0		
NOTE: EVALUATION						
$(CH_3)_3C\cdot + (CH_3)_3C\cdot \rightarrow (CH_3)_2C{=}CH_2 + (CH_3)_3CH$						
ETHYL, 1,1-DIMETHYL-, FREE RADICAL						
71 FAL/SUN REACTION ORDER: 2 k/k_{ref}: 3.1	298	-	-	-		
77 MCK/TUR REACTION ORDER: 2 k/k_{ref}: 2.6	471-573	-	-	-	0.9	1.1
NOTE: k_{ref}: $(CH_3)_3C\cdot + (CH_3)_3C\cdot \rightarrow (CH_3)_3CC(CH_3)_3$						
$(CH_3)_3C\cdot + (CH_3)_3C\cdot \rightarrow (CH_3)_2C{=}CH_2 + (CH_3)_3CH$						
ETHYL, 1,1-DIMETHYL-, FREE RADICAL						
74 CHO/BEA REACTION ORDER: 2	620-690	1.5(+12)	0	0		
NOTE: k_d/k_r = 3.0						
$(CH_3)_3C\cdot + (CH_3)_3C\cdot \rightarrow (CH_3)_3CC(CH_3)_3$						
ETHYL, 1,1-DIMETHYL-, FREE RADICAL						
72 MCM/GOL REACTION ORDER: 2	462	4.0(+8)	-	-		
73 HIA/BEN	373	2.5(+8)	-	-		
74 CHO/BEA	620-690	5.0(+11)	0	0	0.5	2.0
75 FAR/QUI	298	1.2(+12)	-	-	0.8	1.2
76 EAT/MCC1	383-413	2.5(+11)	0	0		
NOTE: EVALUATION						
76 CHO/BEA	623-692	6.3(+11)	0	0	0.5	2.0
NOTE: NEGLIGIBLE T DEPENDENCE						
76 MAR/PUR	800	7.9(+11)	-	-		
NOTE: EVALUATION						
76 FAR/QUI	298	2.4(+12)	-	-	0.7	1.3
$CH_3CH_2CH_2CH_3^*$ → $CH_3\cdot + CH_3CH_2\cdot + CH_3CH_2CH_2\cdot$						
BUTANE						
72 RAS/JOH REACTION ORDER: 1	298	7.3(+6)	-	-	0.9	1.1
NOTE: 0.35 TORR.						
	298	2.3(+7)	-	-	0.9	1.1
NOTE: 1.06 TORR.						
$CH_3CH_2CH_2CH_3$ → $CH_3CH_2\cdot + CH_3CH_2\cdot$						
BUTANE						
74 GOL/ALF REACTION ORDER: 1	1100-1250	2.5(+16)	0	40710		
NOTE: BEST FIT OF EXPERIMENTAL DATA						
TO log A = 16.4 FOR EACH C-C FISSION						
$CH_3CH_2CH_2CH_3$ → $CH_3CH_2\cdot + CH_3CH_2\cdot$						
BUTANE						
74 HUG/MAR REACTION ORDER: 1	895-981	2.0(+15)	0	38850±2050	0.1	7.9
NOTE: EVALUATION						
$CH_3CH_2CH_2CH_3$ → products						
BUTANE						
72 ILL/SZA REACTION ORDER: 1	940-1075	2.4(+13)	0	30200	0.9	1.1
72 ILL	913-1063	5.8(+12)	0	28430		
74 BAK/NOV	973-1123	1.5(+12)	0	26775±800		

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
$CH_3CH_2CH_2CH_3 + O \rightarrow CH_3CH_2CH_2CH_2\cdot + CH_3CH_2CH(\cdot)CH_3 + OH$						
BUTANE + OXYGEN ATOM						
71 PAP/ASH REACTION ORDER: 2	300-365	1.7(+13)	0	2280±120	0.7	1.4
77 ATK/PER1 REACTION ORDER: 2	298-439	1.5(+13)	0	2100±150	0.8	1.2
$CH_3CH_2CH_2CH_3 + O \rightarrow$ products						
BUTANE + OXYGEN ATOM						
74 ATK/PIT2 REACTION ORDER: 2	301	1.9(+10)	-	-	0.9	1.1
$CH_3CH_2CH_2CH_3 + O^*(1D) \rightarrow$ products						
BUTANE + OXYGEN ATOM						
74 MIC/PAR REACTION ORDER: 2 k/k_{ref}: 0.863	300	-	-	-	0.9	1.1
NOTE: k_{ref}: $(CH_3)_4C + O^*(1D) \rightarrow$ products						
$CH_3CH_2CH_2CH_3 + H \rightarrow CH_3CH_2CH(\cdot)CH_3 + CH_3CH_2CH_2CH_2\cdot + H_2$						
BUTANE + HYDROGEN ATOM						
75 NAM/SHE REACTION ORDER: 2	800-850	1.6(+13)	-	-	0.8	1.2
76 YAM/NAM	980-1050	9.6(+11)	-	-	0.7	1.3
$CH_3CH_2CH_2CH_3 + OH \rightarrow CH_3CH_2CH_2CH_2\cdot + H_2O$						
BUTANE + HYDROXYL FREE RADICAL						
75 CAM/HAN1 REACTION ORDER: 2 k/k_{ref}: 14.8	292	-	-	-	0.9	1.1
NOTE: k_{ref}: $CO + OH \rightarrow CO_2 + H$						
$CH_3CH_2CH_2CH_3 + OH \rightarrow CH_3CH_2CH(\cdot)CH_3 + CH_3CH_2CH_2CH_2\cdot + H_2O$						
BUTANE + HYDROXYL FREE RADICAL						
73 STU	298	1.4(+12)	-	-		
71 MOR/NIK2 REACTION ORDER: 2 k/k_{ref}: 0.24	300	-	-	-		
NOTE: k_{ref}: $CH_3CH{=}CH_2 + OH \rightarrow$ products						
76 GER	298	2.0(+12)	-	-	0.9	1.1
74 GER/VOL	298	1.7(+12)	-	-	0.8	1.2
75 HUC/BOO k/k_{ref}: 1.54	653	-	-	-	0.9	1.1
NOTE: k_{ref}: $CH_3CH_2CH_3 + OH \rightarrow (CH_3)_2CH\cdot + CH_3CH_2CH_2\cdot + H_2O$						
76 PER/ATK2	297-420	1.1(+13)	0	560±150		
$CH_3CH_2CH_2CH_3 + OH + M \rightarrow CH_3CH_2CH(\cdot)CH_3 + CH_3CH_2CH_2CH_2\cdot + H_2O + M$						
BUTANE + HYDROXYL FREE RADICAL						
75 GER/NULL REACTION ORDER: 2	298	2.5(+12)	-	-	0.9	1.1
NOTE: M=Ar(710 TORR) + H_2O(10 TORR) + C_4H_{10}(0.54-2.46 TORR) M: H_2O	381	2.5(+12)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR	416	3.0(+12)	-	-	0.9	1.1
NOTE: IN AN ATMOSPHERE OF WATER VAPOR						
$CH_3CH_2CH_2CH_3 + CH \rightarrow$ products						
BUTANE + METHYLIDYNE FREE RADICAL						
71 BCS/PER REACTION ORDER: 2	298	7.8(+13)	-	-	0.9	1.1
$CH_3CH_2CH_2CH_3 + {}^1CH_2{}^* \rightarrow (CH_3)_2CHCH_2CH_3{}^*$						
BUTANE + METHYLENE FREE RADICAL						
72 GEO/HAS REACTION ORDER: 2 k/k_{ref}: 0.89	298	-	-	-	0.9	1.1
NOTE: k_{ref}: $CH_3CH_3 + {}^1CH_2{}^* \rightarrow CH_3CH_2CH_3{}^*$						
$CH_3CH_2CH_2CH_3 + CH_2 \rightarrow CH_3CH_2CH_2CH_2CH_3$						
BUTANE + METHYLENE FREE RADICAL						
73 HAL/CRU REACTION ORDER: 2	304	2.6(+12)	-	-		
NOTE: EDITOR'S CALCULATION BASED ON REPORTED 1.31 EFFICIENCY OF CH_2 INSERTION AT SECONDARY OVER PRIMARY CH BONDS IN BUTANE						
$CH_3CH_2CH_2CH_3 + CH_2 \rightarrow (CH_3)_2CHCH_2CH_3$						
BUTANE + METHYLENE FREE RADICAL						
73 HAL/CRU REACTION ORDER: 2	304	2.3(+12)	-	-		

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
NOTE: EDITOR'S CALCULATION BASED ON REPORTED 1.31 EFFICIENCY OF CH_2 INSERTION AT SECONDARY OVER PRIMARY CH BONDS IN BUTANE						
$CH_3CH_2CH_2CH_3 + CH_3\cdot \rightarrow CH_3CH_2CH_2CH_2\cdot + CH_4$						
BUTANE + METHYL FREE RADICAL						
75 YAM REACTION ORDER: 2	980-1060	5.0(+11)	0	6845		
NOTE: EVALUATION						
$CH_3CH_2CH_2CH_3 + CH_3\cdot \rightarrow CH_3CH(\cdot)CH_2CH_3 + CH_4$						
BUTANE + METHYL FREE RADICAL						
75 YAM REACTION ORDER: 2	980-1060	4.3(+11)	0	5285		
NOTE: EVALUATION						
$CH_3CH_2CH_2CH_3 + CH_3\cdot \rightarrow CH_3CH_2CH(\cdot)CH_3 + CH_3CH_2CH_2CH_2\cdot + CH_4$						
BUTANE + METHYL FREE RADICAL						
72 PAC/PUR1 REACTION ORDER: 2	869-952	2.5(+14)	0	9160±1600	0.2	6.3
74 HLG/MAR REACTION ORDER: 2	895-981	3.2(+13)	0	7430±1800	0.1	7.9
75 YAM	980-1060	3.2(+12)	0	5585±1000	0.4	2.6
76 YAM/NAM	980-1060	3.2(+12)	0	5590±1000	0.4	2.6
$CH_3CH_2CH_2CH_3 + CH_3CH_2\cdot \rightarrow CH_3CH_2CH(\cdot)CH_3 + CH_3CH_2CH_2CH_2\cdot + CH_3CH_3$						
BUTANE + ETHYL FREE RADICAL						
71 YAM/NAM REACTION ORDER: 2	980-1060	3.2(+12)	0	6440±1360	0.3	3.5
72 PAC/PUR1	869-957	3.2(+13)	0	10120+860	0.4	2.5
74 HLG/MAR	895-981	7.9(+13)	0	11160+810	0.4	2.5
$(CH_3)_3CH \rightarrow (CH_3)_2CH\cdot + CH_3$						
PROPANE, 2-METHYL-						
73 KEN/MAR REACTION ORDER: 1	770-855	6.3(+16)	0	41120		
74 GEL/AIF	1100-1280	7.9(+16)	0	41670		
NOTE: BEST FIT OF EXPERIMENTAL DATA TO log A = 16.4 FOR EACH C-C FISSION						
$(CH_3)_3CH \rightarrow$ products						
PROPANE, 2-METHYL-						
72 ILL REACTION ORDER: 1	913-1063	1.1(+15)	0	33640		
76 YAM/TS1	903-1073	5.0(+13)	0	30400		
$(CH_3)_3CH + OH \rightarrow (CH_3)_3C\cdot + (CH_3)_2CHCH_2\cdot + H_2O$						
PROPANE, 2-METHYL-, + HYDROXYL FREE RADICAL						
72 GER/VOL REACTION ORDER: 2	298	2.1(+12)	-	-	0.8	1.2
75 BUC/BOO k/k_{ref}: 1.28	653	-	-	-	0.9	1.1
NOTE: k_{ref}: $CH_3CH_2CH_3 + OH \rightarrow (CH_3)_2CH\cdot + CH_3CH_2CH_2\cdot + H_2O$						
$(CH_3)_3CH + HO_2 \rightarrow (CH_3)_3C\cdot + H_2O_2$						
PROPANE, 2-METHYL-, + HYDROPEROXYL FREE RADICAL						
71 EAL/LAN REACTION ORDER: 2 k/k_{ref}: 0.155	713	-	-	-		
NOTE: k_{ref}: $(CH_3)_3CH + HCHO \rightarrow$ products						
73 EAL/FUL k/k_{ref}: 0.133	773	-	-	-		
NOTE: k_{ref}: $HCHO + HO_2 \rightarrow \cdot CHO + H_2O_2$						
	773	1.4(+8)	-	-		
NOTE: EVALUATION						
$(CH_3)_3CH + HO_2 \rightarrow (CH_3)_2CHCH_2\cdot + H_2O_2$						
PROPANE, 2-METHYL + HYDROPEROXYL FREE RADICAL						
73 EAL/FUL REACTION ORDER: 2 k/k_{ref}: 0.045	773	-	-	-		
NOTE: k_{ref}: $HCHO + H_2O \rightarrow \cdot CHO + H_2O$						
	773	4.6(+7)	-	-		
NOTE: EVALUATION						
$(CH_3)_3CH + CH_2 \rightarrow (CH_3)_2CHCH_2CH_3$						
PROPANE, 2-METHYL-, + METHYLENE FREE RADICAL						
73 BAL/CRU REACTION ORDER: 2	304	3.9(+12)	-	-		
NOTE: EDITOR'S CALCULATION BASED ON REPORTED 1.33 EFFICIENCY OF CH_2 INSERTION AT TERTIARY OVER PRIMARY CH BONDS IN 2-METHYLPROPANE						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	F
$(CH_3)_3CH + CH_2 \rightarrow (CH_3)_4C$						
PROPANE, 2-METHYL-, + METHYLENE FREE RADICAL						
73 HAI/CRU REACTION ORDER: 2	304	5.9(+11)	-	-		
NOTE: EDITOR'S CALCULATION BASED ON REPORTED 1.33 EFFICIENCY OF CH_2 INSERTION AT TERTIARY OVER PRIMARY CH BONDS IN 2-METHYLPROPANE						
$(CH_3)_3CH + CH_3 \rightarrow (CH_3)_3C. + CH_4$						
PROPANE, 2-METHYL-, + METHYL FREE RADICAL						
73 KON/MAR REACTION ORDER: 2	770-855	3.2(+12)	0	6490		
NOTE: EVALUATION						
$(CH_3)_3CH + CH_3 \rightarrow (CH_3)_2CHCH_2. + CH_4$						
PROPANE, 2-METHYL-, + METHYL FREE RADICAL						
73 KON/MAR REACTION ORDER: 2	770-855	1.4(+13)	0	8200		
NOTE: EVALUATION						
$CH{\equiv}CCH_2COOH \rightarrow CH_2{=}C{=}CH_2 + CO_2$						
3-BUTYNOIC ACID						
76 BIG/WEA1 REACTION ORDER: 1	500-648	2.2(+11)	0	19105±760	0.4	2.6
NOTE: EDITOR'S EVALUATION BASED ON GIVEN $\Delta H^{\ddagger}$ AND $\Delta S^{\ddagger}$						
$CH{\equiv}CCH_2COOD \rightarrow CHD{=}C{=}CH_2 + CO_2$						
3-BUTYNOIC ACID-d						
76 BIG/WEA1 REACTION ORDER: 1	630	5.1(-3)	-	-		
$.CH_2COCOCH_3 \rightarrow CH_2{=}C{=}O + CH_3C(O).$						
BUTYL, 2,3-DIOXO-, FREE RADICAL						
75 SCH/PLA REACTION ORDER: 1	822-905	2.0(+15)	0	26700		
$CH_3CH{=}CHCHO + O \rightarrow$ products						
2-BUTENAL + OXYGEN ATOM						
74 CAD/WIC REACTION ORDER: 2		2.0(+13)	0	1160		
NOTE: UNSPECIFIED TEMPERATURE RANGE IN THE VICINITY OF 300 K.						
75 GAF/ATK1	296	5.1(+11)	-	-	0.9	1.1
75 GAF/ATK2	296-423	1.5(+13)	0	995±65	0.9	1.1
$CH_3COCOCH_3 \rightarrow CH_3C(O). + CH_3C(O).$						
2,3-BUTANEDIONE						
73 KNO/SCH REACTION ORDER: 1	240-277	3.2(+17)	0	34070±2210	0.1	25.0
75 SCH/PLA	822-905	6.3(+15)	0	33620±860		
$CH_3COCOCH_3 \rightarrow$ products						
2,3-BUTANEDIONE						
73 KNO/SCH REACTION ORDER: 1	240-277	1.6(+17)	0	33920±1160	0.2	5.0
75 SCH/PLA	822-905	4.0(+13)	0	28080±2100	0.1	100
NOTE: OVERALL k	822-905	1.3(+15)	0	31450±2370	0.1	13.0
NOTE: OVERALL k. (INHIBITED BY TOLUENE)						
$CH_3COCOCH_3 + CH_3 \rightarrow (CH_3)_2CO + CH_3C(O).$						
2,3-BUTANEDIONE + METHYL FREE RADICAL						
73 KNO/SCH REACTION ORDER: 2	240-277	2.5(+10)	0	3220		
NOTE: EVALUATION						
75 SCH/PLA REACTION ORDER: 2	822-905	1.6(+11)	0	4330		
$CD_3COCOCD_2H + CD_3 \rightarrow CD_3COCD_3 + CD_2HC(O).$						
2,3-BUTANEDIONE-1,1,1,4,4-d_5 + METHYL-d_3 FREE RADICAL						
77 SCH/KNO REACTION ORDER: 2	660-685	-	-	-	0.6	1.6
NOTE: k_{ref}: $CD_3COCOCD_3 + CD_3 \rightarrow CD_3COCD_3 + CD_3C(O).$						
k/k_{ref}: 0.2 exp(+900±150/T)						
$CD_3COCOCD_3 + CH_3 \rightarrow CD_3COCH_3 + CD_3C(O).$						
2,3-BUTANEDIONE-1,1,1,4,4,4-d_6 + METHYL FREE RADICAL						
77 SCH/KNO REACTION ORDER: 2	524-565	-	-	-	0.4	2.5
NOTE: k_{ref}: $CD_3COCOCD_3 + CD_3 \rightarrow CD_3COCD_3 + CD_3C(O).$						
k/k_{ref}: 0.5 EXP(-600±400/T)						
$CH_3COCOCH_3 + CH_3 \rightarrow CH_3COCOCH_2. + CH_4$						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
2,3-BUTANEDIONE + METHYL FREE RADICAL						
73 KNO/SCH REACTION ORDER: 2	240-277	3.2(+11)	0	4180		
75 SCH/PLA REACTION ORDER: 2	822-905	7.9(+11)	0	4730		
$CH_3COCOCH_3 + CH_3 \rightarrow CH_3COCOCH_2\cdot + CH_4$						
2,3-BUTANEDIONE + METHYL FREE RADICAL						
77 SCH/KNO REACTION ORDER: 2	524-565	-	-	-	0.3	3.2
NOTE: k_{ref}: $CD_3COCOCD_3 + CH_3 \rightarrow CD_3COCOCD_2\cdot + CH_3D$						
k/k_{ref}: 3.16exp(+300±430/T)						
$CH_3COCOCH_3 + CD_3 \rightarrow CH_3COCOCH_2\cdot + CD_3H$						
2,3-BUTANEDIONE + METHYL-d_3 FREE RADICAL						
77 SCH/KNO REACTION ORDER: 2	524-565	-	-	-	0.8	1.3
NOTE: k_{ref}: $CD_3COCOCD_2H + CD_3 \rightarrow CD_3COCOCD_2\cdot + CD_3H$						
k/k_{ref}: 1.58exp(+900±400/T)						
$CD_3COCOCD_3 + CD_3 \rightarrow CD_3COCOCD_2\cdot + CD_4$						
2,3-BUTANEDIONE-1,1,1,4,4,4-d_6 + METHYL-d_3 FREE RADICAL						
77 SCH/KNO REACTION ORDER: 2	660-685	-	-	-	0.6	1.6
NOTE: k_{ref}: $CD_3COCOCD_3 + CD_3 \rightarrow CD_3COCD_3 + CD_3C(O)\cdot$						
k/k_{ref}: 10.0exp(-1360±300/T)						
$CD_3COCOCD_3 + CD_3 \rightarrow CD_3COCOCD_2\cdot + CD_4$						
2,3-BUTANEDIONE-1,1,1,4,4,4-d_6 + METHYL-d_3 FREE RADICAL						
77 SCH/KNO REACTION ORDER: 2	660-685	-	-	-	0.8	1.3
NOTE: k_{ref}: $CD_3COCOCD_2H + CD_3 \rightarrow CD_3COCOCD_2\cdot + CD_3H$						
k/k_{ref}: 4.0exp(-900±100/T)						
$CD_3COCOCD_3 + CH_3 \rightarrow CH_3COCOCD_3\cdot + CD_3$						
2,3-BUTANEDIONE-1,1,1,4,4,4-d_6 + METHYL FREE RADICAL						
77 SCH/KNO REACTION ORDER: 2	524-565	-	-	-	0.4	2.5
NOTE: k_{ref}: $CD_3COCOCD_3 + CH_3 \rightarrow CH_3COCD_3 + CD_3C(O)\cdot$						
k/k_{ref}: 3.16exp(-3120±450/T)						
$CH_3COCOCH_3 + CH_3CH_2\cdot \rightarrow CH_3C(O)\cdot + CH_3CH_2COCH_3$						
2,3-BUTANEDIONE + ETHYL FREE RADICAL						
76 SCH/KNO REACTION ORDER: 2	525-556	4.0(+8)	0	2970±300	0.5	2.0
$CH_3COCOCH_3 + CH_3CH_2\cdot \rightarrow CH_3COCOCH_2\cdot + CH_3CH_3$						
2,3-BUTANEDIONE + ETHYL FREE RADICAL						
76 SCH/KNO REACTION ORDER: 2	525-556	4.0(+12)	0	5360±1560	0.1	19.0
$CH_3COCOCH_3 + CH_3CH_2\cdot \rightarrow CH_3CH_2COCOCH_3 + CH_3\cdot$						
2,3-BUTANEDIONE + ETHYL FREE RADICAL						
76 SCH/KNO REACTION ORDER: 2	525-556	2.5(+8)	0	3575+300	0.5	2.0
$CH_3COCH_2CF_2\cdot \rightarrow CH_3C(O)\cdot + CH_2{=}CH_2$						
BUTYL, 3-OXO-, FREE RADICAL						
75 KNO/SCH REACTION ORDER: 1	515-712	-	-	-		
NOTE: k_{ref}: $CH_3COCH_2CH_2\cdot + CH_3COCH_2CH_2COCH_3 \rightarrow CH_3COCH_2CH_3$ + $\cdot CH_2COCH_2CH_2COCH_3 + CH_3COCH(\cdot)CH_2COCH_3$						
k/k_{ref}: 1.0(2.1±0.4)exp(815±400/T)						
$CH_3OCH_2CH{=}CH_2 \rightarrow HCHO + CH_3CH{=}CH_2$						
1-PROPENE, 3-METHOXY-						
77 TEU/TAK REACTION ORDER: 1	287	1.1(+8)	-	-		
$CH_3CH_2CH_2CHO + O \rightarrow CH_3CH_2CH_2C(O)\cdot + OH$						
BUTANAL + OXYGEN ATOM						
74 JAF/WAN REACTION ORDER: 2	298	1.5(+11)	-	-		
NOTE: EVALUATION						
$CH_3CH_2CH_2CHO + O \rightarrow CH_3CH_2CH_2C(O)\cdot + OH$						
BUTANAL + OXYGEN ATOM						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	F
77 SIN/IRW — REACTION ORDER: 2	298-472	1.0(+13)	0	857±20	0.9	1.1
$CH_3CH_2CH_2CHO + HO_2 \rightarrow CH_3CH_2CH_2C(O). + H_2O_2$						
BUTANAL + HYDROPEROXYL FREE RADICAL						
71 EAL/LAN — REACTION ORDER: 2	713	2.4(+9)	-	-		
$CH_3CH_2CH_2CHO + NO_2 \rightarrow CH_3CH_2CH_2C(O). + HONO$						
BUTANAL + NITROGEN OXIDE (NO_2)						
74 JAF/WAN — REACTION ORDER: 2	295-390	2.5(+10)	0	6240		
$(CH_3)_2CHCHO + O \rightarrow (CH_3)_2CHC(O).$						
PROPANAL, 2-METHYL-, + OXYGEN ATOM						
77 SIN/IRW — REACTION ORDER: 2	298-472	7.9(+12)	0	727±45	0.9	1.1
$(CH_3)_2CHCHO + (CH_3)_2CH. \rightarrow (CH_3)_2CHC(O). + (CH_3)_2C(.)CHO + CH_3CH_2CH_3$						
PROPANAL, 2-METHYL-, + ETHYL, 1-METHYL-, FREE RADICAL						
76 EAL/CIE — REACTION ORDER: 2 k/k_{ref}: 0.0032	713	-	-	-	0.9	1.1
NOTE: k_{ref}: $O_2 + (CH_3)_2CH. \rightarrow HO_2 + CH_3CH{=}CH_2$						
$CH_3COCH_2CH_3 + OH \rightarrow$ products						
2-BUTANONE + HYDROXYL FREE RADICAL						
76 WIN/LIO — REACTION ORDER: 2	305	2.0(+12)	-	-	0.8	1.2
NOTE: EVALUATION						
$CD_3COCD_2CH_3 + CH_3. \rightarrow .CD_2COCD_2CH_3 + CD_3COCD(.)CH_3 + CH_3D$						
2-BUTANONE-1,1,1,3,3-D5 + METHYL FREE RADICAL						
74 SCH/DRE — REACTION ORDER: 2	523-563	1.3(+11)	0	4505±275	0.6	1.6
$CH_3CH_2COCH_3 + M \rightarrow CH_3CH_2. + CH_3C(O). + M$						
2-BUTANONE						
75 ABU/LIS — REACTION ORDER: 1	291-346	4.3(+14)	0	6400±1080	0.1	31.0
NOTE; LIMITING HIGH PRESSURE k. M = $CH_3CH_2CH_3$						
$cy\text{-}CH_2CH_2CH_2CH_2O + OH \rightarrow$ products						
FURAN, TETRAHYDRO-, + HYDROXYL FREE RADICAL						
77 WIN/LIO — REACTION ORDER: 2	305	8.8(+12)	-	-	0.8	1.2
$CH_3COOCH_2CH_3 \rightarrow CH_3COOH + CH_2{=}CH_2$						
ACETIC ACID ETHYL ESTER						
75 TAY — REACTION ORDER: 1	650-700	3.2(+12)	0	24055±500	0.5	2.0
$CH_3COOCH_2CH_3 \rightarrow CH_3COOH + CH_2{=}CH_2$						
ACETIC ACID ETHYL ESTER						
76 DIB/TAY — REACTION ORDER: 1	650-700	3.2(+12)	0	24010		
$CH_3CH_2CH_2COOH + CH_2{=}C{=}O \rightarrow CH_3CH_2CH_2C(O)OC(O)CH_3$						
BUTANOIC ACID + ETHENONE						
76 BIA/VAY — REACTION ORDER: 2	428	1.3(+3)	-	-		
$(CH_3)_2CHCOOH + CH_2{=}C{=}O \rightarrow (CH_3)_2CHC(O)OC(O)CH_3$						
PROPANOIC ACID, 2-METHYL-, + ETHENONE						
76 IIA/VAY — REACTION ORDER: 2	428	1.6(+3)	-	-		
$CH_3OC(O)OCH_2CH_3 \rightarrow CH_3OH + CO_2 + CH_2{=}CH_2$						
CARBONIC ACID ETHYL METHYL ESTER						
76 CHO/HUN — REACTION ORDER: 1	581-667	5.2(+11)	0	21890		
$CH_3CH_2CH(O.)CH_3 \rightarrow CH_3CH_2. + CH_3CHO$						
PROPOXY, 1-METHYL-, FREE RADICAL						
75 EAT/MCC — REACTION ORDER: 1	393-473	1.0(+16)	0	8805		
76 EAT/MCC2	403-433	6.3(+14)	0	7700		
$CH_3CH_2C(O.)CH_3 + NO \rightarrow CH_3CH_2COCH_3 + HNO$						
PROPOXY, 1-METHYL-, FREE RADICAL + NITROGEN OXIDE (NO)						
75 EAT/MCC — REACTION ORDER: 2	393-473	4.0(+12)	0	0±500	0.3	3.2
76 EAT/MCC2	403-433	6.3(+12)	0	0±500	0.4	2.5
NOTE: EVALUATION						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
$CH_3CH_2CH(\cdot)CH_3 + NO \rightarrow CH_3CH_2CH(CH_3)ONO$						
PROPOXY, 1-METHYL-, FREE RADICAL + NITROGEN OXIDE (NO)						
76 EAT/MCC REACTION ORDER: 2	393-473	2.5(+13)	0	0±500	0.4	2.5
76 EAT/MCC2	403-433	2.5(+13)	0	0±400	0.4	2.5
NOTE: EVALUATION						
$(CH_3)_3CO\cdot \rightarrow (CH_3)_2CO + CH_3$						
ETHOXY, 1,1-DIMETHYL-, FREE RADICAL						
71 CAL/IRO REACTION ORDER: 1	373-423	2.3(+13)	0	8445±745	0.2	6.6
NOTE: LIMITING HIGH PRESSURE k						
75 EAT/MCC REACTION ORDER: 1	393-473	4.0(+15)	0	8605		
76 EAT/MIL	393-433	4.0(+15)	0	8600	0.7	1.3
$(CH_3)_3CO\cdot + NO \rightarrow (CH_3)_3CONO$						
ETHOXY, 1,1-DIMETHYL-, FREE RADICAL + NITROGEN OXIDE(NO)						
74 BAT/MIL REACTION ORDER: 2	393-473	2.5(+13)	0	0±500	0.4	2.5
75 EAT/MCC REACTION ORDER: 2	393-473	2.5(+13)	0	0±500	0.4	2.5
75 MEN/GOL	300	6.3(+12)	-	-		
NOTE: ESTIMATED k						
76 EAT/MIL	393-433	2.5(+13)	0	0±500		
NOTE: EVALUATION						
$(CH_3)_3CO\cdot + NO_2 \rightarrow (CH_3)_3CONO_2$						
ETHOXY, 1,1-DIMETHYL-, FREE RADICAL + NITROGEN OXIDE (NO_2)						
76 EAT/MIL REACTION ORDER: 2	393-433	1.6(+13)	0	0		
NOTE: EVALUATION						
$(CH_3)_3CO_2\cdot + CH_3O_2\cdot \rightarrow (CH_3)_3CO\cdot + CH_3O\cdot + O_2$						
ETHYLDIOXY, 1,1-DIMETHYL-, FREE RADICAL + METHYLDIOXY FREE RADICAL						
75 PAR REACTION ORDER: 2	298	3.0(+10)	-	-	0.5	1.5
NOTE: UNREPORTED T ASSUMED TO BE 298 k						
$(CH_3)_3CO_2\cdot + CH_3O_2\cdot \rightarrow (CH_3)_3COH + HCHO + O_2$						
ETHYLDIOXY, 1,1-DIMETHYL-, FREE RADICAL + METHYLDIOXY FREE RADICAL						
75 PAR REACTION ORDER: 2	298	3.0(+10)	-	-	0.5	1.5
NOTE: UNREPORTED T ASSUMED TO BE 298 K						
$(CH_3)_3CO_2\cdot + (CH_3)_3CO_2\cdot \rightarrow (CH_3)_3CO\cdot + (CH_3)_3CO\cdot + O_2$						
ETHYLDIOXY, 1,1-DIMETHYL-, FREE RADICAL						
75 PAR REACTION ORDER: 2	298	2.2(+6)	-	-	0.8	1.2
NOTE: UNREPORTED T ASSUMED TO BE 298 K						
$CH_3CH_2CH_2CH_2OH + OH \rightarrow [\cdot C_4H_9] + H_2O$						
1-BUTANOL + HYDROXYL FREE RADICAL						
76 CAM/MCL REACTION ORDER: 2	292	4.1(+12)	-	-	0.9	1.1
$CH_3CH_2OCH_2CH_3 + OH \rightarrow$ products						
ETHANE, 1,1'-OXYBIS-, + HYDROXYL FREE RADICAL						
76 LIG/DARI REACTION ORDER: 2	305	5.6(+12)	-	-	0.8	1.2
NOTE: EVALUATION						
$(CH_3)_3COH \rightarrow (CH_3)_2C{=}CH_2 + H_2O$						
2-PROPANOL, 2-METHYL-						
71 GEN/LEW REACTION ORDER: 1	753-833	2.5(+5)	0	15136		
$(CH_3)_3COH + H \rightarrow (CH_3)_3C\cdot + H_2O$						
2-PROPANOL, 2-METHYL-, + HYDROGEN ATOM						
73 ADE/WAG2 REACTION ORDER: 2	295-700	4.0(+13)	0	4125±300	0.9	1.1
$NCC{\equiv}CCN + N \rightarrow [N.C_4N_2^*]$						
2-BUTYNEDINITRILE + NITROGEN ATOM						
76 HAN/OBE REACTION ORDER: 2	300	3.2(+9)	-	-	0.2	1.8
$CH_3CH_2CH_2CN \rightarrow CH_3CH_2\cdot + \cdot CH_2CN$						
BUTANENITRILE						
75 KIN/GOD2 REACTION ORDER: 1	1090-2050	2.5(+15)	0	38600±850	0.5	2.0
$(CH_3)_2CHCN \rightarrow CH_3CH{=}CH_2 + HCN$						
PROPANENITRILE, 2-METHYL-						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
73 LAS/ENØ 75 KIN/GØDI — REACTION ØRDER: 1	820-928 1074-1253	1.6(+12) 7.9(+13)	0 0	32280±520 38350±1000	0.9 0.5	1.1 2.0
$(CH_3)_2CHCN \rightarrow CH_3CH(.)CN + CH_3$ PROPANE NITRILE, 2-METHYL- 75 KIN/GØDI — REACTION ØRDER: 1	1074-1250	5.0(+15)	0	39760±1000	0.5	2.0
$CH_3CH_2N{=}NCH_2CH_3 \rightarrow$ products DIAZENE, DIETHYL- 73 FER/DEA — REACTION ØRDER: 1	700-950	2.5(+16)	0	25000±500		
$CH_3CH_2N{=}NCH_2CH_3 + CH_3CH_2. \rightarrow CH_3CH_2N{=}NCH_2CH_2. + CH_3CH_3$ 76 SCH/KNØ — REACTION ØRDER: 1	525-556	7.9(+11)	0	3775±1350	0.1	10.0
$(CH_3)_2NN(CH_3)_2 \rightarrow (CH_3)_2N. + (CH_3)_2N.$ HYDRAZINE, TETRAMETHYL- 72 GEL/SØL — REACTION ØRDER: 1	720-930	215(+17)	0	27180		
$(CH_3)_3CNØ \rightarrow (CH_3)C. + NØ$ PROPANE, 2-METHYL-2-NITROSØ- 74 CRØ/MEN — REACTION ØRDER: 1	550-850	550-850	0	18120±500	0.3	3.2
$CH_3CH_2CH(CH_3)ØNØ \rightarrow CH_3CH_2CØCH_3 + HNØ$ NITROUS ACID 1-METHYLPROPYL ESTER 76 EAT/MCC2 — REACTION ØRDER: 1	403-433	6.3(+12)	0	18000±400	0.3	3.2
$CH_3CH_2CH(CH_3)ØNØ \rightarrow CH_3CH_2CH(Ø.)CH_3 + NØ$ NITROUS ACID 1-METHYLPROPYL ESTER 75 EAT/MCC — REACTION ØRDER: 1 76 EAT/MCC2	393-473 403-433	1.3(+16) 1.6(+16)	0 0	20735±400 20600±400	0.4 0.4	2.5 2.5
$CH_3CH_2CH(CH_3)ØNØ \rightarrow$ products NITROUS ACID 1-METHYLPROPYL ESTER 76 EAT/MCC2 — REACTION ØRDER: 1	403-433	5.0(+15)	0	19930±400	0.3	3.2
$(CH_3)_3CØNØ \rightarrow (CH_3)_2C{=}CH_2 + HNØ$ NITROUS ACID 1,1-DIMETHYLETHYL ESTER 74 EAT/MIL — REACTION ØRDER: 1 75 EAT/MCC 76 EAT/MIL	393-473 393-473 393-433	7.9(+12) 7.9(+12) 7.9(+12)	0 0 0	16910±400 18220 16910±400	0.4 0.4	2.5 2.5
$(CH_3)_3CØNØ \rightarrow (CH_3)_2C{=}CH_2 + HNØ + (CH_3)_3CØ + NØ$ NITROUS ACID 1,1-DIMETHYLETHYL ESTER 74 EAT/MIL — REACTION ØRDER: 1	393-473	5.0(+14)	0	18220±400	0.4	2.5
$(CH_3)_3CØNØ \rightarrow (CH_3)_3CØ. + NØ$ NITROUS ACID, 1,1-DIMETHYLETHYL- 74 BAT/MIL — REACTION ØRDER: 1 75 MIN/GØL — REACTION ØRDER: 1 75 EAT/MCC 76 EAT/MIL	393-473 300 393-473 393-433	2.0(+16) 6.3(+15) 2.0(+16) 2.0(+16)	0 0 0 0	20280±400 19780 20280±400 20280±400	0.4 0.4 0.4	2.5 2.5 2.5
$(CH_3)_3CØNØ \rightarrow$ products (ØVERALL) NITROUS ACID 1,1-DIMETHYLETHYL ESTER 76 BAT/MIL — REACTION ØRDER: 1	393-433	5.0(+14)	0	18220		
$(CH_3)_3CØNØ_2 \rightarrow (CH_3)_3CØ. + NØ_2$ NITRIC ACID 1,1-DIMETHYLETHYL ESTER 76 BAT/MIL — REACTION ØRDER: 1 NØTE: EVALUATION	393-433	7.9(+15)	0	20230		
$(CH_3CH_2NØ)_2 \rightarrow CH_3CH_2NØ + CH_3CH_2NØ$ ETHANE NITROSØ-, DIMER 72 TAN/LAM — REACTION ØRDER: 1	314	4.1(-3)	-	-	0.9	1.1
$cis\text{-}CH_2{=}CHCH{=}CHCH_3 \rightarrow trans\text{-}CH_2{=}CHCH{=}CHCH_3$ cis-1,3-PENTADIENE 75 CHA/RØS — REACTION ØRDER: 1 k/k_{ref}: 1.3 NØTE: k_{ref}: $trans\text{-}CH_2{=}CHCH{=}CHCH_3 \rightarrow cis\text{-}CH_2{=}CHCH{=}CHCH_3$	298	-	-	-	0.9	1.1
$(CH_3)_2C{=}CH_2 + Ø \rightarrow$ products						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
1,2-BUTADIENE, 3-METHYL-, + OXYGEN ATOM 74 HAC REACTION ORDER: 2 k/k_{ref}: 0.76	298	-	-	-		
NOTE: k_{ref}: $(CH_3)_2C{=}CHCH_3$ + O → products						

$CH_2{=}CH(CH_3){-}CH_2$ + NO_2 → products 1,3-BUTADIENE, 2-METHYL-, + NITROGEN OXIDE (NO_2) 75 GRY/ROZ REACTION ORDER: 2	273-433	1.7(+7)	0	1060		

$CH_3CH{=}CHCH_2CH_2$· → $CH_3CH_2CH{=}CHCH_2$· + $CH_3CH_2CH(\cdot)CH{=}CH_2$ 3-PENTENYL FREE RADICAL 75 STE/RAB REACTION ORDER: 1	298	2.0(+9)	-	-		

$CH_3CH{=}CHCH_2CH_2$· + CH_3CH_2· → cis-$CH_3CH{=}CHCH{=}CH_2$ + CH_3CH_3 3-PENTENYL FREE RADICAL + ETHYL FREE RADICAL 75 STE/RAB REACTION ORDER: 2 k/k_{ref}: 0.087	298	-	-	-	0.9	1.1
NOTE: k_{ref}: $CH_3CH{=}CHCH_2CH_2$· + CH_3CH_2· → $CH_3CH{=}CHCH_2CH_2CH_2CH_3$						

$CH_3CH{=}CHCH_2CH_2$· + CH_3CH_2· → $CH_3CH{=}CHCH_2CH_3$ + $CH_2{=}CH_2$ 3-PENTENYL FREE RADICAL + ETHYL FREE RADICAL 75 STE/RAB REACTION ORDER: 2 k/k_{ref}: 0.093	298	-	-	-	0.9	1.1
NOTE: k_{ref}: $CH_3CH{=}CHCH_2CH_2$· + CH_3CH_2· → $CH_3CH{=}CHCH_2CH_2CH_2CH_3$						

$CH_3CH_2CH_2CH{=}CH_2$ → products 1-PENTENE 73 SHI/KIN1 REACTION ORDER: 1	753-1023	1.6(+12)	0	26170		

$CH_3CH_2CH_2CH{=}CH_2$ + O_3 → products 1-PENTENE + OZONE 74 JAP/WU REACTION ORDER: 2	298	6.4(+6)	-	-	0.9	1.1

$CH_3CH_2CH_2CH{=}CH_2$ + H → $CH_3CH_2CH_2CH(\cdot)CH_3$ 1-PENTENE + HYDROGEN ATOM 74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 3.0	923	-	-	-		
NOTE: k_{ref}: $CH_3CH_2CH_2CH{=}CH_2$ + H → $CH_3CH_2CH_2CH_2CH_2$·						

$CH_3CH_2CH_2CH{=}CH_2$ + H → $CH_3CH_2CH_2CH(\cdot)CH_3$ + $CH_3CH_2CH_2CH_2CH_2$· 1-PENTENE + HYDROGEN ATOM 74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 9.0	923	-	-	-		
NOTE: k_{ref}: $CH_2CH_2CH_2CH{=}CH_2$ + H → $CH_3CH_2CH(\cdot)CH{=}CH_2$ + $\cdot CH_2CH_2CH_2CH{=}CH_2$ + $CH_3CH(\cdot)CH_2CH{=}CH_2$ + H_2						

$CH_3CH_2CH_2CH{=}CH_2$ + H + M → $CH_3CH_2CH_2CH(\cdot)CH_3$ + $CH_3CH_2CH_2CH_2CH_2$· + M 1-PENTENE + HYDROGEN ATOM 71 COW/KEI REACTION ORDER: 2 M: He	298	6.4(+11)	-	-	0.9	1.1
NOTE: DISCHARGE FLOW METHOD. 3.0 TORR PRESSURE.						

$CH_3CH_2CH_2CH{=}CH_2$ + H + M → $CH_3CH_2CH_2CH(\cdot)CH_3$ + $CH_3CH_2CH_2CH_2CH_2$· + M 1-PENTENE + HYDROGEN ATOM 71 COW/KEI REACTION ORDER: 2	298	7.8(+11)	-	-	0.7	1.3
NOTE: STEADY STATE PHOTOLYSIS METHOD. 10-15 TORR. PRESSURE.r M = Ne, Ar						

$CH_3CH_2CH_2CH{=}CH_2$ + OH → products 1-PENTENE + HYDROXYL FREE RADICAL 71 MCR/NIK2 REACTION ORDER: 2 k/k_{ref}: 2.5	300	-	-	-		
NOTE: k_{ref}: $CH_3CH{=}CH_2$ + OH → products						

$CH_3CH_2CH{=}CHCH_3$ + OH → products 2-PENTENE + HYDROXYL FREE RADICAL 71 MCR/NIK2 REACTION ORDER: 2 k/k_{ref}: 5.3	300	-	-	-		
NOTE: k_{ref}: $CH_3CH{=}CH_2$ + OH → products						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
$CH_3CH_2CH_2CH{=}CH_2 + NO_2 \rightarrow$ products 1-PENTENE + NITROGEN OXIDE (NO_2) 71 JAF REACTION ORDER: 2	298-373	1.6(+6)	0	3650		
$CH_3CH_2CH_2CH{=}CH_2 + CH_3 \rightarrow CH_3CH_2CH_2CH(.)CH_2CH_3 + CH_3CH_2CH_2CH(CH_3)CH_2.$ 1-PENTENE + METHYL FREE RADICAL 74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 1.0	923	-	-	-		
NOTE: k_{ref}: $CH_3CH_2CH_2CH{=}CH_2 + CH_3 \rightarrow CH_3CH_2CH(.)CH{=}CH_2 + .CH_2CH_2CH_2CH{=}CH_2 + CH_3CH(.)CH_2CH{=}CH_2 + CH_4$						
$CH_3CH_2CH{=}CHCH_3 \rightarrow$ products 2-PENTENE 72 SHI/AMA REACTION ORDER:1	753-1003	2.0(+12)	0	26675		
$CH_3CH_2CH{=}CHCH_3 + H \rightarrow CH_3CH_2CH(.)CH_2CH_3$ 2-PENTENE + HYDROGEN ATOM 74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 1.0	923	-	-	-		
NOTE: k_{ref}: $CH_3CH_2CH{=}CHCH_3 + H \rightarrow CH_2CH_2CH_2CH(.)CH_3$						
$CH_3CH_2CH{=}CHCH_3 + H \rightarrow CH_3CH_2CH(.)CH_2CH_3 + CH_3CH_2CH_2CH(.)CH_3$ 2-PENTENE + HYDROGEN ATOM 74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 3.0	923	-	-	-		
NOTE: k_{ref}: $CH_3CH_2CH{=}CHCH_3 + H \rightarrow CH_3CH_2CH{=}CHCH_2.$ + $(CH_3CH(.)CH{=}CHCH_3 + .CH_2CH_2CH{=}CHCH_3 + H_2$						
$CH_3CH_2CH{=}CHCH_3 + CH_3 \rightarrow CH_3CH_2CH(.)CH(CH_3)_2 + CH_3CH_2CH(CH_3)CH(.)CH_3$ 2-PENTENE + METHYL FREE RADICAL 74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 0.2	923	-	-	-		
NOTE: k_{ref}: $CH_3CH_2CH{=}CHCH_3 + CH_3 \rightarrow CH_3CH_2CH{=}CHCH_2.$ + $CH_2CH(.)CH{=}CHCH_3 + .CH_2CH_2CH{=}CHCH_3 + CH_4$						
cis-$CH_3CH_2CH{=}CHCH_3 + SO_2{}^*(^3B_1) \rightarrow [SO_2.CH_3CH_2CH{=}CHCH_3]^*$ cis-2-PENTENE + SULFUR DIOXIDE 76 WAM REACTION ORDER: 2	295	6.3(+13)	-	-	0.8	1.2
cis-$CH_3CH_2CH{=}CHCH_3 + CH_3C(O)OO. \rightarrow$ cy-$(CH_3CH_2)CHCH(CH_3)O + CH_3O. + CO_2$ cis-2-PENTENE + ETHYLDIOXY, 1-OXO-, FREE RADICAL 77 DIA/WAD REACTION ORDER: 2	393	1.4(+8)	-	-	0.4	1.6
cis-$CH_3CH_2CH{=}CHCH_3 + CH_3C(O)OOH \rightarrow$ cy-$(CH_3CH_2)CHCH(CH_3)O + CH_3CCOH$ cis-2-PENTENE + ETHANEPEROXOIC ACID 77 DIA/WAD REACTION ORDER: 2	393	4.3(+1)	-	-	0.6	1.4
cis-$CH_3CH_2CH{=}CHCH_3 + M \rightarrow$ trans-$CH_3CH_2CH{=}CHCH_3 + M$ cis-2-PENTENE 74 SPR/AKI REACTION ORDER: 2 M: NO_2	298-381	3.1(+10)	0	5040		
trans-$CH_3CH_2CH{=}CHCH_3 + SO_2{}^*(^3B_1) \rightarrow [SO_2.CH_3CH_2CH{=}CHCH_3]^*$ trans-2-PENTENE + SULFUR DIOXIDE 76 WAM REACTION ORDER: 2	295	1.0(+14)	-	-	0.7	1.3
trans-$CH_3CH_2CH{=}CHCH_3 + CH_3C(O)OO. \rightarrow$ cy-$(CH_3CH_2)CHCH(CH_3)O + CH_3O. + CO_2$ trans-2-PENTENE + ETHYLDIOXY, 1-OXO-, FREE RADICAL 77 DIA/WAD REACTION ORDER: 2	393	1.4(+8)	-	-	0.4	1.6
trans-$CH_3CH_2CH{=}CHCH_3 + CH_3C(O)OOH \rightarrow$ cy-$(CH_3CH_2)CHCH(CH_3)O + CH_3O$						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	F
trans-2-PENTENE + ETHANEPERØXØIC ACID 77 DIA/WAD REACTIØN ØRDER: 2	393	4.3(+1)	-	-	0.6	1.4
$trans\text{-}CH_3CH_2CH{=}CHCH_3 + M \rightarrow cis\text{-}CH_3CH_2CH{=}CHCH_3 + M$ trans-2-PENTENE 74 SPR/AKI REACTIØN ØRDER: 2	298-382	5.2(+10)	0	6290		
$CH_3CH_2C(CH_3){=}CH_2 \rightarrow CH_3 + .CH_2C(CH_3){=}CH_2$ 1-BUTENE, 2-METHYL 77 TRE/WRI REACTIØN ØRDER: 1 NØTE: LIMITING HIGH PRESSURE k.	671-722	4.0(+16)	0	35730±400	0.4	2.5
$CH_3CH_2C(CH_3){=}CH_2^* \rightarrow CH_3 + .CH_2C(CH_3){=}CH_2$ 1-BUTENE, 2-METHYL- 71 TAY/SIM REACTIØN ØRDER: 1 NØTE: AT 3660A°. UNREPØRTED T, ASSUMED TØ BE 298K.	298	5.9(+7)	-	-	0.9	1.1
$CH_3CH_2C(CH_3){=}CH_2^* \rightarrow CH_3 + .CH_2C(CH_3){=}CH_2$ 1-BUTENE, 2-METHYL- 71 TAY/SIM REACTIØN ØRDER: 1 NØTE: AT 4358A°. UNREPØRTED T, ASSUMED TØ BE 298K.	298	3.4(+7)	-	-	0.9	1.1
$CH_3CH_2C(CH_3){=}CH_2 + H \rightarrow CH_3CH_2C(.)(CH_3)_2$ 1-BUTENE, 2-METHYL-, + HYDRØGEN ATØM 74 SHI/AMA REACTIØN ØRDER: 2 k/k_{ref}: 4.0 NØTE: k_{ref}: $CH_3CH_2C(CH_3){=}CH_2 + H \rightarrow CH_3CH_2CH(CH_3)CH_2.$	923	-	-	-		
$CH_3CH_2C(CH_3){=}CH_2 + H \rightarrow CH_3CH_2C(.)(CH_3)_2 + CH_3CH_2CH(CH_3)CH_2.$ 1-BUTENE, 2-METHYL-, + HYDRØGEN ATØM 74 SHI/AMA REACTIØN ØRDER: 2 k/k_{ref}: 13.0 NØTE: k_{ref}: $CH_3CH_2C(CH_3){=}CH_2 + H \rightarrow CH_3CH(.)C(CH_3){=}CH_2$ $+ .CH_2CH_2C(CH_3){=}CH_2 + CH_3CH_2C(CH_2.){=}CH_2 + H_2$	923	-	-	-		
$CH_3CH_2C(CH_3){=}CH_2 + H + M \rightarrow CH_3CH_2C(.)(CH_3)_2$ $+ CH_3CH_2CH(CH_3)CH_2. + M$ 1-BUTENE, 2-METHYL-, + HYDRØGEN ATØM 71 DAB/NIK REACTIØN ØRDER: 2 M: He NØTE: 0.7 to 1.3 TØRR. He PRESSURE.	298	9.1(+11)	-	-	0.9	1.1
$CH_3CH_2C(CH_3){=}CH_2 + D + M \rightarrow CH_3CH_2C(.)(CH_3)CH_2D$ $+ CH_3CH_2CD(CH_3)CH_2. + M$ 1-BUTENE, 2-METHYL-, + DEUTERIUM ATØM 71 DAB/NIK REACTIØN ØRDER: 2 M: He NØTE: 1.2 to 2.6 TØRR. He PRESSURE.	298	2.1(+12)	-	-	0.9	1.1
$CH_3CH_2C(CH_3){=}CH_2 + ØH \rightarrow$ products 1-BUTENE, 2-METHYL-, + HYDRØXYL FREE RADICAL 71 MØR/NIK2 REACTIØN ØRDER: 2 k/k_{ref}: 5.3 NØTE: k_{ref}: $CH_3CH{=}CH_2 + ØH \rightarrow$ products	300	-	-	-		
$CH_3CH_2C(CH_3){=}CH_2 + S \rightarrow cy\text{-}(CH_3CH_2)C(CH_3)CH_2S$ 1-BUTENE, 2-METHYL-, + SULFUR ATØM 71 STR/Ø'C REACTIØN ØRDER: 2 NØTE: k/k_{ref}: 0.78 exp(+1424/T); k_{ref}: $CH_2{=}CH_2 + S \rightarrow$ $cy\text{-}CH_2CH_2S$ CØNVENTIØNAL PHØTØLYSIS METHØD	298-450	-	-	-		
$CH_3CH_2C(CH_3){=}CH_2 + CH_3C(Ø)ØØ. \rightarrow cy\text{-}[(CH_3CH_2)C(CH_3)]CH_2Ø$ $+ CH_3. + CØ_2$ 1-BUTENE, 2-METHYL-, + ETHYLDIØXY, 1-ØXØ-, FREE RADICAL 74 DIA/WAD REACTIØN ØRDER: 2 77 DIA/WAD	393 393	5.0(+8) 1.5(+8)	- -	- -	0.9	1.1
$CH_3CH_2C(CH_3){=}CH_2 + CH_3C(Ø)ØØH \rightarrow cy\text{-}[(CH_3CH_2)C(CH_3)]CH_2Ø$ $+ CH_3CØØH$ 1-BUTENE, 2-METHYL-, + ETHANEPERØXØIC ACID						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
77 DIA/WAD REACTION ORDER: 2	393	6.0(+1)	-	-	0.6	1.4
$(CH_3)_2CHCH{=}CH_2^*$ → CH_3 + $CH_3CH(.)CH{=}CH_2$						
1-BUTENE, 3-METHYL-						
71 TAY/SIM REACTION ORDER: 1	298	1.7(+8)	-	-	0.7	1.3
NOTE: AT 3660Å. UNREPORTED T, ASSUMED TO BE 298K.	298	1.0(+8)	-	-	0.7	1.3
NOTE: AT 4358Å. UNREPORTED T, ASSUMED TO BE 298K.						
$(CH_3)_2CHCH{=}CH_2$ + O → cy-$[(CH_3)_2CH]CHCH_2O$						
1-BUTENE, 3-METHYL-, + OXYGEN ATOM						
76 SIN/CVE REACTION ORDER: 2	298-480	6.0(+12)	0	266±26	0.9	1.1
$(CH_3)_2CHCH{=}CH_2$ + O → products						
1-BUTENE, 3-METHYL-, + OXYGEN ATOM						
74 MCC REACTION ORDER: 2 k/k_{ref}: 0.22	298	-	-	-	0.8	1.2
NOTE: k_{ref}: $(CH_3)_2C{=}CH_2$ + O → products						
$(CH_3)_2CHCH{=}CH_2$ + H + M → $(CH_3)_2CHCH(.)CH_3$ + $(CH_3)_2CHCH_2CH_2$·	M					
1-BUTENE, 3-METHYL-, + HYDROGEN ATOM						
71 DAB/NIK REACTION ORDER: 2 M: He	298	7.3(+11)	-	-	0.9	1.1
NOTE: 0.6 to 2.7 TORR. He PRESSURE.						
$(CH_3)_2CHCH{=}CH_2$ + D + M → $(CH_3)_2CHCH(.)CH_2D$ + $(CH_3)_2CHCHDCH_2$·	M					
1-BUTENE, 3-METHYL-, + DEUTERIUM ATOM						
71 DAB/NIK REACTION ORDER: 2 M: He	298	7.6(+11)	-	-	0.9	1.1
NOTE: 0.6 to 2.6 TORR. He PRESSURE.						
$(CH_3)_2CHCH{=}CH_2$ + OH → products						
1-BUTENE, 3-METHYL-, + HYDROXYL FREE RADICAL						
77 ATK/PER3 REACTION ORDER: 2	299-424	3.2(+12)	0	-533±150	0.9	1.1
$(CH_3)_2CHCH{=}CH_2$ + $CH_3C(O)OO$· → cy-$[(CH_3)_2CH]CHCH_2O$ + CH_3· + CO_2						
1-BUTENE, 3-METHYL-, + ETHYLDIOXY, 1-OXO-, FREE RADICAL						
77 DIA/WAD REACTION ORDER: 2	393	1.3(+7)	-	-	0.5	1.5
$(CH_3)_2CHCH{=}CH_2$ + $CH_3C(O)OOH$ → cy-$[(CH_3)_2CH]CHCH_2O$ + CH_3COOH						
1-BUTENE, 3-METHYL, + ETHANEPEROXOIC ACID						
77 DIA/WAD REACTION ORDER: 2	393	1.0(+1)	-	-	0.8	1.2
$CH_3CH{=}C(CH_3)_2$ + O → cy-$(CH_3)CHC(CH_3)_2O$						
2-BUTENE, 2-METHYL-, + OXYGEN ATOM						
74 FOR/ATK REACTION ORDER: 2	298	3.1(+13)	-	-	0.9	1.1
$CH_3CH{=}C(CH_3)_2$ + $O_2^*(^1\Delta_g)$ → $CH_2{=}CHC(CH_3)_2OOH$ + $CH_2{=}C(CH_3)CH(CH_3)OOH$						
2-BUTENE, 2-METHYL-, + OXYGEN MOLECULE						
73 BUI/HER REACTION ORDER: 2	298	3.3(+7)	-	-		
75 ASH/OGR	300-500	1.3(+11)	0	2465±140	0.7	1.4
$CH_3CH{=}C(CH_3)_2$ + O_3 → products						
2-BUTENE, 2-METHYL-, + OZONE						
74 JAP/WU REACTION ORDER: 2	298	3.0(+8)	-	-	0.9	1.1
75 BUI/HER	227-363	3.8(+9)	0	826±78	0.8	1.3
NOTE: IN 0.0075 TORR. OF O_2 AS SCAVENGER						
$CH_3CH{=}C(CH_3)_2$ + H → $CH_3CH_2C(.)(CH_3)_2$						
2-BUTENE, 2-METHYL-, + HYDROGEN ATOM						
74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 4.0	923	-	-	-		
NOTE: k_{ref}: $CH_3CH{=}C(CH_3)_2$ → $CH_3CH(.)CH(CH_3)_2$						
$CH_3CH{=}C(CH_3)_2$ + H → $CH_3CH_2C(.)(CH_3)_2$ + $CH_3CH(.)CH(CH_3)_2$						
2-BUTENE, 2-METHYL-, + HYDROGEN ATOM						
74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 3.0	923	-	-	-		
NOTE: k_{ref}: $CH_3CH{=}C(CH_3)_2$ + H → $CH_3CH{=}C(CH_3)CH_2$· + H_2						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F

$CH_3CH{=}C(CH_3)_2 + H \rightarrow CH_3CH_2C(.)(CH_3)_2^*$ 2-BUTENE, 2-METHYL-, + HYDROGEN ATOM 74 LAU/BUE REACTION ORDER: 2 k/k_{ref}: 1.25	298	-	-	-	0.8	1.35
NOTE: k_{ref}: $CH_2{=}CH_2 + H \rightarrow CH_3CH_2.^*$						

$CH_3CH{=}C(CH_3)_2 + H + M \rightarrow CH_3CH(.)CH(CH_3)_2$ $+ CH_3CH_2C(.)(CH_3)_2 + M$ 2-BUTENE, 2-METHYL-, + HYDROGEN ATOM 71 DAB/NIK REACTION ORDER: 2 M: He	298	8.2(+11)	-	-	0.9	1.1
NOTE: 0.7 to 1.3 torr. He PRESSURE.						

$CH_3CH{=}C(CH_3)_2 + H + M \rightarrow CH_3CH(.)CD(CH_3)_2$ $+ CH_3CHC(.)(CH_3)_2 + M$ 2-BUTENE, 2-METHYL-, + DEUTERIUM ATOM 71 DAB/NIK REACTION ORDER: 2 M: He	298	9.2(+11)	-	-	0.9	1.1
NOTE: 0.6 to 2.6 torr. He PRESSURE.						

$CH_3CH{=}C(CH_3)_2 + OH \rightarrow$ products 2-BUTENE, 2-METHYL-, + HYDROXYL FREE RADICAL 71 MER/NIK2 REACTION ORDER: 2 k/k_{ref}: 7.0	300	-	-	-		
NOTE: k_{ref}: $CH_3CH{=}CH_2 + OH \rightarrow$ products						

$CH_3CH{=}C(CH_3)_2 + S \rightarrow$ cy-$(CH_3)CHC[(CH_3)_2]S$ 2-BUTENE, 2-METHYL-, + SULFUR ATOM 71 STR/PSC REACTION ORDER: 2	298-450	-	-	-		
NOTE: k/k_{ref}: 0.51 exp(+1515/T); k_{ref}: $CH_2{=}CH_2 + S \rightarrow$ cy-CH_2CH_2S						

$CH_3CH{=}C(CH_3)_2 + OH \rightarrow$ products 2-BUTENE, 2-METHYL-, + HYDROXYL FREE RADICAL 76 ATK/PER1 REACTION ORDER: 2	297-425	2.2(+13)	0	-226±200		

$CH_3CH{=}C(CH_3)_2 + NO_2 \rightarrow$ products 2-BUTENE, 2-METHYL-, + NITROGEN OXIDE (NO_3) 75 JAP/NIK REACTION ORDER: 2	300	3.3(+12)	-	-	0.9	1.1

$CH_3CH{=}C(CH_3)_2 + CH_3C(O)OO. \rightarrow$ cy-$(CH_3)CHC(CH_3)_2O$ $+ CH_3 + CO_2$ 2-BUTENE, 2-METHYL-, + ETHYLDIOXY, 1-OXO-, FREE RADICAL 77 DIA/WAD REACTION ORDER: 2	370-410	1.2(+11)	0	1965±110	0.8	1.3

$CH_3CH{=}C(CH_3)_2 + CH_3C(O)OOH \rightarrow$ cy-$(CH_3)CHC(CH_3)_2O + CH_3COOH$ 2-BUTENE, 2-METHYL-, + ETHANEPEROXOIC ACID 77 DIA/WAD REACTION ORDER: 2	370-410	1.7(+11)	0	7410±290	0.5	2.1

$CH_3CH_2CH_2CH_2CH_2. \rightarrow CH_3CH_2CH_2CH(.)CH_3$ PENTYL FREE RADICAL 71 WAT REACTION ORDER: 1	297-435	3.3(+8)	0	7600		
NOTE: EVALUATION						

$CH_3CH_2CH_2CH_2CH_2. + CH_3. \rightarrow CH_3CH_2CH_2CH{=}CH_2 + CH_4$ PENTYL FREE RADICAL + METHYL FREE RADICAL 71 WAT REACTION ORDER: 2 k/k_{ref}: ≥0.33	298	-	-	-		
NOTE: LOWER LIMIT ESTIMATE. k_{ref}: $CH_3CH_2CH_2CH_2CH_2. + CH_3. \rightarrow CH_3(CH_2)_4CH_3$						

$CH_3CH_2CH_2CH_2CH_2. + CH_3CH_2CH_2CH_2CH_2. \rightarrow CH_3CH_2CH_2CH{=}CH_2$ $+ CH_3CH_2CH_2CH_2CH_3$ PENTYL FREE RADICAL 71 WAT REACTION ORDER: 2 k/k_{ref}: 0.14	298	-	-	-		
NOTE: k_{ref}: $CH_3CH_2CH_2CH_2CH_2. + CH_3CH_2CH_2CH_2CH_2. \rightarrow$ $+ CH_3(CH_2)_4CH_3$						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
$CH_3CH_2CH_2CH_2CH_2\cdot + CH_3CH_2CH_2CH_2CH_2N{=}NCH_3 \rightarrow CH_3CH_2CH_2CH_2CH_3 + \cdot CH_2CH_2CH_2CH_2CH_2N{=}NCH_3$						
PENTYL FREE RADICAL + DIAZENE, METHYL PENTYL-						
71 WAT REACTION ORDER: 2	297-435	4.2(+11)	0	3925		

$(CH_3)_3CCH_2\cdot \rightarrow CH_3\cdot + (CH_3)_2C{=}CH_2$						
PROPYL, 2,2-DIMETHYL-, FREE RADICAL						
75 SZI/MAR REACTION ORDER: 1	512-571	2.0(+13)	0	15000±1000	0.2	6.3
NOTE: EVALUATION						

$CH_3CH_2CH_2CH_2CH_3^* \rightarrow CH_3\cdot + CH_3CH_2\cdot + CH_3CH_2CH_2\cdot + CH_3CH_2CH_2CH_2\cdot$						
PENTANE						
72 HAS/JGH REACTION ORDER: 1	298	1.5(+6)	-	-	0.9	1.1
NOTE: 0.066 TORR	298	1.8(+6)	-	-	0.9	1.1
NOTE: 0.079 TORR						

$CH_3CH_2CH_2CH_2CH_3 + O^*(^1D) \rightarrow$ products						
PENTANE + OXYGEN ATOM						
74 MIC/PAR REACTION ORDER: 2 k/k_{ref}: 0.988	300	-	-	-	0.9	1.1
NOTE: k_{ref}: $(CH_3)_4C + O^*(^1D) \rightarrow$ products						

$CH_3CH_2CH_2CH_2CH_3 + {}^1CH_2^* \rightarrow CH_3(CH_2)_4CH_3$						
PENTANE + METHYLENE FREE RADICAL						
75 ZAB/CAR REACTION ORDER: 2 k/k_{ref}: 11.1	298	-	-	-		
NOTE: ${}^1CH_2^*(^1A_1)$ STATE. k_{ref}: ${}^1CH_2^*(^1A_1) + M \rightarrow CH_2(^3B_1) + M$						

$(CH_3)_2CHCH_2CH_3^* \rightarrow CH_3\cdot + CH_3CH_2\cdot + (CH_3)_2CH\cdot + CH_3CH_2CH(\cdot)CH_3 + (CH_3)_2CHCH_2\cdot$						
BUTANE, 2-METHYL-						
72 HAS/JGH REACTION ORDER: 1	298	2.9(+6)	-	-	0.9	1.1
NOTE: AVERAGE OF 2 K'S AT 0.12 AND 0.13 TORR	298	1.9(+6)	-	-	0.8	1.2
NOTE: AVERAGE OF 2 k's AT 0.071 AND 0.091 TORR						

$(CH_3)_2CHCH_2CH_3 + O_2 \rightarrow (CH_3)_2C(\cdot)CH_2CH_3 + (CH_3)_2CHCH(\cdot)CH_3 + HO_2$						
BUTANE, 2-METHYL-, + OXYGEN MOLECULE						
73 LEG/DEN REACTION ORDER: 2	410-439	1.5(15)	0	19120		

$(CH_3)_2CHCH_2CH_3 + OH \rightarrow$ products						
BUTANE, 2-METHYL-, + HYDROXYL FREE RADICAL						
76 ILO/DAR2 REACTION ORDER: 2	305	2.0(+12)	-	-	0.8	1.2
NOTE: EVALUATION						

$(CH_3)_4C \rightarrow (CH_3)_3C\cdot + CH_3$						
PROPANE, 2,2-DIMETHYL-						
71 LAR/DZI REACTION ORDER: 1	723-803	6.3(+16)	0	41270		

$(CH_3)_4C \rightarrow (CH_3)_3C\cdot + CH_3\cdot$						
PROPANE, 2,2-DIMETHYL-						
72 MAR/PUR REACTION ORDER: 1	756-845	1.3(+16)	0	39700±1100	0.1	10
73 PAC	793-953	5.0(+17)	0	42820±720	0.5	2.0
76 ERA/WEST	1030-1300	3.3(+16)	0	40415	0.8	1.3

$(CH_3)_4C + O^*(^1D) \rightarrow (CH_3)_3CCH_2\cdot + OH$						
PROPANE, 2,2-DIMETHYL-, + OXYGEN ATOM						
71 SCO/CVE REACTION ORDER: 2 k/k_{ref}: 4.29	296	-	-	-	0.9	1.1
NOTE: k_{ref}: $N_2O + O^*(^1D) \rightarrow N_2 + O_2 + NO + NO$						
76 ELE/HUS	300	7.4(+14)	-	-	0.9	1.1

$(CH_3)_4C + O^*(^1D) \rightarrow$ products						
PROPANE, 2,2-DIMETHYL-, + OXYGEN ATOM						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
75 GAL/SNE REACTION ORDER: 2 k/k_{ref}: 14.0	300	-	-	-	0.9	1.1
NOTE: k_{ref}: $O_2 + O^*(^1D) \rightarrow O_2^*(^1\Sigma_g^+) + O$						
	300	6.3(+14)	-	-		
NOTE: EVALUATION						

$(CH_3)_4C + H \rightarrow (CH_3)_3CCH_2\cdot + H_2$						
PROPANE, 2,2-DIMETHYL-, + HYDROGEN ATOM						
76 LAK/BAL REACTION ORDER: 2 k/k_{ref}: 52.0	753	-	-	-		
NOTE: k_{ref}: $O_2 + H \rightarrow O + OH$ (OPTIMIZATION)						
	753	2.4(+11)	-	-		
NOTE: EVALUATION						

$(CH_3)_4C + OH \rightarrow (CH_3)_3CCH_2\cdot + H_2O$						
PROPANE, 2,2-DIMETHYL-, + HYDROXYL FREE RADICAL						
76 LAK/BAL REACTION ORDER: 2 k/k_{ref}: 10.0	753	-	-	-		
NOTE: k_{ref}: $H_2 + OH \rightarrow H + H_2O$ (OPTIMIZATION)						
	753	3.9(+12)	-	-	0.9	1.1
NOTE: EVALUATION						

$(CH_3)_4C + CD_2 \rightarrow (CH_3)_3CCH_2\cdot + CD_2H$						
PROPANE, 2,2-DIMETHYL-, + METHYLENE-d_2 FREE RADICAL						
71 MCN/KEL REACTION ORDER: 2 k/k_{ref}: 2.1	576-706	-	-	-	0.8	1.2
NOTE: k_{ref}: $CD_2{=}C{=}O + CD_2 \rightarrow \cdot CD{=}C{=}O + CD_3$						
REACTION ORDER: 2	653	1.5(+11)	-	-	0.5	1.5
NOTE: EVALUATION						

$(CH_3)_4C + CH_3 \rightarrow (CH_3)_3CCH_2\cdot + CH_4$						
PROPANE, 2,2-DIMETHYL-, + METHYL FREE RADICAL						
71 MCN/KEL REACTION ORDER: 2 k/k_{ref}: 6.7	576-706	-	-	-	0.9	1.1
NOTE: k_{ref}: $CD_2{=}C{=}O + CH_3 \rightarrow \cdot CD{=}C{=}O + CH_3D$						

$(CH_3)_4C + CH_3 \rightarrow (CH_3)_3CCH_2\cdot + CH_4$						
PROPANE, 2,2-DIMETHYL-, + METHYL FREE RADICAL						
73 PAC REACTION ORDER: 2	793-953	3.2(+13)	0	8060±240	0.8	1.3
76 BEA/WES1	1030-1300	6.6(+14)	0	10825	0.6	1.7

$(CH_3)_4C + CH{\equiv}C\cdot \rightarrow (CH_3)_3CCH_2\cdot + CH{=}CH$						
PROPANE, 2,2-DIMETHYL-, + ETHYNYL FREE RADICAL						
73 CUL/HUC REACTION ORDER: 2 k/k_{ref}: 0.91	298	-	-	-	0.9	1.1
NOTE: k_{ref}: $CH{\equiv}CBr + CH{\equiv}C\cdot \rightarrow Br\cdot + CH{\equiv}CC{\equiv}CH$						

$CH_3C{\equiv}CCH_2C{=}O{-}OH \rightarrow CH_3CH{=}C{=}CH_2 + CO_2$						
3-PENTYNOIC ACID						
76 BIG/WEA1 REACTION ORDER: 1	500-663	2.4(+11)	0	19440±760	0.4	2.6
NOTE: EDITOR'S EVALUATION BASED ON GIVEN $\Delta H^{\ddagger}$ AND $\Delta S^{\ddagger}$						

$CH_3C{\equiv}CCH_2C{=}O{-}OD \rightarrow CH_3CD{=}C{=}CH_2 + CO_2$						
3-PENTYNOIC ACID-D						
76 BIG/WEA1 REACTION ORDER: 1	630	3.3(-3)	-	-		

$CH_2{=}C{=}CHCH_2C{=}O{-}OH \rightarrow CH_2{=}CHCH{=}CH_2 + CO_2$						
3,4-PENTADIENOIC ACID						
76 BIG/WEA2 REACTION ORDER: 1	500-715	1.1(+11)	0	20150±750	0.4	2.6
NOTE: EDITOR'S EVALUATION BASED ON GIVEN $\Delta H^{\ddagger}$ AND $\Delta S^{\ddagger}$						

$CH_3CH{=}CHCH_2C{=}O{-}OH \rightarrow CH_3CH{=}CHCH_3 + CO_2$						
3-PENTENOIC ACID						
76 BIG/WEA1 REACTION ORDER: 1	500-720	2.3(+11)	0	20810±780	0.3	3.5
NOTE: EDITOR'S EVALUATION BASED ON GIVEN $\Delta H^{\ddagger}$ AND $\Delta S^{\ddagger}$						

$CH_3C{=}O{-}C{=}O{-}CH_2CH_3 \rightarrow CH_3C(=O)\cdot + CH_3CH_2C(=O)\cdot$						
2,3-PENTANEDIONE						
74 SCH/KNO REACTION ORDER: 1	362-398	7.9(+16)	0	33970±1460		
NOTE: ORDER OF MAGNITUDE ESTIMATE: $k=0.1k$(OVERALL).						

$CH_3C{=}O{-}C{=}O{-}CH_2CH_3 \rightarrow$ products (OVERALL)						
2,3-PENTANEDIONE						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
74 SCH/KNO REACTION ORDER: 1	362-398	7.9(+17)	0	33970±1460	0.1	10.
$CH_3COCOCH_2CH_3 + CH_3 \rightarrow CH_3COCOCH(.)CH_3 + CH_4$						
2,3-PENTANEDIONE + METHYL FREE RADICAL						
74 SCH/KNO REACTION ORDER: 2 k/k_{ref}: 4.5	362-398	-	-	-		
NOTE: k_{ref}: $CH_3COCOCH_2CH_3 + CH_3 \rightarrow .CH_2COCOCH_2CH_3 + CH_4$						
$CH_3COCOCH_2CH_3 + CH_3 \rightarrow CH_3COCOCH_2CH_2. + CH_4$						
2,3-PENTANEDIONE + METHYL FREE RADICAL						
74 SCH/KNO REACTION ORDER: 2 k/k_{ref}: 0.3	362-398	-	-	-		
NOTE: k_{ref}: $CH_3COCOCH_2CH_3 + CH_3 \rightarrow .CH_2COCOCH_2CH_3 + CH_4$						
$CH_3COCOCH_2CH_3 + CH_3 \rightarrow .CH_2COCOCH_2CH_3 + CH_3COCOCH(.)CH_3$ $+ CH_3COCOCH_2CH_2. + CH_4$						
2,3-PENTANEDIONE + METHYL FREE RADICAL						
74 SCH/KNO REACTION ORDER: 2	362-398	-	-	-	0.4	2.5
NOTE: k_{ref}: $CH_3COCOCH_2CH_3 + CH_3 \rightarrow CH_3CH_2C(O). + CH_3COCH_3$						
k/k_{ref}: $25.12\exp(-150\pm1200/T)$						
$CH_3COCOCH_2CH_3 + CH_3CH_2. \rightarrow CH_3COCOCH(.)CH_3 + CH_3CH_3$						
2,3-PENTANEDIONE + ETHYL FREE RADICAL						
74 SCH/KNO REACTION ORDER: 2 k/k_{ref}: 4.5	362-398	-	-	-		
NOTE: k_{ref}: $CH_3COCOCH_2CH_3 + CH_3CH_2. \rightarrow .CH_2COCOCH_2CH_3 + CH_3CH_3$						
$CH_3COCOCH_2CH_3 + CH_3CH_2. \rightarrow CH_3COCOCH_2CH_2. + CH_3CH_3$						
2,3-PENTANEDIONE + ETHYL FREE RADICAL						
74 SCH/KNO REACTION ORDER: 2 k/k_{ref}: 0.3	362-398	-	-	-		
NOTE: k_{ref}: $CH_3COCOCH_2CH_3 + CH_3CH_2. \rightarrow .CH_2COCOCH_2CH_3 + CH_3CH_3$						
$CH_3COCOCH_2CH_3 + CH_3CH_2. \rightarrow .CH_2COCOCH_2CH_3 + CH_3COCOCH(.)CH_3$ $+ CH_3COCOCH_2CH_2. + CH_3CH_3$						
2,3-PENTANEDIONE + ETHYL FREE RADICAL						
74 SCH/KNO REACTION ORDER: 2	362-398	-	-	-	0.2	6.3
NOTE: k_{ref}: $CH_3COCOCH_2CH_3 + CH_3CH_2. \rightarrow CH_3C(O).$ $+ CH_3CH_2COCH_2CH_3$; k/k_{ref}: $50.12\exp(-1410\pm1160/T)$						
$CH_3CH_2OCH_2CH=CH_2 \rightarrow CH_3CHO + CH_3CH=CH_2$						
1-PROPENE, 3-ETHOXY						
74 EGG/VIT2 REACTION ORDER: 1	560-648	6.9(+11)	0	21930±390	0.5	1.9
$CH_3CH_2CH_2OCH=CH_2 \rightarrow CH_3CH=CH_2 + CH_3CHO$						
PROPANE, 1-(ETHENYLOXY)-						
74 EAM REACTION ORDER: 1	653-708	1.4(+11)	0	22240±140	0.8	1.2
$CH_3CD_2COCD_2CH_3 + CH_3 \rightarrow .CH_2CD_2COCD_2CH_3 + CH_4$						
3-PENTANONE-2,2,4,4-d_4 + METHYL FREE RADICAL						
72 SCH/WOLI REACTION ORDER: 2	513-572	2.0(+11)	0	5540±450	0.3	3.2
$CH_3CD_2COCD_2CH_3 + CH_3 \rightarrow CH_3CD(.)COCD_2CH_3 + CH_3D$						
3-PENTANONE-2,2,4,4-d_4 + METHYL FREE RADICAL						
72 SCH/WOLI REACTION ORDER: 2	513-572	1.3(+11)	0	4180±200	0.6	1.8
$CH_3OCH_2CH_2OCH=CH_2 \rightarrow CH_3OCH=CH_2 + CH_3CHO$						
ETHENE, (2-METHOXY ETHOXY)-						
74 EAM REACTION ORDER: 1	653-708	3.8(+10)	0	20990±120	0.8	1.2
$CH_3COOCH_2CH_2CH_3 \rightarrow CH_3COOH + CH_3CH=CH_2$						
ACETIC ACID PROPYL ESTER						
76 EIB/TAY REACTION ORDER: 1	650-700	4.5(+12)	0	24±10		
$CH_3COOCH_2CH_2CH_3 + OH \rightarrow$ products						
ACETIC ACID PROPYL ESTER + HYDROXYL FREE RADICAL						
77 WIN/LLO REACTION ORDER: 2	305	2.6(+12)	-	-	0.8	1.2
$CH_3COOCH(\quad)_2 \rightarrow CH_3COOH + CH_3CH=CH_2$						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
ACETIC ACID 1-METHYL ETHYL ESTER 75 TAY REACTION ORDER: 1 77 SMI/MUT	609-668 651	1.6(+13) 5.9(-3)	0 -	22900±350 -	0.6 0.9	1.6 1.1
$(CH_3)_3CCOCH_2 + CH_2=C=O \rightarrow (CH_3)_3CC(O)OC(O)CH_3$ PROPANOIC ACID, 2,2-DIMETHYL-, + ETHENONE 76 BIA/VAY REACTION ORDER: 2	368-489	1.5(+9)	0	5750±100	0.8	1.3
$CH_3COOCH_2CH_2OCH_3 \rightarrow CH_3COOH + CH_2=CHOCH_3$ ETHANOL, 2-METHOXY-, ACETATE 76 DEB/TAY REACTION ORDER: 1	650-700	7.9(+12)	0	25770		
$CH_3CH_2OCOOCH_2CH_3 \rightarrow CH_3CH_2OH + CO_2 + CH_2=CH_2$ CARBONIC ACID DIETHYL ESTER 72 BIG/WRE1 REACTION ORDER: 1	554-594	1.4(+13)	0	23350		
NOTE: k DETERMINED BY SEALED-TUBE METHOD	668-703	4.0(+13)	0	23755	0.9	1.1
NOTE: k DETERMINED BY FLOW-TUBE METHOD 76 CHO/HUN	584-663	1.1(+13)	0	23455		
$HOCH_2COOCH(CH_3)_2 \rightarrow HOCH_2COOH + CH_3CH=CH_2$ ACETIC ACID, HYDROXY-, 1-METHYLETHYL ESTER 77 CHU/MAR REACTION ORDER: 1	563-623	3.6(+12)	0	21640±350	0.5	1.2
$(CH_3)_3CCH_2CO. \rightarrow (CH_3)_2C(CH_2OOH)CH_2.$ PROPYLDIOXY, 2,2-DIMETHYL-, FREE RADICAL 75 EAK/BAL REACTION ORDER: 1 NOTE: ESTIMATED K	753	1.9(+4)	-	-		
$(CH_3)_3CCH_2CO. \rightarrow (CH_3)_2C(.)CH_2OOCH_3$ PROPYLDIOXY, 2,2-DIMETHYL-, FREE RADICAL 75 EAK/BAL REACTION ORDER: 1 NOTE: UPPER LIMIT ESTIMATE	753	1.6(+3)	-	-		
$(CH_3)_2C(CH_2OOH)CH_2. \rightarrow cy\text{-}CH_2C(CH_3)_2CH_2O + OH$ PROPYL, 2-METHYL-2-HYDROPEROXY METHYL-, FREE RADICAL 75 EAK/BAL REACTION ORDER: 1 NOTE: ESTIMATED k	753	1.0(+6)	-	-	0.5	2.0
$(CH_3)_2C(CH_2OOH)CH_2OO. \rightarrow (CH_3)_2CO + HCHO + HCHO + OH$ PROPYLDIOXY, 2-METHYL-2-HYDROPEROXYMETHYL-, FREE RADICAL 75 EAK/BAL REACTION ORDER: 1 NOTE: ESTIMATED k	753	1.5(+6)	-	-	0.5	2.0
$(CH_3)_3COCH_3 \rightarrow (CH_3)_2C=CH_2 + CH_3OH$ PROPANE, 2-METHOXY-2-METHYL- 74 CHO/GOL REACTION ORDER: 1 NOTE: RECOMMENDED k FOR T=800K, BUT ARRHENIUS PLOT DETERMINED EXPERIMENTALLY OVER 780-917 k RANGE	800	7.9(+13)	0	29695±500		
$(CH_3)_2CHCH_2CN \rightarrow (CH_3)_2CH. + .CH_2CN$ BUTANENITRILE, 3-METHYL- 75 KIN/GOD2 REACTION ORDER: 1	1011-1123	2.5(+15)	0	37100±850	0.5	1.1
$(CH_3)_3CCN \rightarrow (CH_3)_2C=CH_2 + HCN$ PROPANENITRILE, 2,2-DIMETHYL- 73 EAS/EMO REACTION ORDER: 1 76 KIN/GOD	838-927 1023-1254	1.6(+12) 1.3(+14)	0 0	32055±245 37290±600	0.9 0.5	1.1 2.0
$(CH_3)_3CCN \rightarrow (CH_3)_2C(.)CN + CH_3$ PROPANENITRILE, 2,2-DIMETHYL- 76 KIN/GOD REACTION ORDER: 1	1023-1254	7.9(+15)	0	37700±800	0.5	2.0
$(CH_3)_3CC\equiv CH \rightarrow (CH_3)_2C(.)C\equiv CH + CH_3$ 1-BUTYNE, 3,3-DIMETHYL- 77 KIN REACTION ORDER: 1	933-1182	6.3(+5)	0	35630±750	0.5	2.0
$cis\text{-}CH_3CH=CH-CH=CHCH_3 \rightarrow trans\text{-}CH_3CH=CH-CH=CHCH_3$ cis-2,3,4 HEXATRIENE 76 RGT/EXN REACTION ORDER: 1	377-426	1.1(+13)	0	16000±150		
$CH_2=CHCH_2CH_2CH=CH_2 \rightarrow$ products						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
1,5-HEXADIENE 75 SAK/NGR — REACTION ORDER: 1	853-973	7.9(+12)	0	27680		
$.CH_2CH_2CH_2CH_2CH{=}CH_2^{*} \rightarrow .CH_2CH{=}CH_2 + CH_3CH{=}CH_2$ 5-HEXENYL FREE RADICAL 75 TAR — REACTION ORDER: 1 k/k_{ref}: 8.95	298	-	-	-		
NOTE: k_{ref}: $(CH_3)_2C(.)CH_2CH_3^{*} \rightarrow (CH_3)_2C{=}CH_2 + CH_3.$						
$CH_3CH_2CH_2CH_2CH{=}CH_2 \rightarrow$ products 1-HEXENE 71 MAG/IGA — REACTION ORDER: 1	823-923	2.0(+12)	0	25670		
$CH_3CH_2CH_2CH_2CH{=}CH_2 + O_3 \rightarrow$ products 1-HEXENE + OZONE 72 COX/PEN — REACTION ORDER: 2 72 COX/PEN	295 295	8.2(+6) 7.2(+6)	- -	- -		
NOTE: IN N_2 ATMOSPHERE 73 SIE/WU 74 JAP/WU	299 298	6.6(+6) 6.7(+6)	- -	- -	0.9 0.9	1.1 1.1
$CH_3CH_2CH_2CH_2CH{=}CH_2 + NO_2 \rightarrow [CH_3CH_2CH_2CH_2CH{=}CH_2.NO_2@$ 1-HEXENE + NITROGEN OXIDE (NO_2) 75 GRY/ROZ — REACTION ORDER: 2	293-333	7.7(+7)	0	3520		
$CH_3CH_2CH_2CH_2CH{=}CH_2 + CH_3C(O)OO. \rightarrow cy\text{-}(CH_3CH_2CH_2CH_2)CHCH_2O + CH_3. + CO_2$ 1-HEXENE + ETHYLDIOXY, 1-OXO-, FREE RADICAL 77 DIA/WAD — REACTION ORDER: 2	393	2.2(+7)	-	-	0.6	1.4
$CH_3CH_2CH_2CH_2CH{=}CH_2 + CH_3C(O)OOH \rightarrow cy\text{-}(CH_3CH_2CH_2CH_2)CHCH_2O + CH_3COOH$ 1-HEXENE + ETHANEPEROXOIC ACID 77 DIA/WAD — REACTION ORDER: 2	393	2.1(+1)	-	-	0.4	1.6
$cis\text{-}CH_3CH_2CH_2CH{=}CHCH_3 \rightarrow trans\text{-}CH_3CH_2CH_2CH{=}CHCH_3$ cis-2-HEXENE 74 EAV/YAD — REACTION ORDER: 1 k/k_{ref}: 1.0	1000-1150	-	-	-		
NOTE: k_{ref}: $cis\text{-}CH_3CH{=}CHCH_3 \rightarrow trans\ CH_3CH{=}CHCH_3$						
$CH_3CH_2CH_2C(CH_3){=}CH_2 + O_3 \rightarrow$ products 1-PENTENE, 2-METHYL-, + OZONE 72 COX/PEN — REACTION ORDER: 2	295	1.0(+7)	-	-		
$CH_3CH_2CH_2C(CH_3){=}CH_2 + H \rightarrow CH_3CH_2CH_2C(.)(CH_3)_2$ 1-PENTENE, 2-METHYL-, + HYDROGEN ATOM 74 SHI/AMA — REACTION ORDER: 2 k/k_{ref}: 4.0	923	-	-	-		
NOTE: k_{ref}: $CH_3CH_2CH_2C(CH_3){=}CH_2 + H \rightarrow CH_3CH_2CH_2CH(CH_3)CH_2.$						
$CH_3CH_2CH_2C(CH_3){=}CH_2 + H \rightarrow CH_3CH_2CH_2C(.)(CH_3)_2 + CH_3CH_2CH_2CH(CH_3)CH_2.$ 1-PENTENE, 2-METHYL-, + HYDROGEN ATOM 74 SHI/AMA — REACTION ORDER: 2 k/k_{ref}: 8.0	923	-	-	-		
NOTE: k_{ref}: $CH_3CH_2CH_2C(CH_3){=}CH_2 + H \rightarrow CH_3CH_2CH(.)C(CH_3){=}CH_2 + .CH_2CH_2CH_2C(CH_3){=}CH_2 + CH_3CH_2CH_2C(CH_2.){=}CH_2 + H_2$						
$CH_3CH_2CH_2C(CH_3){=}CH_2 + CH_3 \rightarrow CH_3CH_2CH_2C(.)(CH_3)CH_2CH_3$ 1-PENTENE, 2-METHYL-, + METHYL FREE RADICAL 74 SHI/AMA — REACTION ORDER: 2 k/k_{ref}: 5.0	923	-	-	-		
NOTE: k_{ref}: $CH_3CH_2CH_2C(CH_3){=}CH_2 + CH_3 \rightarrow CH_3CH_2CH_2C(CH_3)_2CH_2. + CH_4$						
$CH_3CH_2CH_2C(CH_3){=}CH_2 + CH_3 \rightarrow CH_3CH_2CH_2C(.)(CH_3)CH_2CH_3 + CH_3CH_2CH_2C(CH_3)_2CH_2.$ 1-PENTENE, 2-METHYL-, + METHYL FREE RADICAL						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	F
74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 0.6	923	-	-	-		
NOTE: k_{ref}: $CH_3CH_2CH_2C(CH_3)=CH_2 + CH_3 \rightarrow CH_3CH_2CH(\cdot)C(CH_3)=CH_2 + \cdot CH_2CH_2CH_2C(CH_3)=CH_2 + CH_3CH_2CH_2C(CH_2\cdot)=CH_2 + CH_4$						
$(CH_3)_2CHCH_2CH=CH_2 + O_3 \rightarrow$ products						
1-PENTENE, 4-METHYL-, + OZONE 72 COX/PEN REACTION ORDER: 2	295	6.4(+6)	-	-		
$CH_3CH_2CH=C(CH_3)_2 + O_2^*(^1\Delta_g) \rightarrow CH_3CH=CH(CH_3)_2OOH + CH_3CH_2CH(OOH)C(CH_3)=CH_2$						
2-PENTENE, 2-METHYL-, + OXYGEN MOLECULE 72 HUI/HER REACTION ORDER: 2	298	9.0(+6)	-	-		
NOTE: GIVEN WITH CAUTION						
$CH_3CH_2CH=C(CH_3)_2 + H \rightarrow CH_3CH_2CH_2C(\cdot)(CH_3)_2$						
2-PENTENE, 2-METHYL-, + HYDROGEN ATOM 74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 3.0	923	-	-	-		
NOTE: k_{ref}: $CH_3CH_2CH=C(CH_3)_2 + H \rightarrow CH_3CH_2CH(\cdot)CH(CH_3)_2$						
$CH_3CH_2CH=C(CH_3)_2 + H \rightarrow CH_3CH_2CH_2C(\cdot)(CH_3)_2 + CH_3CH_2CH(\cdot)CH(CH_3)_2$						
2-PENTENE, 2-METHYL-, + HYDROGEN ATOM 74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 3.0	923	-	-	-		
NOTE: k_{ref}: $CH_3CH_2CH=C(CH_3)_2 + H \rightarrow CH_3CH_2CH=C(CH_3)CH_2\cdot + CH_3CH(\cdot)CH=C(CH_3)_2 + H_2$						
$CH_3CH_2CH=C(CH_3)_2 + CH_3 \rightarrow CH_3CH_2CH(CH_3)C(\cdot)(CH_3)_2$						
2-PENTENE, 2-METHYL-, + METHYL FREE RADICAL 74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 1.0	923	-	-	-		
NOTE: k_{ref}: $CH_3CH_2CH=C(CH_3)_2 + CH_3 \rightarrow CH_3CH_2CH(\cdot)C(CH_3)_3$						
$CH_3CH_2CH=C(CH_3)_2 + CH_3 \rightarrow CH_3CH_2CH(CH_3)C(\cdot)(CH_3)_2 + CH_3CH_2CH(\cdot)C(CH_3)_3$						
2-PENTENE, 2-METHYL-, + METHYL FREE RADICAL 74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 0.12	923	-	-	-		
NOTE: k_{ref}: $CH_3CH_2CH=C(CH_3)_2 + CH_3 \rightarrow CH_3CH_2CH=C(CH_3)CH_2\cdot + CH_3CH(\cdot)CH=C(CH_3)_2 + CH_4$						
$CH_3CH_2C(CH_3)=CHCH_3 + H \rightarrow CH_3CH_2C(\cdot)(CH_3)CH_2CH_3$						
2-PENTENE, 3-METHYL-, + HYDROGEN ATOM 74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 3.0	923	-	-	-		
NOTE: k_{ref}: $CH_3CH_2C(CH_3)=CHCH_3 + H \rightarrow CH_3CH_2CH(CH_3)CH(\cdot)CH_3$						
$CH_3CH_2C(CH_3)=CHCH_3 + H \rightarrow CH_3CH_2C(\cdot)(CH_3)CH_2CH_3 + CH_3CH_2CH(CH_3)CH(\cdot)CH_3$						
2-PENTENE, 3-METHYL-, + HYDROGEN ATOM 74 SHI/AMA REACTION ORDER: 2 k/k_{ref}: 3.0	923	-	-	-		
NOTE: k_{ref}: $CH_3CH_2C(CH_3)=CHCH_3 + H \rightarrow CH_3CH_2C(CH_3)=CHCH_2\cdot + CH_3CH(\cdot)C(CH_3)=CHCH_3 + CH_3CH_2C(CH_2\cdot)=CHCH_3 + H_2$						
cis-$CH_3CH_2C(CH_3)=CHCH_3 + O_3 \rightarrow$ products						
cis-2-PENTENE, 3-METHYL-, + OZONE 74 JAP/WU REACTION ORDER: 2	298	2.7(+8)	-	-	0.9	1.1
trans-$CH_3CH_2C(CH_3)CHCH_3 + O_3 \rightarrow$ products						
trans-2-PENTENE, 3-METHYL-, + OZONE 74 JAP/WU REACTION ORDER: 2	298	3.4(+8)	-	-	0.9	1.1
$(CH_3)_2C=C(CH_3)_2 + O \rightarrow$ cy-$[(CH_3)_2]CC[(CH_3)_2]O\cdot$						
2-BUTENE, 2,3-DIMETHYL-, + OXYGEN ATOM 74 FUR/ATK REACTION ORDER: 2	298	4.4(+13)	-	-	0.9	1.1

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
$(CH_3)_2C{=}C(CH_3)_2 + O \rightarrow$ cy-$[(CH_3)_2CHCH(CH_3)_2]O$						
2-BUTENE, 2,3-DIMETHYL-, + OXYGEN ATOM						
73 LAV/HUI REACTION ORDER: 2	298-355	3.4(+12)	0	-790±60	0.8	1.2
$(CH_3)_2C{=}C(CH_3)_2 + O \rightarrow$ products						
2-BUTENE, 2,3-DIMETHYL-, + OXYGEN ATOM						
75 SIN/FUR REACTION ORDER: 2	298-481	1.2(+13)	0	-390±38	0.9	1.1
$(CH_3)_3C{=}C(CH_3)_2 + O_2^*(^1\Delta_g) \rightarrow CH_2{=}C(CH_3)C(CH_3)_2OOH$						
2-BUTENE, 2,3-DIMETHYL-, + OXYGEN MOLECULE						
72 ACK/PIT REACTION ORDER: 2	298	4.9(+8)	-	-	0.9	1.1
NOTE: FOR PRESSURES> 3 TORR						
73 HUI/HER	298	7.6(+8)	-	-		
75 ASB/OGR	300-500	1.3(+11)	0	1625±75	0.8	1.2
76 DUM	298	2.0(+7)	-	-		
$(CH_3)_2C{=}C(CH_3)_2 + O_3 \rightarrow$ products						
2-BUTENE, 2,3-DIMETHYL-, + OZONE						
74 JAP/WU REACTION ORDER: 2	298	9.1(+8)	-	-	0.9	1.1
75 HUI/HER	227-363	1.7(+9)	0	294±196	0.6	1.7
NOTE: IN 0.0075 TORR. OF O_2 AS SCAVENGER.						
$(CH_3)_2C{=}C(CH_3)_2 + H + M \rightarrow (CH_3)_2C(.)CH(CH_3)_2 + M$						
2-BUTENE, 2,3-DIMETHYL-, + HYDROGEN ATOM						
71 DAB/NIK REACTION ORDER: 2 M: He	298	7.0(+11)	-	-	0.9	1.1
NOTE: 0.7 to 1.3 TORR. He PRESSURE.						
$(CH_3)_2C{=}C(CH_3)_2 + D + M \rightarrow (CH_3)_2C(.)CD(CH_3)_2 + M$						
2-BUTENE, 2,3-DIMETHYL-, + DEUTERIUM ATOM						
71 DAB/NIK REACTION ORDER: 2 M: He	298	8.6(+11)	-	-	0.9	1.1
NOTE: 0.6 to 2.6 TORR. He PRESSURE.						
$(CH_3)_2C{=}C(CH_3)_2 + OH \rightarrow$ products						
2-BUTENE, 2,3-DIMETHYL-, + HYDROXYL FREE RADICAL						
71 NCR/NIK2 REACTION ORDER: 2 k/k_{ref}: 9.0	300	-	-	-		
NOTE: k_{ref}: $CH_3CH{=}CH_2 + OH \rightarrow$ products						
$(CH_3)_2C{=}C(CH_3)_2 + S \rightarrow$ cy-$[(CH_3)_2CC(CH_3)_2]S$						
2-BUTENE, 2,3-DIMETHYL-, + SULFUR ATOM						
71 CCK/VAN REACTION ORDER: 2	298	6.2(+13)	-	-	0.9	1.1
NOTE: LOWER LIMIT k. FLASH PHOTOLYSIS METHOD.						
71 STR/G'C	298-450	-	-	-		
NOTE: k/k_{ref}: 0.5 exp(+1690/T); k_{ref}: $CH_2{=}CH_2 + S \rightarrow$ cy-CH_2CH_2S						
CONVENTIONAL PHOTOLYSIS METHOD						
$(CH_3)_2C{=}C(CH_3)_2 +$ cis-NH=NH $\rightarrow (CH_3)_2CHCH(CH_3)_2 + N_2$						
2-BUTENE, 2,3-DIMETHYL-, + cis-DIAZENE						
74 VID/WIL REACTION ORDER: 2 k/k_{ref}: 0.02	373	-	-	-	0.5	1.5
NOTE: k_{ref}: $CH_2{=}CH_2 +$ cis-NH=NH $\rightarrow CH_3CH_3 + N_2$. APPROXIMATE RATIO						
$(CH_3)_2C{=}C(CH_3)_2 + S \rightarrow$ products						
2-BUTENE, 2,3-DIMETHYL-, + SULFUR ATOM						
73 LAV/KLE REACTION ORDER: 2	252-500	2.8(+12)	3	-650±115	0.6	1.4
$(CH_3)_2C{=}C(CH_3)_2 + NO_3 \rightarrow$ products						
2-BUTENE, 2,3-DIMETHYL-, + NITROGEN OXIDE (NO_3)						
75 JAP/NIK REACTION ORDER: 2	300	2.2(+13)	-	-	0.9	1.1
cis-$CH_3CH(.)CH(CH_3)CH_2CH_2$· $\rightarrow$ trans-$CH_3CH(.)CH(CH_3)CH_2CH_2$·						
cis-1,4-BUTANEDIYL, 1,2-DIMETHYL-						
77 SCA/BAC REACTION ORDER: 2 k/k_{ref}: 1.36	663-703	-	-	-	0.9	1.1
NOTE: k_{ref}: cis-$CH_3CH(.)CH(CH_3)CH_2CH_2$· $\rightarrow$ cis-cy-$[CH(CH_3)CH(CH_3)CH_2CH_2]$						
cis-$CH_3CH(.)CH(CH_3)CH_2CH_2$· $\rightarrow$ cis-cy-$[CH(CH_3)CH(CH_3)CH_2CH_2]$						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	k factors F
cis-1,4 BUTANEDIYL, 1,2-DIMETHYL-						
77 SCA/BAC REACTION ORDER: 1 k/k_{ref}: 0.87	663-703	-	-	-	0.9	1.1
NOTE: k_{ref}: cis-$CH_3CH(.)CH(CH_3)CH_2CH_2$. → cis-$CH_3CH{=}CHCH_3$ + $CH_2{=}CH_2$						
---						
cis-$CH_3CH(.)CH(CH_3)CH_2CH_2$. → cis-cy-[$CH(CH_3)CH(CH_3)CH_2CH_2$]						
cis-1,4-BUTANEDIYL, 1,2-DIMETHYL-						
77 SCA/BAC REACTION ORDER: 1 k/k_{ref}: 0.29	663-703	-	-	-	0.9	1.1
NOTE: k_{ref}: cis-$CH_3CH(.)CH(CH_3)CH_2CH_2$. → products						
---						
trans-$CH_3CH(.)CH(CH_3)CH_2CH_2$. → trans-$CH_3CH{=}CHCH_3$ + $CH_2{=}CH_2$						
trans-1,4-BUTANEDIYL, 1,2-DIMETHYL-						
77 SCA/BAC REACTION ORDER: 1 k/k_{ref}: 1.61	663-703	-	-	-	0.9	1.1
NOTE: k_{ref}: cis-$CH_3CH(.)CH(CH_3)CH_2CH_2$ → cis-$CH_3CH{=}CHCH_3$ + $CH_2{=}CH_2$						
---						
trans-$CH_3CH(.)CH(CH_3)CH_2CH_2$. → cis-$CH_3CH(.)CH(CH_3CH_2CH_2$.						
trans-1,4-BUTANEDIYL, 1,2-DIMETHYL-						
77 SCA/BAC REACTION ORDER: 1 k/k_{ref}: 0.7	663-703	-	-	-	0.9	1.1
NOTE: k_{ref}: trans-$CH_3CH(.)CH(CH_3)CH_2CH_2$. → trans-cy-[$CH(CH_3)CH(CH_3)CH_2CH_2$]						
---						
trans-$CH_3CH(.)CH(CH_3)CH_2CH_2$. → trans-cy-[$CH(CH_3)CH(CH_3)CH_2CH_2$]						
trans-1,4-BUTANEDIYL, 1,2-DIMETHYL-						
77 SCA/BAC REACTION ORDER: 1 k/k_{ref}: 0.72	663-703	-	-	-	0.9	1.1
NOTE: k_{ref}: trans-$CH_3CH(.)CH(CH_3)CH_2CH_2$. → trans-$CH_3CH{=}CHCH_3$ + $CH_2{=}CH_2$						
k/k_{ref}: 0.32	663-703	-	-	-	0.9	1.1
NOTE: k_{ref}: trans-$CH_3CH(.)CH(CH_3)CH_2CH_2$. → products						
---						
trans-cy-[$CH(CH_3)CH(CH_3)CH_2CH_2$] → trans-$CH_3CH(.)CH(CH_3)CH_2CH_2$.						
trans-CYCLOBUTANE, 1,2-DIMETHYL-						
77 SCA/BAC REACTION ORDER: 1 k/k_{ref}: 0.58	663-703	-	-	-	0.9	1.1
NOTE: k_{ref}: cis-cy-[$CH(CH_3)CH(CH_3)CH_2CH_2$] → cis-$CH_3CH(.)CH(CH_3)CH_2CH_2$.						

$CH_3CH(.)CH_2CH_2CH_2CH_3$* → $CH_3CH{=}CH_2$ + $CH_3CH_2CH_2$.						
PENTYL, 1-METHYL-, FREE RADICAL						
75 TAR REACTION ORDER: 1 k/k_{ref}: 0.49	298	-	-	-		
NOTE: k_{ref}: $(CH_3)_2C(.)CH_2CH_3$* → $(CH_3)_2C{=}CH_2$ + CH_3.						

$CH_3(CH_2)_4CH_3$ → products						
HEXANE						
73 ILL/WEL REACTION ORDER: 1	870-1025	2.3(+12)	0	26520	0.9	1.1

$CH_3(CH_2)_4CH_3$ + OH → [$.C_6H_{13}$] + H_2O						
HEXANE + HYDROXYL FREE RADICAL						
76 CAM/MCL REACTION ORDER: 2	292	3.3(+12)	-	-	0.9	1.1

$CH_3(CH_2)_4CH_3$ + M → products						
HEXANE						
76 RYB/YAM REACTION ORDER: 1 M: Ar	973-1083	3.6(+10)	0	23150		
76 RYB/YAM M: D_2	973-1083	1.6(+10)	0	22145		

$CH_3(CH_2)_4CH_3$ + OH → products						
HEXANE + HYDROXYL FREE RADICAL						
76 LIO/DAR REACTION ORDER: 2	305	3.8(+12)	-	-	0.8	1.2
NOTE: EVALUATION						

$CH_3(CH_2)_4CH_3$ + CH_3. → [C_6H_{13}.] + CH_4						
HEXANE + METHYL FREE RADICAL						
76 YAM REACTION ORDER: 2	973-1088	4.2(+12)	0	5640		

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
$CH_3(CH_2)_4CH_3 + CH_3CH_2\cdot \rightarrow [C_6H_{13}\cdot] + CH_3CH_3$ HEXANE + ETHYL FREE RADICAL 76 YAM REACTION ORDER: 2	973-1088	1.8(+13)	0	8050		
$(CH_3)_2CHCH_2CH_2CH_3 \rightarrow$ products PENTANE, 2-METHYL- 73 ILL/WEL REACTION ORDER: 1	853-1053	1.0(+14)	0	29910	0.9	1.1
$(CH_3)_2CHCH_2CH_2CH_3 + OH \rightarrow$ products PENTANE, 2-METHYL-, + HYDROXYL FREE RADICAL 76 ILG/DAR2 REACTION ORDER: 2 NOTE: EVALUATION	305	3.2(+12)	-	-	0.8	1.2
$CH_3CH_2CH(CH_3)CH_2CH_3 + OH \rightarrow$ products PENTANE, 3-METHYL-, + HYDROXYL FREE RADICAL 76 ILG/DAR2 REACTION ORDER: 2 NOTE: EVALUATION	305	4.3(+12)	-	-	0.8	1.2
$(CH_3)_3CCH_2CH_3 \rightarrow$ products BUTANE, 2,2-DIMETHYL- 73 ILL/WEL REACTION ORDER: 1	898-1053	4.6(+13)	0	30190		
$CH_3(CH_2)_4CH_3 + OH \rightarrow [.C_6H_{13}] + H_2O$ HEXANE + HYDROXYL FREE RADICAL 76 CAM/MCL REACTION ORDER: 2	292	3.3(12)	-	-	0.9	1.1
$(CH_3)_2CHCH(CH_3)_2 \rightarrow (CH_3)_2CH\cdot + (CH_3)_2CH\cdot$ BUTANE, 2,3-DIMETHYL 74 GEL/ALF REACTION ORDER: 1 NOTE: BEST FIT OF EXPERIMENTAL DATA TO log A=16.4 FOR EACH C-C FISSION.	990-1250	2.5(+16)	0	37540		
$(CH_3)_2CHCH(CH_3)_2 + OH \rightarrow$ products BUTANE, 2,3-DIMETHYL-, + HYDROXYL FREE RADICAL 76 DAR/WIN REACTION ORDER: 2 k/k_{ref}: 0.1 NOTE: k_{ref}: $(CH_3)_2C{=}CH_2 + OH \rightarrow$ products	305	-	-	-		
$(CH_3)_2CHCH(CH_3)_2 + HO_2 \rightarrow (CH_3)_2CHC(.)(CH_3)_2 + H_2O_2$ BUTANE, 2,3-DIMETHYL-, + HYDROPEROXYL FREE RADICAL 75 ALC/MIL REACTION ORDER: 2 NOTE: OPTIMIZATION	373	2.5(+5)	-	-		
$(CH_3)_2CHCH(CH_3)_2 + CH_3O\cdot \rightarrow (CH_3)_2CHC(.)(CH_3)_2 + CH_3OH$ BUTANE, 2,3-DIMETHYL-, + METHOXY FREE RADICAL 75 ALC/MIL REACTION ORDER: 2 NOTE: OPTIMIZATION	373	4.0(+8)	-	-		
$(CH_3)_2CHCH(CH_3)_2 + CH_3O_2\cdot \rightarrow (CH_3)_2CHC(.)(CH_3)_2 + CH_3OOH$ BUTANE, 2,3-DIMETHYL-, + METHYLDIOXY FREE RADICAL 75 ALC/MIL REACTION ORDER: 2 NOTE: OPTIMIZATION	373	1.6(+5)	-	-		
$(CH_3)_2CHCH(CH_3)_2 + (CH_3)_2CHC(O.)(CH_3)_2 \rightarrow (CH_3)_2CHC(.)(CH_3)_2 + (CH_3)_2CHC(OH)(CH_3)_2$ BUTANE, 2,3-DIMETHYL-, + PROPOXY, 1,1,2-TRIMETHYL-, FREE RADICAL 75 ALC/MIL REACTION ORDER: 2 NOTE: OPTIMIZATION	376	4.0(+8)	-	-		
$(CH_3)_2CHCH(CH_3)_2 + (CH_3)_2CH(O_2.)(CH_3)_2 \rightarrow (CH_3)_2CHC(.)(CH_3)_2 + (CH_3)_2CHC(OOH)(CH_3)_2$ BUTANE, 2,3-DIMETHYL-, + PROPYLDIOXY, 1,1,2-TIMETHYL-, FREE RADICAL 75 ALC/MIL REACTION ORDER: 2 NOTE: OPTIMIZATION	373	1.6(+5)	-	-		
$(CH_3)_3CCH_2CH_3^{*} \rightarrow CH_3 + CH_3CH_2\cdot + (CH_3)C\cdot + (CH_3)_2C(.)CH_2CH_3\cdot + (CH_3)_3CCH_2\cdot$ BUTANE, 2,2-DIMETHYL-						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
72 HAS/JOH — REACTION ORDER: 1	298	4.6(+5)	-	-	0.8	1.2
NOTE: 0.017 TORR	298	8.7(+5)	-	-	0.9	1.1
NOTE: 0.033 TORR						
$CH{\equiv}CC(CH_3)_2COOH \rightarrow CH_2{=}C{=}C(CH_3)_2 + CO_2$						
3-BUTYNOIC ACID, 2,2-DIMETHYL-						
76 BIG/WEA — REACTION ORDER: 1	500-630	2.3(+11)	0	18395±760	0.4	2.6
NOTE: EDITOR'S EVALUATION BASED ON GIVEN $\Delta H^{\ddagger}$ AND $\Delta S^{\ddagger}$						
$CH_3COCH_2CH_2COCH_3 + CH_3 \rightarrow .CH_2COCH_2CH_2COCH_3 + CH_3C{\equiv}C(.)CH_2COCH_3 + CH_4$						
2,5-HEXANEDIONE + METHYL FREE RADICAL						
75 KNG/SCH — REACTION ORDER: 2	515-712	-	-	-		
NOTE: k_{ref}: $CH_3COCH_2CH_2COCH_3 + CH_3. \rightarrow .CH_2CH_2COCH_3 + CH_3COCH_3$. k/k_{ref}: exp(+1630±10/T)						
$CH_3COCH_2CH(CH_3)_2 + OH \rightarrow$ products						
2-PENTANONE, 4-METHYL-, + HYDROXYL FREE RADICAL						
76 WIN/LLO — REACTION ORDER: 2	305	9.0(+12)	-	-	0.7	1.3
NOTE: EVALUATION						
$(CH_3)_2CHCH_2OCH{=}CH_2 \rightarrow (CH_3)_2C{=}CH_2 + CH_3O$						
PROPANE, 1-(ETHENYLOXY)-2-METHYL-						
74 LAM — REACTION ORDER: 1	653-708	1.3(+11)	0	21400±200	0.7	1.3
$CH_3COOCH_2CH_2CH_2CH_3 \rightarrow CH_3COOH + CH_3CH_2CH{=}CH_2$						
ACETIC ACID BUTYL ESTER						
76 DIB/TAY — REACTION ORDER: 1	650-700	4.0(+12)	0	24210		
$CH_3COOCH(CH_3)CH_2CH_3 + OH \rightarrow$ products						
ACETIC ACID 1-METHYLPROPYL ESTER + HYDROXYL FREE RADICAL						
77 WIN/LLO — REACTION ORDER: 2	305	3.4(+12)	-	-	0.8	1.2
$CH_3COOC(CH_3)_3 \rightarrow CH_3COOH + (CH_3)_2C{=}CH_2$						
ACETIC ACID 1,1-DIMETHYLETHYL ESTER						
75 TAY — REACTION ORDER: 1	557-609	2.0(+13)	0	20280±175	0.8	1.3
$CH_3CH_2COOCH(CH_3)_2 \rightarrow CH_3CH_2COOH + CH_3CH{=}CH_2$						
PROPANOIC ACID 1-METHYLETHYL ESTER						
77 CHI/MAR — REACTION ORDER: 1	563-623	1.1(+13)	0	22850±100	0.8	1.2
77 SMI/MUT	651	6.1(-3)	-	-	0.9	1.1
$(CH_3)_3CCH_2COOH + CH_2{=}C{=}O \rightarrow (CH_3)_3CCH_2C(O)OC(O)CH_3$						
BUTANOIC ACID, 3,3-DIMETHYL-, + ETHENONE						
76 LIA/VAY — REACTION ORDER: 2	428	1.6(+3)	-	-		
$CH_3COOCH_2CH_2CH_2OCH_3 \rightarrow CH_3COOH + CH_2{=}CHCH_2OCH_3$						
1-PROPANAL, 3-METHOXY-, ACETATE						
76 DIB/TAY — REACTION ORDER: 1	650-700	4.5(+12)	0	24410		
$CH_3OCH_2COOCH(CH_3)_2 \rightarrow CH_3OCH_2COOH + CH_3CH{=}CH_2$						
ACETIC ACID, 2-METHOXY-, 1-METHYLETHYL ESTER						
77 SMI/MUT — REACTION ORDER: 2	651	6.9(-3)	-	-	0.9	1.1
$CH_3CH_2OC(O)OCH_2CH_2CH_3 \rightarrow CH_2{=}CH_2 + CH_3CH_2OH + CO_2 + CH_3CH{=}CH_2 + CH_3CH_2CH_2OH$						
CARBONIC ACID ETHYL PROPYL ESTER						
76 CHO/HUN — REACTION ORDER: 1	581-664	7.8(+11)	0	21845		
$(CH_3)_2CHC(.)(CH_3)_2 \rightarrow (CH_3)_2CH. + (CH_3)_2CO$						
PROPOXY, 1,1,2-TRIMETHYL-, FREE RADICAL						
75 ALC/MIL — REACTION ORDER: 2	373	4.7(+6)	-	-		
NOTE: OPTIMIZATION						
$(CH_3)_2CHC(.)(CH_3)_2 \rightarrow (CH_3)_2CHCOCH_3 + CH_3$						
PROPOXY, 1,1,2-TRIMETHYL-, FREE RADICAL						
75 ALC/MIL — REACTION ORDER: 2	373	1.5(+8)	-	-		
NOTE: OPTIMIZATION						

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
$(CH_3)_2CHC(e.)(CH_3)_2$ + O_2 → products PROPOXY, 1,1,2-TRIMETHYL-, FREE RADICAL + OXYGEN MOLECULE 75 ALC/MIL — REACTION ORDER: 2 NOTE: OPTIMIZATION	373	1.2(+9)	-	-		
$(CH_3)_2CHC(e.)(CH_3)_2$ + $(CH_3)_2CHCH(CH_3)_2$ → $(CH_3)_2CHC(OH)(CH_3)_2$ + $(CH_3)_2CHC(.)(CH_3)_2$ PROPOXY, 1,1,2-TRIMETHYL-, FREE RADICAL + BUTANE, 2,3-DIMETHYL- 75 ALC/MIL — REACTION ORDER: 2 NOTE: OPTIMIZATION	373	4.0(+8)	-	-		
$(CH_3)_2CHC(e_2.)(CH_3)_2$ + $(CH_3)_2CHCH(CH_3)_2$ → $(CH_3)_2CHC(OOH)(CH_3)_2$ + $(CH_3)_2CHC(.)(CH_3)_2$ PROPYLDIOXY, 1,1,2-TRIMETHYL-, FREE RADICAL + BUTANE, 2,3-DIMETHYL- 75 ALC/MIL — REACTION ORDER: 2 NOTE: OPTIMIZATION	373	1.6(+5)	-	-		
$(CH_3)_2CHC(e_2.)(CH_3)_2$ + $(CH_3)_2CHO_2.$ → products PROPYLDIOXY, 1,1,2-TRIMETHYL-, FREE RADICAL + ETHYLDIOXY, 1-METHYL-, FREE RADICAL 75 AIC/MIL — REACTION ORDER: 2 NOTE: OPTIMIZATION	373	6.2(+11)	-	-		
$(CH_3)_2CHC(e_2.)(CH_3)_2$ + $(CH_3)_2CHC(e_2.)(CH_3)_2$ → $(CH_3)_2CHC(O.)(CH_3)_2$ + $(CH_3)_2CHC(O.)(CH_3)_2$ + O_2 PROPYLDIOXY, 1,1,2-TRIMETHYL-, FREE RADICAL 75 AIC/MIL — REACTION ORDER: 2 NOTE: OPTIMIZATION	373	2.3(+11)	-	-		
$(CH_3)_2CHC(e_2.)(CH_3)_2$ + $(CH_3)_2CHC(O_2.)(CH_3)_2$ → FRAGMENTATION PRODUCTS PROPYLDIOXY, 1,1,2-TRIMETHYL-, FREE RADICAL 75 ALC/MIL — REACTION ORDER: 2 NOTE: OPTIMIZATION	373	2.4(+11)	-	-		
$CH_3CH_2CH_2OCH_2CH_2CH_3$ + OH → products PROPANE, 1,1'-OXYBIS-, + HYDROXYL FREE RADICAL 76 IIC/DAR — REACTION ORDER: 2	305	1.0(+13)	-	-	0.8	1.2
$(CH_3)_2CHC(CH_3)_2OH$ → $(CH_3)_2CH.$ + $.C(CH_3)_2OH$ 2-BUTANOL, 2,3-DIMETHYL- 76 TSAI — REACTION ORDER: 1	1080-1165	1.7(+16)	0	18820		
$(CH_3)_2CHC(CH_3)_2OH$ → $(CH_3)_2CHC(CH_3)=CH_2$ + H_2O 2-BUTANOL, 2,3-DIMETHYL- 76 TSAI — REACTION ORDER: 1	1080-1165	1.5(+14)	0	16255		
$(CH_3)_2CHC(CH_3)_2OH$ → $(CH_3)_2C=C(CH_3)_2$ + H_2O 2-BUTANOL, 2,3-DIMETHYL- 76 TSAI — REACTION ORDER: 1	1080-1165	4.6(+13)	0	16455		
$(CH_3)_3CCH(CH_3)OH$ → $(CH_3)_3C.$ + $CH_3CH(.)OH$ 2-BUTANOL, 3,3-DIMETHYL- 76 TSAI — REACTION ORDER: 1	990-1125	2.1(+16)	0	18875		
$(CH_3)_3CCH(CH_3)OH$ → $(CH_3)_3CCH=CH_2$ + H_2O 2-BUTANOL, 3,3-DIMETHYL- 76 TSAI — REACTION ORDER: 1	990-1125	1.0(+14)	0	17210		
$CH_2=CHCH_2NHCH_2CH=CH_2$ → $CH_3CH=CH_2$ + $CH_3-CHCH=NH$ 2-PROPEN-1-AMINE, N-(2-PROPENYL)- 74 EGG/VITI — REACTION ORDER: 1	533-616	1.1(+11)	0	18676±166	0.7	1.3
$(CH_3)_2C=CHN(CH_3)_2$ + $O_2^*(^1\Delta_g)$ → $CH_2=C(CH_3)CH(OOH)[N(CH_3)_2]$ 1-PROPEN-1-AMINE, N,N,2-TRIMETHYL-, + OXYGEN MOLECULE 7[illegible] CI/BER — REACTION ORDER: 2	298	1.5(+10)	-	-		

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
$CH_3CH_2CH_2CH_2CH_2N{=}NCH_3 + CH_3CH_2CH_2CH_2CH_2\cdot \rightarrow$ $\cdot CH_2CH_2CH_2CH_2CH_2N{=}NCH_3 + CH_3CH_2CH_2CH_2CH_3$						
DIAZENE, METHYLPENTYL-, + PENTYL FREE RADICAL						
71 WAT REACTION ORDER: 2	297-435	4.2(+11)	0	3925		
$(CH_3)_2CHN{=}NCH(CH_3)_2 \rightarrow$ products						
DIAZENE, BIS(1-METHYLETHYL)-						
73 PER/BEA REACTION ORDER: 1	625-830	4.0(+16)	0	24100±500		
$CH_2{=}C{=}CHCH(CH_3)C{\equiv}CH \rightarrow CH{\equiv}CCH_2CH{=}C{=}CHCH_3$						
1,2-HEXADIEN-5-YNE, 4-METHYL-						
72 BEP REACTION ORDER: 1	423-473	6.6(+10)	0	15500±150	0.7	1.3
$CH{\equiv}CCH_2CH(CH_3)CH_2CH_3 \rightarrow CH{\equiv}CCH_2\cdot + CH_3CH(\cdot)CH_2CH_3$						
1-HEXYNE, 4-METHYL-						
76 TSA2 REACTION ORDER: 1	980-1210	7.9(+15)	0	35030		
$CH{\equiv}CCH_2CH(CH_3)CH_2CH_3 \rightarrow CH_2{=}C{=}CH_2 + CH_2{=}CHCH_2CH_3$						
1-HEXYNE, 4-METHYL-						
76 TSA2 REACTION ORDER: 1	980-1210	5.0(+12)	0	27980		
$CH{\equiv}CCH_2CH_2CH(CH_3)_2 \rightarrow CH{\equiv}CCH_2\cdot + \cdot CH_2CH(CH_3)_2$						
1-HEXYNE, 5-METHYL-						
76 TSA2 REACTION ORDER: 1	980-1210	2.0(+16)	0	36940		
$CH{\equiv}CCH_2CH_2CH(CH_3)_2 \rightarrow CH_2{=}C{=}CH_2 + CH_2{=}C(CH_3)_2$						
1-HEXYNE, 5-METHYL-						
76 TSA2 REACTION ORDER: 1	980-1210	2.0(+12)	0	27380		
$syn\text{-}(CH_3)_3CCH{=}CHCH_2\cdot \rightarrow anti\text{-}(CH_3)_3CCH{=}CHCH_2\cdot$						
SYN-2-PENTENYL, 4,4-DIMETHYL-, FREE RADICAL						
76 SUS/BRA REACTION ORDER: 1	253-295	-	-	5185±450		
$CH_3CH_2CH_2CH_2CH_2CH{=}CH_2 \rightarrow$ products						
1-HEPTENE						
74 MAG/IOA REACTION ORDER: 1	823-923	3.5(+13)	0	28335		
$cis\text{-}CH_3CH_2CH_2CH_2CH{=}CHCH_3 \rightarrow trans\text{-}CH_3CH_2CH_2CH_2CH{=}CHCH_3$						
74 FAU/YAD REACTION ORDER: 1 k/k_{ref}: 1.0	1000-1150	-	-	-		
NOTE: k_{ref}: $cis\text{-}CH_3CH{=}CHCH_3 \rightarrow trans\text{-}CH_3CH{=}CHCH_3$						
$(CH_3)_2C{=}C(CH_3)CH_2CH_3 + O_2{}^*({}^1\Delta_g) \rightarrow CH_2{=}C(CH_3)C(CH_2CH_3)(CH_3)OOH$ $+ CH_2{=}C(CH_2CH_3)C(CH_2)OOH$						
2-PENTENE, 2,3-DIMETHYL-, + OXYGEN MOLECULE						
73 BUI/HER REACTION ORDER: 2	298	5.2(+8)	-	-		
$CH_3CH_2CH_2CH_2CH_2CH{=}CH_2 + OH \rightarrow$ products						
1-HEPTENE + HYDROXYL FREE RADICAL						
76 DAR/WIN REACTION ORDER: 2 k/k_{ref}: 0.73	305	-	-	-		
NOTE: k_{ref}: $(CH_3)_2C{=}CH_2 + OH \rightarrow$ products						
$(CH_3)_2CHCH_2C(\cdot)(CH_3)_2{}^* \rightarrow (CH_3)_2C{=}CH_2 + (CH_3)_2CH\cdot$						
BUTYL, 1,1,3-TRIMETHYL-, FREE RADICAL						
71 GLO/KAB REACTION ORDER: 1	298	2.1(+7)	-	-		
$(CH_3)_3CCH_2CH(\cdot)CH_3{}^* \rightarrow (CH_3)_3C\cdot + CH_3CH{=}CH_2$						
BUTYL, 1,3,3-TRIMETHYL-, FREE RADICAL						
71 GLO/KAB REACTION ORDER: 1	298	1.7(+8)	-	-		
$CH_3(CH_2)_5CH_3 \rightarrow$ products						
HEPTANE						
73 IIL/WEL REACTION ORDER: 1	873-1073	1.9(+12)	0	26445	0.9	1.1
75 TAN/KRA	763-813	1.6(+10)	0	24660		
$CH_3(CH_2)_5CH_3 + O_2 \rightarrow [C_7H_{15}\cdot] + HO_2$						
HEPTANE + OXYGEN MOLECULE						
75 SHA/DEN REACTION ORDER: 2	397-434	3.2(+17)	0	21800±2000		

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
$(CH_3)_2CHCH_2CH(CH_3)_2$ → products PENTANE, 2,4-DIMETHYL- 73 ILL/WEL REACTION ORDER: 1	873-1073	4.5(+14)	0	31230	0.9	1.1
$(CH_3)_3CCH(CH_3)_2$ + OH → products BUTANE, 2,2,3-TRIMETHYL-, + HYDROXYL FREE RADICAL 76 DAR/WIN REACTION ORDER: 2 k/k_{ref}: 0.074	305	-	-	-		
NOTE: k_{ref}: $(CH_3)_2C{=}CH_2$ + OH → products						
$CH_2{=}C{=}CHC(CH_3)_2COOH$ → $CH_2{=}CHCH{=}C(CH_3)_2$ + CO_2 3,4-PENTADIENOIC ACID, 2,2-DIMETHYL- 76 BIG/WEA2 REACTION ORDER: 1	500-695	1.7(+11)	0	19455±760	0.4	2.6
NOTE: EDITOR'S EVALUATION BASED ON GIVEN $\Delta H^{\ddagger}$ AND $\Delta S^{\ddagger}$.						
trans-$CH_3CH{=}CHCOOCH(CH_3)_2$ → trans-$CH_3CH{=}CHCOOH$ + $CH_3CH{=}CH_2$ trans-2-BUTENOIC ACID 1-METHYLETHYL ESTER 77 SMI/MUT REACTION ORDER: 1	651	7.1(-3)	-	-	0.9	1.1
$CH_3COOCH_2CH_2CH_2COCH_3$ → CH_3COOH + $CH_2{=}CHCH_2COCH_3$ 2-PENTANONE, 5-ACETYLOXY- 76 DIE/TAY REACTION ORDER: 1	650-700	6.3(+12)	0	23905		
$(CH_3)_2CHC{\equiv}CH(CH_3)_2$ → $(CH_3)_2CHCOOH$ + $CH_3CH{=}CH_2$ PROPANOIC ACID, 2-METHYL-, 1-METHYLETHYL ESTER 77 SMI/MUT REACTION ORDER: 1	651	6.8(-3)	-	-	0.9	1.1
$CH_3CH_2CH_2COOCH(CH_3)_2$ → $CH_3CH_2CH_2COOH$ + $CH_3CH{=}CH_2$ BUTANOIC ACID 1-METHYLETHYL ESTER 77 SMI/MUT REACTION ORDER: 1	651	5.9(-3)	-	-	0.9	1.1
$CH_3CH_2CH_2COOCH_2CH_2CH_3$ → $CH_3CH_2CH_2OH$ + CO_2 + $CH_3CH{=}CH_2$ CARBONIC ACID DIPROPYL ESTER 72 BIG/WRE1 REACTION ORDER: 1	663-708	4.0(+13)	0	23755		
NOTE: k DETERMINED BY FLOW TUBE METHOD. 76 CHO/HUN	583-667	9.3(+11)	0	21890		
$(CH_3)_2CHOCOOCH(CH_3)_2$ → $(CH_3)_2CHOH$ + CO_2 + $CH_3CH{=}CH_2$ CARBONIC ACID BIS(1-METHYL ETHYL) ESTER 72 BIG/WRE2 REACTION ORDER: 1	593-648	2.2(+14)	0	22800		
NOTE: k DETERMINED BY FLOW-TUBE METHOD						
$(CD_3)_2CHOCOOCH(CD_3)_2$ → $(CD_3)_2CHOH$ + CO_2 + $CD_3CH{=}CD_2$ CARBONIC ACID BIS(1-METHYL-d_3-ETHYL-2,2,2-d_3) ESTER 72 BIG/WRE2 REACTION ORDER: 1	593-648	2.4(+14)	0	23400		
NOTE: k DETERMINED BY FLOW-TUBE METHOD						
$CH_3OCOOC(CH_3)_2CH_2CH_3$ → CH_3OH + CO_2 + $CH_2{=}C(CH_3)CH_2CH_3$ + $(CH_3)_2C{=}CHCH_3$ CARBONIC ACID 1,1-DIMETHYL PROPYL METHYL ESTER 72 BIG/WRE3 REACTION ORDER: 1	593-648	4.0(+12)	0	17465		
NOTE: k DETERMINED BY FLOW TUBE METHOD. T RANGE ASSUMED, T RANGE ASSUMED. (OMITTED IN TEXT).						
cy-(CH=CHCH$_2$CH$_2$CH=CHCH$_2$CH$_2$), (Z,Z) → $CH_2{=}CHCH{=}CH_2$ + $CH_2{=}CHCH{=}CH_2$ 1,5-CYCLOOCTADIENE, (Z,Z)- 77 HUY/LUY REACTION ORDER: 1	464-557	2.9(+16)	0	28375±50	0.9	1.1
NOTE: (Z,Z) IS THE SYSTEMATIC NOTATION FOR cis, cis CONFORMATION OF 1,5-CYCLOOCTADIENE						
cy-(CH=CHCH$_2$CH$_2$CH=CHCH$_2$CH$_2$), (Z,Z) → cy-[CH=CHCH$_2$CH(CH=CH$_2$)CH$_2$CH$_2$] 1,5-CYCLOOCTADIENE, (Z,Z)- 77 HUY/LUY REACTION ORDER: 1	464-557	2.2(+15)	0	26060±60	0.9	1.1
NOTE: SEE PRECEDING NOTE.						
$CH_3C{\equiv}CCH_2CH_2CH(CH_3)_2$ → $CH_3C{\equiv}CCH_2\cdot$ + $\cdot CH_2CH(CH_3)_2$ 2-HEPTYNE, 6-METHYL- 77 SA2 REACTION ORDER: 1	980-1210	1.3(+16)	0	36390		

CHEMICAL REACTIONS	T/K	A	B	E/R (in °K)	k factors f	k factors F
$CH_3C{\equiv}CCH_2CH_2CH(CH_3)_2 \rightarrow CH_3CH{=}C{=}CH_2 + CH_2{=}C(CH_3)_2$ 2-METHYL, 6-METHYL- 76 TSA2 — REACTION ORDER: 1	980-1210	3.2(+12)	0	29590		
$CH_3CH_2CH(CH_3)CH_2C(CH_3){=}CH_2 \rightarrow CH_3CH_2CH{=}CH_2 + (CH_3)_2C{=}CH_2$ 1-HEXENE, 2,4-DIMETHYL- 73 TSA — REACTION ORDER: 1	1050	3.2(+12)	0	26900		
$CH_3CH_2CH(CH_3)CH_2C(CH_3){=}CH_2 \rightarrow CH_3CH_2CH(.)CH_3 + .CH_2C(CH_3){=}CH_2$ 1-HEXENE, 2,4-DIMETHYL- 73 TSA — REACTION ORDER: 1	1050	4.0(+15)	0	33200		
$(CH_3)_2C{=}C(CH_3)CH_2CH_2CH_3 + O_2^* \rightarrow$ $CH_2{=}C(CH_3)C(CH_2CH_2CH_3)(CH_3)OOH + CH_2{=}C(CH_2CH_2CH_3)C(CH_3)_2OOH$ 2-HEXENE, 2,3-DIMETHYL-, + OXYGEN MOLECULE 73 HUI/HER — REACTION ORDER: 2	298	5.0(+8)	-	-		
$CH_3(CH_2)_6CH_3 \rightarrow$ products OCTANE 73 ILL/WEL — REACTION ORDER: 1	873-1073	1.0(+12)	0	26335	0.9	1.1
$(CH_3)_2CH(CH_2)_4CH_3 \rightarrow$ products HEPTANE, 2-METHYL- 73 ILL/WEL — REACTION ORDER: 1	873-1046	1.5(+13)	0	28145	0.9	1.1
$CH_3CH_2CH(CH_3)CH(CH_3)CH_2CH_3 \rightarrow CH_3CH_2CH(.)CH_3 + CH_3CH_2CH(.)CH_3$ HEXANE, 3,4-DIMETHYL- 72 TSA — REACTION ORDER: 1	1051-1180	2.2(+16)	0	37900		
$(CH_3)_3CCH(CH_3)CH_2CH_3 \rightarrow (CH_3)_3C. + CH_3CH_2CH(.)CH_3$ PENTANE, 2,2,3-TRIMETHYL- 72 TSA — REACTION ORDER: 2	1040-1180	2.0(+16)	0	36400		
$(CH_3)_3CCH_2CH(CH_3)_2 + O^*(1D) \rightarrow$ products PENTANE, 2,2,4-TRIMETHYL + OXYGEN ATOM 74 NIC/PAR — REACTION ORDER: 2 k/k_{ref}: 1.26	300	-	-	-	0.9	1.1
NOTE: k_{ref}: $(CH_3)_4C + O^*(1D) \rightarrow$ products						
$(CH_3)_3CCH_2CH(CH_3)_2 + O_2 \rightarrow (CH_3)_3CCH_2C(.)(CH_3)_2$ $+ (CH_3)_2CCH(.)CH(CH_3)_2 + HO_2$ PENTANE, 2,2,4-TRIMETHYL-, + OXYGEN MOLECULE 73 BIG/DEN — REACTION ORDER: 2	400-465	1.0(+15)	0	19120		
$(CH_3)_3CC(CH_3)_3 \rightarrow (CH_3)_3C. + (CH_3)_3C.$ BUTANE, 2,2,3,3-TETRAMETHYL- 74 GOL/AIF — REACTION ORDER: 1 NOTE: BEST FIT OF EXPERIMENTAL DATA TO log A = 16.4 FOR EACH C-C FISSION	850-1150	2.5(+16)	0	34220		
$CH_2{=}CHCH{=}CIC(CH_3)_2COOH \rightarrow CH_2{=}CHCH_2CH{=}C(CH_3)_2 + CO_2$ 3,5-HEXADIENOIC ACID, 2,2-DIMETHYL- 76 BIG/WEA2 — REACTION ORDER: 1 NOTE: EDITOR'S EVALUATION BASED ON GIVEN $\Delta H^{\ddagger}$ AND $\Delta S^{\ddagger}$	500-723	1.4(+13)	0	23390±760	0.4	2.6
$CH_2{=}CHCH{=}CIC(CH_3)_2COOD \rightarrow CH_2{=}CHCHDCH{=}C(CH_3)_2 + CO_2$ 3,5-HEXADIENOIC ACID-d, 2,2-DIMETHYL- 76 BIG/WEA2 — REACTION ORDER: 1	692	1.3(-2)	-	-		
$CH_3CH_2CH_2CH_2COOCH(CH_3)_2 \rightarrow CH_3CH_2CH_2CH_2COOH + CH_3CH{=}CH_2$ PENTANOIC ACID 1-METHYLETHYL ESTER 77 SMI/MUT — REACTION ORDER: 1	651	6.0(-3)	-	-	0.9	1.1
$(CH_3)_3CCOOCH(CH_3)_2 \rightarrow (CH_3)_3CCOOH + CH_3CH{=}CH_2$ PROPANOIC ACID, 2,2-DIMETHYL-, 1-METHYL ETHYL ESTER 77 SMI/MUT — REACTION ORDER: 1	651	7.7(-3)	-	-	0.9	1.1
$CH_3OCO(CH_2)_5CH_3 \rightarrow CH_3OH + CO_2 + CH_2{=}CHCH_2CH_2CH_2CH_3$						

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
CARBONIC ACID HEXYL METHYL ESTER 72 BIG/WRE3 REACTION ORDER: 1 NOTE: k DETERMINED BY FLOW TUBE METHOD. T RANGE ASSUMED. (OMITTED IN TEXT)	593-648	7.9(+12)	0	22950		
$CH_3OCOOCH(CH_3)CH_2CH_2CH_2CH_3 \rightarrow CH_3CH + CO_2 + CH_2=CHCH_2CH_2CH_2CH_3$ + cis-, and trans-$CH_3CH=CHCH_2CH_2CH_3$ CARBONIC ACID METHYL 1-METHYLPENTYL ESTER 72 BIG/WRE3 REACTION ORDER: 1 NOTE: k DETERMINED BY FLOW-TUBE METHOD. T RANGE ASSUMED. (OMITTED IN TEXT)	598-648	1.9(+13)	0	21340		
$(CH_3)_3COOC(CH_3)_3 \rightarrow (CH_3)_3CO. + (CH_3)_3CO.$ PEROXIDE, BIS(1,1-DIMETHYLETHYL)- 71 CAD/TRO REACTION ORDER: 1	373-423	7.9(+14)	0	17920±890	0.1	9.3
$(CH_3)_3COOC(CH_3)_3 \rightarrow (CH_3)_2CO + (CH_3)_2CO + CH_3 + CH_3$ PEROXIDE, BIS(1,1-DIMETHYLETHYL)- 73 PER/GEL REACTION ORDER: 1	500-660	4.0(+15)	0	18820±500.		
$(CH_3)_3CN=NC(CH_3)_3 \rightarrow$ products DIAZENE, BIS(1,1-DIMETHYLETHYL)- 73 PER/DEA REACTION ORDER: 1	500-730	2.5(+16)	0	21540±500		
$(CH_3)_2CHCH_2COCH_2CH(CH_3)_2 + OH \rightarrow$ products 4-HEPTANONE, 2,6-DIMETHYL-, + HYDROXYL FREE RADICAL 76 WIN/LIO REACTION ORDER: 2 NOTE: EVALUATION	305	1.5(+13)	-	-	0.7	1.3
$CH_3(CH_2)_4COOCH(CH_3)_2 \rightarrow CH_3(CH_2)_4COOH + CH_3CH=CH_2$ HEXANOIC ACID 1-METHYL ETHYLESTER 77 SMI/MUT REACTION ORDER: 1	651	6.0(-3)	-	-	0.9	1.1
$(CH_3)_3CCH_2COOCH(CH_3)_2 \rightarrow (CH_3)_3CCH_2COOH + CH_3CH=CH_2$ BUTANOIC ACID, 3,3-DIMETHYL-, 1-METHYLETHYL ESTER 77 SMI/MUT REACTION ORDER: 1	651	6.0(-3)	-	-	0.9	1.1
$(CH_3CH_2)_2CHCOOCH(CH_3)_2 \rightarrow (CH_3CH_2)_2CHCOOH + CH_3CH=CH_2$ BUTANOIC ACID, 2-ETHYL-, 1-METHYLETHYL ESTER 77 SMI/MUT REACTION ORDER: 1	651	7.0(-3)	-	-	0.9	1.1
$CH_3CH_2CH_2CH(CH_3)COOCH(CH_3)_2 \rightarrow CH_3CH_2CH_2CH(CH_3)COOH$ + $CH_3CH=CH_2$ PENTANOIC ACID, 2-METHYL-, 1-METHYLETHYL ESTER 77 SMI/MUT REACTION ORDER: 1	651	6.9(-3)	-	-	0.9	1.1
$CH_3COOC[CH(CH_3)_2](CH_3)CH_2CH_3 \rightarrow CH_3COOH + (CH_3)_2C=C(CH_3)CH_2CH_3$ + cis-$CH_3CH=C[CH(CH_3)_2]CH_3$ + trans-$CH_3CH=C[CH(CH_3)_2]CH_3$ + $CH_2=C[CH(CH_3)_1]CH_2CH_3$ 3-PENTANOL, 2,3-DIMETHYL-, ACETATE 77 CUE/CHU REACTION ORDER: 1	485-533	1.7(+14)	0	20430±250	0.6	1.7
$CH_3CH_2CH_2CH_2OCOOCH_2CH_2CH_2CH_3 \rightarrow CH_3CH_2CH_2CH_2OH + CO_2$ + $CH_2=CHCH_2CH_3$ CARBONIC ACID DIBUTYL ESTER 72 BIG/WRE1 REACTION ORDER: 1	552-588	1.32(+12)	0	21890		
NOTE: k DETERMINED BY SEALED-TUBE METHOD	663-708	1.6(+13)	0	22900		
NOTE: k DETERMINED BY FLOW TUBE METHOD						
$(CH_3)_2CHCH_2COOCH_2CH(CH_3)_2 \rightarrow (CH_3)_2CHCH_2OH + CO_2 + (CH_3)_2C=CH_2$ CARBONIC ACID BIS(2-METHYLPROPYL) ESTER 72 BIG/WRE1 REACTION ORDER: 1 NOTE: k DETERMINED BY FLOW-TUBE METHOD	663-708	5.5(+13)	0	24560		
$CH_3CH_2CH(CH_3)OCOOCH(CH_3)CH_2CH_3 \rightarrow CH_3CH_2CHOHCH_3 + CO_2$ + $CH_2=CHCH_2CH_3$ + cis-, and trans-$CH_3CH=CHCH_3$ CARBONIC ACID BIS(1-METHYLPROPYL) ESTER 72 BIG/WRE2 REACTION ORDER: 1 NOTE: k DETERMINED BY FLOW-TUBE METHOD	593-648	1.5(+13)	0	20935		

CHEMICAL REACTIONS	T/K	A	B	E/R (in ^{o}K)	k factors f	F
NOTE: k DETERMINED BY SEALED-TUBE METHOD	489-540	9.1(+12)	0	20535		
$(CH_3)_3COCOOC(CH_3)_3 \rightarrow (CH_3)_3COH + CO_2 + (CH_3)_2C{=}CH_2$ CARBONIC ACID BIS(1,1-DIMETHYLETHYL) ESTER 72 BIG/WRE3 REACTION ORDER: 1	453-498	2.4(+13)	0	19125		
NOTE: k DETERMINED BY SEALED-TUBE METHOD	593-648	1.3(+12)	0	17110		
NOTE: k DETERMINED BY FLOW-TUBE METHOD. T RANGE ASSUMED. (OMITTED IN TEXT)						
$CH_3(CH_2)_3CH_3 \rightarrow$ products DECANE 71 GUN/LEW REACTION ORDER: 1	713-793	2.0(+3)	0	13340		
$CH_3CH_2OCH{=}C(CH_2CH_3)CH_2CH_2CH_2CH_3 + O_2{}^{*}(^{1}\Delta_g) \rightarrow$ $CH_3CH{=}C(CH_2CH_2CH_2CH_3)CH(OCH_2CH_3)OOH$ $+ CH_3CH_2CH_2CH{=}C(CH_2CH_3)CH(OCH_2CH_3)OOH$ 1-HEXENE, 1-ETHOXY-2-ETHYL-, + OXYGEN MOLECULE 73 BUI/BER REACTION ORDER: 2 NOTE: GIVEN WITH CAUTION	298	4.0(+8)	-	-		
$CH_3CH_2C(CH_3)_2OOC(CH_3)_2CH_2CH_3 \rightarrow$ products PEROXIDE, BIS(1,1-DIMETHYLPROPYL)- 73 FER/GOL REACTION ORDER: 1	500-650	6.3(+15)	0	18320±500		
$(CH_3CH_2CH_2)_2CHCOOCH(CH_3)_2 \rightarrow (CH_3CH_2CH_2)_2CHCOOH + CH_3CH{=}CH_2$ PENTANOIC ACID, 2-PROPYL-, 1-METHYLETHYL ESTER 77 SMI/MUT REACTION ORDER: 1	651	6.9(-3)	-	-	0.9	1.1
$CH_3CH_2C(CH_3)_2OCOOC(CH_3)_2CH_2CH_3 \rightarrow CH_3CH_2C(CH_3)_2OH + CO_2$ $+ CH_2{=}C(CH_3)CH_2CH_3 + (CH_3)_2C{=}CHCH_3$ CARBONIC ACID BIS(1,1-DIMETHYLPROPYL) ESTER 72 BIG/WRE3 REACTION ORDER: 1 NOTE: k DETERMINED BY FLOW-TUBE METHOD. T RANGE ASSUMED. (OMITTED IN TEXT)	593-648	1.0(+13)	0	17965		
$CH_3(CH_2)_5OCO(CH_2)_5CH_3 \rightarrow CH_3(CH_2)_5OH + CO_2$ $+ CH_2{=}C(CH)CH_2CH_2CH_2CH_3$ CARBONIC ACID DIHEXYL ESTER 72 BIG/WRE1 REACTION ORDER: 1 NOTE: k DETERMINED BY SEALED-TUBE METHOD.	553-600	4.2(+12)	0	22495		
$CH_3(CH_2)_5OCOO(CH_2)_5CH_3 \rightarrow CH_3(CH_2)_5OH + CO_2$ $+ CH_2{=}C(CH)CH_2CH_2CH_2CH_3$ CARBONIC ACID DIHEXYL ESTER 72 BIG/WRE1 REACTION ORDER: 1 NOTE: k DETERMINED BY FLOW-TUBE METHOD	663-708	7.7(+12)	0	22195		
$CH_3CH_2CH_2CH_2CH(CH_3)OCOOCH(CH_3)CH_2CH_2CH_2CH_3 \rightarrow$ $CH_3CH_2CH_2CH_2CH(OH)CH_3 + CO_2 + CH_2{=}CHCH_2CH_2CH_2CH_3$ $+$ cis- and trans-$CH_3CH{=}CHCH_2CH_2CH_3$ CARBONIC ACID BIS(1-METHYLPENTYL) ESTER 72 BIG/WRE2 REACTION ORDER: 1 NOTE: k DETERMINED BY FLOW-TUBE METHOD	593-648	6.3(+12)	0	20280		

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APPENDIX: CONVERSION TABLES

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 298K; 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 Evaluated Kinetic Data for High Temperature Reactions, Volume 1: Homogeneous Gas Phase Reactions of the H_2-O_2 System, Butterworths, London, 1972.

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}	$1.447 \times 10^{-8} T^{-2}$
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 298K, 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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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)

A table of experimental rate constants for gas phase chemical reactions occurring in combustion is presented. Specifically, it gives in tabular form the values of the parameters for the modified Arrhenius equation $k = AT^B \exp(-E/RT)$. The table covers reactions occurring in the combustion, oxidation and decomposition of aliphatic saturated or unsaturated C_1 to C_{10} hydrocarbons, alcohols, aldehydes, ketones, thiols, ethers, peroxides, amines, amides and their free radicals, as well as the reactions of O, O_2, H, H_2, OH, H_2O, H_2O_2, N, N_2, NO, N_2O, NO_2, N_2O_4, N_2O_5, S, S_2, SH, SO, SO_2, SOH, NS, with each other. The table includes 220 monomolecular, 1092 bimolecular, and 108 termolecular reactions totalling 1420 distinct chemical reactions. There are 2608 distinct entries, distributed as follows: 308 for first order reactions, 1984 for second order reactions and 316 for third order reactions. The kinetic data were compiled from 843 experimental papers published between 1971 and 1977.

12. KEY WORDS (Six to twelve entries; alphabetical order; capitalize only proper names; and separate key words by semicolons)
Arrhenius parameters, chemical kinetics, combustion, decomposition, free radicals, gas phase, hydrocarbons, hydrogen, nitrogen, oxygen, rate of reaction, sulfur

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