A GLOSSARY OF TERMS APPLICABLE IN THE SCIENCE
OF FIRE PROTECTION

by

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U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
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IMPORTANT NOTICE

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ABSTRACT

A glossary is presented of terms used in
the application of the science of fire protection.

PREFACE

Since prehistoric times man has sought to protect
himself from the ravages of uncontrolled fire. In spite
of the great progress that has been made toward greater
security in this respect and the amount of attention this
subject has received, there remains a general lack of
uniformity and precision in the terminology of fire
protection science. It is the object here, to formulate
definitions of some of the terms applicable in this science.

In dealing with definitions it must be recognized that
there are different kinds of definitions for different
purposes. Descriptive definitions describe the present or
past use of words. Such definitions are statements of
fact, the truth of which can, in principle at least, be
ascertained by comparing the stated definitions with
observed usage. Prescriptive definitions, on the other hand
prescribe the meanings of words. These definitions are
not statements of fact, but are of the nature of invi-
tations, commands, or conventions to employ words in speci-
fied ways and, therefore, can neither be true nor false.

One of the fundamental tasks of science is the
development of clear and precise concepts and terminology.
A major part of this task is the formulation and acceptance
of prescriptive definitions. Although it may seem that a
definition is "all a matter of words", it is an inescapable
fact that the precise boundaries of the quantities to be
treated in a given science are set down in the definitions
of the names of those quantities. In the final analysis,
the meaning of every hypothesis, theory, and statement
of fact depends upon the definitions of the terms in which
it is expressed.
Although prescriptive definitions may be neither true nor false, they may be good or bad according to how useful they can be in simplifying and systematizing statements of fact and theoretical propositions. Definitions of this kind must be judged, first of all, on the basis of usefulness. To be useful, the various definitions employed in a given area of science must, of course, be consistent with one another. There are obvious advantages to be gained by choosing definitions consistent with those already accepted in allied fields of science. In fact, it may be well worth while to seek a formal correspondence between the system of quantities and terms to be used and some existing system. If a complete formal correspondence exists between the mathematical relationships among quantities in the two systems, the whole mathematical treatment of the prior system may be applied to the subsequent system. The analogy between the classical dynamics of a damped harmonic oscillator and the electrical theory of a series R-L-C circuit is one of the better known examples of this concept. The correspondence in this case has for many years been usefully employed in solving problems. This principle of analogy is the basic principle of operation of a large class of computing machines.

Although, in principle, prescriptive definitions may be established quite arbitrarily, capricious disregard for existing general usage could bring about more confusion than clarification. In most cases, the best interests of science are served by choosing terms in general use and giving them useful technical meanings differing from the usual meanings mainly in precision and objectivity. As a general rule, this is the intended approach here.

General usage continually evolves in various ways. So it is with technical usage; as concepts develop and the qualities of nature become better known, the meanings of terms must be refined. Thus, it is not with the thought of ending the matter of definitions that the following terms have been defined, but rather with the hope of establishing a reasonable point of departure.
arc, n.
a sustained luminous electrical discharge formed when
a break is made in an electric circuit which is
holding current.

burn, v.
intransitive: to undergo a persisting destructive
change in essential properties as a result of high
temperature or combustion

transitive: to cause something to burn in the sense
defined above

burnable, adj.
capable of being burned under the stated or implied
conditions

burning, n.
an instance of something being burned

burnt, adj.
having been burned

chain breaking, \( \cap \)
the process of terminating the sequence of reactions
involved in a chain reaction, usually by removing or
modifying the chain carriers, the agents produced
during the reaction and necessary for completion of
the reaction

chain reaction, \( \cap \)
a reaction in which one or more of the agents necessary
to the reaction is produced by the reaction so as to
permit like reactions

combustible, adj.
capable of undergoing combustion under the stated or
implied conditions

combustion, n.
a chemical process, usually of a complex nature, which
occurs mainly in the gas phase and which liberates
energy, at a high rate in part by heat or light; an
oxidation process is usually involved
explosive, n.
an explosive is a material which is capable of suddenly liberating the energy which it contains, causing a sudden increase in pressure or movement of matter in the surrounding medium.

fire, n.
burning regarded generally as a destructive agency

fire endurance, n.
the time period during which a structure resists fire according to a specified criterion and under specified conditions.

fireproof, adj.
capable of withstanding the effects of fire

Note: Since no known materials fulfill this defined and generally understood meaning, under all conditions, the use of this term is to be discouraged.

fire resistance, n.
the extent to which a material or structure resists the effects of fire

fire resistive, adj.
fire resistant, the preferable term

fire retardant, adj.
tending to retard the effects of fire to a lower degree than materials classified as fire resistant.

flame, n.
a body of gas or of matter in gaseous suspension undergoing combustion and usually emitting light as a consequence

flameproof, adj.
not being readily ignited by a flame nor able to propagate flame under the stated or implied conditions

flame propagation, γ.
the movement of the combustion zone with respect to the unburnt gaseous fuel
Note 1: The combustion zone may be fixed with respect to other objects such as a burner or flame-holder.

Note 2: The movement of the boundary of the flame zone with respect to the solid or liquid fuel is called "flame spread."

flame spread, \( \bigtriangleup \)
the movement of the boundary of the flame zone with respect to the solid or liquid fuel

flammable, adj.
capable of supporting vigorous combustion and of being easily ignited under normal conditions

Note: Because of the possibility of confusion of the meanings of the prefix "in-", the term "inflammable" is not to be used.

fuel, n.
1) matter which undergoes exothermic reaction in a fire, thereby contributing a destructive effect

2) matter consumed by combustion to produce heat of power

3) when a rocket propellant is composed of two separate materials (a bipropellant system), the two materials may be called the "fuel" and the "oxidant."

ignite, v.
to initiate combustion

ignition, n.
the initiation of combustion

noncombustible, adj.
not combustible

nonflammable, adj.
not flammable

resistance, n.
the opposition offered by a substance or body to being affected by or allowing the passage of a specific effective agency
retard, v., transitive
to delay or impede the action of a specific effective agency

spark, n.
1) electrical spark: a sudden electrical discharge of extremely short duration between two objects separated by air or some similar medium, resulting from a high potential gradient
2) fire spark: a small, isolated, glowing particle
3) mechanical spark: a small, isolated, glowing particle produced upon impact between hard objects.
THE NATIONAL BUREAU OF STANDARDS

The scope of activities of the National Bureau of Standards at its headquarters in Washington, D. C., and its major field laboratories in Boulder, Colorado, is suggested in the following listing of the divisions and sections engaged in technical work. In general, each section carries out specialized research, development, and engineering in the field indicated by its title. A brief description of the activities, and of the resultant reports and publications, appears on the inside front cover of this report.

WASHINGTON, D. C.


* Office of Basic Instrumentation

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