

Table of Chemical Hazards

by self-reaction or polymerization), or they can undergo violent eruptive or explosive reaction if contacted with water or other extinguishing agents or with certain other materials

The violence of reaction or decomposition of materials may be increased by heat or pressure, by mixture with certain other materials to form fuel-oxidizer combinations, or by contact with incompatible substances, sensitizing contaminants, or catalysts

Because of the wide variations of accidental combinations possible in fire emergencies, these extraneous hazard factors (except for the effect of water) cannot be applied in a general numerical scaling of hazards. Such extraneous factors must be considered individually in order to establish appropriate safety factors such as separation or segregation. Such individual consideration is particularly important where significant amounts of materials are to be stored or handled. Guidance for this consideration is provided in NFPA Standard No 49, *Hazardous Chemicals Data*.

The degree of hazard should indicate to fire fighting personnel that the area should be evacuated, that the fire may be fought from a protected location, that caution must be used in approaching the fire and applying extinguishing agents, or that the fire may be fought using normal procedures.

The relative reactivity of a material is defined as follows:

- Reactive materials are those which can enter into a chemical reaction with other stable or unstable materials. For purposes of this guide, the other material to be considered is water and only if its reaction releases energy. Reactions with common materials, other than water, may release energy violently. Such reactions must be considered in individual cases, but are beyond the scope of this identification system.

- Unstable materials are those which in the pure state or as commercially produced will vigorously polymerize, decompose or condense, or become self-reactive and undergo other violent chemical changes.

- Stable materials are those that normally have the capacity to resist changes in their chemical composition, despite exposure to

air, water, and heat as encountered in fire emergencies.

The degrees of hazard are ranked according to ease, rate and quantity of energy release as follows:

4 Materials which are readily capable of detonation or of explosive decomposition or explosive reaction at normal temperatures and pressures. This degree should include materials which are sensitive to mechanical or localized thermal shock at normal temperatures and pressures.

3 Materials which are capable of detonation or of explosive decomposition or explosive reaction but which require a strong initiating source or which must be heated under confinement before initiation. This degree should include materials which are sensitive to thermal or mechanical shock at elevated temperatures and pressures or which react explosively with water without requiring heat or confinement.

2 Materials which are normally unstable and readily undergo violent chemical change but do not detonate. This degree should include materials which can undergo chemical change with rapid release of energy at normal temperatures and pressures or which can undergo violent chemical change at elevated temperatures and pressures. It should also include those materials which may react violently with water or which may form potentially explosive mixtures with water.

1 Materials which are normally stable, but which can become unstable at elevated temperatures and pressures or which may react with water with some release of energy but not violently.

0 Materials which are normally stable, even under fire exposure conditions, and which are not reactive with water.

References

References to publications on chemical safety have been included in the Table as an aid to the safety professional who is seeking more information on safe handling of a particular chemical. A brief description of the format and content of each of these publi-