3.4.4 Oxidizers

Oxidizers are agents that initiate or promote combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases. Depending on the class of the chemical, an oxidizing material may increase the burning rate of combustibles with which it comes in contact and cause the spontaneous ignition of combustibles with which it comes in contact or undergo an explosive reaction when exposed to heat, shock or friction.

Oxidizers are generally corrosive.

Examples: Peroxides, Nitrates, Nitrites, Perchlorates, Chlorates, Chlorites, Hypochlorites, Dichromates etc

- Oxidizers form explosive combinations with flammable or combustible material. For this reason, they should be stored away from solvents, organic compounds, and combustible materials and in a cool, dry location.
- Never store them under the sink.
- Strong oxidizing agents like chromic acid should be stored in glass or some other inert container, preferably unbreakable. Corks and rubber stoppers should not be used.
- Perchloric acid is an oxidizing agent of particular concern. Whenever possible, substitute a less hazardous chemical for Perchloric acid.
- Do not allow Perchloric acid to come in contact with any strong dehydrating agents such as sulfuric acid. The dehydration of Perchloric acid is a severe fire and explosion hazard.

3.4.5 Water Reactive Materials

Water reactive materials are chemicals, which react violently with water to produce heat and flammable or toxic gas. They can be particularly hazardous to firefighting personnel responding to a fire in a lab, because water is the most commonly used fire extinguishing medium.

Examples:

Alkali metals like lithium, sodium, potassium, Alkali metal hydrides, Alkali metal amides, Metal alkyls such as lithium alkyls and aluminum alkyls, Grignard reagents, Magnesium, Silanes, Zinc, Aluminum, Anhydrous metal halides like AlCl3, TiCl4, ZrCl4, SnCl4, Halides of non-metals like POCL3, SOCl2, SO2 Cl2, Halides of non-metals like BCl3, BF3, PCl3, PCl5, Phosphorous pentoxide, Calcium Carbide, Organic acid halides and anhydrides of low molecular weight.

3.4.6 Pyrophoric Materials

Pyrophoric means a chemical that will ignite spontaneously in air at temperature of 130°F (54°C) or below.

Classes of Pyrophoric Chemicals:
Grignard reagents, RMgX
Metal alkyls and aryls, such as RLi, RNa, R 3 Al, R 2 Zn

Metal carbonyls, such as Ni(CO)4 , Fe(CO)5 , Co 2 (CO)8
Alkali metals such as Na, K
Metal powders, such as Al, Co, Fe, Mg, Mn, Pd, Pt, Ti, Sn, Zn, Zr
Metal Hydrides, such as NaH, LiAlH 4
Nonmetal hydrides, such as B 2 H 6 and other boranes, PH 3 , AsH 3
Nonmetal alkyls, such as R 3 B, R 3 P, R 3 As
Phosphorus (white)