



# City of Brooklyn Park

## FIRE DEPARTMENT

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## Hazardous Materials Inventory Statement Users Guide

**A separate inventory statement shall be provided for each building. An amended inventory statement shall be provided within 30 days of the storage of any hazardous materials or plastics that changes or adds a hazard class or which is sufficient in quantity to cause an increase in the quantity which exceeds 5 percent for any hazard class.**

The hazardous materials inventory statement shall list by hazard class categories. Each grouping shall provide the following information for each hazardous material listed for that group including a total quantity for each group of hazard class.

1. Hazard class. (*See attached Hazardous Materials Categories Listing*)
2. Common or trade name.
3. Chemical Abstract Service Number (CAS number) found in 29 Code of Federal Regulations (C.F.R.).
4. Whether the material is pure or a mixture, and whether the material is a solid, liquid or gas
5. Maximum aggregate quantity **stored** at any one time.
6. Maximum aggregate quantity **In-Use (Open to atmosphere)** at any one time.
7. Maximum aggregate quantity **In-Use (Closed to atmosphere)** at any one time.
8. Storage conditions related to the storage type, high-pile, encapsulated, non-encapsulated.

Attached is a listing of categories that all materials need to be organized to. Definitions of these categories are also attached for your use. At the end of this packet are blank forms for completing this project.

**For questions regarding Hazardous Materials Inventory Statement contact  
the Fire Department at 763-493-8020.**

# Hazardous Materials Categories Listing

The following list of categories shall be used  
when compiling a list of chemicals or plastics used  
(*showing average inventories at any given time*) in your facility.

**A total sum of each category shall also be provided.**

## **Flammable and Combustible Liquids:**

Class I-A  
Class I-B  
Class I-C  
Class II  
Class III-A  
Class III-B

Class I  
Class II  
Class III  
Class IV  
Class V  
Organic Peroxide, (Unclassified Detonatable)  
Oxidizer  
Class 4  
Class 3  
Class 2  
Class 1

## **Materials presenting a Health Hazard:**

Carcinogens  
Corrosives  
Highly Toxics  
Irritants  
Radioactives  
    Alpha Emitters  
    Beta Emitters  
    Gamma Emitters  
Sensitizers  
Other Health Hazards  
Toxics

Oxidizer - Gas (Gaseous or Liquified)  
Pyrophoric  
Unstable (Reactive)  
Class 4  
Class 3  
Class 2  
Class 1  
Water Reactive  
Class 3  
Class 2  
Class 1

## **Classifications of Plastics:**

Group A Plastics  
Group B Plastics  
Group C Plastics

## **Materials presenting a Physical Hazard:**

Combustible Fiber  
Cryogenic, (Flammable or Oxidizing)  
Explosives  
Flammable Solid  
Flammable Gas, (Gaseous or Liquified)  
Organic Peroxide

## Definitions of Hazardous Materials Categories

**CARCINOGEN** is a substance that causes the development of cancerous growth in living tissue.

Examples: asbestos, benzene, beryllium, carbon tetrachloride, chloroform, diazomethane, P-dioxane, ethylene dichloride, polychlorinated biphenyls (PCSs) and vinyl chloride.

**COMBUSTIBLE DUSTS:** are pulverized particles which, if mixed with air in the proper proportions, become explosive and may ignite by flame or a spark or other source of ignition.

**COMBUSTIBLE FIBERS** are readily ignitable and free-burning fibers, such as cotton, sisal, henequen, ixtle, jute, hemp, tow, cocoa fiber, oakum, baled waste, baled wastepaper, kapok, hay, straw, excelsior, Spanish moss or other like materials.

**COMBUSTIBLE LIQUID:**

**CLASS II LIQUIDS** are those having closed cup flash points at or above 1001F (37.81C) and below 1401F (601C).

**CLASS III-A LIQUIDS** are those having closed cup flash points at or above 1401F (601C) and below 2001F (93.31C).

**CLASS III-B LIQUIDS** are those having closed cup flash points at or above 2001F (93.31C)

**CORROSIVE** is a chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the site of contact. Examples:

**Acids** - chromic, formic, hydrochloric (muriatic greater than 15 percent), hydrofluoric, nitric (greater than 6 percent), perchloric and sulfuric (4 percent or more).

**Bases (alkalis)** -hydroxides-ammonium (greater than 10 percent), calcium, potassium (greater than 1 percent), sodium (greater than 1 percent), and certain carbonates-potassium.

**Other corrosives** - bromine, chlorine, fluorine, iodine and ammonia.

**Note:** Corrosives which are oxidizers, e.g., nitric acid, chlorine, fluorine; or are compressed gases, e.g., ammonia, chlorine, fluorine; or are water-reactive, e.g., concentrated sulfuric acid, sodium hydroxide, and physical hazards in addition to being health hazards.

**CRYOGENIC FLUID** is a fluid that has a normal boiling point below -1501F (-101.11C). Examples: Carbon monoxide, deuterium, ethylene, hydrogen, methane, fluorine, nitric oxide, oxygen.

**EXPLOSIVE MATERIALS** are explosives, blasting agents and detonators including, but not limited to , dynamite and other high explosives; slurries, emulsions and water gels; black powder and pellet powder; initiating explosives; detonators or blasting caps; safety fuses; squibs; detonating cord; igniter cord; igniters and fireworks, 1.3G (Class B special fireworks).

**FLAMMABLE GAS** is any material which is a gas at 681F (201C) or less at 14.7 psia (101.3 kPa) of pressure which is ignitable when in a mixture of 13 percent or less by volume with air, or has a flammable range with air at least 12 percent, regardless of the lower limit.

**FLAMMABLE LIQUEFIED GAS** is a liquefied compressed gas which under the charged pressure is

partially liquid at a temperature of 681F (201C) and which is flammable.

**FLAMMABLE LIQUID:**

**CLASS I-A LIQUIDS** include those having a flash point below 731F (22.81C) and having a boiling point below 1001F (37.81C).

**CLASS I-B LIQUIDS** include those having a flash point below 731F (22.81C) and having a boiling point at or above 1001F (37.81C).

**CLASS I-C LIQUIDS** include those having a flash point at or above 731F (22.81C) and having a boiling point below 1001F (37.81C).

**FLAMMABLE SOLID** is a solid substance, other than one which is defined as a blasting agent or explosive, that is liable to cause fire through friction or as a result of retained heat from manufacture, which has an ignition temperature below 2121F (1001C), or which burns so vigorously or persistently when ignited that it creates a serious hazard. Flammable solids include finely divided solid materials which when dispersed in air as a cloud could be ignited and cause an explosion.

**HIGHLY TOXIC MATERIAL** is a material which produces a lethal dose or lethal concentration which falls within any of the following categories:

1. A chemical that has a median lethal dose (LD<sub>50</sub>) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
2. A chemical that has a median lethal dose (LD<sub>50</sub>) of 200 milligrams or less per kilogram of body weight when administered continuous contact for 24 hours, or less if death occurs within 24 hours, with the bare skin of albino rabbits weighing between 2 and 3 kilograms each.
3. A chemical that has a median lethal dose (LD<sub>50</sub>) in air of 200 milligrams by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume or dust, when administered by continuous inhalation for one hour, or less if death occurs with one hour, to albino rats weighing between 200 and 300 grams each.

Mixtures of these materials with ordinary materials, such as water, might not warrant classification as highly toxic. While this system is basically simple in application, any hazard evaluation which is required for the precise categorization of this type of material shall be performed by experienced, technically competent persons. Examples:

**Gases** - arsine, chlorine trifluoride, cyanogen, diborane, fluorine, germane, hydrogen cyanide, nitric oxide, nitrogen dioxide, ozone, phosphine, hydrogen selenide and stibene.

**Liquids** - acrolein, acrylic acid, 2-chloroethanol (ethylene chlorohydrin), hydrazine, hydrocyanic acid, 2-methylaziridine (propylenimine), 2-methylactonitrile.(acetone cyanohydrin), methyl ester isocyanic acid (methyl isocyanate), nicotine, tetranitromethane, and tetraethylstannane (tetraethyltin).

**Solids** - (acetato) phenylmercury (phenyl mercuric acetate), 4-aminopyridine, arsenic pentoxide, arsenic trioxide, calcium cyanide, 20chloroacetophenone, aflatoxin B, decaborane (14), mercury (II) bromide (mercuric bromide), mercury (II) chloride (corrosive mercury chloride), pentachlorophenol, methyl parathion, phosphorus (white), and sodium azide.

**IRRITANT** is a chemical which is not corrosive, but which causes a reversible inflammatory effect on living

tissue by chemical action at the site of contact. A chemical is a skin irritant if, when tested on the intact skin of albino rabbits by the methods of 16 C.F.R. 1500.41 for four hours= exposure or by other appropriate techniques, it results in an empirical score of 5 or more. A chemical is an eye irritant if so determined under the procedure listed in 16 C.F.R. 1500.42 or other approved techniques.

**ORGANIC PEROXIDES** are flammable compounds which contain the double oxygen or peroxy (-O-O-) group and are subject to explosive decomposition. Organic peroxides can present an explosion hazard (detonation or deflagration) or they can be shock sensitive. They can also decompose into various unstable compounds over an extended period of time. They are available as Liquids, Pastes or Solids.

**UNCLASSIFIED** peroxides are capable of detonation. These peroxides present an extremely high explosion hazard through rapid explosive decomposition and are regulated in accordance with Article 77 of the Uniform Fire Code for Class A Explosives.

**CLASS I:** peroxides are capable of deflagration, but not detonation. These peroxides present a high explosion hazard through rapid decomposition.

Examples: acetyl cyclohexane sulfonyl 60-65 percent concentration by weight, fulfonyl peroxide, benzoyl peroxide over 98 percent concentration, t-butyl hydroperoxide 90 percent, t-butyl peroxyacetate 75 percent, t-butyl peroxyisopropylcarbonate 92 percent, diisopropyl peroxydicarbonate 100 percent, di-n-propyl peroxydicarbonate 98 percent and di-n-propyl peroxydi-carbonate 85 percent.

**CLASS II:** peroxides burn very rapidly and present a severe reactivity hazard.

Examples: acetyl peroxide, 25 percent, t-butyl hydroperoxide 70 percent, t-butyl peroxybenzoate 98 percent, t-butyl peroxy-2-ethylhexanoate 97 percent, t-butyl peroxyisobutyrate 75 percent, t-butyl peroxyisopropyl-carbonate 75 percent, t-butyl peroxy-pivalate 75 percent, dibenzoyl peroxydicarbonate 85 percent, di-sec-butyl peroxydicarbonate 98 percent, di-sec-butyl peroxydicarbonate 75 percent, 1,1-di-(t-butylperoxy)-3,5,5-trimethylcyclohexane 95 percent, di-(2-ethylhexyl) peroxydicarbonate 97 percent, 2,5-dimethyl-2,5-di (benzoylperoxy) hexane 92 percent and peroxyacetic acid 43 percent.

**CLASS III:** peroxides burn rapidly and present a moderate reactivity hazard.

Examples: acetyl cyclohexane sulfonal peroxide 29 percent, benzoyl peroxide 78 percent, benzoyl peroxide paste 55 percent, benzoyl peroxide paste 50 percent peroxide/50 percent butylbenzylphthalate diluent, cumene hydroperoxide 86 percent, di-(4-butylcyclohexyl) peroxydicarbonate 98 percent, t-butyl peroxy-2-ethylhexanoate 97 percent, t-butyl peroxyneodecanoate 75 percent, decanoyl peroxide 98.5 percent, di-t-butyl peroxide 99 percent, 1,1-di-(t-butylperoxy)3,5,5-trimethylcyclohexane 75 percent, 2,4-dichlorobenzoyl peroxide 50 percent, diisopropyl peroxydi-carbonate 30 percent, 2,5-dimethyl-2,5-di-(2-ethylhexanolyperoxy)-hexane 90 percent, 2,5-dimethyl-2,5-di-(t-butylperoxy) hexane 90 percent and methyl ethyl ketone peroxide 9 percent active oxygen diluted in dimethyl phthalate.

**CLASS IV:** peroxides burn in the same manner as ordinary combustibles and present a minimum reactivity hazard.

Examples: benzoyl peroxide 70 percent, benzoyl peroxide paste 50 percent peroxide/15 percent water/35 percent butylphthalate diluent, benzoyl peroxide slurry 40 percent, benzoyl peroxide powder 35 percent, t-butyl hydroxide 70 percent, t-butyl peroxy-2-ethylhexanoate 50 percent, decumyl peroxide 98 percent, di-(2-ethylhexyl) peroxydicarbonate 40 percent, laurel peroxide 98 percent, p-methane hydroperoxide 52.5 percent, methyl ethyl ketone peroxide 5.5 percent active oxygen and methyl ethyl ketone peroxide 9 percent active oxygen diluted in water and glycols.

**CLASS V** peroxides do not burn or present a decomposition hazard.

Examples: benzoyl peroxide 35 percent, 1,1-di-t-butyl peroxy 3,5,5-trimethylcyclohexane 40 percent, 2,5-di-(t-butyl peroxy) hexane 47 percent and 2,4-pentanedione peroxide 4 percent active oxygen.

**OTHER HEALTH HAZARD MATERIAL** is a hazardous material which affects target organs of the body, including, but not limited to:

Examples:

**Hepatotoxins** (chemicals which produce liver damage): carbon tetrachloride and nitrosamines.

**Nephrotoxins** (chemicals which produce kidney damage): halogenated hydrocarbons and uranium.

**Neurotoxins** (chemicals which produce their primary toxic effect on the nervous system): mercury and carbon disulfide.

**Blood or hematopoietic system toxins** (chemicals which decrease hemoglobin function, deprive the body tissues of oxygen): carbon monoxide and cyanides.

**Reproductive toxins** (chemicals which affect the reproductive capabilities, including chromosomal damage [mutations] and effects on fetuses [teratogenesis]): lead and DBCP.

**OXIDIZER** is a material, other than a blasting agent or explosive, that readily yields oxygen or other oxidizing gas, or that readily reacts to promote or initiate combustion of combustible materials. Oxidizer liquids and solids subdivided as follows:

**CLASS 4:** An oxidizer that can undergo an explosive reaction due to contamination or exposure to thermal or physical shock. In addition, the oxidizer will enhance the burning rate and may cause spontaneous ignition of combustible materials.

Examples: ammonium perchlorate (particle size greater than 15 microns), ammonium permanganate, guanidine nitrate, hydrogen peroxide solutions (greater than 91 percent) and tetranitromethane.

**CLASS 3:** An oxidizer that will cause a severe increase in the burning rate of combustible materials with which it comes in contact or will undergo vigorous, self-sustained decomposition due to contamination or exposure to heat.

Examples: ammonium dichromate, calcium hypochlorite (over 50 percent by weight), chloric acid (10 percent maximum concentration), hydrogen peroxide solutions (greater than 52 percent up to 91 percent), mono-(trichloro)-tetra-(monopotassium dichloro)-penta-s-triazinetrione, nitric acid, fuming (more than 86 percent concentration), perchloric acid solutions (60 percent to 72 percent by weight), potassium bromate, potassium chlorate, potassium dichloro-s-triazinetrione (potassium dichloroisocyanurate), sodium bromate, sodium chlorate, sodium chlorite (over 40 percent by weight) and sodium dichloro-s-triazinetrione (sodium dichloroisocyanurate).

**CLASS 2:** An oxidizer that will cause a moderate increase in the burning rate or that may cause spontaneous ignition of combustible materials with which it comes in contact.

Examples: barium bromate, barium chlorate, barium hypochlorite, barium perchlorate, barium permanganate, 1-bromo-3-chloro-5, 5-dimethylhydantoin, calcium chlorate, calcium chlorite, calcium hypochlorite (50 percent or less by weight), calcium perchlorate, calcium permanganate, chromium trioxide (chromic acid), copper chlorate, halane (1,3-dichloro-5, 5-dimethylhydantoin), hydrogen peroxide (greater than 27.5 percent up to 52 percent), lead perchlorate, lithium chlorate, lithium

hypochlorite (more than 39 percent available chlorine), lithium perchlorate, magnesium bromate, magnesium chlorate, magnesium perchlorate, mercurous chlorate, nitric acid (more than 50 percent but less than 60 percent), potassium perchlorate, potassium permanganate, potassium peroxide, potassium superoxide, silver peroxide, sodium chlorite (40 percent or less by weight), sodium perchlorate, sodium perchlorate monohydrate, sodium permanganate, sodium peroxide, strontium chlorate, strontium perchlorate, thallium chlorate, trichloro-s-triazinetriene (trichloroisocyanuric acid), urea hydrogen peroxide, zinc bromate, zinc chlorate and zinc permanganate.

**CLASS 1:** An oxidizer whose primary hazard is that slightly increases the burning rate but does not cause spontaneous ignition when it comes in contact with combustible materials.

Examples: all inorganic nitrates (unless otherwise classified), all inorganic nitrites (unless otherwise classified), ammonium persulfate, barium peroxide, calcium peroxide, hydrogen peroxide solutions (greater than 8 percent up to 27.5 percent), lead dioxide, lithium hypochlorite (39 percent or less available chlorine), lithium peroxide, magnesium peroxide, manganese dioxide, nitric acid (40 percent concentration or less), perchloric acid solutions (less than 50 percent by weight), potassium dichromate, potassium percarbonate, potassium persulfate, sodium carbonate peroxide, sodium dichloro-s-triazinetriene dihydrate, sodium dichromate, sodium perborate (anhydrous), sodium perborate monohydrate, sodium perborate tetrahydrate, sodium percarbonate, sodium persulfate, strontium peroxide and zinc peroxide.

## PLASTICS

**Group A plastics** are plastic materials having a heat of combustion that is much higher than that of ordinary combustibles, and a burning rate higher than that of Group B plastics. Examples of Group A plastics include, but are not limited to, the following:

ABS (acrylonitrile-butadiene-styrene copolymer)

Acetal (polyformaldehyde)

Acrylic (polymethyl methacrylate)

Butal rubber

EPDM (ethylene-propylene rubber)

FRP (fiberclass-reinforced polyester)

Natural rubber (expanded)

Nitrile rubber (acrylonitrile-butadiene rubber)

PET or PETE (polyethylene terephthalate)

Polybutadiene

Poylcarbonate

Polyester elastomer

Polyethylene

Polypropylene

Polystyrene (expanded and unexpanded)

Polyurethane (expanded and unexpanded)

PVC (polyvinyl chloride greater than 15 percent plasticized, e.g., coated fabric unsupported film)

SAN (styrene acrylonitrile)

SBR (styrene-butadiene rubber)

**Group B plastics** are plastic materials having a heat of combustion and a burning rate higher than that of ordinary combustibles, but not as high as those of Group B plastics. Examples of Group A plastics include, but are not limited to, the following:

Cellulosics (cellulose acetate, cellulose acetate butyrate, ethyl cellulose)  
Chloroprene rubber  
Fluoroplastics (ECTFE, ethylene-chlorotrifluoroethylene copolymer; ETFE, ethylene-tetrafluoroethylene copolymer; FEP, fluorinated ethylene-propylene copolymer)  
Natural rubber (nonexpanded)  
Nylon (Nylon 6, Nylon6/6)  
PVC (polyvinyl chloride greater than 5 percent, but not exceeding 15 percent plasticized)  
Silicone rubber

**Group C plastics** are plastic materials which have a heat of combustion and a burning rate similar to those of ordinary combustibles. Examples of Group C plastics include, but are not limited to, the following:

Fluoroplastics (PCTFE, polychlorotrifluoroethylene; PTFE, polytetrafluoroethylene)  
Melamine (melamine formaldehyde)  
Phenol  
PVC (polyvinyl chloride, rigid or plasticized less than 5 percent, e.g., pipe, pipe fittings)  
PVDC (polyvinylidene chloride)  
PVDF (polyvinylidene fluoride)  
PVF (polyvinyl fluoride)  
Urea (urea formaldehyde)

**PYROPHORIC** is a chemical that will spontaneously ignite in air at or below a temperature of 1301F (54.51C). Examples:

**Gases** - diborane, phosphine and silane.

**Liquids** - diethyl aluminum chloride, diethylberyllium, diethyl phosphine, diethyl zinc, dimethyl arsine, triethyl aluminum etherate, triethyl bismuthine, triethyl boron, trimethyl aluminum and trimethyl gallium.

**Solids** - cesium, hafnium, lithium, white or yellow phosphorus, plutonium, rubidium, sodium and thorium.

**RADIOACTIVE MATERIAL** is a material or combination of materials that spontaneously emits ionizing radiation. Common radiation source materials:

More than 100 radioisotopes are in common usage in various medical and industrial test and measuring situations. Most emit beta and gamma radiation. Some emit alpha radiation also. Some emit beta or gamma radiation exclusively. Examples: americium-241, bismuth-210, polonium-210, radium-226, uranium-238.

These are heavier isotopes as indicated by high numbers.

**Beta** - calcium-45, carbon-14, hydrogen-3, nickel-63, sulfur-35, tungsten-185, and zinc-65.

**Gamma** - beryllium-7, germanium-71, iron-55, palladium-13, praseodymium-143, promethium-147, and tin-113.

**TOXIC MATERIAL** is a material which produces a lethal dose or lethal concentration which falls within any of the following categories:

1. A chemical or substance that has a median lethal dose (LD<sub>50</sub>) of more than 50 milligrams per kilogram but not more than 500 milligrams per kilogram of body weight when administered orally to

albino rats weighing between 200 and 300 grams each.

2. A chemical or substance that has a median lethal dose (LD<sub>50</sub>) of more than 200 milligrams or less per kilogram but not more than 1,000 milligrams per kilogram of body weight when administered continuous contact for 24 hours, or less if death occurs within 24 hours, with the bare skin of albino rabbits weighing between 2 and 3 kilograms each.

3. A chemical or substance that has a median lethal dose (LD<sub>50</sub>) in air more than 200 parts per million but not more than 2,000 parts per million by volume of gas, of more than two milligrams per liter but nor more than 20 milligrams per liter of mist, fume or dust, when administered by continuous inhalation for one hour, or less if death occurs with one hour, to albino rats weighing between 200 and 300 grams each. Examples:

**Gases** - boron trichloride, boron trifluoride, chlorine, hydrogen fluoride, hydrogen sulfide, phosgene, silicon tetrafluoride.

**Liquids** - acrylonitrile, allyl alcohol, alpha-chlorotoluene, aniline, 1-chloro-2, 3-epoxypropane, chloroformic acid (allyl ester), 3-chloropropene (allyl chloride), 0-cresol, crotonaldehyde, dibromomethane, diisopropylamine, diethyl ester sulfuric acid, dimethyl ester sulfuric acid, 2-furaldehyde (furfural), furfuryl alcohol, phosphorus chloride, phosphoryl chloride (phosphorus oxychloride), and thionyl chloride.

**Solids** - acrylamide, barium chloride, barium (II) nitrate, benzidine, p-benzoquinone, beryllium chloride, cadmium chloride, cadmium oxide, chloroacetic acid, chlorophenylmercury (phenyl mercuric chloride), chromium (VI) oxide (chromic acid, solid), 2,4-dinitrotoluene, hydroquinone, mercury chloride (calomel), mercury (II) sulfate (mercuric sulfate), osmium tetroxide, oxalic acid, phenol, P-phenylenediamine, phenylhydrazine, 4-phenylmorpholine, phosphorus sulfide, potassium fluoride, potassium hydroxide, selenium (IV) disulfide, and sodium fluoride.

**UNSTABLE (reactive) MATERIAL** is a material, other than an explosive, which in the pure state or as commercially produced will vigorously polymerize, decompose, condense or become self-reactive and undergo other violent chemical changes, including explosion, when exposed to heat, friction or shock, or in the absence of an inhibitor or in the presence of contaminants or in contact with noncompatible materials. Unstable, reactive materials are subdivided as follows:

**CLASS 4:** Materials which, in themselves, are readily capable of detonation or of explosive decomposition or explosive reaction at normal temperatures and pressures. This class includes materials which are sensitive to mechanical or localized thermal shock at normal temperatures and pressures. Examples: acetyl peroxide, dibutyl peroxide, dinitrobenzene, ethyl nitrate, peroxyacetic acid and picric acid (dry) trinitrobenzene.

**CLASS 3:** Materials which, in themselves, 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 class includes materials which are sensitive to thermal or mechanical shock at elevated temperatures and pressures. Examples: hydrogen peroxide (greater than 52 percent), hydroxylamine, nitromethane, paranitroaniline, perchloric acid and tetrafluoroethylene monomer.

**CLASS 2:** Materials which, in themselves, are normally unstable and readily undergo violent chemical change but do not detonate. This class includes materials which can undergo chemical change with rapid release of energy at normal temperatures and pressures and which can undergo violent chemical change at elevated temperatures and pressures. Examples: acrolein, acrylic acid,

hydrazine, methacrylic acid, sodium perchlorate, styrene and vinyl acetate.

**CLASS 1:** Materials which, in themselves, are normally stable but which can become unstable at elevated temperatures and pressures. Examples: acetic acid, hydrogen peroxide 35 percent to 52 percent, paraldehyde and tetrahydrofuran.

**WATER (reactive) MATERIAL** is material which explodes; violently reacts; produces flammable, toxic or other hazardous gases; or evolves enough heat to cause self-ignition or ignition of nearby combustibles upon exposure to water or moisture. Water-reactive materials are subdivided as follows:

**CLASS 3:** Materials which react explosively with water without requiring heat or confinement.

**CLASS 2:** Materials which may form potentially explosive mixtures with water.

**CLASS 1:** Materials which may react with water with some release of energy, but not violently.

## Other Definitions

- Storage** - is the keeping, retention or leaving of materials in closed containers, on pallets or together.
- High-Pile** - is storage of combustible materials in closely packed piles or combustible materials on pallets, in racks or on shelves where the top of storage is greater than 12 feet (3658mm) in height. High-piled combustible storage also includes certain high hazard commodities, such as rubber tires, Group A plastics, flammable liquids, idle pallets and similar commodities, where the top of storage is greater than 6 feet (1829mm) in height.
- Encapsulated** - is a method of packaging consisting of a plastic sheet completely enclosing the sides and top of a pallet load. The term encapsulated does not apply to banding (i.e., stretch-wrapping) around the sides only or individual plastic-enclosed items inside a large non-plastic enclosed container.
- Non-encapsulated** - is a method of packaging consisting of anything other than what is stated for encapsulated.
- Use, (closed system)** - is use of a solid or liquid material in a closed vessel or system that remains closed during normal operations where vapors emitted by the product are not liberated outside of the vessel or system and the product is not exposed to the atmosphere during normal operations, and all uses of compressed gases. Examples of closed systems for solids and liquids include reaction process operations and product conveyed through a piping system into a closed vessel, system or piece of equipment.
- Use, (open system)** - is use of a solid or liquid material in a vessel or system that is continuously open to the atmosphere during normal operations and where vapors are liberated, or the product is exposed to the atmosphere during normal operations. Examples of open systems for solids and liquids include dispensing from or into open beakers or containers, and dip tank and plating tank operations.





