



## STANDARD OPERATING PROCEDURE

### Flammables

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#### 1.0 PURPOSE

The purpose of this standard is to provide guidelines for the safe handling of flammable materials. Consult the MSDS for specific information about a particular flammable.

#### 2.0 DEFINITIONS

**Flammable** means a chemical that falls into one of the following categories:

1. Aerosol, flammable means an aerosol that, when tested by the method described in 16 CFR 1500.45, yields a flame projection exceeding 18 inches at full valve opening, or a flashback (a flame extending back to the valve) at any degree of valve opening;
2. Gas, flammable means:
  - a. A gas that, at ambient temperature and pressure, forms a flammable mixture with air at a concentration of 13 percent by volume or less; or
  - b. A gas that, at ambient temperature and pressure, forms a range of flammable mixtures with air wider than 12 percent by volume, regardless of the lower limit.
3. Liquid, flammable means any liquid having a flashpoint below 100 deg F (37.8 deg. C), except any mixture having components with flashpoints of 100 deg. C) or higher, the total of which make up 99 percent or more of the total volume of the mixture.

4. Solid, flammable means a solid, other than a blasting agent or explosive as defined in § 1910.109(a), that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard. A chemical shall be considered to be a flammable solid if, when tested by the method described in 16 CFR 1500.44, it ignites and burns with a self-sustained flame at a rate greater than one-tenth of an inch per second along its major axis.

### **3.0 POTENTIAL HAZARDS**

Vapors evolving from flammable liquids are the most common fire hazard in a laboratory. In sufficient concentration in air, these vapors can enflame rapidly to produce an explosion.

### **4.0 EXPOSURE HAZARDS**

#### **4.1 Contact/Absorption**

Solvents in contact with skin may cause defatting and drying of the skin. Absorption may lead to edema, blurred vision, liver damage, and kidney failure.

#### **4.2 Inhalation**

Inhalation of vapors may cause bronchial irritation, dizziness, central nervous system depression, nausea, headache or coma. Prolonged exposure to high solvent vapor concentration may result in liver or kidney damage.

#### **4.3 Ingestion**

Ingestion may cause abdominal pain, nausea, central nervous system depression, convulsions or vomiting.

### **5.0 PERSONAL PROTECTIVE EQUIPMENT**

Use chemical splash goggles for eye protection; for operations that may involve splashing, include a face shield. Thick butyl rubber, neoprene, nitrile, or polyethylene gloves may be appropriate. Check glove manufacturer for recommendations on a suitable glove for the specific chemical.

Wear a lab coat and closed-toed shoes (non-fabric) with non-slip soles.

If a respirator is needed, then user must follow guidelines of the Respiratory Protection Program.

### **6.0 ENGINEERING AND VENTILATION CONTROLS**

All procedures involving solvents must be conducted in a fume hood to prevent the accumulation of flammable vapors.

### **7.0 SPECIAL HANDLING PROCEDURES**

1. CONDUCT PROCEDURES IN A FUME HOOD.
2. Minimize the quantity of flammable substances stored in the work area.

3. Handle flammable substances only in areas free of ignition sources. Ignition sources include open flames, electrical equipment, static electricity, and hot surfaces. Check the work area for flames or ignition sources before using a flammable substance.
4. Keep containers of flammable substances tightly closed when not in use.
5. Assure proper bonding and grounding when transferring or dispensing flammable liquid from a large container, or when pouring from one metal container to another.

### **8.0 LABELING REQUIREMENTS**

Label flammable storage cabinets with the wording: **FLAMMABLE - KEEP FIRE AWAY.**

Label containers for Class I liquids: **DANGER - FLAMMABLE! KEEP AWAY FROM HEAT AND OPEN FLAME.**

Label containers for Class II or III liquids: **CAUTION - COMBUSTIBLE!**

### **9.0 STORAGE REQUIREMENTS**

1. Store flammables/combustibles in an approved storage cabinet or in safety cans.
2. If flammable/combustible must be refrigerated, store in an explosion-proof refrigerator.
3. A maximum of ten (10) gallons of flammable solvents may be stored outside of approved flammable storage cabinet.

### **10.0 FIRST AID**

See CHP 7.9.2 Chemical Exposure.

### **11.0 SPILL AND ACCIDENT PROCEDURES**

See CHP 7.9.1 Chemical Spill Clean Up.

### **12.0 WASTE DISPOSAL**

See Hazardous Waste Management and Disposal

### **13.0 PROGRAM APPROVAL AND REVIEW**

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