



## FIRE PREVENTION STANDARD

Title: Incompatible Chemicals		
Number: G-04	Effective Date: 08/01/05	Revised Date: 10/01/09
Code References: 2007 California Fire Code (CFC) Sections 1703.9.8, 3404.2.9.5.3 and 3405.3.6.2.5		
Note: <i>This standard is a summary of Fire Department clarifications of City and State Codes. Information contained herein applies to typical circumstances and may not address all situations.</i>		

### Scope

Incompatible chemicals when mixed together have the potential to react in a manner which generates heat, fumes, gases or byproducts which are hazardous to life or property. Since chemicals may spill, and containers may leak, incompatibles should be separated while in storage. This standard is intended to provide basic guidelines for storage of major classes of incompatible chemicals. Without regard to the maximum allowable quantities exempt amounts or those quantities that require a permit, incompatible chemicals shall not be stored within the same cabinet or exhausted enclosure. Where physical set backs vary in the code, the most restrictive requirement shall apply.

### Codes and Standards

This standard is pursuant to the California Fire Code (CFC) sections as noted above.

### Permits Required

A permit for the storage of hazardous materials is required by the Roseville Fire Department when quantities of equal or exceed those specified CFC Table 105.6.20.

### Methods

Acceptable methods of separating incompatible chemicals include providing: 1) a distance of 20 feet; or 2) a non-combustible leak tight partition that extends 18 inches above and to the sides of the stored material, or by 3) approved cabinets.

### Description of Hazard Classes

**Oxidizers** are chemicals that initiate or promote combustion of other materials, thereby cause the release of other gases. Oxidizers are corrosive to metals and tissue, and can explode if exposed to prolonged heat. Oxidizers include organic and inorganic peroxides, oxides, permanganates, nitrates, chromates, dichromates, and certain chlorides.

**Corrosives** can cause severe burns to the skin and eyes, and can wear away metal and concrete. Corrosive vapors and gasses can damage the respiratory system if inhaled. Corrosives can be acidic or alkaline. Acids turn litmus or pH paper red and neutralize alkaline materials or bases to produce salts. Their corrosive property is due to the hydrogen (H+) ions they yield in water solution. Typical acids used in industry include sulfuric, hydrochloric, phosphoric and hydrofluoric acid. Bases turn litmus or pH paper blue and neutralize acids to produce salts. Their corrosive property is due to the hydroxyl (OH-) ions they supply in a water solution. A typical base used in industry such as lye (sodium hydroxide) emits irritating vapors that can cause severe skin burns. Materials that react to water include carbides, hydrides, and earth metals like sodium, and potassium.



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### **Storage**

In general, store incompatibles in a cool, dry and ventilated area. Separate oxidizers from organic, flammable and combustibles material, and from reducing agents such as alkaline metals and formic acid. Separate acids from flammable and alkaline materials, and from toxic emitters such as sodium cyanide and iron sulfide. Similarly, separate bases from acids, and separate water reactive materials from water and flammable liquids. Inorganic hydroxide solutions should be provided with polyethylene secondary containment or a specially treated impervious surface.

### **Spill or Incident Response**

In the event of a chemical spill or an incident causing an exothermic (heat producing) reaction, follow the guidelines in the Roseville Fire Department's Spill Reporting Fire Prevention Standard G-03. If the quantities involved in the incident can be managed safely without assistance from the fire department, remember – never pour water on water reactive substances or on concentrated acid solutions. If you must neutralize spills of acids or bases, do so carefully. Use weak bases to neutralize acids and weak acids to neutralize bases. Attempting to neutralize and alkaline spill with water may not be practical due to the large quantity of water that would be necessary to change the pH of the material by merely a factor of one.

### **Examples of Incompatible Chemicals**

See attachment entitled "Guidelines for Incompatible Chemicals".

**Approved:**

A handwritten signature in black ink, appearing to read "D. M. Mathisen", is written over a horizontal line.

Dennis M. Mathisen, Division Chief/Fire Marshal