

# Flammable Solids

## Safe Handling Guideline

Product ID: [207](#) | Revision ID: 1504 | Date published: 20 May 2013 | Date effective: 20 May 2013

URL: <http://www-group.slac.stanford.edu/esh/eshmanual/references/chemsafetyGuideFlamSolid.pdf>

### Synonyms

Will vary depending upon specific chemicals

### Reactivity and Physical Concerns

Many flammable solids may react violently or explosively on contact with water and may also be ignited with friction, heat, sparks, or flame. Some of these materials will burn with intense heat. Dusts or fumes may form explosive mixtures in air. Containers may explode when heated. Materials may re-ignite after fire is extinguished. Fires may produce irritating, corrosive, and/or toxic gases. Some of these materials may also be pyrophoric – spontaneously reacting with oxygen in air to ignite.

For metallic flammable solids (e.g., phosphorus, sodium, lithium, magnesium) **do not use water, foam, or carbon dioxide as a fire suppressant**. Dousing metallic fires with water may generate hydrogen gas, an extremely dangerous explosion hazard, particularly if fire is in a confined environment. Additionally, fires involving flammable metals (lithium, sodium, potassium, etc.) or flammable metal compounds (butyllithium, diethylzinc, etc.) can be fueled by using water or carbon dioxide fire extinguishers. **You must have a class D extinguisher on hand if you are using these materials.**

### Exposure Hazards

#### Routes of Exposure

Inhalation, ingestion, skin contact, eye contact

The health hazards associated with flammable solids will vary depending upon the individual chemical's hazards; the manufacturer's [SDS](#) should be consulted for each chemical in use. Many flammable solids are metals; oxides from metallic fires are a severe health hazard: inhalation or contact with substance or decomposition products may cause severe injury or death.

#### Chronic Exposure

Chronic exposure hazards associated with flammable solids will vary greatly. Consult the individual chemical's SDS for specific chronic hazards.

#### First Aid

First aid measures will vary greatly based on the individual chemicals hazard properties. Consult the specific chemical's manufacturer's SDS and, when necessary, a medical professional for the appropriate first aid procedures. (See [Chemical Safety: Accidental Exposure Requirements](#) [SLAC-I-730-0A09S-041].)

### Exposure Limits

Exposure limits will vary based on individual chemical hazards; consult the manufacturer's SDS for established exposure limits.

## Exposure Controls

### Engineering Controls

Local exhaust ventilation or breathing protection is generally required. Depending upon the level of flammability involved with specific chemicals, engineering control requirements may increase (e.g., use of inert atmospheres, glove boxes, special detection and/or extinguishing systems, etc.). Consult the SDS for hazardous properties and ESHQ for specific requirements.

### Administrative Controls

Administrative controls will vary based on individual chemical hazards. Personnel working with the materials must receive detailed training on the hazards, safe use, and emergency procedures.

### Personal Protective Equipment

**Avoid breathing dusts, vapors, or fumes.** Follow SDS recommendations for PPE. In general, prevent skin/eye contact through the use of impervious gloves, clothing, boots, apron, and eye goggles or full face shield. If the airborne concentrations are elevated and engineering controls are not feasible wear a NIOSH-approved self-contained breathing apparatus with full face-piece operated in the pressure demand or other positive pressure mode.

### Disposal

In general, flammable solids are disposed of as hazardous waste. Requirements will vary depending on the individual chemical. Contact the Waste Management Group for specific disposal requirements and procedures.

### Medical Monitoring (if applicable)

Medical and exposure monitoring will vary depending on the individual chemical's hazards. Consult the SDS or chemical safety program manager for the appropriate monitoring.

### Emergency Response

In the event of a spill that poses a threat to health and/or the environment, immediately evacuate the area and call 911. Then call SLAC Site Security (ext. 5555 or 650-926-5555 from a cell phone) and notify your supervisor.

For other spills, notify your supervisor then SLAC Site Security; these may be cleaned up with appropriate spill response supplies by trained personnel who have been authorized via work planning and control. (See [Spills: Response, Cleanup, and Reporting Procedure](#) [SLAC-I-750-0A16C-006].)

## Standards and Regulations

- OSHA. PEL: [29 CFR 1910.1000 Table Z-1](#); Respiratory Protection: [29 CFR 1910.134](#)
- EPA. Release: [40 CFR 355.40](#); Waste: [40 CFR 261.21-261.24](#)
- *California Fire Code*, Chapters 27 through 41 ([24 CCR Part 9](#))

## Other References

- Safety Emporium. [The MSDS HyperGlossary: Flammable Solid](#)