

SOP FOR PYROPHORIC CHEMICALS

Pyrophoric chemicals are liquids and solids that will ignite spontaneously in air at about 130°F. Titanium dichloride and phosphorous are examples of pyrophoric solids; tertiary butyl lithium and tributylaluminum and related compounds are examples of pyrophoric liquids.

Securing of gas cylinders

Not applicable.

Decontamination procedures

Personnel: Immediately flush contaminated area with copious amounts of water after contact with oxidizing chemicals. Remove any jewelry to facilitate removal of chemicals.

Area: Carefully clean work area after use. Paper towels or similar materials contaminated with strong oxidizing chemicals may pose a fire risk.

Designated area

Not applicable.

Emergency procedure

Emergency procedures address response actions to fires, explosions, spills, or injury to staff. Utilize the information available in the "Emergency 13" flip chart. The following emergency phone numbers should be utilized to initiate an emergency response:

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| All emergencies: | x13 (Public Safety) |
| Chemical Exposures: | x5-4955 (UHS) |
| Laboratory Safety Unit | x5-2402 |
| Occupational Safety Unit: | x5-3241 |
| Environmental Compliance/Hazardous Waste | x5-2056 |
| Radiation Safety Unit: | x5-3781 |

Eye Protection

Eye protection in the form of safety glasses or goggles must be worn at all times when handling pyrophoric chemicals. Ordinary (street) prescription glasses do not provide adequate protection. (Contrary to popular opinion these glasses may not pass the rigorous tests for industrial safety glasses.) Adequate safety glasses must meet the requirements of the current version of Practice for Occupational and Educational Eye and Face Protection (ANSI Z.87.1) and must be equipped with side shields. Safety glasses with side shields do not provide adequate protection from splashes, therefore, when the potential for splash hazard exists other eye protection and/or face protection must be worn.

Eyewash

Where the eyes of any person may be exposed to pyrophoric chemicals, suitable facilities for quick drenching or flushing of the eyes shall be provided within 50 feet for immediate emergency use. Bottle type eyewash stations are not acceptable.

Fume hood

Many pyrophoric chemicals release noxious or flammable gases and should be handled in a hood. In addition, some pyrophoric materials are stored under kerosene (or other flammable solvent), therefore the use of a fume hood is required to prevent the release of flammable vapors into the laboratory.

Glove (dry) box

Glove boxes may be used to handle pyrophoric chemicals if inert or dry atmospheres are required.

Gloves

Gloves should be worn when handling pyrophoric chemicals. The selection of glove materials should be made according to the MSDS and the recommendations of the glove manufacturer.

Hazard assessment

Hazard assessment for work involving pyrophoric chemicals should thoroughly address the issue of fire safety (including the need for Class D fire extinguishers), proper use and handling techniques, chemical toxicity, storage, and spill response.

EHS Notification

Not applicable.

Clothing & Protective Apparel

To prevent dermal exposure to these chemicals: A layer of clothing will help prevent splash and droplet exposures. Personnel should wear a long sleeve shirt and pants. A lab coat can also be recommended. Personnel should wear non-skid sole shoes. The following types of shoes are not recommended: open-toes shoes, open heeled shoes, shoes made with cotton or a material that readily absorbs liquids.

Safety shielding

Safety shielding is required any time there is a risk of explosion, splash hazard or a highly exothermic reaction. All manipulations of pyrophoric chemicals that pose this risk should occur in a fume hood with the sash in the lowest feasible position. Portable shields, which provide protection to all laboratory occupants, are acceptable.

Safety shower

A safety or drench shower should be available within 100 feet where pyrophoric chemicals are used. The path to the shower must be clear and unobstructed.

Signs and labels

All pyrophoric chemicals must be clearly labeled with the correct chemical name and hazard warning. Handwritten labels are acceptable; chemical formulas and structural formulas are not acceptable.

Special storage

Pyrophoric chemicals should be stored under an atmosphere of inert gas or under kerosene as appropriate. Do not store pyrophoric materials with flammable materials or in a flammable-liquids storage cabinet. Store these materials away from sources of ignition. Minimize the quantities of pyrophoric chemicals stored in the laboratory.

Never return excess chemical to the original container. Small amounts of impurities may be introduced into the container that may cause a fire or explosion.

Special ventilation

Always attempt to handle pyrophoric chemicals in a fume hood or glove box. If your research does not permit the handling of pyrophoric chemicals in a fume hood or glove box, you must contact the Laboratory Safety Unit to review the adequacy of all special ventilation.

Spill response

Anticipate spills by having the appropriate clean up equipment on hand. The appropriate clean up supplies can be determined by consulting the safety data sheet. This should occur prior to the use of any pyrophoric chemical. Spill control materials are designed to be inert and will not react with these agents.

In the event of a spill, alert personnel in the area that a spill has occurred. Do not attempt to handle a large spill of pyrophoric chemicals. Turn off all ignition sources and vacate the laboratory immediately. Call Public Safety (x13) for a spill response. Remain on the scene, but at a safe distance, to receive and provide information to safety personnel when they arrive.

Vacuum protection

Evacuated glassware can implode and eject flying glass and splattered chemicals. Such glassware should be wrapped or taped. Vacuum work involving pyrophoric chemicals must be conducted in a fume hood, glove box, or isolated in an acceptable manner.

Mechanical vacuum pumps must be protected using cold traps and, where appropriate, filtered to prevent particulate release. The exhaust for the pumps must be vented into an exhaust hood. Vacuum pumps should be rated for use with pyrophoric chemicals.

Waste disposal

All materials contaminated with pyrophoric chemicals pose a fire hazard and should be disposed of as hazardous waste. Alert the Environmental Compliance / Hazardous Waste Unit if you generate wastes contaminated by pyrophoric chemicals. Do not let contaminated wastes remain in the laboratory overnight unless proper containers are provided. These wastes may pose a flammability risk and should not remain in the laboratory overnight. Questions regarding waste pick up should be directed to the Environmental Compliance / Hazardous Waste Unit (x5-2056). This office can also assist you in minimizing waste generation.