

PYROPHORIC CHEMICALS STANDARD OPERATING PROCEDURE

Pyrophoric chemicals are chemicals that ignite spontaneously in air.

The most common pyrophoric chemicals include phosphorus, alkylated metals, metal alkoxides and halides. A list of some pyrophoric chemicals is at the end of this SOP.

HAZARD DESCRIPTION

- Pyrophoric chemicals can react explosively when they come into contact with air.

PROTECTION PROCESS

- Good laboratory technique
- Appropriate shielding through use of personal protective equipment
- Portable shield or fume hood with a working sash
- Availability of eye wash station and safety shower

PERSONAL PROTECTIVE EQUIPMENT

- Safety glasses/goggles (Wear chemical safety goggles when using small quantities or safety glasses or chemical safety goggles with face shield when using large quantities or when a splash potential exists.)
- Gloves should be worn when handling pyrophoric chemicals. Disposable latex or nitrile gloves provide adequate protection against accidental hand contact with small quantities of most laboratory chemicals. Lab workers should contact OEHS for advice on chemical resistant gloves when direct or prolonged contact with hazardous chemicals is anticipated.
- Lab coats, closed toed shoes and long sleeved clothing should be worn when handling pyrophoric chemicals.
- Additional protective clothing should be worn if the possibility of skin contact is likely.

ENGINEERING/VENTILATION CONTROLS

- Fume hood- Many pyrophoric chemicals release noxious or flammable gases and must be handled in a hood. In addition some pyrophoric materials are stored under kerosene (or other flammable solvents); therefore the use of a fume hood is required to prevent the release of flammable vapors in the laboratory.
- Glove (dry) box - Glove boxes must be used to handle pyrophoric chemicals if inert or dry atmospheres are required.
- A safety shower and eyewash must be available and accessible when working with pyrophoric chemicals.

SPECIAL HANDLING PROCEDURES AND STORAGE REQUIREMENTS

- Pyrophoric chemicals should be stored in a cool and dry location, under inert gas or kerosene as required.
- Keep pyrophoric chemicals segregated from all other chemicals in the laboratory.
- Minimize the quantities of pyrophoric chemicals stored in the laboratory.
- Date all containers upon receipt.

- Examine storage containers frequently.
- Dispose of any container that appears damaged or corroded.
- Dispose of all pyrophoric chemicals whenever they are no longer required for current research.

SPILL AND ACCIDENT PROCEDURES

- Before beginning work with pyrophoric chemicals, develop emergency procedures which address response actions to accidental exposure from fires, explosions, or spills. The procedures should address as a minimum the following:
 - Who to contact: (University police, and the Department of Occupational Health and Safety,
 - Principal investigator of the laboratory including evening phone number)
 - The location of all pyrophoric chemicals in the laboratory.
 - The method used to alert personnel in nearby areas of potential hazards
 - Special first aid treatment required by the type of pyrophoric chemical(s) handled in the laboratory
- Anticipate spills by having clean up equipment on hand. The appropriate clean up supplies can be determined by consulting the material safety data sheet. This should occur prior to the use of any pyrophoric chemicals.
- Class C and D fire extinguishers should be available for small fires.
- Spill control materials for pyrophoric chemicals are designed to be inert and will not react with the reagent.
- In the event of a spill, all personnel in the area should be alerted.
- Do not attempt to handle a large spill of pyrophoric chemicals. Turn off all ignition sources and vacate the laboratory immediately and call for assistance (Department of Occupational Health & Safety 934-2487 or UAB Police 911).
- Remain on the scene, but at a safe distance, to receive and direct safety personnel when they arrive.

WASTE DISPOSAL

- All materials contaminated with pyrophoric chemicals should be disposed of as hazardous waste.
- Alert Occupational Health and Safety if you generate wastes contaminated by pyrophoric chemicals.
- These wastes should not remain in the laboratory overnight as they may pose a flammability risk.

SPECIAL APPROVAL REQUIRED

- Quantities over 500 grams require notification of OH&S

DECONTAMINATION

Personnel:

- Wash hands and arms with soap and water immediately after handling pyrophoric materials.

Area:

- Carefully clean work area after use.

DESIGNATED AREA

- Depends on quantity and/or process.

EXAMPLES OF PYROPHORIC CHEMICALS

- Titanium dichloride
- Phosphorus
- Tributylaluminum
- Finely divided metals
- Metal carbonyls
- Alkylated metals, metal alkoxides or halides