

FACT SHEET: Pyrophorics

Safe Use and Handling



Pyrophoric materials are substances (liquids, solids, and gases) that ignite spontaneously when coming into contact with oxygen in air. Pyrophoric substances are often water-reactive as well, and will ignite when they contact water or humid air. All laboratory staff using pyrophorics must be familiar with the properties and characteristics of the material.

NEED TO KNOW:

1. **ALWAYS** wear appropriate Personal Protective Equipment (PPE) when handling pyrophoric materials: flame proof laboratory coat, goggles, and proper gloves.
2. **NEVER** work alone when working with highly hazardous materials.
3. Review all Safety Data Sheets and laboratory specific Standard Operating Procedures prior to starting work.
4. Pyrophoric materials should be used in a glove box supplied with an inert gas (e.g., argon). If unavailable, a chemical fume hood is an acceptable alternative in conjunction with a blast shield. **NOTE:** To obtain blast shield, reach out to OEHS.

WORKING WITH PYROPHORICS:

- When working with pyrophoric materials, especially solids, the best practice is to work inside a **glove box**. If a glove box is not available, a certified chemical fume hood may be used. (*The sash of the fume hood must be no higher than 12" during this work.*)
- When using a glove box, check all hoses and connections for cracks. **DO NOT USE** glove box if it is compromised in any way.
- **NEVER** leave an experiment using pyrophorics unattended, including quench of excess used materials for disposal.
- Use mineral oil bubblers to release pressure from reagent or reaction vessels.
- **NOTE:** Contact OEHS for a risk assessment of any pyrophoric work to be conducted outside of a glove box.

EMERGENCY RESPONSE:

- Ensure Class D fire extinguisher (pictured above) is available in lab. If not, notify EHS to provide Class D extinguisher. EHS can assess/provide training on use.
- Always work with another member of your lab nearby. **NEVER** work alone! If fire occurs, your lab partner must be available to assist with fire response (extinguishing using a Class D extinguisher).
- Know the location of the nearest safety shower. Ensure it is always accessible.
- **NOTE:** Safety shower must be available in same space where pyrophoric materials are used.
- **In the event of fire, remember to R.A.C.E. and P.A.S.S.**

	RACE
Rescue	Rescue persons in immediate danger
Alarm	Activate a pull station.
Confine	Call (212)-639-6000 Close all doors
Evacuate	Follow building evacuation plan
	PASS
	Pull, Aim, Squeeze, Sweep

STORAGE OF PYROPHORICS:

- **Control Inventory.** Only purchase amount of pyrophoric materials needed. Regularly check inventories of pyrophoric materials to avoid ordering and storing surplus materials.
- **Segregate.** Pyrophorics should be stored in separate cabinet away from other flammable liquids. Store pyrophorics in their own designated location (e.g., a desiccator specifically dedicated for pyrophoric storage).
- **Contain.** Liquid pyrophorics must be stored in sealed containers with PTFE-lined septa to prevent exposure to air. Use a syringe or cannula over a spill tray in a chemical hood to manipulate. Keep the chemical hood sash as low as possible.

BEFORE USING PYROPHORICS:

Prior to starting new experiments or work with pyrophorics, remember to:

- Perform a "dry run" without the chemical so that you are familiar with all steps.
- Do not perform large batch preparations in order to minimize risk of exposure or adverse reactions.
- Before purchasing pyrophoric materials, contact OEHS to ensure a compatible fire extinguisher is installed. A Class D extinguisher must be available **BEFORE** any work takes place.

ADDITIONAL RESOURCES:

- Princeton University EHS: [Pyrophoric Materials](#); OSHA: [Chemical Hygiene Plan \(CHP\) Fact Sheet](#); Lab Manager: [Safe Use of Pyrophoric Materials](#)

MORE INFO:

