



Principal Investigator: \_\_\_\_\_

Date Approved: \_\_\_\_\_

**This document covers basic chemical safety information for pyrophorics. DO NOT USE PYROPHORICS UNTIL YOU HAVE OBTAINED THE NECESSARY APPROVAL.**

## Pyrophoric and Self-heating Materials

Refer to the University of Arkansas Chemical Hygiene Plan for a description of chemicals that will be considered as a Particularly Hazardous Substance (PHS).

Chemicals that meet the definition of a PHS must be used only in a designated area where limited access, special procedures, knowledge, and work skills are required. A designated area can be the entire laboratory, a specific laboratory workbench, or a laboratory hood. Designated areas must be clearly marked with signs that identify the chemical hazard and include an appropriate warning; for example: WARNING! PYROPHORICS WORK AREA



A pyrophoric material is defined by the National Fire Protection Agency (NFPA) as having an autoignition temperature below 130°F (55°C). A self-heating material is one which reacts with air, in the absence of external energy, to produce heat. Self-heating materials may ignite if stored in large quantities. These materials typically also react violently with water. Because of this, pyrophoric and self-heating materials must always be handled under inert atmosphere.

## Exposure, Signs and Symptoms and Chemical Properties

Review the appropriate sections of the chemical specific Safety Data Sheet (SDS) for information on ways to detect exposure, appropriate exposure limits, signs and symptoms of exposures and chemical properties. If data is lacking in any area, refer to the following sites for additional information:

<https://pubchem.ncbi.nlm.nih.gov/>

<https://druginfo.nlm.nih.gov/drugportal/>

<https://toxnet.nlm.nih.gov/index.html>

<http://web.doh.state.nj.us/rtkhsfs/indexfs.aspx>

Always use the smallest amount of chemical that is consistent with the requirements of the work performed. Understand the chemical properties and what are the likely routes of exposure based on those properties and the procedures to be performed. Use containment devices (e.g., fume hood, glove box) when substance can volatilize, when the substance is manipulated, whenever aerosols or particulates may be produced, or when an action may result in an uncontrolled release.

Contact Environmental Health and Safety (EHS) if there are any questions (479-575-5448).

## Personal Protective Equipment (PPE) & Personnel Monitoring



**Lab Coat**

Chemical/Flame resistant



**Gloves**

Nitrile or neoprene gloves typically provide adequate protection against minor splashes. Consult with your PI or supervisor to determine whether any materials involved in your process require alternative hand protection.



**Eye Protection**

ANSI Z87.1-compliant safety glasses or safety goggles if a splash hazard is present

## Labeling & Storage

Store pyrophoric and self-heating materials in a flammable storage cabinet with self-closing hinges or in a refrigerator rated for flammable storage. All pyrophoric and self-heating materials must be stored away from combustible materials, oxidizing acids, oxidizers, and aqueous solutions. Also, if not plainly visible (e.g. through a cabinet window), labeling must be applied to storage locations where these are stored to avoid an inadvertent encounter.

## Cautions and Considerations

Use and store only in fully-sprinklered buildings.

## Engineering Controls, Equipment & Materials

### **Fume Hood**

A Schlenck line inside of a fume hood may be used to provide an inert atmosphere for working with pyrophorics. Use a fume hood to keep exposure to materials as low as possible. If your protocol does not permit the handling of such materials in a fume hood, contact EH&S (479-575-5448) to perform an exposure assessment to determine whether alternative engineering controls or additional respiratory protection is required.

### **Glove Box**

Whenever possible, pyrophorics should be handled inside of a glove box.

## Housekeeping

<b>Spills</b>	<p>If pyrophoric materials spill in a glove box, quench the spilled material slowly with isopropanol. Absorb with a non-combustible absorbent, and dispose as hazardous solid waste.</p> <p>If pyrophoric materials spill outside of a glove box, a Class D fire extinguisher may be used to extinguish a small fire. If you do not feel comfortable using a fire extinguisher, CALL 911. NOTE: Any use of a fire extinguisher must be reported to the Fire Marshal</p> <p>Notify others in the area of the spill, including your supervisor. Evacuate the location where the spill occurred. Call 911 and report any exposure to EHS (479-575-5448). Remain on-site (at a safe distance) to provide detailed information to first responders.</p>
<b>Quenching</b>	<p>Do not return unused pyrophoric materials to their original container. Unused pyrophoric materials must be quenched under inert atmosphere with adequate cooling by slowly adding first isopropanol, then methanol, then water.</p>
<b>Waste</b>	<p>Refer to the UA Chemical Hygiene Plan for details and contact EHS (479-575-5448) for specific disposal instructions.</p>

## First Aid & Emergencies

<b>Skin or Eye Contact</b>	<p>Remove contaminated clothing and accessories; flush affected area for at least 15 minutes with water. If symptoms persist, get medical attention/call 911.</p>
<b>Fire</b>	<p><b>DO NOT</b> use water to put out fire, instead use a Class B fire extinguisher.</p>

Attachments: Chemical Specific Safety Data Sheet (SDS)

Note: If there is more than one chemical that classifies as a pyrophoric; include all appropriate SDSs with this SOP.

