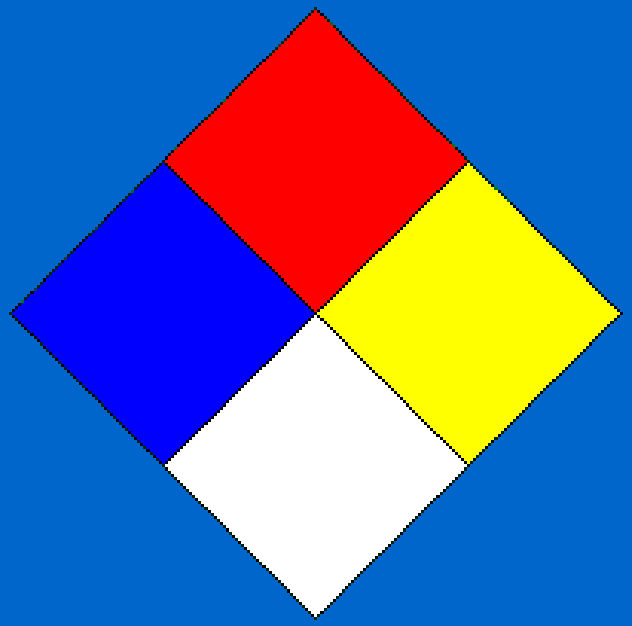
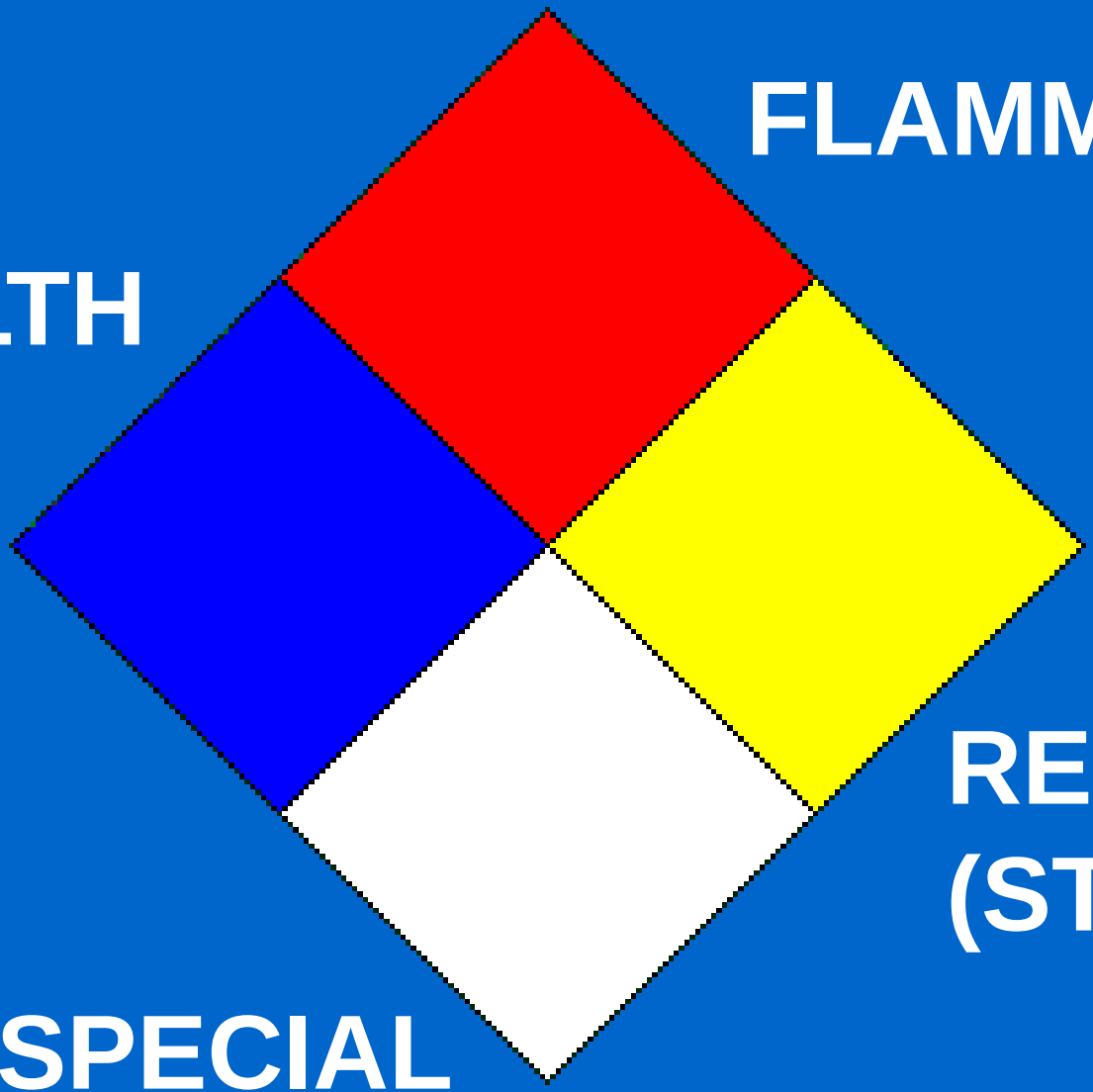
LABORATORY SAFETY



- **Chemical Hazard Label**
- **MSDS**
- **Safety Quiz**

NFPA CHEMICAL HAZARD LABEL



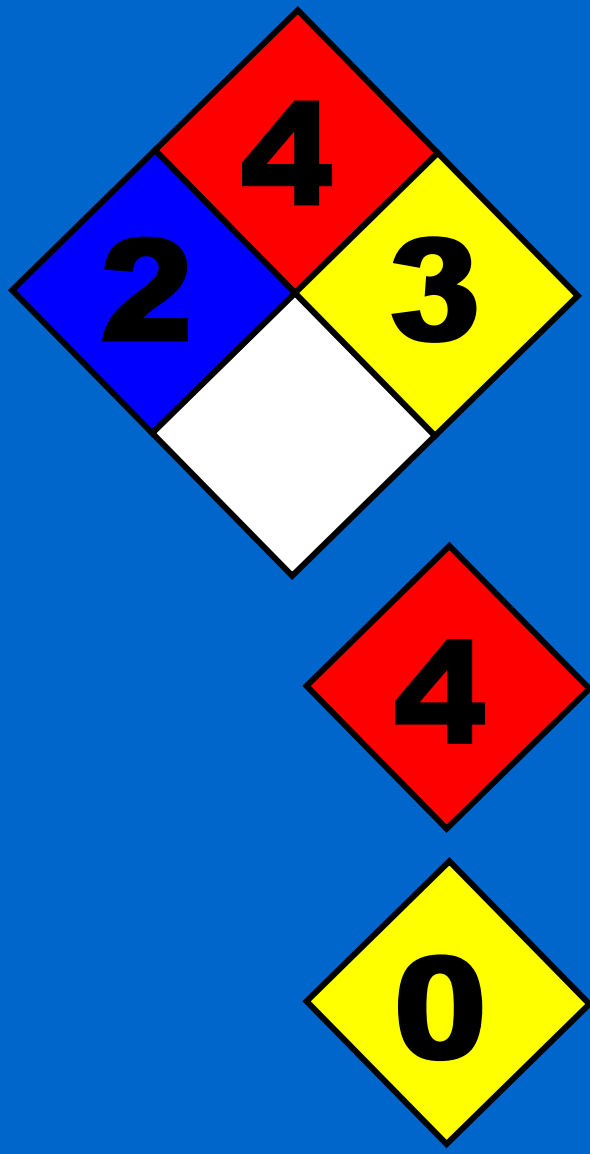
FLAMMABILITY

HEALTH

REACTIVITY
(STABILITY)

SPECIAL

NFPA CHEMICAL HAZARD LABEL



0 4

Least Serious — **Most Serious**

Flammable vapor which burns readily

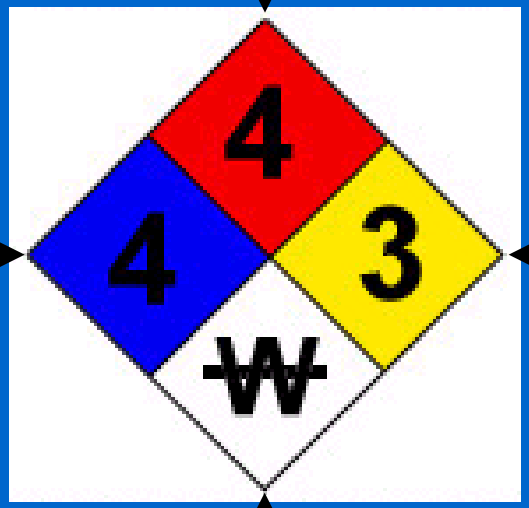
Substance is stable

NFPA CHEMICAL HAZARD LABEL

Diborane

Burns readily.

Severe health risk.

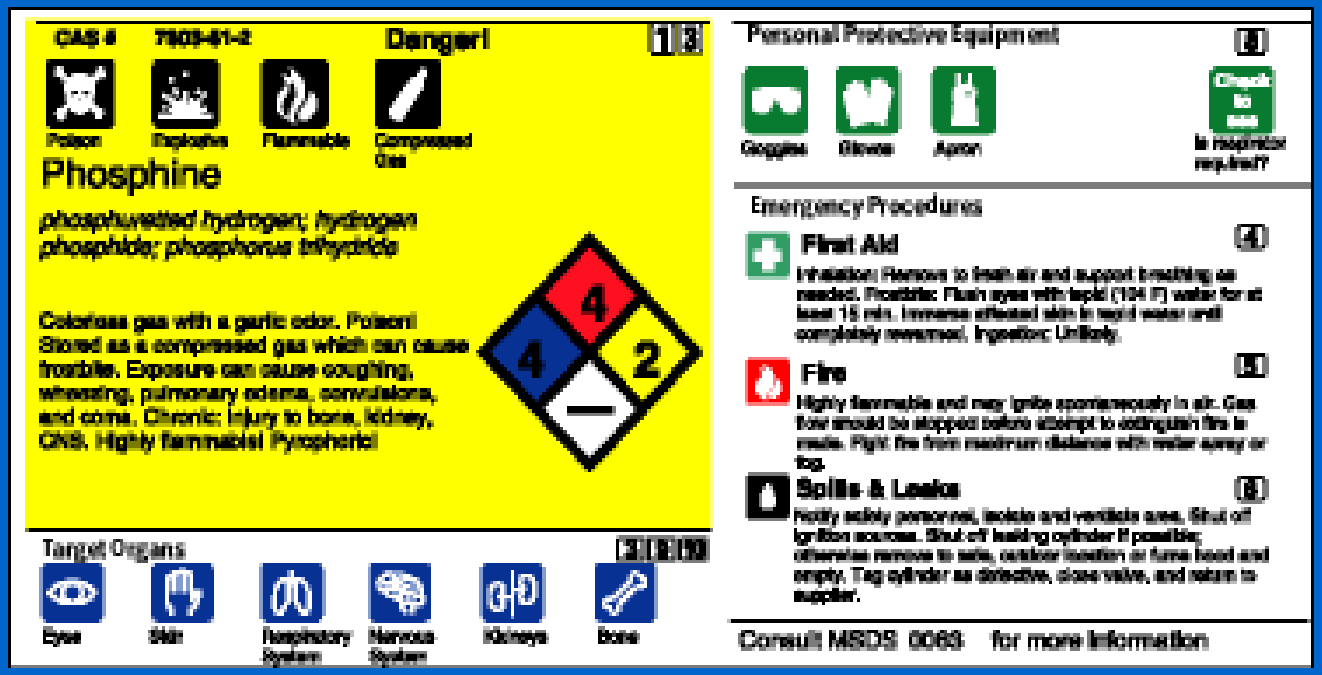


May detonate with heat or ignition.

Avoid water.

NFPA CHEMICAL HAZARD LABEL

Complete Label for Phosphine



MSDS

- **Material Safety Data Sheet**
- **On file for all purchased chemicals.**
- **Includes all information shown on a chemical label and more.**
- **Different formats are used by different chemical companies.**

MSDS

MATERIAL SAFETY DATA SHEET

FREY SCIENTIFIC

905 Hickory Lane
Mansfield, Ohio 44905
(419) 589-9905

MSDS No. CC 30
Effective Date May 11, 1993

SECTION I NAME — 24 HOUR EMERGENCY ASSISTANCE

Product	CALCIUM METAL
Chemical Synonyms	Calcium Metal, Granular, Turnings
Formula	Ca
Unit(s) Size	100 to 500 grams
C.A.S. No.	7440-70-2

CHEMTREC
800-424-9300
Day 716 226 6177
Night 716 334-4222

Health	1
Fire	2
Reactivity	2

NFPA HAZARD RATING

LEAST	SLIGHT	MODERATE	HIGH	EXTREME
0	1	2	3	4

SECTION II HAZARDOUS INGREDIENTS OF MIXTURES

Principal Hazardous Component(s)	%	TLV Units
Calcium Metal; (CAS No. 7440-70-2)	99%	Not established
Magnesium Metal; (CAS No. 7439-95-4)	0.7%	Not established
WARNING! FLAMMABLE SOLID - A FIRE HAZARD		
KEEP DRY AND WELL CLOSED. DANGEROUS WHEN WET.		

SECTION III PHYSICAL DATA

Melting Point (°F)	839°C (1544°F)	Specific Gravity (H_2O = 1)	1.54 @ 20°C
Boiling Point (°F)	1487°C (2817°F)	Percent Volatile by Volume (%)	Non-volatile (NA)
Vapor Pressure (mm Hg)	10 mm @ 983°C	Evaporation Rate (= 1)	Non-volatile (NA)
Vapor Density (Air=1)	Not listed		
Solubility in Water	Caution: Reacts violently with water to produce hydrogen gas.		
Appearance & Odor	Lustrous, silver-white surface when freshly cut, tarnishes to grayish-white on exposure to air; no odor.		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used)	Non-flammable	Flammable Limits in Air % by Volume	Lower NA	Upper
Extinguisher Media	Use dry graphite, soda ash, powdered sodium chloride, sand, G-1 powder.			

SPECIAL FIREFIGHTING PROCEDURES

Do not use water or halogenated hydrocarbons such as Carbon Tetrachloride. Carbon dioxide and dry chemicals are ineffective. Wear a self contained breathing apparatus; wear goggles. USE: Special mixtures of dry chemical or lime is only extinguishing agent to be used.

(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5, GUIDE PAGE NO. 40)

UNUSUAL FIRE AND EXPLOSION HAZARDS

Calcium reacts with water to form the hydroxide and hydrogen. Mixed with air, the liberated hydrogen may present an explosion hazard. Explosion or violent reaction may take place if care is not exercised in selecting extinguishants applied to a calcium fire. Finely divided calcium is considered pyrophoric and will cause an explosion when an ignition source is applied. Moderate explosion hazard in intimate contact with very powerful oxidizing agents.

D.O.T. CALCIUM, 4.3, UN 1401

SECTION V HEALTH HAZARD DATA — CC 30

Threshold Limited Value

None established.

Effects of Overexposure

Solid material will cause skin and eye burns since it reacts with moisture to form caustic. Similarly, the fumes from burning calcium are highly irritating to skin, eyes, and mucous membranes.

Emergency and First Aid Procedures

SKIN: Wipe excess metal from skin. Wash with soap and water.
EYES: Flush with water for 15 minutes. Get prompt medical attention. INGESTION: Specific data is not available. Call physician immediately.

SECTION VI REACTIVITY DATA

Stability		Conditions to Avoid
Unstable		
Stable	X	Unstable when exposed to moist atmosphere - heat.

Incompatibility (Materials to Avoid) Moisture from any source, alkali - metal hydroxides and carbonates.

Hazardous Decomposition Products Calcium and water react to produce hydrogen. Burning calcium is self sustaining and strongly reducing to adjacent media.

Hazardous Polymerization		Conditions to Avoid
May Occur	Will Not Occur	
	X	Not applicable.

SECTION VII SPILL OR LEAK PROCEDURES

Steps to be taken in case material is released or spilled Wear protective equipment and clothing. Collect spilled material for reclamation or disposal in sealed containers. Avoid contact with water. Avoid inhalation of dust.

Waste Disposal Method Discharge, treatment, or disposal may be subject to Federal, State or Local laws. These disposal guidelines are intended for the disposal of catalog size quantities only.

Recycle or dispose of in an approved incinerator or contract with a licensed chemical waste disposal service.

SECTION VIII SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type) Normally none needed. A NIOSH-approved dust filter mask if needed.

Ventilation				
Local Exhaust	Recommended	Special	No
Mechanical (General)	Recommended	Other	No

Protective Gloves Rubber **Eye Protection** Chemical safety glasses.

Other Protective Equipment Safety glasses, smock, apron, eye wash station and a fire extinguisher.

SECTION IX SPECIAL PRECAUTIONS

Precautions to be Taken in Handling & Storing Store in a cool, dry place. No smoking or open flames when opening container. Wash thoroughly after handling.

Keep container tightly closed when not in use.

Other Precautions Read label on container before using. Do not wear contact lenses when working with chemicals.

Store under kerosene or other neutral oil. Never store under halogenated hydrocarbons. Remove and wash contaminated clothing.

For laboratory use only. Not for drug, food or household use. Keep out of reach of children.

Rev. No. No. 6 | Date 5/11/93 | Approved Alexander A. Piccirilli | Chemical Safety Coordinator AP

The information contained herein is furnished without warranty of any kind. Employers should use the information only as a supplement to other information gathered