

# MATERIAL SAFETY DATA SHEET

## **I PRODUCT IDENTIFICATION**

---

**Trade Name:** Indium Phosphide **Synonyms:** Indium Monophosphide  
**Chemical Family:** Metal Phosphide **Chemical Formula:** InP

## **II HAZARDOUS INGREDIENTS**

---

**TLV (Units):** Not Set 0.1 mg/m<sup>3</sup> (In), 0.1 mg/m<sup>3</sup> (P<sub>4</sub>) **OSHA PEL:** Not Set 0.1 mg/m<sup>3</sup> (P<sub>4</sub>)

**HMIS Hazard Rating: Health:** 3 **Flammability:** 2 **Reactivity:** 2 **Personal Protection:** X

## **III PHYSICAL DATA**

---

**Boiling Point:** No data **Melting Point:** 1070 °C  
**Reaction with H<sub>2</sub>O:** No data (may form PH<sub>3</sub>) **Density:** No data  
**Solubility in H<sub>2</sub>O:** No data (may form PH<sub>3</sub>) **Comments:** Slightly soluble in mineral acids.  
**Appearance and Odor:** Brittle mass with metallic appearance, odorless.

## **IV FIRE AND EXPLOSION HAZARDS DATA**

---

**Flash Point:** N/A **Autoignition Temperature:** N/A  
**Flammability:** Hazard on contact with water/moisture.

**Extinguishing Media:** Do not use water, use dry chemical, CO<sub>2</sub>.

**Special Fire Fighting Procedures:** Wear a self-contained breathing apparatus and full protective clothing to prevent contact with skin and eyes.

**Unusual Fire & Explosion Hazards:** Can react with moisture or acids to liberate phosphine (PH<sub>3</sub>), which is a fire and explosion hazard. When heated to decomposition, it may emit toxic fumes of POx.

## **V HEALTH HAZARD INFORMATION**

---

**Toxicity Data:** No specific data for this compound

**In Data:** scu-mus LDLO: 10 mg/kg  
**PH<sub>3</sub> Data:** ihl-hmn LCLO: 1000 ppm orl-rat LD50: 12 mg/kg ihl-rat LC50: 11 ppm/4H  
scu-dog LDLO: 2 mg/kg scu-rbt LDLO: 10 mg/kg

**Routes of Entry: Inhalation:** Yes **Skin:** Yes **Ingestion:** Yes

**Medical Conditions Generally Aggravated by Exposure:** Respiratory disorders.

**Carcinogenicity:** None **NTP?** No **IARC Monographs?** No **OSHA Regulated?** No

**Effects of Over Exposure:**

**Inhalation:** May cause sneezing, coughing, difficulty breathing and irritation of the mucous membrane of the respiratory tract.

**Dermal/Eye Contact:** Dermal: May cause irritation, itching and dermatitis. Eye: May cause burning sensation, irritation, redness and watering of the eyes if comes in contact.

**Other:** In Compounds: Highly toxic via subcutaneous and moderately toxic via oral routes. Symptoms of acute indium intoxication are anorexia, localized convulsive motions, hind-leg paralysis, pulmonary edema, necrotizing pneumonia, and renal and hepatic damage with resultant dysfunction. Chronic indium intoxication leads to weight loss, poor growth, and extensive necrotic damage to the liver and kidneys.

#### **Phosphides:**

Phosphides are particularly dangerous because they tend to decompose to phosphine upon contact with moisture or acids. Phosphine is a very toxic gas. It appears to cause, chiefly, a depression of the CNS and irritation of the lungs. Inhalation of phosphine causes restlessness, followed by tremors, fatigue, slight drowsiness, nausea, vomiting and frequently, severe gastric pain and diarrhea. There is often headache, thirst, dizziness, oppression in the chest and burning substernal pain; later the patient may become dyspneic and develop cough and sputum. Coma or convulsions may precede death. Chronic poisoning, characterized by anemia, bronchitis, gastrointestinal disturbances and visual, speech and motor disturbances may result from continued exposure to low concentrations.

#### **EMERGENCY AND FIRST AID PROCEDURES:**

**EYES:** Flush eyes with lukewarm water for 15 minutes. Seek medical attention.

**SKIN:** Brush material off of skin. Wash affected area with soap and water. Seek medical attention.

**INHALATION:** Remove victim to fresh air. Administer oxygen if breathing is difficult. Seek medical attention.

**INGESTION:** Give 1-2 glasses of milk or water and induce vomiting. Seek immediate medical attention.

#### **VI REACTIVITY DATA**

---

**Stability:** Unstable

**Incompatibility (Material to avoid):** Strong acids, strong bases, oxidants, moisture/water.

**Hazardous Decomposition Products:** In, InO<sub>x</sub>, P, PO<sub>x</sub>, PH<sub>3</sub>.

**Hazardous Polymerization:** Will not occur.

**Conditions to Avoid:** Heat, flame and incompatible materials.

#### **VII SPILL OR LEAK PROCEDURES**

---

**Steps to Be Taken in Case Material Is Released or Spilled:** Wear a self-contained breathing apparatus and full protective clothing. Isolate the area where the spill occurred and insure that proper ventilation is available. Vacuum up spill using a high efficiency unit and place in a container for proper disposal. Take care not to raise dust. Insure that water/moisture is kept out of the area.

**Waste Disposal Method:** In accordance with Local, State and Federal Waste Disposal Regulations.

#### **VIII SPECIAL PROTECTION INFORMATION**

---

**Respiratory Protection (Specify Type):** Wear NIOSH-approved dust mist-fume cartridge respirator.

**Ventilation: Local Exhaust:** Maintain exposure below TLV level for P<sub>4</sub> & In.

**Mechanical:** Not recommended.

**Special:** Handle in a dry, inert controlled environment.

**Eye Protection:** Safety glasses.

**Protective Gloves:** Neoprene

**Other Protective Equipment:** Wear protective clothing to prevent contamination of skin and clothes.

## **IX SPECIAL PRECAUTIONS**

---

### **Precautions to Be Taken in Handling and Storage:**

- Wash thoroughly after handling.
- Store in tightly closed containers, in a cool, dry place.

Prepared By: S. Dierks  
Date: March 1994