**MATERIAL SAFETY DATA SHEET**

**CHEMICAL IDENTITIES**

<table>
<thead>
<tr>
<th>Property</th>
<th>Lead Oxide</th>
<th>Lead Monoxide, Litharge or Massicot</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chemical Name/Synonyms</strong></td>
<td>PbO</td>
<td>PbO</td>
</tr>
<tr>
<td><strong>CAS Registry Number</strong></td>
<td>1317-36-8, Listed in the TSCA Inventory</td>
<td></td>
</tr>
<tr>
<td><strong>Calculated Molecular Weight</strong></td>
<td>233.20</td>
<td></td>
</tr>
</tbody>
</table>

**Hazardous Ingredients**

- Lead Oxide %: 100
- TLV: Not Set
- OSHA/PEL: 0.2mg/m^3 (Pb)

**Physical and Chemical Properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color, Form and Odor</td>
<td>Red-yellow crystals, odorless</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>ND</td>
</tr>
<tr>
<td>Density (gm/cc)</td>
<td>9.53</td>
</tr>
<tr>
<td>Vapor Pressure @ 20°</td>
<td>NA</td>
</tr>
<tr>
<td>% Volatile by Volume (%)</td>
<td>NA</td>
</tr>
<tr>
<td>Reaction with Water</td>
<td>None</td>
</tr>
<tr>
<td>Evaporation Rate (H2O=1)</td>
<td>NA</td>
</tr>
<tr>
<td>Solubility in Water</td>
<td>Insoluble</td>
</tr>
<tr>
<td>Melting Point</td>
<td>888</td>
</tr>
</tbody>
</table>

**Fire and Explosion Hazard Data**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flash Point</td>
<td>NA</td>
</tr>
<tr>
<td>Autoignition Temperature (°C)</td>
<td>NA</td>
</tr>
<tr>
<td>Flammability</td>
<td>Non-flammable</td>
</tr>
<tr>
<td>Extinguishing Media</td>
<td>Use dry chemical, CO₂.</td>
</tr>
<tr>
<td>Special Fire Fighting Procedures</td>
<td>Wear a self-contained breathing apparatus and full protective clothing to prevent contact with skin and eyes.</td>
</tr>
<tr>
<td>Unusual Fire &amp; Explosion Hazards</td>
<td>When heated to decomposition, it may emit toxic fumes of Pb.</td>
</tr>
</tbody>
</table>
## Lead Oxide

### Material Safety Data Sheet

**Health Hazard Information**

<table>
<thead>
<tr>
<th>Toxicity Data</th>
<th>Health Hazard Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>skn-rbt: 100mg/24H MLD</td>
<td><strong>Inhalation:</strong> May cause sneezing, coughing, difficulty breathing and irritation of the mucous membranes of the respiratory tract.</td>
</tr>
<tr>
<td>otr-ham: emb 50µmol/L</td>
<td><strong>Dermal:</strong> May cause irritation, itching and dermatitis.</td>
</tr>
<tr>
<td>dnd-ham: emb 50µmol/L</td>
<td><strong>Eye:</strong> May cause burning sensation, irritation, redness and watering of the eyes if comes in contact.</td>
</tr>
</tbody>
</table>

**HMIS Rating:**

- **Health:** 4*
- **Flammability:** 0
- **reactivity:** 0
- **Personal Protection:** X

**Routes of Entry:**

- **Inhalation:** Yes
- **Skin:** Yes
- **Ingestion:** Yes

**Medical Conditions Aggravated by Overexposure:**

Respiratory Disorders

**Effects of Overexposure (acute and chronic):**

- **Inhalation:** May cause sneezing, coughing, difficulty breathing and irritation of the mucous membranes of the respiratory tract.
- **Dermal:** May cause irritation, itching and dermatitis.
- **Eye:** May cause burning sensation, irritation, redness and watering of the eyes if comes in contact.
- **Other:** *see attached sheet*

**Carcinogenicity:**

- **MUT Data**
- **IARC Monographs:** Indefinite IARC
- **NTP:** No
- **OSHA Regulate:** Yes

**Emergency First Aid Procedures:**

- **Ingestion:** give 1-2 glasses of milk or water, induce vomiting
- **Inhalation:** remove to fresh air, administer oxygen if breathing is difficult
- **Skin Contact:** brush material off skin, wash affected area with soap and water
- **Eye Contact:** flush eyes for at least 15 minutes with lukewarm water
  *seek medical attention for all conditions mentioned above*

**Reactivity Data**

- **Stability:** Stable
- **Conditions Contributing to Unstability:** None
- **Incompatibility (Materials to Avoid):**
  - chlorinated rubber, chlorine, ethylene, fluorine, glycerol, perchloric acid, hydrogen trisulfide, metal acetylides, metals, non-metals, peroxo-farmic acid, seleninyl chloride.
  - Pb, PbOx
  - Will Not Occur
- **Hazardsous Decomposition Products:**
  - Pb, PbOx
  - PB
- **HAZARDOUS POLYMERIZATION:**
  - Will Not Occur
- **Conditions to Avoid:** Heat, flame & incompatible materials
LEAD OXIDE
MATERIAL SAFETY DATA SHEET

SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Wear self-contained breathing apparatus and full protective clothing, isolate area where spill occurred, ensure proper ventilation, vacuum spill using a high efficiency unit and place in container for proper disposal. Take care not to raise dust.

WASTE DISPOSAL METHOD:
Consult federal, state and local regulations for proper disposal.

SPECIAL PROTECTIVE INFORMATION

RESPIRATORY PROTECTION
NIOSH approved dust-mist-fume cartridge respirator

LOCAL EXHAUST
Maintain exposure below TLV level for Pb

MECHANICAL (general)
Not recommended

SPECIAL
Handle in a dry, controlled atmosphere

OTHER
NA

PROTECTIVE GLOVES
Neoprene

EYE PROTECTION
Safety glasses

OTHER PROTECTIVE EQUIPMENT
Wear protective clothing to prevent contamination of skin and clothes

SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING/STORAGE: Store in tightly closed containers in a cool, dry place. Wash hands and face thoroughly after handling and before meals.

TRANSPORTATION REQUIREMENTS

DOT CLASS: Not Classified
UN NUMBER: 2291
IMCO CLASS: 6.1
OTHER:

PRECAUTIONARY LABELING
NONE

THE ABOVE INFORMATION IS ACCURATE TO THE BEST OF OUR KNOWLEDGE. HOWEVER, SINCE DATA, SAFETY STANDARDS AND GOVERNMENT REGULATIONS ARE SUBJECT TO CHANGE THE CONDITIONS OF HANDLING AND USE, OR MISUSE ARE BEYOND OUR CONTROL. ANGSTROM SCIENCES MAKE NO WARRANTY, EITHER EXPRESSED OR IMPLIED, WITH RESPECT TO THE COMPLETENESS OR CONTINUING ACCURACY OF THE INFORMATION CONTAINED HEREIN AND DISCLAIMS ALL LIABILITY FOR THE RELIANCE THEREON. USER SHOULD SATISFY HIMSELF THAT HE HAS ALL CURRENT DATA RELEVANT TO HIS PARTICULAR USE.

NA= NOT APPLICABLE       ND= NO DATA FOUND
Industrial lead poisoning commonly occurs following prolonged exposure to lead or its compounds. The common clinical types of lead poisoning may be classified according to their clinical picture as (a) alimentary; (b) neuomotor; and (c) encephalic. Some cases may show a combination of clinical types. The alimentary type occurs most frequently, and is characterized by abdominal discomfort and pain. Severe cases may present actual colic. Other complaints are constipation and/or diarrhea, loss of appetite, metallic taste, nausea and vomiting, lassitude, insomnia, weakness, joint and muscle pains, irritability, headache and dizziness. Pallor, lead line on the gums, pyorrhea, loss of weight, abdominal tenderness, basophilic stippling, anemia, slight albuminuria, increased urinary excretion, and an increase in the lead content of the whole blood, are signs which may accompany the above symptoms.

In the neuromuscular type, the chief complaint is weakness, frequently of the extensor muscles of the wrist and hand, unilateral or bilateral. Other muscle groups which are subject to constant use may be affected. Gastroenteric symptoms are usually present, but are not as severe as in the alimentary type of poisoning. Joint and muscle pains are likely to be more severe. Headache, dizziness and insomnia are frequently prominent. True paralysis is uncommon, usually is the result of prolonged exposure.

Lead encephalopathy is the most severe but rarest manifestation of lead poisoning. In the industrial worker it follows rapid and heavy lead absorption. Organic lead compounds, such as tetraethyl lead, are absorbed rapidly through the skin as well as through the lungs, and are selectively absorbed by the CNS. With inorganic lead compounds, comparable concentrations in the CNS are reached only when the workplace is heavily contaminated with vapor, fume and dust. Encephalopathy begins abruptly, and is characterized by signs of cerebral and meningeal involvement. There is usually stupor, progress to coma with or without convulsion, and often terminating in death. Excitation, confusion and mania are less common. In milder cases of short duration, there may be symptoms of headache, dizziness, somnolence and insomnia. The cerebrospinal pressure may be increased.