

SAFETY DATA SHEET

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SECTION 1. IDENTIFICATION

Product Identifier: Lead Magnesium Niobate/Lead Titanate Single Crystal

Product Code: PMN-PBT-01-SX

CAS Number: N/A

Relevant identified uses of the substance: Scientific research and development

Supplier details:

American Elements
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SECTION 2. HAZARDS IDENTIFICATION

MECHANICAL PROCESSING OF PMN-PT PRODUCT MAY RESULT IN TOXIC FINE POWDER OR DUST.

Potential Health Effects Resulting from Fine Powder or Dust:

Inhalation: The respiratory system may be irritated and both acute and chronic effects can result.

Ingestion: Powder or dust swallowed or contained in the upper respiratory tract through multiple methods (food, tobacco, fingers, etc.) can have acute and chronic effects on blood and kidney functions.

Skin Contact: May cause irritation to skin

Eye Contact: May cause irritation to eyes

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Composition and Ingredient Information*:

Material CAS Number

Lead Monoxide (PbO)** 1317-36-8

Titanium Dioxide (TiO₂) 13463-67-7

Niobium Pentoxide (Nb₂O₅) 1313-96-8

Magnesium Oxide (MgO) 1309-48-4

*Specific percentages of Materials withheld due to a trade secret claim.

****SARA Section 313 Supplier Notification:** This product contains chemicals noted that are subject to the reporting requirements of Section 313 of the EMERGENCY PLANNING AND COMMUNITY RIGHTTO-KNOW ACT OF 1986 AND OF 40 CFR 372.

SECTION 4. FIRST AID MEASURES

Inhalation: Remove from exposure and seek medical attention if experiencing effects from acute overexposure to lead.

Ingestion: Induce vomiting in a conscious individual and seek immediate medical attention.

Skin Contact: Wash skin with soap and water.

Skin Absorption: N/A

Eye Contact: Flush eyes well for 15 minutes, lifting the lower and upper eyelids occasionally. Seek immediate medical attention

SECTION 5. FIREFIGHTING MEASURES

Flammability:

NFPA Flammability Rating = 0

Extinguishing Media = Water, CO₂, and Dry Chemicals

Unusual Fire Hazard:

Product emits toxic fumes under fire conditions and can react quickly with strong oxidizing agents.

Fire Fighting Precautions:

Self-contained breathing apparatus, full face piece, and full body protective clothing strongly recommended.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Waste Disposal:

Disposal of waste obtained through mechanical processing of the PMN-PT material must be handled in according to local, state, and federal regulations of hazardous material.

SECTION 7. HANDLING AND STORAGE

Processing of Material:

Wet mechanical processing of the PMN-PT material with incorporation of water cooling to minimize dust exposure is recommended. The PMN-PT material is intended for use only in industrial applications.

Proper handling practices include:

- Proper PPE equipment utilized (Gloves, masks, safety glasses)
- Wash thoroughly after handling product or in contact areas where the product is stored or processed
- Keep materials away from food, food products, and children
- Do not reuse containers
- Do not wear any clothing home that may have come into contact with this material.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal Protection Equipment

Respirator Dust / Fume respirator compliant to NIOSH/WSHA when handling material.

Protective Gloves Chemical resistant gloves recommended.

Eye Protection Safety goggles recommended.

Other Clothing and Equipment Personal clothing should be protected against contamination

Processing Controls:

- If operations generate dust, ventilation must be used to keep exposure to contaminants to a minimum.

- Ventilation should be in accordance with OSHA, industry, state, local, and federal regulations.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Yellow/Green/Brown

Odor: Odorless

Melting Point: 1300 to 1320C

Molecular Weight: 310 - 330

Specific Gravity: 8.0 - 8.2

Decomposition Temp: 700C

SECTION 10. STABILITY AND REACTIVITY

Reactivity: Reacts with Hydrochloric Acid

Chemical Stability: Stable to 700C

Conditions to Avoid: Dry Mechanical Processing

Hazardous Polymerization: N/A

SECTION 11. TOXICOLOGICAL INFORMATION

Routes of Exposure:

Eyes, mouth, and inhalation of the dust or powder

Effects from Acute Overexposure:

Lead poisoning with possible symptoms of abdominal pain, confusion, headache, fatigue, and various others. Severe symptoms can result in convulsions, stupor, and encephalopathy. Niobium Pentoxide may irritate the mucus membranes and skin.

Effects from Chronic Overexposure:

Normal adult metabolism can handle and mitigate ingestion of lead from the air, food, and beverages until a certain level of toxicity is attained due to the cumulative toxic effect of lead. Early symptoms of lead poisoning can include loss of appetite, intermittent abdominal pain, nausea, diarrhea, constipation, and muscle pain. Magnesium compounds may cause metal fume fever of which symptoms are similar to those of common influenza.

SECTION 12. ECOLOGICAL INFORMATION

No data available.

SECTION 13. DISPOSAL CONSIDERATIONS

Waste Disposal:

Disposal of waste obtained through mechanical processing of the PMN-PT material must be handled in according to local, state, and federal regulations of hazardous material.

SECTION 14. TRANSPORT INFORMATION

Not considered hazardous for transport in this form.

SECTION 15. REGULATORY INFORMATION

Lead, silver and chromium compounds are reportable chemicals under Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (SARA Title III).

16. OTHER INFORMATION

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH). The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. American Elements shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. COPYRIGHT 1997-2022 AMERICAN ELEMENTS. LICENSED GRANTED TO MAKE UNLIMITED PAPER COPIES FOR INTERNAL USE ONLY.