

MATERIAL SAFETY DATA SHEET

SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Identifier Lead Indium Niobate – Lead Magnesium Niobate – Lead Titanate (PIN-PMN-PT)			
Product Use Medical Ultrasound Probe, Non-destructive Testing, Underwater Imaging, Industrial Sensor, MEMS Components			
Manufacturer's Name Innovia Materials (Shanghai) Co., Ltd		Supplier's Name	
Street Address 1333 Luchaogang Road, Pudong		Street Address	
City Shanghai	Province	City	Province
Postal Code 201306	Emergency Telephone 862158357950	Postal Code	Emergency Telephone +86-21-5835-7950
Date MSDS Prepared 26/April/2024	MSDS Prepared By Lirong Ji	Phone Number +86-21-5835-9592	

SECTION 2 — COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Ingredients (<i>specific</i>)	%	CAS Number	LD ₅₀ of Ingredient (<i>specify species and route</i>)	LC ₅₀ of Ingredient (<i>specify species</i>)
Lead Monoxide (PbO)*	-	1317-36-8	-	-
Titanium Dioxide (TiO ₂)	-	13463-67-7	-	-
Niobium Pentoxide (Nb ₂ O ₅)	-	1313-96-8	-	-
Magnesium Oxide (MgO)	-	1309-48-4	-	-
Indium Oxide (In ₂ O ₃)	-	1312-43-2 Y	-	-

*This product contains chemicals subject to reporting requirements of Section 313 of the EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT OF 1986 OF 40 CFR 372 (USA)

SECTION 3 — HAZARDS IDENTIFICATION

MECHANICAL AND CHEMICAL PROCESS OF PMN-PT PRODUCT MAY RESULT IN TOXIC FINE POWDERS OR DUST
Potential health effects resulting from the Fine Powder or Dust:

Route of Entry	Reaction	Hazard
Inhalation	The respiratory system may be irritated and both acute and chronic effects and 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.	N/A
Skin Absorption	N/A	N/A
Eye Contact	May cause irritation to eyes.	N/A

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 — FIRE FIGHTING MEASURES

Flammable NFPA Flammability Rating= 0	If yes, under which conditions?	
Means of Extinction Water, CO2, and Dry Chemicals		
Flashpoint (° C) and Method N/A	Upper Flammable Limit (% by volume)	Lower Flammable Limit (% by volume) N/A
Autoignition Temperature (°C) N/A	Explosion Data — Sensitivity to Impact	Explosion Data — Sensitivity to Static Discharge N/A
Hazardous Combustion Products	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 materials must be handled in according to local, state and country regulations of hazalardous material.
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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
- 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 CONTROL / PERSONAL PROTECTION

Specific Engineering Controls	If operations generate dust, ventilation must be used to keep exposure to contaminants to a minimum Ventilation should be in accordance with OSHA requirements, including industry, local, state and country safety requirement
Personal Protective	Specifications
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.

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

Physical State Solid	Odour and Appearance Yellow/Green/Brown, Odourless	Odour Threshold (ppm) N/A
Specific Gravity 8.0 – 8.2	Vapour Density (air = 1) N/A	Vapour Pressure (mmHg) N/A
Evaporation Rate N/A	Boiling Point (° C) N/A	Melting Point (° C) 1300 - 1320° C
pH N/A	Coefficient of Water/Oil Distribution N/A	[Solubility in Water] N/A
Decomposition Temperature 700° C	Molecular weight 310 to 330	

SECTION 10 — STABILITY AND REACTIVITY

Chemical Stability NO	If no, under which conditions? Stable to 700° C
Incompatibility with Other Substances NO	If yes, which ones?
Reactivity, and under what conditions? Reacts with Hydrochloric Acid	
Hazardous Decomposition Products N/A	

SECTION 11 — TOXICOLOGICAL INFORMATION

Routes of Exposure
Eyes, mouth and inhalation of the dust or powder.
Effects of Acute Exposure
Lead poisoning with possible symptoms off 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 skins.
Effects of chronic exposure
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 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

N/A

SECTION 13 — DISPOSAL CONSIDERATIONS

Waste Disposal

Disposal of waste obtained through mechanical processing of the PMN-PT material must be handled in accordance with local, state and country regulations of hazardous material.

SECTION 14 — TRANSPORT INFORMATION

Special Shipping Information	N/A
N/A	PIN
TDG	N/A
[IMO]	N/A
[DOT]	N/A
[ICAO]	N/A

SECTION 15 — REGULATORY INFORMATION

[WHMIS Classification] N/A	[OSHA] N/A
[SERA] N/A	[TSCA] N/A

SECTION 16 — OTHER INFORMATION

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Revision: none

This document is served only as guide with information best known to Innovia Materials (Shanghai) Co., Ltd at the time of creation. Innovia Materials should not be held liable for any damage from resulting from handling or contact of the product. All persons using, handling or working in close proximity with this product should be familiar with the contents of this datasheet.

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