



SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MANUFACTURED BY: Sensor Technology Ltd.
20 Stewart Road
Collingwood, ON
L9Y 4K1

PRODUCT NAME: Lead Titanate, Lead Zirconate Titanate, Lead Magnesium Niobate, Lead Metaniobate.
(mixture of metal salts).

Product Codes:

Product Use: manufacture of acoustic and ultrasonic transducers, and actuators

Phone: 705-444-1440

Emergency Contact: 705-444-1440, or as instructed

Fax: 705-444-6787

2. HAZARDS IDENTIFICATION

HEALTH	2
FLAMMABILITY	0
REACTIVITY	0
PERSONAL PROTECTION	*

* Recommended personal protective measures are identified within this document



HARMFUL IF SWALLOWED, HARMFUL IF INHALED

POTENTIAL ACUTE HEALTH EFFECTS:

EYE CONTACT: nuisance dust only

SKIN CONTACT: The material readily adheres to skin, but there is little or no risk of effects from skin contact. If good hygiene is not practiced, the probability of ingestion will be increased by passing dust from skin to mouth.

INGESTION: Abdominal pain, loss of appetite, metallic taste, headache, dizziness, insomnia, constipation, nausea, muscular pain, weakness, and in extreme cases may result in lead encephalopathy.

INHALATION: Abdominal pain, loss of appetite, metallic taste, headache, dizziness, insomnia, constipation, nausea, muscular pain, weakness, and in extreme cases may result in lead encephalopathy.

ROUTES OF EXPOSURE: inhalation and ingestion

POTENTIAL CHRONIC HEALTH EFFECTS: Muscular pain, weakness, insomnia, headaches, dizziness, loss of appetite, metallic taste, constipation, nausea, abdominal pain, can be fatal in extreme circumstances.

Medical conditions aggravated by exposure: Any pre-existing lung or pulmonary condition





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3. COMPOSITION/INFORMATION ON INGREDIENTS

This SDS applies to the following BM300 for Lead Titanate.

BM200, BM400, BM500, BM527, BM532, BM740, BM800 for Lead Zirconate Titanate.

BM901, BM921 and BM941 for Lead metaniobate

Ingredients	Chemical Formula	CAS #	Weight Percent	Exposure Limits	Agency	Type
Barium Carbonate	BaCO ₃	513-77-9	0-10	0.5 mg/m ³	OSHA	PEL
Calcium Carbonate	CaCO ₃	1317-65-3	0-5	15 mg/m ³	OSHA	PEL
Cobalt Carbonate	CoCO ₃	513-79-1	0-10	0.1mg/m ³	OSHA	PEL
Indium Oxide	In ₂ O ₃	1312-43-2	0-5	0.1mg/mg ³	OSHA	TWA
Iron Oxide	Fe ₂ O ₃	1309-37-1	0-2	10mg/m ³	OSHA	TWA
Lanthanum Oxide	La ₂ O ₃	1312-81-8	0-5	---	---	---
Lead Oxide	PbO	1317-36-8	0-65	0.05 mg/m ³	OSHA	PEL
Magnesium Oxide	MgO	1309-48-4	0-20	15mg/m ³	OSHA	PEL
Manganese Carbonate	MnCO ₃	598-62-9	0-20	5mg/m ³	OSHA	PEL
Nickelous Carbonate	NiCO ₃	3333-67-3	0-5	5mg/m ³	OSHA	PEL
Niobium Pentoxide	Nb ₂ O ₅	1313-96-8	0-75	---	---	---
Potassium Carbonate	K ₂ CO ₃	584-08-7	0-20	---	---	---
Sodium Carbonate	Na ₂ CO ₃	497-19-8	0-20	---	---	---
Strontium Carbonate	SrCO ₃	1633-05-2	0-5	---	---	---
Titanium Dioxide	TiO ₂	13463-67-7	0-15	10mg/m ³	OSHA	PEL
Tungsten Oxide	WO ₃	1314-35-8	0-10	5mg/m ³	ACGIH	TLV
Zirconium Oxide	ZrO ₂	1314-23-4	0-25	5mg/m ³	OSHA	TWA

4. FIRST AID MEASURES

INGESTION: No recognized first aid. Contact a Physician if over exposed.

INHALATION: If symptoms arise, remove from exposure and contact a physician.

EYE CONTACT: Flush eyes with running water or saline solution, etc.

5. FIRE FIGHTING MEASURES

FLASHPOINT: Not Applicable

OSHA FLAMABILITY CLASSIFICATION: Not Applicable

EXTINGUISHING MEDIA: Use extinguishing media required for surrounding area. This material is not combustible and we do not anticipate it to react with any commercial grade extinguishing media.

SPECIAL FIREFIGHTING PROCEDURES: Contain any run off from fire and dispose of as per regulatory requirements. Fire fighters and other who may be exposed to products should wear full fire fighting gear and a self-contained breathing apparatus to protect from inhalation.

6. ACCIDENTAL RELEASE MEASURES





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Spill clean-up should be done using proper ppe and vacuum with a HEPA filter.

Lead Zirconate Titanate will be disposed of in accordance with Federal, Provincial and Municipal regulations.

Reporting: All spills must be reported to the appropriate Federal, Provincial and Municipal regulators.

7. HANDLING AND STORAGE

HANDLING:

Wear all specified elements of PPE. Avoid dust generation before firing. Be familiar with the requirements set forth in designated substance standard.

STORAGE:

Store in cool, dry area.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

LEAD CONTROL PROGRAM: Preventative measures are outlined in the R.R.O. 1990, Regulation 843- Designated substance Lead. (Occupational Health and Safety Act, Ontario, Canada)

PERSONAL PROTECTIVE EQUIPMENT: if the Time Weighted Average Exposure Value of $0.05\text{mg}/\text{m}^3$ is exceeded, respirators, approved for lead dust at the level of exposure experienced, must be used; and gloves, safety glasses and full body coveralls must be worn.

HYGIENE CONTROLS:

- No food, drink or tobacco to be allowed in storage or handling areas;
- No contaminated clothing or equipment to be allowed outside designated areas;
- employees must wash hands, forearms and face thoroughly after handling, especially before eating, drinking, smoking or leaving plant facilities;
- Contaminated clothing and equipment must be thoroughly cleaned of dust before use; and
- Clean-up to be done by a wet method or HEPA filtered vacuuming only.





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9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Solid
Appearance	Light Colored Powder
Vapour Pressure (mg Hg)	10 @ ~1000°C
Solubility in Water	Insoluble
Odour	None
% Volatile by Volume	N/A
Evaporation rate	N/A
Specific Gravity	4.0 – 7.8
Vapour Density (Air=1)	~7.0
Melting Point	> 800°C
pH	N/A
Boiling Point	~1400°C

10. STABILITY AND REACTIVITY

Conditions under which the product is chemically unstable:	N/A
Name of any substance or class of substance with which the product is incompatible:	N/A
Conditions of reactivity:	N/A
Hazardous decomposition products:	N/A

11. TOXICOLOGICAL INFORMATION

PEL - Permissible exposure limits
TWA - Time weighted average
 LD50 (species and route) Not available
 LC50 (species and route) Not available
 Exposure limits - 0.05mg/m³ (TWAEV)
 Irritancy of product - Data not available
 Sensitization to product - Data not available
 Carcinogenicity -Data not available
 Reproductive toxicity-Data not available
 Teratogenicity-Data not available
 Mutagenicity-Data not available
 Name of toxically synergistic products- Not applicable



**SAFETY DATA SHEET****12. ECOLOGICAL INFORMATION**

Very toxic for aquatic organisms
Do not allow to reach groundwater, water course or sewage system.
Danger to drinking water
Avoid transfer to environment

13. DISPOSAL CONSIDERATIONS

Consult local regulation for proper disposal

14. TRANSPORT INFORMATION

Environmentally hazardous substance, solid

15. REGULATORY INFORMATION

HWIN – Hazardous Waste Information Network (MOE)
Toxic Reduction Plan – Regulation 455/09 (MOE)
Airborne Contaminates Discharge -Regulation 127/01 (MOE)
NPRI – Environment Canada
Designated Substance – Reg 490/09 (MOE)

16. OTHER INFORMATION

The above information is believed to be correct to the best of our knowledge and should be used as a guide only. Sensor Technology Ltd. shall not be held liable for any damage resulting in handling or from contact with the above product.

Dated June 22, 2018

