SENSOR TECHNOLOGY

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

SENSOR TECHNOLOGY

SAFETY DATA SHEET

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/m3	OSHA	PEL
Calcium Carbonate	$CaCO_3$	1317-65-3	0-5	15 mg/m3	OSHA	PEL
Cobalt Carbonate	$CoCO_3$	513-79-1	0-10	0.1mg/m3	OSHA	PEL
Indium Oxide	In_2O_3	1312-43-2	0-5	0.1mg/mg3	OSHA	TWA
Iron Oxide	Fe_2O_3	1309-37-1	0-2	10mg/m3	OSHA	TWA
Lanthanum Oxide	La_2O_3	1312-81-8	0-5	---	---	---
Lead Oxide	PbO	1317-36-8	0-65	0.05 mg/m3	OSHA	PEL
Magnesium Oxide	MgO	1309-48-4	0-20	15mg/m3	OSHA	PEL
Manganese Carbonate	$MnCO_3$	598-62-9	0-20	5mg/m3	OSHA	PEL
Nickelous Carbonate	$NiCO_3$	3333-67-3	0-5	5mg/m3	OSHA	PEL
Niobium Pentoxide	Nb_2O_5	1313-96-8	0-75	---	---	---
Potassium Carbonate	K_2CO_3	584-08-7	0-20	---	---	---
Sodium Carbonate	Na_2CO_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/m3	OSHA	PEL
Tungsten Oxide	WO_3	1314-35-8	0-10	5mg/m3	ACGIH	TLV
Zirconium Oxide	ZrO_2	1314-23-4	0-25	5mg/m3	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

SENSOR TECHNOLOGY

SAFETY DATA SHEET

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 0.05mg/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.

SENSOR TECHNOLOGY

SAFETY DATA SHEET

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Solid
Appearance	
Light Colored Powder Vapour Pressure (mg Hg)	
	10 @ ~1000°C Solubili
ty 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/m^3 (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

SENSOR TECHNOLOGY

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 handing or from contact with the above product.

Dated August 10th, 2021