

TITLE: MSDS for PZT	TYPE	Specification	
	DOC. NUM.	MS-1379	Rev. A

1.0 TITLE

MSDS for PZT

2.0 DESCRIPTION

Piezoelectric Materials: Lead Zirconate-Titanate (PZT)
 Lead Meta-Niobate (PMN)
 Lead Titanate (PT)

<u>Distribution</u>	<u>Number of Copies</u>
Facilities Manager	1
Purchasing Manager	1

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**APPENDIX I
MATERIAL SAFETY DATA SHEET**

Morgan Electro Ceramics
232 Forbes Rd.
Bedford, Ohio 44146 USA
(440) 232-8600
(440) 232-8731 fax

PRODUCT NAME: Piezoelectric Materials:
Lead Zirconate-Titanate (PZT)
Lead Meta-Niobate (PMN)
Lead Titanate (PT)

MSDS# MATROC-PEC
MSDS DATE: 02/04/97

NOTE: The OSHA Hazard Communication Standard 29 CFR 1910.1200 requires that the information contained on these sheets be made available to your workers. Please instruct your workers to handle this product properly.

COMPOSITION/INFORMATION ON INGREDIENTS

	<u>CAS #</u>	<u>OSHA PEL</u>	<u>%</u>
LEAD	7439-92-1	50 ug/M ³ TWA	50-70%
ZIRCONIUM	7440-67-7	5 mg/M ³ TWA; 10 mg/M ³ STEL	0-20%
TITANIUM	7440-32-6	N/A	0-25%
NIOBIUM	7440-03-1	N/A	0-25%
STRONTIUM	7440-24-6	N/A	0-2%
SILVER	7440-22-4	10 ug/M ³ TWA	0-5%
BARIUM	7440-39-3	0.5 mg/M ³ TWA	0-3%
CHROMIUM	7440-47-3	0.5 mg/M ³ TWA	< 1%
ANTIMONY	7440-36-0	0.5 mg/M ³ TWA	< 1%

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).

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Note: If this product is used in a manner that creates dust, especially if the dust becomes airborne, the OSHA Lead Standard (29 CFR 1910.1025) may apply.

Potential Health Effects:

EYES: Can cause irritation. Particles embedded in eyes can cause inflammation, degeneration of tissues and discoloration.

SKIN: Repeated and prolonged exposure can cause irritation and dermatitis, mostly through mechanical abrasion. The toxic metal ingredients are not generally absorbed through skin. Repeated and prolonged contact with zirconium can cause skin granulomas.

INGESTION: Significant quantities can cause weakness, headache, anemia, nausea, constipation or diarrhea, and nervous, muscular and cardiac irregularities. Lead can have a long term effect on the nervous system, the brain and the kidneys. Lead has been linked to reproductive disorders and birth defects through exposure to both the mother and the father.

INHALATION: Chronic exposure to the lungs can lead to the same symptoms as through ingestion. The dust can also cause respiratory irritation, especially as an aggravation to pre-existing conditions.

CARCINOGENICITY: Lead is classified as group 3 by IARC: Cannot be classified as to it's carcinogenicity.

First Aid Measures:

In any normal use, the product will not give off enough dust to cause problems requiring first aid, except possibly due to eye irritation. If eye irritation occurs, rinse with water and seek medical advice if irritation persists. Health effects due to metals are best avoided by good hygiene and adequate ventilation. In the event of exposure to significant amounts of dust, remove worker to fresh air. Seek medical assistance if symptoms as described above are exhibited.

Fire Fighting Measures:

The product will normally not burn unless subjected to very high heat. Use CO₂, sand, dry chemical or water to extinguish. Fire-fighters should wear self-contained breathing apparatus. Toxic metal oxides may be emitted.

Handling and Storage:

Minimize actions that would generate dust and maintain good housekeeping to minimize the exposure to workers. Vacuuming is preferable to sweeping if significant amounts of dust are created. Do not use compressed air to blow off dust. Wash hands thoroughly after handling and do not eat or drink in areas where handled. Launder work clothing regularly. Use ventilation to keep airborne concentrations below exposure limits or use NIOSH-approved respirators if exposure limits are exceeded. Use eye protection if airborne dust is generated.