



PIEZO SYSTEMS, INC.

65 Tower Office Park
Woburn, MA 01801

Tel (781) 933-4850 • Fax (781) 933-4743

Material Safety Data Sheet (MSDS)

PSI-5A4E Piezoceramic Material

Company Name: Piezo Systems, Inc.

Address: 65 Tower Office Park
Woburn, Massachusetts 01801 USA

Information Telephone Number: (781) 933-4850

Emergency Telephone Number: (781) 933-4743 (ask for Safety Director)

Identification:

Chemical Family: Ceramic Materials

Formula: Proprietary

Physical Data:

Form: Solid Ceramic Material

Appearance: Yellow - White

Odor: None

Solubility in Water: Insoluble

Components:

Material	Percent %	CAS #
Lead Oxide	60-70	1306-60-0
Zirconium Oxide	20-25	1314-23-4
Titanium Oxide	10-15	13463-67-7
Lanthanum Oxide	2-4	1312-81-8

Hazards/Reactivity:

Instability: This product is normally stable

Incompatibility: None

Polymerization: This product does not normally polymerize significantly

Fire & Explosion Data:

Flash Point: None; solid material

Fire & Explosion Hazards: None, nonflammable

Health Hazard Information:

The primary route of entry is either by inhalation or ingestion. This material can be in the form of a powder or solid. If inhaled or ingested the toxicology of lead predominates. This includes the potential for damage to the kidneys, blood forming organs as well as the reproductive system and the nervous system. Ingestion can cause vomiting, diarrhea, nausea and abdominal pain. Inhalation may cause irritation of the nose and throat, cough, dyspnea, chest pains, fever and chills.

Acute lead poisoning can lead to a condition called acute encephalopathy, which may rapidly develop into seizures, coma and eventually death.

Exposure Limits:

<u>Material Name:</u>	<u>OSHA PEL (mg/m3)</u>	<u>ACGIH TLV (mg/m3)</u>
Lead	0.05	0.05
Zirconium	5.0	5.0
Titanium	15.0 (respirable dust)	10.0
Lanthanum	15.0 (respirable dust)	10.0

First Aid Instructions:

Ingestion: If conscious, induce vomiting.

Inhalation: Remove to fresh air and if breathing is difficult give oxygen.

Skin Contact: Wash thoroughly.

Eye Contact: Flush with plenty of water for 15 minutes.

In all cases seek appropriate medical advice & treatment.

Personal Protection Information:

Respiratory Protection: Selection of a suitable respirator will depend on the properties of the contaminant(s) and their actual or expected air concentration(s) versus applicable limits. Consult ANSI Standard Z88.2 for decision logic to select appropriate NIOSH/MSHA approved respirators. If respirators are needed to meet applicable limits a respiratory protection program in accordance with OSHA Standard 29 CFR 1910.134 is mandatory. This includes monitoring, selection, medical approval, training, fit testing, inspection, maintenance, storage, etc.

Gloves: Gloves should be used when the possibility of skin contact exists. The suitability of a particular glove and glove material should be determined as part of an overall glove personal protection program. Considerations should include chemical breakthrough time, permeation rate; abrasion, cut and puncture resistance; and duration of contact, etc. Recommended glove material: Latex.

Other personal protection practices: Appropriate eye protection such as safety glasses should be used where the possibility of eye contact exists. Protective outer clothing should be used where the possibility of body contact exists. Contaminated work clothing should not be allowed out of the workplace. Smoking or the consumption of food or beverages should be prohibited where the material is handled or stored. After handling this material wash hands thoroughly before leaving the work area.

Additional Engineering Controls: Local exhaust ventilation is recommended where an airborne dust or powder is generated. Work practices and training may be required depending on the exposure level. Many of these points are discussed in the OSHA Respiratory Protection Standard (29 CFR 1910.134), the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the OSHA Lead Standard (29 CFR 910.1025).

Disposal Information:

Contaminated items: Empty product containers, contaminated clothing and cleaning materials, etc. should be considered hazardous until decontaminated or properly disposed of. Dispose of waste in accordance with federal, state and local regulations. Typically defined as a hazardous waste by EPA.

Storage Information:

Store in tightly closed containers. Label with name of contents and hazard warnings.

Regulatory Information:

This material is listed on EPA's TSCA inventory. Lead is regulated under EPA's SARA Regulations.