



Super Conductor Materials, Inc.

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Chemtrec: (800) 424-9300
Poison Center: (800) 562-8236
Revision Date: January 8th, 2019

SAFETY DATA SHEET

Identity: Germanium

Formula: Ge

SECTION I - GENERAL INFORMATION

Manufacturer: Super Conductor Materials, Inc.

The information below is believed to be accurate and represents the best information available to Super Conductor Materials, Inc. However, SCM makes no warranty, expressed or implied with respect to such information and assumes no liability resulting from its use.

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Molecular weight: 72.61

CAS #	OSHA PEL	ACGIH TLV	%
7440-56-4	N/A	N/A	0.0-100.0%

SECTION III – PHYSICAL/CHEMICAL CHARACTERISTICS

Physical State: Solid

Boiling Point: 2830.00°C

Specific Gravity (water=1): 5.32 g/cm³ at 25.0°C

Melting Point: 937.2°C

Vapor Pressure: 1.1 x 10⁻⁹ atm

Solubility in water: None

Vapor Density: NA

Evaporation Rate: NA

Flash Point: N/A

Appearance and odor: Grayish-white, crystalline, brittle powder or pieces, no odor

Section IV - Fire and Explosion Hazard Data:

Method Used: Unknown

Explosive Limits: LEL: N/A

UEL: N/A

Extinguishing Media: Use suitable extinguishing agent for surrounding material and type of fire

Special Fire Fighting Procedures:

Firefighters must wear full face, self-contained breathing apparatus with full protective clothing to prevent contact with skin and eyes. Fumes from fire are hazardous. Isolate runoff to prevent environmental pollution.

Unusual Fire and Explosion Hazards:

- In powder form, Germanium is capable of creating a dust explosion.
- Germanium oxidizes at 600-700C, does not volatilize to approximately 1350C.
- May ignite on contact with chlorine or bromine + heat.
- May have a violent reaction with nitric acid.
- May have an explosive reaction when heated with potassium chlorate or potassium nitrate.
- May have an incandescent reaction when heated with oxygen or potassium.



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SECTION V - REACTIVITY DATA

Stability: Stable

Conditions to Avoid (stability): None

Incompatibility: Aqua regia, concentrated sulfuric acid, fused alkalis, nitrates or carbonates, halogens and oxidants.

Hazardous Decomposition or Byproducts: Oxides of germanium

Hazardous Polymerization: Will not occur

Conditions to avoid (hazardous polymerization): None

SECTION VI - HEALTH HAZARD DATA

Routes of entry: Inhalation? Yes Skin? Yes Eyes? Yes Ingestion? Yes Other: No

To the best of our knowledge the chemical, physical and toxicological properties of germanium have not been thoroughly investigated and recorded.

Germanium compounds are considered to be of a low order of toxicity, but rare instances of poisoning have been reported in the literature. Experimental LD50 values are typically about 100-1000 mg/kg for parenteral route and 500-5000 mg/kg for ingestion. The animals suffer from hypothermia, diarrhea, and respiratory and cardiac failure. (Sax, Dangerous Properties of Industrial Materials, eighth edition)

Signs and Symptoms of Overexposure:

Inhalation: May cause coughing, sneezing, difficulty breathing and pulmonary edema. Acute germanium toxicity may cause: hypothermia, listlessness, diarrhea, cyanosis, edema and hemorrhage of lungs, petechial hemorrhage in the walls of the small intestines and a peritoneal effusion which is rich in protein. Edematous changes are also seen in heart muscle and in the parenchymal cells of the liver and kidneys. Chronic germanium toxicity may cause: growth and fatty degeneration of the liver.

Ingestion: No acute or chronic health effects recorded.

Skin: May cause redness and itching.

Eye: May cause redness, itching and watering.

Health Hazards (Acute and Chronic):

Inhalation:

Acute: Inhaled dust is rapidly absorbed. May cause irritation to the respiratory tract and acute germanium toxicity.

Chronic: May cause chronic germanium toxicity.

Ingestion:

Acute: No acute health effects recorded.

Chronic: No chronic health effects recorded.

Skin:

Acute: Moderately toxic by subcutaneous route. May cause irritation.

Chronic: No chronic health effects recorded.

Eye:



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Acute: May cause irritation.

Chronic: No chronic health effects recorded.

Target Organs: May affect the skin, eyes and respiratory system.

Carcinogenicity: NTP? No

IARC Monographs? No

OSHA Regulated? No

Medical Condition Generally Aggravated by Exposure: Pre-existing respiratory disorders.

Emergency and First Aid Procedures:

Inhalation: Remove victim to fresh air, keep warm and quiet, and give oxygen if breathing is difficult; seek medical attention

Ingestion: Give 1-2 glasses of milk or water and induce vomiting, seek medical attention. Never induce vomiting or give anything by mouth to an unconscious person

Skin: Remove contaminated clothing, brush material off skin, wash affected area with mild soap and water, and seek medical attention if symptoms persist

Eye: Flush eyes with lukewarm water, lifting upper and lower eyelids for at least 15 minutes and seek medical attention

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be taken in case material is released or spilled:

Wear appropriate respiratory and protective equipment specified in section VIII. Isolate spill area, provide ventilation and extinguish sources of ignition. Vacuum up spill using a high efficiency particulate absolute (HEPA) air filter and place in a closed container for proper disposal. Take care not to raise dust.

Waste disposal method:

Dispose of in accordance with state, local, and federal regulations.

Hazard Label Information:

Solid suspected of containing moisture should be thoroughly dried before added to molten bath. Store in cool, dry area and in tightly sealed container. Wash thoroughly after handling.

SECTION VIII - CONTROL MEASURES

Protective Equipment Summary (Hazard Label Information):

NIOSH approved respirator, impervious gloves, safety glasses, clothes to prevent contact.

Ventilation:

Local Exhaust: If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants to low exposures.

Mechanical (General): Good general ventilation is recommended

Work/Hygienic/Maintenance Practices:

Implement engineering and work practice controls to reduce and maintain concentration of exposure at low levels. Use good housekeeping and sanitation practices. Do not use tobacco or food in work area. Wash thoroughly before eating or smoking. Do not blow dust off clothing or skin with compressed air.

Please be advised that N/A can either mean Not Applicable or No Data Has Been Established