

Material Safety Data Sheet

Identity: Germanium

Formula: Ge

SECTION I - GENERAL INFORMATION

Manufacturer: [Stanford Advanced Materials](#) (SAM)

The information below is believed to be accurate and represents the best information available to SAM. However, SAM 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	100%

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

Physical State: Solid

Boiling Point: 2830°C
Melting Point: 937.2 °C
Solubility in water: None
Rate: NASpecific Gravity (water=1): 5.32 g/cm³
Vapor Pressure: 1.1 x 10⁻⁹ atm
Vapor Density: NA Evaporation*Appearance and odor:* Grayish-white metal, Odorless

Section IV - Fire and Explosion Hazard Data:

Flash Point: N/A *Method Used:* *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:

Massive metal is not considered a fire or explosion hazard. Germanium metal dust or powder may be flammable or explosive when dispersed in the air at high concentrations. When finely divided, germanium burns in chlorine and bromine.

SECTION V - REACTIVITY DATA

Stability: Stable

Conditions to Avoid (stability): Powder reacts violently with concentrated nitric acid. Mixtures with potassium chlorate or potassium nitrate explode when heated.

Incompatibility: Strong oxidizing agents, fused alkalis and halogens. May ignite in bromine, chlorine, fluorine or oxygen

Hazardous Decomposition or Byproducts: Irritating and noxious fumes may be generated by thermal decomposition or combustion. Contact with hydrochloric acid emits volatile germanium tetrachloride, which is corrosive and irritation

Hazardous Polymerization: Will not occur

Conditions to avoid (hazardous polymerization): Contact with hydrochloric acid

SECTION VI - HEALTH HAZARD DATA

Routes of entry: Relatively non-toxic to humans by all routes of exposure.

Health Hazards (Acute and Chronic):

Inhalation: Irritation to the respiratory system

Ingestion: Kidney dysfunction, anemia and liver dysfunction

Skin: Direct contact may cause mechanical irritation, redness and itching

Eye: May cause redness, itching, watering and/or swelling

Carcinogenicity: NTP? No IARC Monographs? No OSHA Regulated? No

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: To maintain concentration at low exposure levels.

Mechanical (General): 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