

Material Safety Data Sheet

Identity: Germanium Selenide
CAS #: 12065-11-1Formula: GeSe₂

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 we assume no liability resulting from its use.

SECTION II – INGREDIENTS/SUMMARY OF HAZARDS

Ingredient	%	OSHA/PEL	ACGIH/TLV
Germanium Selenide	0.0-100.0	.2mg (Se)/m ³	.2mg(Se)/m ³

SECTION III – PHYSICAL DATA

Boiling Point: N/E or N/A	Melting Point: 704.0°C to 710.0°C
Specific Gravity (water=1): 4.56gm/cc @ 25.0°C	Physical State: Solid
Vapor Pressure: NE	Solubility in Water: Insoluble
Vapor Density: NA	Percent Volatile: NE
Evaporation Rate: NA	
Appearance and Odor: Orange pieces, no odor.	

SECTION IV – FIRE AND EXPLOSION HAZARD DATA

Flash Point: NA Method Used: Non-flammable
Explosive Limits: LEL: NA UEL: NA

Extinguishing Media: USE: Not applicable. Use suitable extinguishing media for surrounding materials and type of fire.

Unusual Fire and Explosion Hazards: When heated to decomposition, Germanium selenide may emit toxic fumes of Selenium.

Special Fire Fighting Procedures: Fire fighters must wear a 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.

SECTION V – HEALTH HAZARDS

Routes of entry:

Eyes – Yes Skin – Yes Inhalation – Yes Ingestion – Yes

Health Hazards (Acute and Chronic):

To the best of our knowledge the chemical, physical and toxicological properties of germanium selenide 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 100/1000mg/kg for parenteral route and 500/5000mg/kg for ingestion. The animals suffered from hypothermia, diarrhea, and respiratory, and cardiac failure.

Selenium compounds are poison by inhalation and intravenous routes. Some selenium compounds are experimental carcinogens. Long-term exposure may be a cause of amyotrophic lateral sclerosis in humans, just as it may cause “blind staggers” in cattle. Elemental selenium has low acute systemic toxicity, but dust or fumes can cause dermatitis. Garlic odor of breath is a common symptom. Pallor, nervousness, depression, digestive disturbances and death have been reported in chronic exposure. (Sax, Dangerous Properties of Industrial Materials, 8th Edition)

INHALATION:

Acute: DANGER—POISON. May cause irritation to the respiratory tract, acute germanium toxicity and acute selenium poisoning.

Chronic: May cause chronic germanium toxicity and chronic selenium poisoning. Continued intoxication may cause loss of nails and hair, hemolytic anemia, and kidney, liver and spleen damage.

INGESTION:

Acute: DANGER—POISON. May cause gastrointestinal disturbances.

Chronic: May cause chronic selenium toxicity.

SKIN:

Acute: May cause irritation.

Chronic: May cause dermatitis.

EYES:

Acute: May cause irritation.

Chronic: May cause visual disturbances and blurred vision.

Target Organs: Upper respiratory system, eyes, skin, liver, kidneys, and blood.

Carcinogenicity: NTP – No IARC – No LD50/LC50 – No toxicity data recorded.

Signs and Symptoms of Exposure:

Inhalation: Acute chronic toxicity may cause: hypothermia, listlessness, diarrhea, cyanosis, edema, and hemorrhage of lungs, petachial hemorrhage in the walls of small intestines and a peritoneal effusion which is rich in protein. Edematous changes are also seen in the heart muscle and in the parenchymal cells of the liver and kidney. Chronic germanium toxicity may cause: growth and fatter degeneration of the liver. Acute selenium poisoning may cause: nervousness, fever, vomiting, somnolence and drop in blood pressure, labored breathing and toxic action on

the nervous system may lead to respiratory failure. Chronic selenium poisoning may cause: depression, marked pallor, coated tongue, gastrointestinal disorders, and garlic odor of breath.

Ingestion: Chronic selenium toxicity may cause: alkali disease, loss of vitality, lameness, atrophy, cirrhosis of the liver, degeneration and necrosis of the myocardium.

Skin: May cause redness, itching, inflammation, and burning.

Eyes: May cause redness, itching, burning, and watering.

Medical Conditions Generally Aggravated by Exposure:

Pre-existing respiratory disorders and skin disorders.

Emergency and First Aid Procedures:

Inhalation: Remove victim to fresh air, keep warm and quiet. Give oxygen if breathing is difficult and seek medical attention if symptoms persist.

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 and brush material off skin. Wash affected area with mild soap and water. Seek medical attention if symptoms persist.

Eyes: Flush eyes with lukewarm water, lifting upper and lower eyelids, for at least 15 minutes. Seek medical attention if symptoms persist.

SECTION VI – REACTIVITY DATA

Stability: Stable

Conditions to Avoid – Instability: None Expected.

Incompatibility (Materials to Avoid): None recorded.. Hazardous

Decomposition or By-Products: Fumes of Selenium

Polymerization: Not expected to occur.

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. Isolate spill area and provide ventilation. 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 material according to all applicable Federal, State and Local Regulations.

Precautions: Wash thoroughly after handling. Keep container closed.

SECTION VIII – PROTECTIVE EQUIPMENT

Protective Equipment: NIOSH/MSHA approved respirator; Impervious gloves; safety glasses; clothes to prevent skin contact.

Respiratory Protective: NIOSH approved dust, mist, vapor cartridge respirator as necessary.

Ventilation: Local exhaust: to maintain concentrations at low levels.

Mechanical: (General): Not 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 food or tobacco in work area. Wash thoroughly before eating and smoking. Do not blow dust off clothing or skin with compressed air.