

## **Material Safety Data Sheet**

Identity: Niobium selenide

Formula: NbSe<sub>2</sub>

### 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: 250.83

CAS #	OSHA PEL	ACGIH TLV	Other	%
12034-77-4	.2mg(Se)m <sup>3</sup>	.2mg(Se)m <sup>3</sup>		0.0-100%

### SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

Physical States: Solid

Boiling Point: N/E or N/A

Vapor Pressure (mmHg): N/E or N/A

Melting Point: 1316.0 °C

Vapor Density(vs. air=1): N/E or N/A

Evaporation Rate: N/E or N/A

Percent Volatile: N/E or N/A

Solubility in water: N/E or N/A

Specific Gravity:(H<sub>2</sub>O=1): N/E or N/A

Flash Point:

*Appearance and odor:* Grey-black powder and pieces, no odor

### SECTION IV - FIRE AND EXPLOSION HAZARD DATA:

**Flash Point:** N/E or N/A **Method Used:** Non-Flammable **Explosive Limits:** LEL:N/A UEL: N/A

**Extinguishing Media:** Use suitable extinguishing media for surrounding materials and type of fire. 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:** When heated to decomposition, niobium selenide may emit toxic fumes.

SECTION V - REACTIVITY DATA

*Stability:* Stable

*Conditions to Avoid (stability):* None

*Incompatibility:* Strong acids and bases and oxidizing agents.

*Hazardous Decomposition Products:* Niobium, selenium and selenium oxides

*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 niobium selenide have been thoroughly investigated and recorded.

Niobium is an eye and severe skin irritant. There are no reports of human intoxication. It can cause kidney damage. Experimentally, there is a moderate fibrogenic effect on the lungs after inter-tracheal administration (Sax, Dangerous Properties of Industrial Materials, eight editions).

Selenium compounds are poisonous by inhalation and intravenous routes. Some selenium compounds are experimental carcinogens. Long-term exposure may be a cause "blind staggers" in cattle. Elemental selenium has low ac systemic toxicity, but dust or fumes can cause serious irritation of the respiratory tract. Inorganic selenium compounds can cause dermatitis. Garlic odor of breath is common symptom. Pallor nervousness depression, digestive, disturbances and death have been reported in case if there is chronic exposure (Sax, Dangerous Properties of Industrial Materials, eight edition).

*Health Hazards (Acute and Chronic):*

*Inhalation:*

*Acute:* May cause irritation to the respiratory tract and acute selenium poisoning.

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

*Ingestion:*

*Acute:* May cause gastrointestinal disturbances.

*Chronic:* May cause chronic selenium toxicity.

*Skin:*

*Acute:* May cause irritation.

*Chronic:* May cause dermatitis.

*Eye:*

*Acute:* May cause irritation.

*Chronic:* May cause visual disturbances and blurred vision.

*Target Organ:* Upper respiratory system, eyes, skin, liver, kidneys and blood.  
May aggravate pre-existing respiratory and skin 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 fluids, do not induce vomiting, and seek medical attention.
- 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 and under eyelids with lukewarm water for at least 15 minutes. 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-Control Measures. Isolate spill area, 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 of in accordance with state, local, and federal regulations.

*Hazard Label Information:* Store container tightly closed. Store in cool, dry area. Wash thoroughly after use.

SECTION VIII - CONTROL MEASURES

*Protective Equipment Summary (Hazard Label Information):*

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

Respiratory Protective: NIOSH approved dust respirator.

*Ventilation:*

Local Exhaust: To maintain concentration at, or below, the PEL, TLV.

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 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