



Chemtrec: (800) 424-9300  
Poison Center: (800) 562-8236  
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**SAFETY DATA SHEET**

Identity: Cadmium Selenide

Formula: CdSe

**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: 191.36

CAS #	OSHA PEL	ACGIH TLV	%
1306-24-7	5ug (Cd)/m3	.05mg (Cd)/m3	0.0-100.0%

**SECTION III – PHYSICAL/CHEMICAL CHARACTERISTICS**

Physical States: Solid

Boiling Point: N/A

Vapor Pressure (vs. air or mmHg): N/A

Melting Point: >1350°C

Specific Gravity(H<sub>2</sub>O=1): 5.81 gm/cc

Evaporation Rate: N/A

Flash Point: N/A

Solubility in water: Insoluble

*Appearance and odor:* Brown to brownish red powder and 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 media for surrounding materials 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:*

-When heated to decomposition, cadmium selenide may emit toxic fumes of cadmium, selenium and oxides of cadmium and selenium. Material may react exothermically on contact with water or moisture.



-Decomposes in air or acids.

-On contact with water or moisture, hydrogen selenide may be evolved.

SECTION V - REACTIVITY DATA

*Stability:* Stable

*Conditions to Avoid (stability):* None

*Incompatibility:* Strong oxidizing agents and acids.

*Hazardous Decomposition or Byproducts:* Airborne cadmium fumes, cadmium oxide, hydrogen selenide and hydrogen gas.

*Hazardous Polymerization:* Will not occur

*Conditions to avoid (hazardous polymerization):* None

SECTION VI - HEALTH HAZARD DATA

*Route of entry:* Inhalation? Yes    Ingestion? Yes    Eyes? Yes    Skin? Yes    Other? No

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

Cadmium compounds are confirmed carcinogens producing lung tumors. Poison by ingestion. Inhalation of fumes or dusts affects the respiratory tract and the kidneys. Brief exposure to high concentrations may result in pulmonary edema and death. Fatal concentrations may be breathed without sufficient discomfort to warn a worker to leave the exposure. Cadmium oxide fumes can cause metal fume fever. (Sax, Dangerous Properties of Industrial Materials, eighth edition)

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 of fumes can cause serious irritation of the respiratory tract. Inorganic selenium compounds can cause dermatitis. (Sax, Dangerous Properties of Industrial Materials, eighth edition)

*Signs and Symptoms of Overexposure:*

*Inhalation:* Throat dryness, cough, headache, vomiting, chest pain, extreme restlessness and irritability, pneumonitis, possibly bronchopneumonia. Acute selenosis may cause: nervousness, fever, vomiting, somnolence, drop in blood pressure, labored breathing, spasms and the toxic action on the nervous system from prolonged convulsions, may lead to respiratory failure. Chronic selenosis may cause: depression, marked pallor, coated tongue, gastrointestinal disturbances, garlic odor breath, kidney, liver and spleen damage, hemolytic anemia, and loss of nails and hair.

*Ingestion:* Increased salivation, choking, vomiting, abdominal pain, anemia, renal dysfunction, diarrhea, tenesmus.

*Skin:* Redness, itching and burning.

*Eye:* Redness, itching, burning and watering.

*Health Hazards (Acute and Chronic):*

*Inhalation:*



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Acute: May cause irritation of the upper respiratory system, vertigo, constriction of the throat, metallic taste in the mouth and cough, garlic odor to breath, nervousness, depression, dyspnea, cyanosis, chest pain, flu-like symptoms, pulmonary edema and acute selenosis. More severe exposure may cause pulmonary fibrosis/hypertrophy of bronchial vessels and renal necrosis and/or liver damage.

Chronic: May cause irreversible lung injury, pulmonary fibrosis, damage to the olfactory nerve and chronic selenosis. All routes of entry may cause kidney damage, osteomalacia, osteoporosis, spontaneous fractures, hemolytic and iron-deficiency anemia, weight loss, irritability, renal tubular necrosis, cardiovascular effects, liver damage and prostatic and respiratory cancers.

*Ingestion:*

Acute: May cause irritation of mouth, throat and digestive system, increased salivation, burning sensation and cramps in stomach, nausea, headache, vomiting, weakness, dizziness, diarrhea, shock, convulsions, coma and death.

Chronic: May cause irreversible renal tubular dysfunction, functional changes in the liver, pancreas and adrenal glands.

*Skin:*

Acute: May cause local irritation and possible burns.

Chronic: May cause dermatitis.

*Eye:*

Acute: May cause irritation, redness, pain and smarting.

Chronic: May cause conjunctivitis and blurred vision.

*Target Organs:* May affect the respiratory system, liver, kidneys, prostate, blood, skin and eyes.

*Carcinogenicity:* NTP? Yes IARC Monographs? Yes OSHA Regulated? Yes

*Medical Conditions Aggravated by Exposure:* Kidney, liver or respiratory dysfunction, skin, blood or bone 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:*

**DANGER: CONTAINS CADMIUM** Use chemical splash goggles and avoid creating dust

*Precautions to be taken in handling:* Store in cool, dry area and in tightly sealed container. Wash thoroughly after handling.

*Other percussions:* Do not breathe or ingest dust

**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.

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

Special: Enclose process if possible

Mechanical (General): Not recommended

Other: Engineering and work practices

*Work/Hygienic/Maintenance Practices:*

Implement engineering and work practice controls to reduce and maintain concentration of exposure at low levels. Handle in a controlled, inert atmosphere. Minimize exposure of cadmium by local exhaust and enclosing process if/when possible. Use good housekeeping and sanitation practices. Do not use tobacco or food in work area. Wash thoroughly before eating or smoking. Shower and change clothes at the end of work shift (DO NOT wear contaminated clothing at home). 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