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**1. PRODUCT AND COMPANY IDENTIFICATION**

Product Name	<b>Selenium, Enriched Selenium</b>
Chemical Formula	Se
Molecular Weight	78.96
CAS No.	7782-49-2
RTECS No.	VS7700000
Supplier Address*	ISOFLEX USA PO Box 29475 San Francisco CA 94129 United States
Telephone	+1 415-440-4433
Fax	+1 415-563-4433
Emergency Phone Number (both supplier and manufacturer)	Infotrac/ +1 800-535-5053  *May include subsidiaries or affiliate companies/divisions
Email	<a href="mailto:iusa@isoflex.com">iusa@isoflex.com</a>
Website	<a href="http://www.isoflex.com">www.isoflex.com</a>
Preparation Information	ISOFLEX USA Product Safety +1 415-440-4433

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**2. HAZARDS IDENTIFICATION**

**Emergency Overview:**

*Appearance:* Black-red

Warning! May cause respiratory tract irritation. May cause skin irritation. May cause digestive tract irritation. Toxic. May be harmful if swallowed. May be absorbed through intact skin. May cause adverse reproductive effects based upon animal studies. May cause liver and kidney damage. May cause blood abnormalities. Causes eye irritation. May cause nervous system effects.

*Target Organs:* Blood, kidneys, liver, spleen, nervous system

*Hazard statement(s):*

H301	Toxic if swallowed
H330	Fatal if inhaled
H410	Very toxic to aquatic life, with long-lasting effects

*Precautionary statement(s):*

P260	Do not breathe dust/ fume/ gas/ mist/ vapors/ spray
P273	Avoid release to the environment
P284	Wear respiratory protection
P310	Immediately call a POISON CENTER or doctor/ physician
P501	Dispose of contents/ container to an approved waste disposal plant

**NFPA Ratings:** (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

**Health Hazard = 2      Flammability = 0      Reactivity = 0**



**HMS Ratings:** (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

**Health Hazard = 2      Flammability = 0      Physical Hazard = 0**

<b>HEALTH HAZARD</b>	<b>2</b>
<b>FLAMMABILITY</b>	<b>0</b>
<b>PHYSICAL HAZARD</b>	<b>0</b>

#### **Potential Health Effects**

<i>Eye</i>	Causes eye irritation; may result in corneal injury; may cause pink, puffy eyelids due to an allergic reaction
<i>Skin</i>	May cause skin irritation. Prolonged and/or repeated contact may cause irritation and/or dermatitis. May be absorbed through the skin. Contact with the skin may cause the skin to appear to be blue and the nails brittle and yellow.
<i>Ingestion</i>	May cause irritation of the digestive tract. May cause liver and kidney damage. May be harmful if swallowed. May cause alopecia (loss of hair). May cause spleen damage. May cause blood abnormalities. Effects may be delayed. May cause garlic smell on the breath and body.
<i>Inhalation</i>	Causes respiratory tract irritation. May cause effects similar to those described for ingestion. May produce anemia, leucocytosis (increase in the white blood cell count), cloudy swelling and fatty degeneration of the viscera.
<i>Chronic</i>	Prolonged or repeated skin contact may cause dermatitis. May cause reproductive and fetal effects. Chronic exposure to selenium may cause central nervous system effects, digestive tract disturbances, pallor, garlic breath, metallic taste, anemia, liver and spleen damage. Chronic selenium poisoning is characterized by loss of hair and nails, skin lesions, and abnormalities of the nervous system.

### **3. COMPOSITION / INFORMATION ON INGREDIENTS**

Chemical Name:	Selenium
CAS No.:	7782-49-2
Chemical Formula:	Se
Molecular Weight:	78.96

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#### 4. FIRST AID MEASURES

<i>Eye Exposure</i>	Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately. Do NOT allow victim to rub or keep eyes closed.
<i>Dermal Exposure</i>	Get medical aid. Immediately flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.
<i>Oral Exposure</i>	Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.
<i>Inhalation Exposure</i>	Remove from exposure to fresh air immediately. If breathing is difficult, give oxygen. Get medical aid. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased, apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.
<i>Notes to Physician</i>	Treat symptomatically

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#### 5. FIREFIGHTING MEASURES

<i>General Information</i>	As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH-approved or equivalent, full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use extinguishing media appropriate to the surrounding fire. Substance is noncombustible.		
<i>Suitable Extinguishing Media</i>	Substance is noncombustible; use agent most appropriate to extinguish surrounding fire. Use water spray, dry chemical, carbon dioxide or chemical foam.		
<i>Autoignition Temperature</i>	N/A		
<i>Flash Point</i>	N/A		
<i>Explosion Limits, Lower</i>	N/A		
<i>Explosion Limits, Upper</i>	N/A		
<i>NFPA Rating (estimated)</i>	Health: 2	Flammability: 0	Reactivity: 0

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#### 6. ACCIDENTAL RELEASE MEASURES

<i>Personal Precautions</i>	Use proper personal protective equipment as indicated in Section 8. Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation.
<i>Environmental Precautions</i>	Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.
<i>Methods for Cleaning Up</i>	Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation.

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## 7. HANDLING AND STORAGE

### *Handling*

Wash thoroughly after handling. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Avoid contact with skin and eyes. Keep container tightly closed. Avoid ingestion and inhalation. Use with adequate ventilation.

### *Storage*

Store in a tightly closed container, in a cool, dry, well-ventilated area away from incompatible substances.

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## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### *Engineering Controls*

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use process enclosure, local exhaust ventilation, or other engineering controls to control airborne levels.

### *Exposure Limits*

ACGIH: 0.2 mg/m<sup>3</sup>

NIOSH: as Se: 0.2 mg/m<sup>3</sup> / TWA (1 mg/m<sup>3</sup> / IDLH)

OSHA: 0.2 mg/m<sup>3</sup> TWA

### **Personal Protective Equipment**

#### *Eye*

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

#### *Hand*

Wear appropriate protective gloves to prevent skin exposure.

#### *Body*

Wear appropriate protective clothing to prevent skin exposure.

#### *Respirators*

Follow the OSHA respirator regulations found in 29CFR 1910.134 or European Standard EN 149. Always use a NIOSH- or European Standard EN 149-approved respirator when necessary.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

### **Appearance**

#### *Physical State*

Solid

#### *Form*

Powder / Ingots

#### *Color*

Black

#### *Odor*

Odorless

### **Safety Data**

#### pH:

Not available

#### Vapor Pressure:

Not available

#### Viscosity:

Not available

#### Melting Point:

423 °F (217 °C)

#### Decomposition Temperature:

Not available

#### Specific Gravity:

4.81

#### Vapor Density:

Not available

#### Evaporation Rate:

Not available

#### Boiling Point:

690 °C

#### Freezing/Melting Point:

220-222 °C

#### Solubility in Water:

Insoluble in water

#### Molecular Formula:

Se

#### Molecular Weight:

78.96

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## 10. STABILITY AND REACTIVITY

<i>Chemical Stability</i>	Stable under normal temperatures and pressures
<i>Conditions to Avoid</i>	Incompatible materials, dust generation, excess heat
<i>Incompatible Materials</i>	Strong oxidizing agents, acids, metal oxides, carbides, fluorine, oxygen, potassium
<i>Hazardous Decomposition Products</i>	Irritating and toxic fumes and gases, selenium/selenium oxides
<i>Hazardous Polymerization</i>	Will not occur

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## 11. TOXICOLOGICAL INFORMATION

<i>RTECS Number</i>	VS7700000
<i>CAS Number</i>	7782-49-2
<i>LD50/LC50:</i>	Oral LD50 (Rat)- 6700 mg/kg

### Carcinogenicity

<i>IARC</i>	Group 3 carcinogen (not classifiable for humans)
<i>ACGIH</i>	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
<i>NTP</i>	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
<i>OSHA</i>	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
<i>Epidemiology</i>	Available animal data are insufficient to allow an evaluation of the carcinogenicity of selenium compounds.
<i>Other Studies</i>	The hazards associated with selenium may be seen in this product. See actual entry in RTECS for complete information.
<i>Signs and Symptoms of Exposure</i>	Anemia, vomiting, diarrhea, cough, difficulty in breathing. Acute selenium poisoning produces central nervous system effects, which include nervousness, convulsions and drowsiness. Other signs of intoxication can include skin eruptions, lassitude, gastrointestinal distress, teeth that are discolored or decayed, odorous ("garlic") breath, and partial loss of hair and nails. Chronic exposure by inhalation can produce symptoms that include pallor, coating of the tongue, anemia, irritation of the mucosa, lumbar pain, liver and spleen damage, as well as any of the other previously mentioned symptoms. Chronic contact with selenium compounds may cause garlic odor of breath and sweat, dermatitis, and moderate emotional instability, dermatitis, garlic-like breath odor, pallor, nervousness, depression.

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## 12. ECOLOGICAL INFORMATION

### Ecotoxicity

<i>Algae</i>	IC50 (72h): 38 mg/l
<i>Daphnia</i>	EC50 (48h): >100 mg/l
<i>Fish</i>	LC50 (96h): >100 mg/l
<i>Bioaccumulative Potential</i>	Bioaccumulation <i>Lepomis macrochirus</i> - 60 d

<i>Bioconcentration Factor (BCF)</i>	7.7
<i>Mobility in Soil</i>	No data available
<i>PBT and vPvB Assessment</i>	No data available
<i>Other Adverse Effects</i>	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Very toxic to aquatic life, with long-lasting effects.

**13. DISPOSAL CONSIDERATIONS**

<i>Product</i>	Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Part 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.  RCRA P-Series: None listed RCRA U-Series: None listed
<i>Contaminated Packaging</i>	Dispose of as unused product.

**14. TRANSPORT INFORMATION**

<b>DOT</b>	
<i>Proper Shipping Name</i>	Environmentally hazardous substances, solid, n.o.s. (Selenium)
<i>UN No.</i>	3077
<i>Class</i>	9
<i>Packing Group</i>	Packing Group III
<i>Hazard Label</i>	Class 9
<i>PIH</i>	Not PIH
<b>IATA</b>	
<i>Proper Shipping Name</i>	Environmentally hazardous substance, solid, n.o.s (Selenium)
<i>IATA UN No.</i>	3077
<i>Hazard Class</i>	9
<i>Packing Group</i>	III

**15. REGULATORY INFORMATION**

<b>OSHA Hazards</b>	Target organ effect, toxic by inhalation, toxic by ingestion
<b>SARA 302 Components</b>	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
<b>SARA 313 Components</b>	The following components are subject to reporting levels established by SARA Title III, Section 313: Selenium / CAS No. 7782-49-2 / Revision Date 2007-07-01.
<b>SARA 311/312 Hazards</b>	Acute health hazard, chronic health hazard
<b>Massachusetts Right to Know Components</b>	Selenium / CAS No. 7782-49-2 / Revision Date 2007-07-01
<b>Pennsylvania Right to Know Components</b>	Selenium / CAS No. 7782-49-2 / Revision Date 2007-07-01

**New Jersey Right to Know  
Components**

Selenium / CAS No. 7782-49-2 / Revision Date 2007-07-01

**California Prop. 65 Components**

This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

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**16. OTHER INFORMATION**

Prepared By	ISOFLEX USA PO 29475 San Francisco CA 94129 United States
Issuing Date	January 12, 2014
Revision Date	July 29, 2021
Revision Number	2
Revision Note	Required review and update

**ISOFLEX USA's Commonly Used Abbreviations and Acronyms\***

ACGIH	American Conference of Governmental Industrial Hygienists
ADR	European Agreement Concerning the International Carriage of Dangerous Goods by Road
AICS	Australian Inventory of Chemical Substances
ALARA	As Low As Is Reasonably Achievable
AMU	Atomic Mass Unit
ANSI	American National Standards Institute
BLS	Basic Life Support
BOD5	Biochemical Oxygen Demand
CAM	Continuous Air Monitor
CAS	Chemical Abstracts Service (division of the American Chemical Society)
CEN	European Committee for Standardization
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CLP	Classification, Labelling and Packaging (European Union)
COD	Chemical Oxygen Demand
CPR	Controlled Products Regulations (Canada)
CWA	Clean Water Act (USA)
DAC	Derived Air Concentration (USA)
DOE	United States Department of Energy (USA)
DOT	United States Department of Transportation (USA)
DSL	Domestic Substances List (Canada)
EC50	Half Maximal Effective Concentration
ECL	Korean Existing Chemicals List
EINECS	European Inventory of Existing Commercial Chemical Substances
EHS	Environmentally Hazardous Substance
ELINCS	European List of Notified Chemical Substances
EMS	Emergency Response Procedures for Ships Carrying Dangerous Goods
EPA	Environmental Protection Agency (USA)
EPCRA	Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986
GHS	Globally Harmonized System
HMIS	Hazardous Materials Identification System (USA)
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IBC	Intermediate Bulk Containers
ICAO	International Civil Aviation Organization
IDLH	Immediately Dangerous to Life or Health
IECSC	Inventory of Existing Chemical Substances Produced or Imported in China

IMDG	International Maritime Code for Dangerous Goods
LC50	Lethal concentration, 50 percent
LD50	Lethal dose, 50 percent
LDLO	Lethal Dose Low
LOEC	Lowest-Observed-Effective Concentration
MARPOL	International Convention for the Prevention of Pollution from Ships
MSHA	Mine Safety and Health Administration (USA)
NCRP	National Council on Radiation Protection & Measurements (USA)
NDSL	Non-Domestic Substances List (Canada)
NFPA	National Fire Protection Association (USA)
NIOSH	National Institute for Occupational Safety and Health (USA)
NOEC	No Observed Effect Concentration
N.O.S.	Not Otherwise Specified
NRC	Nuclear Regulatory Commission (USA)
NTP	National Toxicology Program (USA)
OSHA	Occupational Safety and Health Administration (USA)
PBT	Persistent Bioaccumulative and Toxic Chemical
PEL	Permissible Exposure Limit
PICCS	Philippines Inventory of Chemicals and Chemical Substances
PIH	Poisonous by Inhalation Hazard
RCRA	Resource Conservation and Recovery Act (USA)
RCT	Radiation Control Technician
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals (Europe)
RID	Regulations Concerning the International Transport of Dangerous Goods by Rail
RQ	Reportable Quantity
RTECS	Registry of Toxic Effects of Chemical Substances
SARA	Superfund Amendments and Reauthorization Act (USA)
SNUR	Significant New Use Rule (TSCA)
TDG	Transportation of Dangerous Goods (Canada)
TIH	Toxic by Inhalation Hazard
TLV	Threshold Limit Value
TPQ	Threshold Planning Quantity
TSCA	Toxic Substances Control Act
TWA	Time Weighted Average
UN	United Nations (Number)
VOC	Volatile Organic Compound
vPvB	Very Persistent Very Bioaccumulative Chemical
WGK	Wassergefährdungsklassen (Germany: Water Hazard Classes)
WHMIS	Workplace Hazardous Materials Information System

\*One or more of the above-listed items may not appear in this document.

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