

**Section 1: Identification of the Substance/Mixture and of the Company/Undertaking****Product Identifier:****Identification as on the label/Trade name:** Selenium, Enriched Selenium.**Molecular weight:** 78.96**Chemical formula:** Se**Synonyms:** None.**Details of the supplier of the Safety Data Sheet:**

Neonest AB

Storgatan 70C, Solna

SE-17152

Sweden

**Contact details:**

+46-76-219-9731

**24-hour Emergency Contact:**

Swedish Poisons Centre

Phone: 112 - Ask for Poisons Information, 112 – begär Giftinformation.

**Other International Contacts:**

CHEMTREC 24-hour: +1-703-741-5500 (US + Worldwide)

NHS: 111 (UK)

Charite: +49 30 450 531 000 (Netherlands)

INTCF: +34 917689800 (Spain)

CapTv: +33 1 40 05 48 48 (France)

**Section 2: Hazards Identification****Classification of the substances or mixture:****The mixture is classified according to:** Regulation EC 1272/2008 [EU-GHS/CLP]**Hazard classes/Hazard categories:**

Acute Toxicity, Oral (Category 3)

Acute Toxicity, Inhalation (Category 3)

STOT RE (Category 2)

Aquatic Chronic (Category 4)

**Hazard statement:**

H301

H331

H373

H413

**Label elements:****Hazard pictograms:**



**Signal Words:** Danger.

**Hazard Statements:**

H301 Toxic if swallowed.

H331 Toxic if inhaled.

H373 May cause damage to organs through prolonged or repeated exposure.

H413 May cause long lasting harmful effects to aquatic life.

**Precautionary Statements:**

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P260 Do not breathe dust.

P270 Do not eat, drink or smoke when using this product.

P271 Use only outdoors or in a well-ventilated area.

P273 Avoid release to the environment.

P280 Wear protective gloves/protective clothing.

P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor.

P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P308 + P313 IF exposed or concerned: Get medical advice/attention.

P330 Rinse mouth.

P391 Collect spillage.

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local and national regulations.

**Other hazards:** None known.

### Section 3: Composition/Information on Ingredients

**Substance/Mixture:** Substance.

**Ingredients:**

Substance name (IUPAC/EC)	CAS-No.	Molecular weight	Concentration % by weight	Classification EC1272/2008	
	EC-No.				
Selenium	7782-49-2	78.96	>99%	Acute Tox. 3	H301
				Acute Tox. 3	H331
	231-957-4			STOT RE 2	H373
				Aquatic Chronic 4H413	

For explanation of abbreviations see Section 16.

### Section 4: First-Aid Measures

**Description of first aid measures:**

**In case of inhalation:** 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.

**In case of skin contact:** 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.

**In case of eye contact:** 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.

**In case of ingestion:** Do not induce vomiting. If victim is conscious and alert, give 2-4 cups of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

### **Most important symptoms and effects, both acute and delayed:**

**Inhalation:** Causes respiratory tract irritation. May cause effects similar to those described for ingestion. May produce anaemia, leucocytosis (increase in the white blood cell count), cloudy swelling and fatty degeneration of the viscera.

**Eyes:** Causes eye irritation; may result in corneal injury; may cause pink, puffy eyelids due to an allergic reaction.

**Skin contact:** 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.

**Ingestion:** 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.

**Indication of any immediate medical attention and special treatment needed:** Treat symptomatically. Show this safety data sheet to a physician or emergency room.

## **Section 5: Fire-Fighting Measures**

### **Extinguisher media:**

**Suitable extinguisher media:** Substance is non-combustible; use agent most appropriate to extinguish surrounding fire. Use water spray, dry chemical, carbon dioxide or chemical foam.

**Unsuitable extinguishing media:** None known.

**Special hazards arising from the mixture:** None known.

**Advice for fire-fighters:** Wear self-contained breathing apparatus and protective clothing for firefighting.

**Further information:** Standard procedure for chemical fires. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

## **Section 6: Accidental Release Measures**

### **Personal precautions, protective equipment and emergency procedures:**

**Personal precautions:** Use proper personal protective equipment as indicated in Section 8. Wear respiratory protection. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation.

**Environmental precautions:** Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. Local authorities should be advised if significant spillages cannot be contained.

### **Methods for containment and cleaning up:**

**Methods for cleaning up:** 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.

**Reference to other sections:**

Treat recovered material as described in the section "Disposal considerations".

## Section 7: Handling and Storage

**Precautions for safe handling:**

**Advice on safe 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.

**Hygiene measures:** Do not eat, drink or smoke when using this product.

**Conditions for safe storage, including incompatibilities:**

**Requirements for storage areas and containers:** Store under inert gas, in a tightly closed container, in a cool, dry, well-ventilated area away from incompatible substances.

## Section 8: Exposure Controls/Personal Protection

**Control parameters:**

**Occupational exposure limits:**

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

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

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

**Exposure controls:**

**Appropriate 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.

**Individual protection measures, such as personal protective equipment:**

**Eye/face protection:** 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 protection:** Use chemical resistant gloves. Examples of preferred glove barrier materials include: Butyl rubber, Neoprene, Nitrile/butadiene rubber, Polyethylene, Ethyl vinyl alcohol laminate, polyvinyl alcohol, Polyvinyl chloride.

**Body protection:** Wear protective clothing as appropriate.

**Respiratory protection:** 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.

## Section 9: Physical and Chemical Properties

### Information on basic physical and chemical properties

**Appearance (form):** Solid (ingot or powder).

**Colour:** Black.

**Odour:** Odourless.

**Odour threshold:** No data available.

**Molecular Weight:** 78.96

**pH (concentration):** No data available.

**Melting point/range (°C):** 217 °C

**Boiling point/range (°C):** 690 °C

**Freezing point (°C):** No data available.

**Flash point (°C):** No data available.

**Evaporation rate:** No data available.

**Flammability (solid, gas):** No data available.

**Ignition temperature (°C):** No data available.

**Upper/lower flammability/explosive limits:** No data available.

**Vapour pressure (20 °C):** No data available.

**Vapour density:** No data available.

**Relative density (25 °C):** 4.81

**Water solubility (g/L) at 20 °C:** Insoluble.

**n-Octanol/Water partition coefficient:** No data available.

**Auto-ignition temperature:** No data available.

**Decomposition temperature:** No data available.

**Viscosity, dynamic (mPa s):** No data available.

**Explosive properties:** The substance or mixture is not classified as explosive.

**Oxidising properties:** The substance or mixture is not classified as oxidizing.

## Section 10: Stability and Reactivity

**Reactivity:** No dangerous reaction known under conditions of normal use.

**Chemical stability:** Stable under normal conditions.

**Possibility of hazardous reactions:** No dangerous reaction known under conditions of normal use.

**Conditions to avoid:** Dust generation, excess heat.

**Incompatible materials:** Strong oxidizing agents, acids, metal oxides, carbides, fluorine, oxygen, potassium.

**Hazardous decomposition products:** Irritating and toxic fumes and gases, selenium/selenium oxides.

## Section 11: Toxicological Information

### Information on toxicological effects:

**Acute Toxicity:** Toxic if swallowed or inhaled.

LD<sub>50</sub> Oral, Rat - 6700 mg/kg.

### Classification according to GHS (1272/2008/EG, CLP)

**Skin corrosion/irritation:**

Not classified based on available information.

**Serious eye damage/eye irritation:**

Not classified based on available information.

**Respiratory or skin sensitisation:**

Not classified based on available information.

**Germ cell mutagenicity:**

Not classified based on available information.

**Carcinogenicity:**

IARC: Group 3 carcinogen (not classifiable for humans).

ACGIH: 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.

NTP: 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.

OSHA: 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.

**Reproductive toxicity:**

Not classified based on available information.

**Specific target organ toxicity – single exposure (STOT):**

Not classified based on available information.

**Specific target organ toxicity (STOT) – repeated exposure:**

May cause damage to organs through prolonged or repeated exposure.

**Aspiration toxicity:**

Not classified based on available information.

**Section 12: Ecological Information****Toxicity:**

Algae IC50 (72h): 38 mg/l

Daphnia EC50 (48h): >100 mg/l

Fish LC50 (96h): >100 mg/l

**Persistence and degradability:** No data available.

**Bioaccumulative potential:** Bioaccumulation *Lepomis macrochirus* - 60 days.

**Mobility in soil:** No data available.

**Results of PBT& vPvB assessment:** Not relevant.

**Other adverse effects:** An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

**Section 13: Disposal Considerations**

**Waste treatment methods:** 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.

**Section 14: Transport Information****DOT:**

**Proper Shipping Name:** Environmentally hazardous substances, solid, n.o.s. (Selenium)

**Hazard Class:** 9

**UN Number:** 3077**Packing Group:** III**Hazard Labels:** Class 9**IATA:****Proper Shipping Name:** Environmentally hazardous substances, solid, n.o.s. (Selenium)**Hazard Class:** 9**UN Number:** 3077**Packing Group:** III**Section 15: Regulatory Information****EU regulations:****Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and II, as amended**

Not listed.

**Regulation (EC) No. 850/2004 on persistent organic pollutants, Annex I**

Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended**

Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended**

Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended**

Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended**

Not listed.

**Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry**

Not listed.

**Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA**

Not listed.

**Authorisations:****Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended**

Not listed.

**Restrictions on use:****Regulation (EC) No. 1907/2006 Annex XVII Substances subject to restriction on marketing and use**

Not regulated.

**Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended**

Not listed.

**Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens and mutagens at work**

Not regulated.

**Directive 92/85/EEC: on the safety and health of pregnant workers and workers who have recently given birth or are breastfeeding.**

Not regulated.

**Other EU regulations:**

**Directive 2012/18/EU on major accident hazards involving dangerous substances**

Not listed.

**Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work.**

Always applicable.

**Directive 94/33/EC on the protection of young people at work**

Not listed.

**Other regulations:** The product is classified and labelled in accordance with EC directives or respective national laws. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006, as amended.

**OSHA Hazards:** Target organ effect, toxic by inhalation, toxic by ingestion.

**SARA 302 Components:** No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**SARA 313 Components:** 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.

**SARA 311/312 Hazards:** Acute Health Hazard, Chronic Health Hazard.

**Massachusetts Right To Know Components:** Selenium / CAS No. 7782-49-2 / Revision Date 2007-07-01

**Pennsylvania Right To Know Components:** 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.

**National regulations:** Follow national regulation for work with chemical agents.

**Chemical safety assessment:** No Chemical Safety Assessment has been carried out.

## Section 16: Other Information

**List of abbreviations:**

ACGIH American Conference of Governmental Industrial Hygienists

ADR European Agreement Concerning the International Carriage of Dangerous Goods by Road

ALARA As Low As Is Reasonably Achievable

AMU Atomic Mass Unit

ANSI American National Standards Institute

BLS Basic Life Support

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)



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  
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  
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  
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  
RTECS Registry of Toxic Effects of Chemical Substances  
SARA Superfund Amendments and Reauthorization Act (USA)  
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

**References:**

Not available.

**Full text of any H-statements not written out in full under Sections 2 to 15:**

H301 Toxic if swallowed.

H331 Toxic if inhaled.

H373 May cause damage to organs through prolonged or repeated exposure.

H413 May cause long lasting harmful effects to aquatic life.

**Revision information:**

None.

**Training information:**

Follow training instructions when handling this material.

**Further Information:**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.