

**SECTION 1: Identification of the substance/mixture and of the company/undertaking**

**1.1 Product identifier**

Trade name **Cadmium selenide**

Stock number: 45456

CAS Number:  
1306-24-7

EC number:  
215-148-3

Index number:  
034-002-00-8

**1.2 Relevant identified uses of the substance or mixture and uses advised against.** No further relevant information available.

**Identified use:** SU24 Scientific research and development

**1.3 Details of the supplier of the safety data sheet**

**Manufacturer/Supplier:**

Thermo Fisher (Kandel) GmbH  
Zeppelinstr. 7b  
76185 Karlsruhe / Germany  
Tel: +49 (0) 721 84007 280  
Fax: +49 (0) 721 84007 300  
Email: tech@alfa.com  
www.alfa.com

**Informing department:** Product safety Tel + +049 (0) 7275 988687-0


**1.4 Emergency telephone number:**

Carechem 24: +44 (0) 1235 239 670 (Multi-language emergency number)  
Poison Information Center Mainz  
www.giftinfo.uni-mainz.de Telephone: +49(0)6131/19240

**SECTION 2: Hazards identification**


**2.1 Classification of the substance or mixture**

**Classification according to Regulation (EC) No 1272/2008**


 GHS06 skull and crossbones

Acute Tox. 3 H301 Toxic if swallowed.

Acute Tox. 3 H331 Toxic if inhaled.

 GHS08 health hazard

STOT RE 2 H373 May cause damage to organs through prolonged or repeated exposure.

 GHS09 environment

Aquatic Acute 1 H400 Very toxic to aquatic life.

Aquatic Chronic 1 H410 Very toxic to aquatic life with long lasting effects.

**Other hazards that do not result in classification** No information known.

**2.2 Label elements**

**Labelling according to Regulation (EC) No 1272/2008** The substance is classified and labelled according to the CLP regulation.

**Hazard pictograms**

    
GHS06 GHS08 GHS09

**Signal word** Danger

**Hazard statements**

H301+H331 Toxic if swallowed or if inhaled.

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

H410 Very toxic to aquatic life with long lasting effects.

**Precautionary statements**

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P273 Avoid release to the environment.

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

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

P405 Store locked up.

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

**2.3 Other hazards**

**Results of PBT and vPvB assessment**

**PBT:** Not applicable.

**vPvB:** Not applicable.

**SECTION 3: Composition/information on ingredients**

**3.1 Substances**

**CAS# Designation:**

1306-24-7 Cadmium selenide

**Concentration:** ≤100%

**Identification number(s):**

**EC number:** 215-148-3

**Index number:** 034-002-00-8

**SECTION 4: First aid measures**

**4.1 Description of first aid measures**

**General information**

Instantly remove any clothing soiled by the product.

Remove breathing apparatus only after soiled clothing has been completely removed.

In case of irregular breathing or respiratory arrest provide artificial respiration.

**After inhalation**

Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.

Seek immediate medical advice.

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**After skin contact**

Instantly wash with water and soap and rinse thoroughly.  
Seek immediate medical advice.

**After eye contact** Rinse opened eye for several minutes under running water. Then consult doctor.

**After swallowing** Do not induce vomiting; instantly call for medical help.

**4.2 Most important symptoms and effects, both acute and delayed**

Toxic if inhaled.

Toxic if swallowed.

May cause damage to organs through prolonged or repeated exposure.

**4.3 Indication of any immediate medical attention and special treatment needed** No further relevant information available.

**SECTION 5: Firefighting measures**

**5.1 Extinguishing media**

**Suitable extinguishing agents** Product is not flammable. Use fire-fighting measures that suit the surrounding fire.

**5.2 Special hazards arising from the substance or mixture**

If this product is involved in a fire, the following can be released:

Hydrogen selenide

Selenium dioxide (SeO<sub>2</sub>)

Cadmium oxide

**5.3 Advice for firefighters**

**Protective equipment:**

Wear self-contained breathing apparatus.

Wear full protective suit.

**SECTION 6: Accidental release measures**

**6.1 Personal precautions, protective equipment and emergency procedures**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

**6.2 Environmental precautions:** Do not allow material to be released to the environment without proper governmental permits.

**6.3 Methods and material for containment and cleaning up:**

Dispose of contaminated material as waste according to section 13.

Ensure adequate ventilation.

**Prevention of secondary hazards:** No special measures required.

**6.4 Reference to other sections**

See Section 7 for information on safe handling

See section 8 for information on personal protection equipment.

See Section 13 for information on disposal.

**SECTION 7: Handling and storage**

**7.1 Precautions for safe handling**

Keep containers tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation/exhaustion at the workplace.

Open and handle container with care.

**Information about protection against explosions and fires:** The product is not flammable

**7.2 Conditions for safe storage, including any incompatibilities**

**Storage**

**Requirements to be met by storerooms and containers:** No special requirements.

**Information about storage in one common storage facility:** Store away from oxidising agents.

**Further information about storage conditions:**

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

Store in a locked cabinet or with access restricted to technical experts or their assistants.

**7.3 Specific end use(s)** No further relevant information available.

**SECTION 8: Exposure controls/personal protection**

**Additional information about design of technical systems:**

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

**8.1 Control parameters**

**Components with critical values that require monitoring at the workplace:**

**1306-24-7 Cadmium selenide (100,0%)**

AGW (Germany) Long-term value: 0,05E mg/m<sup>3</sup>  
1 (II);DFG,Y, 10

PEL (USA) Long-term value: 0,2 mg/m<sup>3</sup>  
as Se

REL (USA) Long-term value: 0,2 mg/m<sup>3</sup>  
as Se

TLV (USA) Long-term value: 0,2 mg/m<sup>3</sup>  
as Se

**Ingredients with biological limit values:**

**1306-24-7 Cadmium selenide (100,0%)**

BEI (USA) 5 µg/g creatinine  
Medium: urine  
Time: not critical  
Parameter: Cadmium (background)

5 µg/L  
Medium: blood  
Time: not critical  
Parameter: Cadmium (background)

**Additional information:** No data

**8.2 Exposure controls**

**Personal protective equipment**

**General protective and hygienic measures**

The usual precautionary measures should be adhered to in handling the chemicals.

Keep away from foodstuffs, beverages and food.

Instantly remove any soiled and impregnated garments.

Wash hands during breaks and at the end of the work.

Store protective clothing separately.

Maintain an ergonomically appropriate working environment.

**Breathing equipment:** Use self-contained respiratory protective device in emergency situations.

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**Recommended filter device for short term use:**

Use a respirator with type P100 (USA) or P3 (EN 143) cartridges as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards.

**Protection of hands:**

Check protective gloves prior to each use for their proper condition.

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

**Material of gloves** Nitrile rubber, NBR

**Penetration time of glove material (in minutes)** 480

**Glove thickness:** 0.11 mm

**Eye protection:** Safety glasses with side shields / NIOSH (US) or EN 166(EU)

**Body protection:** Protective work clothing.

**SECTION 9: Physical and chemical properties**

**9.1 Information on basic physical and chemical properties**

**General Information**

**Appearance:**

**Form:** Various forms (powder/flake/crystalline/beads, etc.)

**Odour:** Odourless

**Odour threshold:** Not determined.

**pH-value:** Not applicable.

**Change in condition**

**Melting point/freezing point:** >1350 °C

**Initial boiling point and boiling range:** Not determined

**Sublimation temperature / start:** Not determined.

**Inflammability (solid, gaseous)** Not determined.

**Ignition temperature:** Not determined

**Decomposition temperature:** Not determined

**Self-inflammability:** Not determined.

**Explosive properties:** Not determined.

**Critical values for explosion:**

**Lower:** Not determined

**Upper:** Not determined

**Steam pressure:** Not applicable.

**Density at 20 °C** 5,81 g/cm<sup>3</sup>

**Relative density** Not determined.

**Vapour density** Not applicable.

**Evaporation rate** Not applicable.

**Solubility in / Miscibility with**

**Water:** Insoluble

**Partition coefficient: n-octanol/water:** Not determined.

**Viscosity:**

**dynamic:** Not applicable.

**kinematic:** Not applicable.

**9.2 Other information** No further relevant information available.

**SECTION 10: Stability and reactivity**

**10.1 Reactivity** No information known.

**10.2 Chemical stability** Stable under recommended storage conditions.

**Thermal decomposition / conditions to be avoided:** No decomposition if used and stored according to specifications.

**10.3 Possibility of hazardous reactions** Reacts with strong oxidising agents

**10.4 Conditions to avoid** No further relevant information available.

**10.5 Incompatible materials:**

Acids

Oxidising agents

**10.6 Hazardous decomposition products:**

Hydrogen selenide

Selenium dioxide (SeO<sub>2</sub>)

Cadmium oxide

**SECTION 11: Toxicological information**

**11.1 Information on toxicological effects**

**Acute toxicity**

Toxic if inhaled.

Toxic if swallowed.

Toxic if swallowed or if inhaled.

**LD/LC50 values that are relevant for classification:** No data

**Skin irritation or corrosion:** May cause irritation

**Eye irritation or corrosion:** May cause irritation

**Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.

**Germ cell mutagenicity:** No effects known.

**Carcinogenicity:**

IARC-1: Carcinogenic to humans: sufficient evidence of carcinogenicity.

EPA-B1: Probable human carcinogen, limited evidence of carcinogenicity from epidemiologic studies.

Carcinogen as defined by OSHA.

ACGIH A2: Suspected human carcinogen: Agent is carcinogenic in experimental animals at dose levels, by route(s) of administration, at site(s), of histologic type(s), or by mechanism(s) considered relevant to worker exposure. Available epidemiologic studies are conflicting or insufficient to confirm an increased risk of cancer in exposed humans.

NTP-K: Known to be carcinogenic: sufficient evidence from human studies.

**Reproductive toxicity:** No effects known.

**Specific target organ system toxicity - repeated exposure:** May cause damage to organs through prolonged or repeated exposure.

**Specific target organ system toxicity - single exposure:** No effects known.

**Aspiration hazard:** No effects known.

**Subacute to chronic toxicity:** No effects known.

**Additional toxicological information:** To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

**SECTION 12: Ecological information**

**12.1 Toxicity**

**Aquatic toxicity:** No further relevant information available.

**12.2 Persistence and degradability** No further relevant information available.

**12.3 Bioaccumulative potential** No further relevant information available.

**12.4 Mobility in soil** No further relevant information available.

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**Ecotoxicological effects:**

**Remark:** Very toxic for fish  
**Additional ecological information:**

**General notes:**

Do not allow material to be released to the environment without proper governmental permits.  
Water danger class 3 (Self-assessment): extremely hazardous for water.  
Do not allow product to reach ground water, water bodies or sewage system, even in small quantities.  
Danger to drinking water if even extremely small quantities leak into soil.  
Also poisonous for fish and plankton in water bodies.  
May cause long lasting harmful effects to aquatic life.  
Avoid transfer into the environment.  
Very toxic for aquatic organisms

**12.5 Results of PBT and vPvB assessment**

**PBT:** Not applicable.

**vPvB:** Not applicable.

**12.6 Other adverse effects** No further relevant information available.

**SECTION 13: Disposal considerations**

**13.1 Waste treatment methods**

**Recommendation**

Hand over to disposers of hazardous waste.  
Must be specially treated under adherence to official regulations.  
Consult state, local or national regulations for proper disposal.

**Uncleaned packagings:**

**Recommendation:** Disposal must be made according to official regulations.

**SECTION 14: Transport information**

**UN-Number**

**ADR, IMDG, IATA**

UN3283

**14.2 UN proper shipping name**

**ADR**

**IMDG, IATA**

3283 SELENIUM COMPOUND, SOLID, N.O.S. (Cadmium selenide)  
SELENIUM COMPOUND, SOLID, N.O.S. (Cadmium selenide)

**14.3 Transport hazard class(es)**

**ADR**



**Class**

**Label**

**IMDG, IATA**

6.1 (T5) Toxic substances.

6.1



**Class**

**Label**

6.1 Toxic substances.

6.1

**Packing group**

**ADR, IMDG, IATA**

III

**14.5 Environmental hazards:**

**Marine pollutant:**

Environmentally hazardous substance, solid

No

**14.6 Special precautions for user**

**Kemler Number:**

**EMS Number:**

**Stowage Category**

Warning: Toxic substances.

60

F-A,S-A

A

**14.7 Transport in bulk according to Annex II of Marpol and the IBC Code** Not applicable.

**Transport/Additional information:**

**ADR**

**Excepted quantities (EQ):**

**Limited quantities (LQ)**

**Excepted quantities (EQ)**

E1

5 kg

Code: E1

Maximum net quantity per inner packaging: 30 g

Maximum net quantity per outer packaging: 1000 g

**Transport category**

**Tunnel restriction code**

2

E

**UN "Model Regulation":**

UN 3283 SELENIUM COMPOUND, SOLID, N.O.S. (CADMIUM SELENIDE), 6.1, III

**SECTION 15: Regulatory information**

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

**Australian Inventory of Chemical Substances** Substance is listed.

**Standard for the Uniform Scheduling of Medicines and Poisons** Substance is not listed.

**Directive 2012/18/EU**

**Named dangerous substances - ANNEX I** Substance is not listed.

**Seveso category**

H2 ACUTE TOXIC

E1 Hazardous to the Aquatic Environment

**Qualifying quantity (tonnes) for the application of lower-tier requirements** 50 t

**Qualifying quantity (tonnes) for the application of upper-tier requirements** 200 t

**REGULATION (EC) No 1907/2006 ANNEX XVII** Conditions of restriction: 23

**National regulations**

**Information about limitation of use:**

Employment restrictions concerning young persons must be observed.

For use only by technically qualified individuals.

**Technical instructions (air):**

Class	Share in %
I	100,0

**Water hazard class:** Water danger class 3 (Self-assessment): extremely hazardous for water.

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**Other regulations, limitations and prohibitive regulations**

**ELINCS (European List of Notified Chemical Substances)** Substance is not listed.

**Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006.** Substance is not listed.

**The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.**

Substance is not listed.

**Annex XIV of the REACH Regulations (requiring Authorisation for use)** Substance is not listed.

**15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

**SECTION 16: Other information**

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

**Department issuing SDS:** Global Marketing Department

**Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

SVHC: Substances of Very High Concern

vPvB: very Persistent and very Bioaccumulative

NIOSH: National Institute for Occupational Safety

OSHA: Occupational Safety and Health Administration (USA)

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

BEI: Biological Exposure Limit

Acute Tox. 3: Acute toxicity – Category 3

STOT RE 2: Specific target organ toxicity (repeated exposure) – Category 2

Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1

Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1