

ACCORDING TO EC-REGULATIONS 1907/2006 (REACH), 1272/2008 (CLP) &amp; 2015/830

**SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING**
**1.1 Product identifier**

Product Name Bismuth selenide crystal  
 Synonyms Bismuth selenide, Bismuth(III) selenide  
 Chemical Name Dibismuth triselenide  
 Chemical Formula Bi<sub>2</sub>Se<sub>3</sub>  
 CAS No. 12068-69-8  
 EC No. 235-104-7  
 Index No. 034-002-00-8  
 REACH Registration No. Not applicable.

**1.2 Relevant identified uses of the substance or mixture and uses advised against**

Identified Use(s) PC21 Laboratory chemicals, Research and development use *only*

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

Company Identification Ossila Limited  
 Address of Supplier Solpro Business Park  
 Windsor Street  
 Sheffield  
 Postal code S4 7WB, UK  
 Telephone: +441142999180  
 E-mail info@ossila.com  
 Office hours 08:00 - 17:00

**1.4 Emergency telephone number**

Emergency Phone # +44 (0) 20 3885 0382 (CHEMTREC)

Other Regions	Emergency Phone Number (CHEMTREC)
Europe, Middle East, Africa	+44 20 3885 0382
North America	+1 703 527 3887
Central America	+52 55 8526 4930
South America	+55 11 4349 1359
Asia, India, and Oceania	+65 3163 8374

**SECTION 2: HAZARDS IDENTIFICATION**
**2.1 Classification of the substance or mixture**

Regulation (EC) No. 1272/2008 (CLP) Acute Tox. 3: Toxic if swallowed.  
 Acute Tox. 3: Toxic if inhaled  
 STOT RE 2: May cause damage to organs through prolonged or repeated exposure  
 Aquatic Acute 1: Very toxic to aquatic life  
 Aquatic Chronic 1: Very toxic to aquatic life with long lasting effects

**2.2 Label elements**

According to Regulation (EC) No. 1272/2008 (CLP)  
 Product Name Bismuth selenide crystal

Hazard Pictogram(s)



GHS06

GHS08

GHS09

Signal Word(s)

Danger

Hazard Statement(s)

H301+H331: Toxic if swallowed or if inhaled  
 H373: May cause damage to organs through prolonged or repeated exposure  
 H400: Very toxic to aquatic life  
 H410: Very toxic to aquatic life with long lasting effects

Precautionary Statement(s)

P261: Avoid breathing dust/fume/gas/mist/vapours/spray.  
 P273: Avoid release to the environment.  
 P301 + P310 + P330: IF SWALLOWED: Immediately call a POISON CENTER/  
 doctor. Rinse mouth.  
 P304 + P340 + P311: IF INHALED: Remove person to fresh air and keep  
 comfortable for breathing. Call a POISON CENTER/ doctor.  
 P314: Get medical advice/attention if you feel unwell.

**2.3 Other hazards**

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

**2.4 Additional Information**

Not applicable.

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**SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS**


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**3.1 Substances**

Hazardous ingredient(s)	CAS No.	EC No.	%W/W	Hazard Statement(s)
Dibismuth triselenide (Index number: 034-002-00-8)	12068-69-8	235-104-7	<100	Acute Tox. 3 H301 Acute Tox. 3 H331 STOT RE 2 H373 Aquatic Acute 1 H400 Aquatic Chronic 1 H410

**3.2 Mixtures**

Not applicable.

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**SECTION 4: FIRST AID MEASURES**


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**4.1 Description of first aid measures**

General Advice

First aiders should ensure they have taken adequate steps to protect themselves from exposure (see Section 8 for recommended personal protection equipment) Show this safety data sheet to the doctor in attendance.

Inhalation

Remove person to fresh air and keep comfortable for breathing. If not breathing give artificial respiration. Call a POISON CENTER or doctor/physician.

Skin Contact

Rinse skin with water. If skin irritation occurs, get medical advice/attention.

Eye Contact

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Ingestion

Immediately call a POISON CENTER or doctor/ physician. Rinse mouth.

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

Most important symptoms and effects, both acute and delayed, are included on labelling (Section 2.2) and in Section 11.

**4.3 Indication of any immediate medical attention and special treatment needed**

Treat symptomatically.

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**SECTION 5: FIREFIGHTING MEASURES**


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**5.1 Extinguishing media**

Suitable Extinguishing media

As appropriate for surrounding fire.

Unsuitable extinguishing media

As appropriate for surrounding fire.

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

Bismuth oxides  
Selenium/selenium oxides

**5.3 Advice for firefighters**

Fire fighters should wear complete protective clothing including self-contained breathing apparatus.

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**SECTION 6: ACCIDENTAL RELEASE MEASURES**


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

Follow safe handling advice and personal protective equipment recommendations (as per section 8). Provide adequate ventilation.

**6.2 Environmental precautions**

Avoid release to the environment.

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

Sweep up spilled substance - avoid making dust. Use vacuum equipment for collecting spilt materials, where practicable. Dispose of contents in accordance with local, state or national legislation.

**6.4 Reference to other sections**

See Also Section 8, 13.

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**SECTION 7: HANDLING AND STORAGE**


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**7.1 Precautions for safe handling**

Advice on safe handling

Avoid inhalation, ingestion, and contact with skin and eyes. Use only in a well-ventilated area. Wear protective clothing as per section 8.

Hygiene measures

Keep away from food and drink. Wash hands after handling, before breaks, and at the end of workday.

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

Storage temperature

Store in a well-ventilated place. Keep container tightly closed. Store locked up. Ambient.

Storage life

Stable under normal conditions.

Incompatible materials  
**7.3 Specific end use(s)**

None known.

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

**SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

**8.1 Control parameters**

8.1.1 Occupational Exposure Limits

UK – EH40 Workplace Exposure Limits (WEL).

Occupational Exposure Limits						
SUBSTANCE.	CAS No.	LTEL (8 hr TWA ppm)	LTEL (8 hr TWA mg/m <sup>3</sup> )	STEL (ppm)	STEL (mg/m <sup>3</sup> )	Note
Selenium and compounds, except hydrogen selenide (as Se)	12068-69-8		0.1			

Region Source  
 EU EU Occupational Exposure Limits  
 United Kingdom UK Workplace Exposure Limits EH40/2005 (Third edition, published 2018)

**8.2 Exposure controls**

8.2.1. Appropriate engineering controls Ensure adequate ventilation and/or exhaust. A washing facility/water for eye and skin cleaning purposes should be present.

8.2.2. Personal protection equipment  
 Eye Protection Wear eye protection with side protection tested and approved under appropriate government standards such as EN166 (EU).

Hand protection Handle with gloves. Gloves must be inspected prior to use and proper glove removal techniques should be used. The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it.

Body protection Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

Respiratory protection No personal respiratory protection is necessary under normal circumstances.

Thermal hazards None known.

8.2.3. Environmental Exposure Controls Avoid release to the environment.

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

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

Physical State Solid: Crystal.  
 Colour Dull Gray.  
 Odour Not known.  
 Odour threshold Not known.  
 Melting point/freezing point 710 °C  
 Initial boiling point and boiling range Not known.  
 Flammability Not known.  
 Lower and upper explosion limit Not known.  
 Flash Point Not known.  
 Auto-ignition temperature (°C) Not known.  
 Decomposition temperature (°C) Not known.  
 pH Not known.  
 Kinematic viscosity Not known.  
 Solubility(ies) Solubility (Water): Not known.  
 Solubility (Other): Not known.  
 Partition coefficient: n-octanol/water (log value) Not known.  
 Vapour pressure Not known.  
 Density Not known.  
 Relative density Not known.  
 Relative vapour density Not known.  
 Particle characteristics Not known.

**9.2 Other information**

None.

**SECTION 10: STABILITY AND REACTIVITY**

**10.1 Reactivity**

None anticipated.

**10.2 Chemical Stability**

Stable under recommended storage conditions.

**10.3 Possibility of hazardous reactions**

Not known.

**10.4 Conditions to avoid**

Not known.

**10.5 Incompatible materials**

Not known.

**10.6 Hazardous decomposition products**

In the event of fire: see Section 5

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**SECTION 11: TOXICOLOGICAL INFORMATION**

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**11.1 Information on toxicological effects**

Acute toxicity - Ingestion	Toxic if swallowed. Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2).
Acute toxicity - Skin Contact	No data available.
Acute toxicity - Inhalation	Toxic if inhaled. Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2).
Skin corrosion/irritation	No data available.
Serious eye damage/irritation	No data available.
Skin sensitization data	No data available.
Respiratory sensitization data	No data available.
Germ cell mutagenicity	No data available.
Carcinogenicity	No data available.
Reproductive toxicity	No data available.
Lactation	No data available.
STOT - single exposure	No data available.
STOT - repeated exposure	Causes damage to organs through prolonged or repeated exposure. Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2).
Aspiration hazard	No data available.

**11.2 Information on other hazards****11.2.1 Endocrine disrupting properties**

None known.

**11.2.2. Information on other hazards**

None known.

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**SECTION 12: ECOLOGICAL INFORMATION**

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**12.1 Toxicity**

Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects. Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2).

Toxicity - Aquatic invertebrates	Not known.
Toxicity - Fish	Not known.
Toxicity - Algae	Not known.
Toxicity - Sediment Compartment	Not known.
Toxicity - Terrestrial Compartment	Not known.

**12.2 Persistence and Degradation**

Not known.

**12.3 Bioaccumulative potential**

Not known.

**12.4 Mobility in soil**

Not known.

**12.5 Results of PBT and vPvB assessment**

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

**12.6 Endocrine disrupting properties**

Not known.

**12.7 Other adverse effects**

Not known.

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**SECTION 13: DISPOSAL CONSIDERATIONS**

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**13.1 Waste treatment methods**

Dispose of contents in accordance with local, state or national legislation. Recycle only completely emptied packaging. Normal disposal is via incineration operated by an accredited disposal contractor. Send to a licensed recycler, reclaimer or incinerator.

**13.2 Additional Information**

Disposal should be in accordance with local, state or national legislation.

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**SECTION 14: TRANSPORT INFORMATION**

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**14.1 UN number**

UN No. 3283

**14.2 UN proper shipping name**

UN proper shipping name Selenium compound, solid, n.o.s. (Bismuth selenide)

**14.3 Transport hazard class(es)**

ADR/RID 6.1  
 IMDG 6.1  
 IATA 6.1

**14.4 Packing group**

Packing group III

**14.5 Environmental hazards**

Environmental hazards Not classified as a Marine Pollutant.

**14.6 Special precautions for user**

Special precautions for user Not known.

**14.7 Maritime transport in bulk according to IMO instruments**

Not known.

**SECTION 15: REGULATORY INFORMATION**

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

European Regulations - Authorisations and/or Restrictions On Use

Candidate List of Substances of Very High Concern for Authorisation Not listed

REACH: ANNEX XIV list of substances subject to authorisation Not listed

REACH: Annex XVII Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles Not listed

Community Rolling Action Plan (CoRAP) Not listed

Regulation (EC) N° 850/2004 of the European Parliament and of the Council on persistent organic pollutants Not listed

Regulation (EC) N° 1005/2009 on substances that deplete the ozone layer Not listed

Regulation (EU) N° 649/2012 of the European Parliament and of the Council concerning the export and import of hazardous chemicals Not listed

**National regulations**

Other Not known.

**15.2 Chemical Safety Assessment**

A REACH chemical safety assessment has not been carried out.

**SECTION 16: OTHER INFORMATION**

The following sections contain revisions or new statements:

**LEGEND**

Acronyms

ADN : European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways  
 ADR : European Agreement concerning the International Carriage of Dangerous Goods by Road  
 CAS : Chemical Abstracts Service  
 CLP : Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures  
 DNEL : Derived No Effect Level  
 EC : European Community  
 EINECS : European Inventory of Existing Commercial Chemical Substances  
 IATA : International Air Transport Association  
 IBC : Intermediate Bulk Container  
 ICAO : International Civil Aviation Organization  
 IMDG : International Maritime Dangerous Goods  
 LTEL : Long term exposure limit  
 PBT : Persistent, Bioaccumulative and Toxic  
 PNEC : Predicted No Effect Concentration  
 REACH : Registration, Evaluation, Authorisation and Restriction of Chemicals  
 RID : Regulations concerning the International Carriage of Dangerous Goods by Rail  
 STEL : Short term exposure limit  
 STOT : Specific Target Organ Toxicity  
 UN : United Nations  
 vPvB : very Persistent and very Bioaccumulative

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## SAFETY DATA SHEET

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