1. Product identifier

1.1 Product Name
Bismuth selenide powder

Synonyms
Bismuth selenide, Bismuth(III) selenide

Chemical Name
Dibismuth triselenide

Chemical Formula
Bi$_2$Se$_3$

Product code
M2206C*

CAS No.
12068-69-8

EC No.
235-104-7

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

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

2. Classification of the substance or mixture

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

2.2 Label elements

Product Name
Bismuth selenide powder

Hazard Pictogram(s)

Signal Word(s)
Danger

Hazard Statement(s)
H301 + H331: Toxic if swallowed or inhaled.

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

H410: Very toxic to aquatic life with long lasting effects.

Precautionary Statement(s)
P260: Do not breathe dust/fume/gas/mist/vapours/spray.
P304 + P340 + P311: IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/physician.

2.3 Other hazards
None known.

2.4 Additional Information
Not applicable.
SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1 Substances

<table>
<thead>
<tr>
<th>Hazardous ingredient(s)</th>
<th>CAS No.</th>
<th>EC No.</th>
<th>%W/W</th>
<th>Hazard Statement(s)</th>
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<td>235-104-7</td>
<td>&lt;100</td>
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<td>Acute Tox. 3 H331</td>
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<td>Aquatic Acute 1 H400</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Aquatic Chronic 1 H410</td>
</tr>
</tbody>
</table>

### 3.2 Mixtures

Not applicable.

SECTION 4: FIRST AID MEASURES

#### 4.1 Description of first aid measures

- **Inhalation**: Remove person to fresh air and keep comfortable for breathing. 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

**SECTION 11: Most important symptoms and effects, both acute and delayed**

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

Treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

#### 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

May decompose in a fire, giving off toxic and irritant vapours.

#### 5.3 Advice for firefighters

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

SECTION 6: ACCIDENTAL RELEASE MEASURES

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

Provide adequate ventilation. Wear protective clothing as per section 8.

#### 6.2 Environmental precautions

Avoid release to the environment.

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

Sweep up spilled substance but avoid making dust. Use vacuum equipment for collecting spill 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.

SECTION 7: HANDLING AND STORAGE

#### 7.1 Precautions for safe handling

Avoid breathing dust/aerosols. Use only in a well-ventilated area. Wear protective clothing as per section 8.

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

- **Storage temperature**: Ambient.
- **Storage life**: Stable under normal conditions.
- **Incompatible materials**: None known.
- **Specific end use(s)**: Not known. See Section: 1.2.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

#### 8.1 Control parameters

##### 8.1.1 Occupational Exposure Limits

No occupational exposure limit assigned.
8.2 Exposure controls
8.2.1. Appropriate engineering controls
Ensure adequate ventilation. 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 (EN166).

Skin protection
Wear protective clothing and gloves: Impervious gloves (EN 374).

Respiratory protection
A suitable mask with filter type A (EN14387 or EN405) may be appropriate.

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

Appearance
Solid: powder
Colour: Dull grey

Odour
Not known.

Odour threshold
Not known.

pH
Not known.

Melting point/freezing point
710 °C

Initial boiling point and boiling range
Not known.

Flash Point
Not known.

Evaporation rate
Not known.

Flammability (solid, gas)
Not known.

Upper/lower flammability or explosive limits
Not known.

Vapour pressure
Not known.

Vapour density
Not known.

Density (g/ml)
Not known.

Relative density
Not known.

Solubility(ies)
Solubility (Water): Not known.
Solubility (Other): Not known.

Partition coefficient: n-octanol/water
Not known.

Auto-ignition temperature
Not known.

Decomposition Temperature (°C)
Not known.

Viscosity
Not known.

Explosive properties
Not known.

Oxidising properties
Not known.

9.2 Other information
None.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity
None anticipated.

10.2 Chemical Stability
Stable under normal 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

No hazardous decomposition products known.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity - Ingestion: Toxic if swallowed.
Acute toxicity - Skin Contact: Not classified.
Acute toxicity - Inhalation: Toxic if inhaled.
Skin corrosion/irritation: Not classified.
Serious eye damage/irritation: Not classified.
Skin sensitization data: Not classified.
Respiratory sensitization data: Not classified.
Germ cell mutagenicity: Not classified.
Carcinogenicity: Not classified.
Reproductive toxicity: Not classified.
Lactation: Not classified.
STOT - single exposure: Not classified.
STOT - repeated exposure: May cause damage to organs through prolonged or repeated exposure.
Aspiration hazard: Not classified.

11.2 Other information

Not known.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

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

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

Not known.

12.6 Other adverse effects

Not known.

SECTION 13: DISPOSAL CONSIDERATIONS

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, reclaimed or incinerator.

13.2 Additional Information

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

SECTION 14: TRANSPORT INFORMATION

14.1 UN number

UN No.: 3283

14.2 UN proper shipping name

UN proper shipping name: Selenium compound, solid, n.o.s.

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: Classified as a Marine Pollutant.

14.6 Special precautions for user

Special precautions for user: Not known.
14.7 Transport in bulk according to Annex II of Marpol and the IBC Code
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
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
Not listed
Regulation (EC) N° 1005/2009 on substances that deplete the ozone layer
Not listed
Not listed
National regulations
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
LTML : 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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