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### Section 3. Composition / information on ingredients

Chemical or common name:	Bismuth selenide
Chemical formula:	Bi <sub>2</sub> Se <sub>3</sub>
Single Substance or Compound:	Single substance
Composition:	100%
CAS #:	12068-69-8
RTECS#:	not listed
TSCA inventory :	listed
EINECS:	2351047

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### Section 4. First aid measures

Eye contact:	Promptly wash eyes with plenty of water while lifting the eye lids. Continue to rinse for at least 15 minutes and get medical attention.
Skin contact:	Promptly flush contaminated skin with soap or mild detergent and water. Contact physician if irritation continues.
Inhalation:	Remove the exposed person immediately and provide fresh air. Get medical attention.
Ingestion:	Rinse mouth and throat with water. Get medical attention immediately.

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### Section5. Fire fighting measures

Extinguishing media:	Use media appropriate for surrounding fire.
Fire fighting:	The product is not combustible. In case of fire, the product may liberate toxic gases/ fume. Self-contained breathing apparatus and full protective clothing should be used, if the material is involved in fire

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### Section 6. Accidental release measures

Personal Precautions:	Workers should use protective wears to prevent contact with the spilt adhesive and inhalation of its vapor/dusts.
Environmental hazard precautions:	Shut off leak if without risk. Prevent flow out to river, etc. so as not to badly affect.
Method for containment and cleaning up:	Avoid unnecessary contacts with spills. Indoor leakage: Ventilate as much as possible until the cleaning is completed. Outdoor leakage: Work from the windward and evacuate the leeward crowd. Gather up, pack in closed container as much as possible. Carefully collect remnant and move to a safe place.

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### Section 7. Handling and storage

#### Precautions to be taken in handling:

Safe handling:	Use protective wears and local ventilation equipment, if inhalation or skin contact is foreseen. Avoid prolonged or repeated exposure.
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#### Precautions to be taken in storage:

General precautions:	Store the material in a sealed container. Store in a cool, dry, well ventilated and dark place away from incompatible materials.
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## Section 8. Exposure controls / personal protection

Exposure guideline: ACGIH(2013) : Selenium and compounds (as Se) TLV-TWA 0.5 mg/m<sup>3</sup>  
 OSHA(2006) : Selenium and compounds (as Se) PEL-TWA 0.5 mg/m<sup>3</sup>

Facility measures: Local ventilation of closed work room or total proper ventilation to prevent inhalation.

Protective ware: Wear appropriate NIOSH/MSHA-approved respirator, safety goggles, protective gloves.

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## Section 9. Physical and chemical properties

Appearance: Black solid

Chemical formula: Bi<sub>2</sub>Se<sub>3</sub>

Formula weight: 654.8

Melting point: 710 °C (decomposes)

Density: 7.5 g/cm<sup>3</sup>

Solubility in water: Insoluble

Flammability: Non-combustible substance

Oxidation: None

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## Section10. Stability and reactivity

Stability: Stable in closed container.

Reactivity

Incompatibility: No data available.

Condition to avoid: Heat

Hazardous decomposition products :  
 Selenium, selenium compounds

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## Section11. Toxicological information

Acute toxicity(Oral): GHS : Category 3 ; Toxic if inhaled

Acute toxicity(Inhalation): GHS : Category 3 ; Toxic if inhaled

Skin corrosive / irritation: GHS : No data available

Serious eye damage / irritation: GHS : No data available

Respiratory sensitization: GHS : No data available

Skin sensitization: GHS : No data available

Germ cell mutagenicity: GHS : No data available

Carcinogenicity: GHS : No data available

Chemical Name	ACGIH (2013)	IARC (2018)	NTP (2016)
Selenium and compounds	—	3	—

IARC(2018) group 3 : The agent is not classifiable as to its carcinogenicity to humans.

Reproductive toxicity: GHS : No data available

Specific target organ toxicity

— single exposure: GHS : No data available

— repeated exposure: GHS : Category 2 ;  
 May cause damage to organs through prolonged or repeated exposure

Aspiration hazard: GHS : No data available



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## Section12. Ecological information

Ecotoxicity:

Hazardous to the aquatic environment

– acute toxicity: GHS : GHS : Category 1 ; Very toxic to aquatic life

– chronic toxicity: GHS : Category 1 ;

Very toxic to aquatic life with long lasting effects

Hazardous to the ozone layer

GHS : No data available

No Freon or Halon

Fish toxicity:

No data available

Degradability:

No data available

Bioaccumulative potential:

No data available

Mobility in soil:

No data available

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## Section13. Disposal considerations

Disposal method: User of the product should contract with the local government or licensed 'Industrial Waste Haulers' for disposal of waste.

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## Section 14. Transport information

UN number: 3283

IATA shipping name: SELENIUM COMPOUND, SOLID, N.O.S.

IATA hazard class: Class 6.1 (Toxic substances)

IATA packing group: III

HS code: 2842.90

Marine pollution: Yes

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## Section 15. Regulatory information

TSCA inventory: listed.

Please refer to any other local / national measures that may be relevant.

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## Section 16. Other information

The information described above is believed to be correct. However, Kojundo Chemical Lab. makes no representation, warranty nor guarantee of any kind with respect to the information on this data sheet or any use of the product based upon this information.



High Purity Materials

KOJUNDO CHEMICAL LABORATORY CO.,LTD.