

SAFETY DATA SHEET

| Date Revised: 22/11/20 SECTION 1. IDENTIFICATION Product Name: Bismuth(III) Selenide CAS #: 12068-69-8 Relevant Identified uses of the substance: Scientific research and development Supplier details: Stanford Advanced Materials E-mail: sales@samaterials.com Tel: (949) 407-8904 Address: 23661 Birtcher Dr., Lake Forest, CA 92630 U.S.A. SECTION 2. HAZARDS IDENTIFICATION Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS) GHS06 Skull and crossbones Acute Tox. 3 H301 Toxic if swallowed. Acute Tox. 3 H301 Toxic if inhaled. GHS08 Health hazard STOT RE 2 H373 May cause damage to the central nervous system, the liver and the digestive system through prolonged or repeated e xposure. Route of exposure: Oral, Inhalative. Hazards not otherwise classified | | н 1 — 1 | | | | | 11 | | | | Accesse | ed: 25/08 | 8/202 |
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| GHS08 Health hazard STOT RE 2 H373 May cause damage to the central nervous system, the liver and the digestive system through prolonged or repeated e xposure. Route of exposure: Oral, Inhalative. Hazards not otherwise classified | | | of the sul | ostance | or mixtu | ure in ac | cordan | ce with 2 | 9 CFR 1 | 910 (O | SHA HC | S) | |
| STOT RE 2 H373 May cause damage to the central nervous system, the liver and the digestive system through prolonged or repeated e xposure. Route of exposure: Oral, Inhalative. Hazards not otherwise classified | 11 | 06 Skull a | nd cross | bones | | | | | | - | | - | •, |
| STOT RE 2 H373 May cause damage to the central nervous system, the liver and the digestive system through prolonged or repeated e xposure. Route of exposure: Oral, Inhalative. Hazards not otherwise classified | Acute | 06 Skull a e Tox. 3 H | nd cross 301 Tox | bones ic if swa | allowed. | 3 | 1. | | 1 | | | 1 | |
| xposure. Route of exposure: Oral, Inhalative. Hazards not otherwise classified | Acute Acute | 06 Skull ar e Tox. 3 H e Tox. 3 H | nd cross 301 Tox 331 Tox | bones ic if swa ic if inha | allowed. aled. | 14 477 | | | 1 | | | 1 | |
| exposure: Oral, Inhalative. | Acute Acute GHS(| 06 Skull ar e Tox. 3 H e Tox. 3 H 08 Health | nd cross 301 Tox 331 Tox hazard | bones ic if swa ic if inh | allowed. aled. | | | | | | | 1 | |
| Hazards not otherwise classified | Acute Acute GHS(STOT | 06 Skull ai e Tox. 3 H e Tox. 3 H 08 Health T RE 2 H3 | nd cross 301 Tox 331 Tox hazard 373 May | bones ic if swa ic if inha cause o | allowed. aled. damage | to the ce | entral n | ervous s | ystem, | | | | · . |
| Hazards not otherwise classified | Acute Acute GHS(STOT the liv | 06 Skull an e Tox. 3 H e Tox. 3 H 08 Health T RE 2 H3 ver and the | nd cross 301 Tox 331 Tox hazard 373 May e digesti | bones ic if swa ic if inha cause o | allowed. aled. damage | to the ce | entral n | ervous s | ystem, | | | | · . |
| | Acute Acute GHS(STOT the liv xposi | 06 Skull an e Tox. 3 H e Tox. 3 H 08 Health T RE 2 H3 ver and the ure. Route | nd cross 301 Tox 331 Tox hazard 373 May e digesti e of | bones ic if swa ic if inh cause o ive syst | allowed. aled. damage em throu | to the ce ugh prolo | entral no | ervous s r repeat | ystem, ed e | | | | |

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|--|---|--|---|-------------------------------|---|------------------------|-----------------|-------------------|----------|----------|---------------------------------------|
| No data available | | | | | | | | | | | |
| GHS label elements | | | | | | | | | | | |
| The product is classifie | d and la | abeled in | | | | | | | | | |
| accordance with 29 CF | | | , | | | | | | | | |
| Hazard pictograms | | 1 1 1 | | | | : * * | | | | | |
| GHS06 GHS08Signal v | vord: Da | anger | 1 - 1 1 | | | | | | | | |
| Hazard statements | | | | | | | | | | | |
| H301+H331 Toxic if sw | allowed | | | | | | · . | | | | |
| H373 May cause dama | ge to th | ne central | nervou | s syste | m, the live | er and th | he dige | stive syst | tem thro | ugh | |
| prolonged or repeated | exposu | re. | | | 1 I | | | | | | |
| Route of exposure: Ora | ıl, | н 1 — 1 | | , , , | | | | | | | |
| Inhalative | 1. | | | · | | | 1. 1. | | | · . | |
| Precautionary statemer | nts | | | | | | | | | | |
| P260 Do not breathe du | ust/fum | e/gas/mist | t/vapors | s/spray | - | : * * | 1. | | | 1. | |
| P261 Avoid breathing c | luct/fum | olaoc/mic | st/vanor | e/enra | N . | | | | | | |
| F201 Avoid breathing d | iust/iuii | ie/yas/iiis | si vapoi | S/Spra | у. | | | | | | |
| P304+P340 IF INHALE | | - | | | | it rest in | n a posi | ition comf | fortable | for | |
| | D: Rem | nove victin | n to free | sh air a | ind keep a | | - | | | | |
| P304+P340 IF INHALE | D: Rem | nove victin | n to free | sh air a | ind keep a | | - | | | | |
| P304+P340 IF INHALE breathing. | D: Rem | nove victin | n to fres | sh air a | ind keep a | 1 | | | 1 | 14. 1 | |
| P304+P340 IF INHALE breathing. P405 Store locked up. P403+P233 Store in a v P501 Dispose of conten | D: Rem well-ver nts/cont | nove victin ntilated pla tainer in a | n to fres ace. Ke ccordar | sh air a ep con nce wit | ind keep a tainer tigh h local/reg | tly close jional/na | ed. ational/ | ínternatic | nal | 14. 1 | |
| P304+P340 IF INHALE breathing. P405 Store locked up. P403+P233 Store in a v P501 Dispose of content regulations. | D: Rem well-ver nts/cont | nove victin ntilated pla tainer in ad | n to fres ace. Ke ccordar | sh air a ep con nce wit | ind keep a tainer tigh h local/rec | tly close jional/na | ed. ational/ | internatic | onal , | | |
| P304+P340 IF INHALE breathing. P405 Store locked up. P403+P233 Store in a v P501 Dispose of conter | D: Rem well-ver nts/cont | nove victin ntilated pla tainer in ad | n to fres ace. Ke ccordar | sh air a ep con nce wit | ind keep a tainer tigh h local/rec | tly close jional/na | ed. ational/ | internatic | onal , | | |
| P304+P340 IF INHALE breathing. P405 Store locked up. P403+P233 Store in a v P501 Dispose of conten regulations. WHMIS classification D1A - Very toxic materi | D: Rem well-ver nts/cont al caus | nove victin ntilated pla tainer in ad | n to fres ace. Ke ccordar diate ar | sh air a ep con nce wit | nd keep a tainer tigh h local/reg ous toxic e | tly close jional/na | ed. ational/ | 'nternatic | onal | | · · · · · · · · · · · · · · · · · · · |
| P304+P340 IF INHALE breathing. P405 Store locked up. P403+P233 Store in a v P501 Dispose of content regulations. WHMIS classification | D: Rem well-ver nts/cont al caus | nove victin ntilated pla tainer in ad | n to fres ace. Ke ccordar diate ar | sh air a ep con nce wit | nd keep a tainer tigh h local/reg ous toxic e | tly close jional/na | ed. ational/ | 'nternatic | onal | | · · · · · · · · · · · · · · · · · · · |
| P304+P340 IF INHALE breathing. P405 Store locked up. P403+P233 Store in a v P501 Dispose of conten regulations. WHMIS classification D1A - Very toxic materi | D: Rem well-ver nts/cont al caus | nove victin ntilated pla tainer in ad | n to fres ace. Ke ccordar diate ar | sh air a ep con nce wit | ind keep a tainer tigh h local/reg ous toxic e | tly close jional/na | ed. ational/ | <i>internatic</i> | onal | | |
| P304+P340 IF INHALE breathing. P405 Store locked up. P403+P233 Store in a v P501 Dispose of content regulations. WHMIS classification D1A - Very toxic materia Classification system HMIS ratings (scale 0-4 (Hazardous Materials 10 | D: Rem well-ver hts/cont al caus | nove victin ntilated pla tainer in ad | n to fres ace. Ke ccordar diate ar | sh air a ep con nce wit | ind keep a tainer tigh h local/reg ous toxic e | tly close jional/na | ed. ational/ | internatio | onal | | |
| P304+P340 IF INHALE breathing. P405 Store locked up. P403+P233 Store in a v P501 Dispose of content regulations. WHMIS classification D1A - Very toxic materia Classification system HMIS ratings (scale 0-4 | D: Rem well-ver hts/cont al caus | nove victin ntilated pla tainer in ad | n to fres ace. Ke ccordar diate ar | sh air a ep con nce wit | ind keep a tainer tigh h local/reg ous toxic e | tly close jional/na | ed. ational/ | internatio | onal | | |
| P304+P340 IF INHALE breathing. P405 Store locked up. P403+P233 Store in a v P501 Dispose of content regulations. WHMIS classification D1A - Very toxic material Classification system HMIS ratings (scale 0-4 (Hazardous Materials loc HEALTH FIRE | D: Rem well-ver hts/cont al caus | nove victin ntilated pla tainer in ad ing immed | n to fres ace. Ke ccordar diate ar | sh air a ep con nce wit | ind keep a tainer tigh h local/reg | tly close jional/na | ed. ational/ | internatio | onal | | |
| P304+P340 IF INHALE breathing. P405 Store locked up. P403+P233 Store in a v P501 Dispose of content regulations. WHMIS classification D1A - Very toxic material Classification system HMIS ratings (scale 0-4 (Hazardous Materials loc HEALTH FIRE | D: Rem well-ver hts/cont al caus | nove victin ntilated pla tainer in ad | n to fres ace. Ke ccordar diate ar | sh air a ep con nce wit | ind keep a tainer tigh h local/reg | tly close jional/na | ed. ational/ | internatio | onal | | |
| P304+P340 IF INHALE breathing. P405 Store locked up. P403+P233 Store in a v P501 Dispose of content regulations. WHMIS classification D1A - Very toxic material Classification system HMIS ratings (scale 0-4 (Hazardous Materials loc HEALTH FIRE | D: Rem well-ver hts/cont al caus | nove victin ntilated pla tainer in ad | n to fres ace. Ke ccordar diate ar | sh air a ep con nce wit | tainer tigh h local/reg | tly close jional/na | ed. ational/ | internatio | onal | | |

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|----------------------------------|-----------|----------|---------|------------|----------|-----|------|------------|----------------|----------|-----|----|
| | н н н | 1 1 1 | | | | | | | | | | |
| 1 Health (acute ef | ifects) = | = 2 | | 1 | 14 | | 1 | 14. 14. | | 1 | | |
| Flammability = (| : * * | · . | . : | 1 1 1 1 | 1. | . : | ;··· | | | | | |
| Physical Hazard Other hazards | 1 = 1 | , , , | | : • | , , , | . : | | | | | | |
| Results of PBT a | and vP | vB asse | essment | 1 | 1. 1. | | 1 | | , * * , * * | 19 19 | 1. | .* |
| vPvB: N/A | | <u>'</u> | | | | | | 1 | | | 1 | |

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

| | | | | | , | | | | |
|---------------------------------|-------|---|----------|-----|-------|----------|-----|--------------|----------|
| Substances | | | | | | | | | |
| CAS No. / Substance Name: | | | 1. 1. | | : • • | 1. 1. | | : • • • : | 1. 1. |
| 12068-69-8 Bismuth(III) selenio | de | | | | | | | | |
| Identification number(s): | · · · | | | 1 1 | , | | 1 I | | |
| EC number: 235-104-7 | | 1 | | | | | | | 14 |
| Index number: 034-002-00-8 | | | | | | | | | |
| | | | | | | | | | |

SECTION 4. FIRST AID MEASURES

Description of first aid measures

General information

Immediately remove any clothing soiled by the product.

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

In case of irregular breathing or respiratory arrest provide artificial respiration. If inhaled: Supply patient with fresh air. If not breathing, provide artificial respiration. Keep patient warm.

Seek immediate medical advice.

In case of skin contact:

Immediately wash with soap and water; rinse thoroughly.

| | | | · · . | | | 1. | | | | |
|--|---|--|---------------------------------|------------------------------|------------|----------|-------|----------|------------|-----|
| Seek immediate medical | advice. | | | | | | | | | |
| In case of eye contact: | | | | | | | | | | |
| Rinse opened eye for se | veral minute | s under ru | unning \ | water. Co | onsult a j | physicia | an. | | | . ' |
| If swallowed: | | | | | | | | | | |
| Do not induce vomiting; i | mmediately | call for m | edical h | elp. | | · · . | | | | |
| Information for doctor | .: .: | · · · · | | 1 1 1 | н н 1 | 1 | | н н н | | |
| Most important symptom | s and effects | s, both ac | ute and | delayed | | · . | | · . | | |
| No data available | | ı | | 1 | , | 1 | t. | | , | |
| Indication of any immedia | ate medical | attention a | and spe | cial treat | ment ne | eded | | | · . | |
| No data available | | | | | | | | | | |
| | | | | | | | | | | |
| <u></u> | | | | | | | | | | |
| SECTION 5. FIR Extinguishing media | _ | _ | _ | | _ | | | | | |
| SECTION 5. FIR Extinguishing media Suitable extinguishing ag | | _ | Ч., | , , , | | | | | | |
| Extinguishing media | gents | : ··· | * | | | | | | | |
| Extinguishing media Suitable extinguishing ag | gents e. Use fire-fig | Inting mea | asures t | hat suit t | the surro | ounding | fire. | | | |
| Extinguishing media Suitable extinguishing ag Product is not flammable | gents 9. Use fire-fig rom the sub | hting mea | asures t mixture | hat suit t | the surro | ounding | fire. | | | |
| Extinguishing media Suitable extinguishing ag Product is not flammable Special hazards arising f | gents 9. Use fire-fig 1 rom the sub 1 in a fire, the | hting mea stance or following | asures t mixture g can be | hat suit t e e release | the surro | ounding | fire. | | | |
| Extinguishing media Suitable extinguishing ag Product is not flammable Special hazards arising f If this product is involved Metal oxide fume | gents 9. Use fire-fig 1 rom the sub 1 in a fire, the | hting mea stance or following | asures t mixture g can be | hat suit t e release | the surro | ounding | fire. | : | 14. 14. | |
| Extinguishing media Suitable extinguishing ag Product is not flammable Special hazards arising f If this product is involved Metal oxide fume Selenium dioxide (SeO2) Advice for firefighters | gents 9. Use fire-fig 1 rom the sub 1 in a fire, the | yhting mea stance or e following | asures t mixture g can be | hat suit t e released | the surro | ounding | fire. | | | |
| Extinguishing media Suitable extinguishing ag Product is not flammable Special hazards arising f If this product is involved Metal oxide fume Selenium dioxide (SeO2) Advice for firefighters | gents 9. Use fire-fig 1 rom the sub 1 in a fire, the | yhting mea stance or e following | asures t mixture g can be | hat suit t e released | the surro | ounding | fire. | | | |
| Extinguishing media Suitable extinguishing ag Product is not flammable Special hazards arising f If this product is involved Metal oxide fume Selenium dioxide (SeO2) Advice for firefighters | gents 9. Use fire-fig 1 rom the sub 1 in a fire, the | yhting mea stance or e following | asures t mixture g can be | hat suit t | the surro | ounding | fire. | | | |

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

| Environmental precautions: | | 1 I 1 | | | 1 - 1 1 | | | | |
|--------------------------------|---------------|-----------|----------|-----------|------------|------------|------|-----|-----|
| Do not allow product to ente | er drains, se | wage s | ystems | , or othe | r water c | ourses | | | |
| Methods and materials for o | containment | and cle | eanup: | | | · · . | | | |
| Dispose of contaminated m | | | - | | | | | | |
| Ensure adequate ventilation | n. | | · . | | | | | | |
| Prevention of secondary ha | zards: | н н н | | | | | | | |
| No special measures requir | red. | | | | | | | | |
| Reference to other sections | 3 | i | | | i | | Ĩ | | |
| See Section 7 for information | on on safe h | andling | ۰. | | | | | | |
| See Section 8 for information | on on persor | nal prote | ection e | | | , | | | |
| See Section 13 for disposal | l information | | , , , | | | | | | |
| | | | | | | · | | · . | |
| SECTION 7. HAN | | AND | STO | RAG | E | 14. 14. | | ÷., | , |
| HandlingPrecautions for sa | fe handling | | | | | | | | |
| Keep container tightly seale | ed. | | | | | | | | |
| Store in cool, dry place in ti | ghtly closed | contain | ners. | | | 14. | | | . ' |
| Ensure good ventilation at t | he workplac | e. | | | | | | | |
| Open and handle container | with care. | | | | 111 | 11 | | 14 | |
| Information about protection | n against ex | plosion | s and fi | res: | | | | | |
| The product is not flammab | le | | | | | | | | |
| Conditions for safe storage | , including a | ny incor | mpatibi | lities | | | | | |
| Requirements to be met by | storerooms | and rec | ceptacl | es: | | | | | |
| No special requirements. | | | | | | | | | |
| Information about storage in | n one comm | on stora | age fac | ility: | 1 - 1 1 | | | | |
| Store away from oxidizing a | agents. | ۰. | · . | | | | | · . | |
| Further information about s | torage cond | itions: | 1 | | | , | | | |
| Keep container tightly seale | ed. | | ۰, | | | · . | | · . | |
| Store in cool, dry conditions | s in well-sea | led cont | tainers. | | | | | | |
| Specific end use(s) | 1 | н н н | , , , | | | | | | |

| No | data | 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. Control parameters Components with limit values that require monitoring at the workplace: None. Additional information: No data Exposure controls Personal protective equipment Follow typical protective and hygienic practices for handling chemicals. Keep away from foodstuffs, beverages and feed. Remove all soiled and contaminated clothing immediately. Wash hands before breaks and at the end of work. Store protective clothing separately. Maintain an ergonomically appropriate working environment. Breathing equipment: Use self-contained respiratory protective device in emergency situations. 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: Impervious gloves Inspect gloves prior to use. Suitability of gloves should be determined both by material and quality, the latter of which may vary

| 1 | | | | | 1 1 1 | | | | | | 1. | |
|-----------------|-----------------|----------|----------|-------------|----------|----------|------|---|----|----------|------------|-------|
| by | | | | | | | | | | | | |
| manut | facturer. | | | | | | | | | | | |
| Mater | ial of glov | res | 11 | . * * | 1 | | . 11 | 1 | 14 | 1 | | . * * |
| | rubber, N | | | | | | | | | | | |
| Penet | ration tim | e of glo | ve mate | erial (in r | ninutes) | 14 | | | | | | |
| 480 | | | | | | | | | | | | |
| Glove 0.11 n | thickness nm | S | 1 | | 1 | 14. 1 | | 1 | | 1 | 14. 14. | |
| · · · · · | rotection: | | glasses | 5 | : | ÷., | | | 1. | : ** | 1. | |
| Body | protectior | n: Prote | ctive wo | | | | | | | | | |
| | | | | | | | | | | | | |

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

| Information on basic physical and chemical prope | rties | | 1.1.1 | | | | | |
|--|-------|------------|-------|------------|----------|-----|------------|-------|
| Appearance: | | | | | | | | |
| Form: Pieces or various forms | | 1 1 | 1 | | | | | |
| Color: Grey | | | | | | 1 | 1. 1. | |
| Odor: No data available | | | | | | | | |
| Odor threshold: No data available. | ' | | 1.1.1 | 1. 1. | | 111 | | |
| pH: N/A | | | 1 I | | | | | |
| Melting point/Melting range: 710 °C (1310 °F) | | | | | | | | |
| Boiling point/Boiling range: No data available | · · . | | | | | | | . * * |
| Sublimation temperature / start: No data available | ; | | | | | | | |
| Flammability (solid, gas): No data available. | · · . | 1 1 1 | | 1. | н н н | 111 | | |
| Ignition temperature: No data available | | | 1 I | | | | | |
| Decomposition temperature: No data available | | | | | | | | |
| Autoignition: No data available. | '. | | | ' . | | 1 | ' . | |
| Danger of explosion: No data available. | | | | | | | | |
| Explosion limits: | | 1 I | - | | | - | | |
| Lower: No data available | | 1 1 - 1 | 1 | | | | | |

| | | | | | | | · · . | | | | |
|---------------------------|-----------|-----------|-----------|------------|-----------|------------|------------|--------|----------------|----------|-------|
| Upper: No data availab | ble | | | | | | | | | | |
| Vapor pressure: N/A | | | | | | | | | | | |
| Density at 20 °C (68 °F |): 6.82 | g/cm | | | | | 14 | | | 1. | |
| 3 | | | | | | | | | | | |
| (56.913 lbs/gal) | · · . | | | | | | 11 | | | | |
| Relative density: No da | ata avail | able. | | | | 1 - 1 1 | | | | | |
| Vapor density: N/A | • | | | · . | | | · · · | | | | |
| Evaporation rate: N/A | | | | | | | ı | | | | 1 |
| Solubility in Water (H | · . | | | · . | | | 1 | | | · . | |
| 2 | | | | | | | | | | | |
| O): Insoluble | | | | | | 1 - 1 1 | | 1 1 | | | |
| Partition coefficient (n- | octanol/ | water): N | No data | availab | le. | | 1. 1. | | 1 | 1. 1. | |
| Viscosity: | | | | | | | | | | | |
| Dynamic: N/A | 1. 1. | | | 1. | | ; • • | 1. 1. | | 111 | 1. 1. | |
| Kinematic: N/A | | | | | | | | | | | , |
| Other information | | | | | | r. | | | | | |
| No data available | | | | 1. 1. | 1 | | 14 | | | 14 | |
| an an an | | | | 1. 1. | | | 1. 1. | | 1 - 1 - 1 1 | 1. 1. | |
| SECTION 10. S | STAB | SILITY | | RE | ACTI | VITY | | | | | |
| Reactivity | | | | | | , | | | | | |
| No data available | 14 | | 1 | 1 | | 1 | 14 | | | 14 | . ' ' |
| Chemical stability | | | | | | | | | | | |
| Stable under recomme | nded st | orage co | onditions | ; ; | | 1.1 | | | 111 | 14 | |
| Thermal decomposition | n / cond | itions to | be avoid | ded: | | | | | | | |
| Decomposition will not | occur if | used ar | nd stored | d accor | ding to s | pecificati | ons. | | | | |
| Possibility of hazardou | s reactio | ons | : | <u>'</u> , | . * * | ; | <u>'</u> , | | | 1 | |
| Reacts with strong oxid | | - | | | | | | | 111 | | |
| Conditions to avoid | | | | | | | | | 4 | · . | |
| No data available | | | | | | 1 - 1 1 | | | | | |

| Incompatible materials: | | | | | | | |
|-----------------------------------|---|---------|---|-------|-------|-------|-----|
| Oxidizing agents | | | | | | | |
| Hazardous decomposition products: | 1 | | | 1. | 1 | 1 · . | . ' |
| Metal oxide fume | | | | | | | |
| Selenium dioxide (SeO2) | | | | · · . | | 14 | |
| <u> </u> | | | | | | | |
| | 1 | 1 1 | 1 | | 1 | | |

SECTION 11. TOXICOLOGICAL INFORMATION

| Information on toxicological effects | | ۰. | | | - 1. | | | |
|--|-----------|-----------|------------|------------|------------|-----------|---------|-----------------|
| Acute toxicity: | | ľ | | | | | | |
| Toxic if inhaled. | | 1 | | | 1 1 - 1 | | | |
| Toxic if swallowed | 1 | 1. 1. | | 1 | 1. 1. | | | 1. 1. |
| LD/LC50 values that are relevant for cla | assificat | ion: No | data | | | | | |
| Skin irritation or corrosion: May cause in | rritation | · . | | : • • | | | | 14. 14. |
| Eye irritation or corrosion: May cause ir | ritation | | , | | | | | |
| Sensitization: No sensitizing effects kno | own. | | | | | | | |
| Germ cell mutagenicity: No effects know | wn. | с. С. | | | 1. 1. | | 1 | 14. 19 |
| Carcinogenicity: | | | | | | | | |
| No classification data on carcinogenic p | propertie | es of thi | s materia | al is avai | lable fr | om the E | PA, IAR | C, [*] |
| NTP, OSHA or ACGIH. | | , , , | | | | | | |
| Reproductive toxicity: No effects known | | · . | | | ÷., | | | 1. 1. |
| Specific target organ system toxicity - re | | | | | | | | |
| May cause damage to the central nervo | | | liver an | d the dig | estive | system th | nrough | |
| prolonged or repeated exposure. Route | of expo | osure: C | Dral, Inha | alative. | | | | |
| Specific target organ system toxicity - s | ingle ex | posure | : No effe | cts know | /n., ; | | | |
| Aspiration hazard: No effects known. | | | | | | | | |
| Subacute to chronic toxicity: No effects | | | | | | | | |
| Additional toxicological information: | | · . | | | ۰, | | | · . |
| To the best of our knowledge the acute | | | | | | | | |
| Carcinogenic categories | | | | | | . : | 1.1 | |

| | | | | | | · · . | | | ÷. | , |
|--|---------------|------------|-----------|-----------|------------|------------|-----------|---------|------------|---|
| OSHA-Ca (Occupational Sa | afety & Hea | Ith Admi | inistrati | on) | | | | | | |
| Substance is not listed. | | | | | | | | | | |
| the second s | | | 1. | - 10 1 | | 14 | | | 14 | |
| | | | | | | | | | | |
| SECTION 12. ECO | OLOGIC | | NFO | RMA | ΓΙΟΝ | 14 | | 111 | 14 | |
| Toxicity | · · · | 1 - 1 1 | | | 1 - 1 1 | | | | | |
| Aquatic toxicity: | | ۰. | · . | | | · . | | | | |
| No data available | | : | | | : | · . | | : | · · · | |
| Persistence and degradabil | lity | ; • • | · . | | 10 | · | | | · . | |
| No data available | | | | | | ., | | | | , |
| Bioaccumulative potential | | | | | | | | | | |
| | | 1 | · | | | · | | | ÷., | |
| Mobility in soil | | | | | | | | | | |
| No data available | | | 1. | | | 1. 1. | | | 1. 1. | |
| Ecotoxical effects: | | | | | | | | | | |
| Remark: | | | | | | | | | | |
| Very toxic for aquatic organ | nisms | | | | 1 | 14. 14. | | 1 | 14. 14. | |
| Additional ecological inform | nation: | | | | | | | | | |
| Do not allow product to read | ch groundw | vater, wa | ater cou | rses, or | sewage | system | s, even i | n small | 14. 14. | |
| quantities. | ı | | | | | | | | | |
| Danger to drinking water if e | even extrer | | | | | | | | | |
| Also poisonous for fish and | l plankton ir | ı water b | odies. | | | 14 | | | 14 | |
| May cause long lasting harr | | | | | | | | | | |
| Avoid transfer into the envir | | - | | | | 14. 14. | | 111 | 14. 14. | |
| Very toxic for aquatic organ | | | | | | | | | | |
| Results of PBT and vPvB a | | | | | | | | | | |
| | | | | . ** | 1 | 14 | . * * | 1 | | |
| Other adverse effects | | | | | | | | | | |
| | , , , , , | | | , , , | 111 | 11 | | 1.1 | | |
| | | | | | 1 - 1 | , | | | | |

| | | ' | , | · . | | | ` , | | | ` . | |
|-------------------------------|-------------|--------------|---------------------|----------|------------|------------|------------|------------|------------|------------|--|
| SECTION | 13. DIS | SPOSA | | SID | ERAT | IONS | | | | | |
| Waste treatmer | nt methods | · | 1 | · . | | | 1. 1. | | · : | | |
| Recommendati | on | | | | | | | | | | |
| Consult official | regulations | s to ensure | e proper di | sposal. | | | | | | | |
| Uncleaned pac Recommendati | | н н н н | | | , , , | 1 - 1 1 | | , , , | , , , | | |
| Disposal must l | be made ad | ccording to | o official re | gulatior | าร. | | 1. | | | 14 | |
| the set | ;·· · | | | 1. 1. | | 111 | | | | | |
| SECTION | 14. TR | ANSP | | IFOR | RMAT | ION | | | | | |
| UN-Number DOT, IMDG, IA | | | | | | | | | | | |
| UN3283 UN proper ship | ping name | •: | | 14. 1 | | | ', ', | | | ʻ., | |
| DOT | | н н н н | | , , , | | н н н | | н 1 — 1 | н н н | | |
| Selenium comp IMDG, IATA | ound, solic | l, n.o.s. (B | ismuth(III) | selenio | de) | 1 | | | : | | |
| SELENIUM CC | MPOUND, | , SOLID, N | I.O.S. <u>(</u> Bis | muth(II | I) selenio | de) | · . | , | | · . | |
| Transport haza | | ;) | | | | | | | · · · · | | |
| Class | | · | | 1. | | | ۰. | | | | |
| 6.1 Toxic subst | ances. | | | | | | | | | | |
| Label | | | : • • | 1. | | ; • • | 1. | | | 14 | |
| 6.1 Class | | · · · | | | , , , | 1 - 1 1 | | | | | |
| 6.1 (T5) Toxic s | substances | | 1 | | | 1 | с. С. | | 1 | 14 | |
| Label | | | | | | | | | | | |
| 6.1 | | · · · · · | | | | 111 | | | | | |
| IMDG, IATA | | · · · | | 1 1 1 | | | | | | | |

| | | | | | 1 | | | | | |
|--|--|---|--------------------------|-------------|--------------------------|----------|----------|--------|----------|---|
| Class | | | | | 1 - 1 1 | | | | | |
| 6.1 Toxic substances. | | | | | | | | | | |
| Label | | | | | | | | | | |
| 6.1 | | | | | | | | | | |
| Packing group | | | | | | | | | | |
| DOT, IMDG, IATA | | | | | н н н | | | | | |
| | | · . | | | | | | · . | | |
| Environmental hazards: | 1 | r L | | 1 | , | 1 | 1 | ı | | 1 |
| Environmentally hazardous | substance | , solid | · . | | | · . | | | · . | |
| Special precautions for user | | | 1 | | | | | | | |
| Warning: Toxic substances | н 1 - 1 | 1 - 1 1 | , , , | | | , , , | | | , , , | |
| EMS Number: | | | · | | | | | | 1. | |
| F-A,S-A | | | | | | | | | | |
| Transport in bulk according | to Annex I | l of MAR | POL73 | /78 and t | he IBC (| Code | | : * * | 1. 1. | |
| N/A | | | | | | | | | | |
| Transport/Additional informa | ition: | 1 | | 1 1 | | | | | | |
| DOTMarine Pollutant (DOT) | : | | 14 | | 1 | 14 | | · . | 14 | |
| No | | | | | | | | | | |
| | | | 1. 1. | | | 14 | | : * * | 14 | |
| UN "Model Regulation": | | | | | | | | | | |
| | | | smuth(I | II) selenio | de), 6.1, | Ш. : | | | | |
| UN3283, Selenium compour | nd, solid, r | n.o.s. (Bis | | | | | | | | |
| | nd, solid, r | n.o.s. (Bis | | | | | | | ••• | |
| UN3283, Selenium compour | nd, solid, r | n.o.s. (Bis ORY | INFC | RMA | TION | • | | | | |
| UN3283, Selenium compour SECTION 15. REG | nd, solid, r BULAT ental regu | n.o.s. (Bis ORY lations/le | INFC egislatic | RMA | TION c for the | substa | nce or m | ixture | *. | |
| UN3283, Selenium compour SECTION 15. REC Safety, health and environm | nd, solid, r GULAT ental regu | n.o.s. (Bis ORY lations/le | INFC gislatic | RMA | TION c for the | substa | nce or m | ixture | *. | |

GHS06 GHS08

Signal word: Danger

Hazard statements H301+H331 Toxic if swallowed or if inhaled. H373 May cause damage to the central nervous system, the liver and the digestive system through prolonged or repeated exposure. Route of exposure: Oral, Inhalative. Precautionary statements P260 Do not breathe dust/fume/gas/mist/vapors/spray. P261 Avoid breathing dust/fume/gas/mist/vapors/spray. P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. P405 Store locked up. P403+P233 Store in a well-ventilated place. Keep container tightly closed. P501 Dispose of contents/container in accordance with local/regional/national/international regulations. National regulations All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory. All components of this product are listed on the Canadian Domestic Substances List (DSL). SARA Section 313 (specific toxic chemical listings) 12068-69-8 Bismuth(III) selenide California Proposition 65 Prop 65 - Chemicals known to cause cancer Substance is not listed. Prop 65 - Developmental toxicity Substance is not listed. Prop 65 - Developmental toxicity, female Substance is not listed. Prop 65 - Developmental toxicity, male

Information about limitation of use:

Substance is not listed.

For use only by technically qualified individuals.

This product is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right to Know Act of 1986 and 40CFR372.

Other regulations, limitations and prohibitive regulations

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.

Chemical safety assessment:

A Chemical Safety Assessment has not been carried out.

SECTION 16. OTHER INFORMATION

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH). The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product.