



VITAL MATERIALS CO LIMITED

Safety Data Sheet (SDS) for Arsenic Selenide

Version:A/3

Product Name: Arsenic Selenide

Ref. No.: GDXD-SDS-058

Issue Date: 2015/12

Version: A/3

Revision Date: Feb 07,2020

This SDS is formulated in accordance with the requirements of GHS of United Nations (Sixth revised edition) and GB/T17519.

SECTION 1: Product and Company Identification

Product Identification

Product Name	Arsenic Selenide
Molecular Formula	As ₂ Se ₃

Recommended and Restricted Use of the Product

Recommended Use	Mainly used in infrared optics industry
Restricted Use	No data available

SDS supplier's Identification

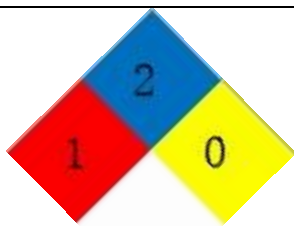




Company Name	VITAL MATERIALS CO LIMITED
Company Address	FLAT/RM 708 7/F KAI TAK COMMERCIAL BUILDING 317&319 DES VOEUX ROAD CENTRAL, HONG KONG
Manufacturer	RPM CO.,LTD
Manufacturer Address	Tellurium Workshop,First Rare Materials Co.,ltd,Heyun County, Qingyuan, Guangdong, China.
Postcode	511875
Manufacturer Emergency Phone Number	0763-5673838
Fax	0763-5673248
E-mail Address	sds@vitalchem.com

National Emergency Contact

National Emergency Phone Number	0532-83889090
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SECTION 2: Hazard Identification




NFPA Hazard Identification Label

Hazard Identification Label	Hazard Category	Hazard Class	Hazard Description
	 Health Hazard	2	May cause temporary loss of behaviors control or lasting damage through exposure under high concentration or lasting exposure.
	 Flammability	1	Flammable only when pre-heated.
	 Reactivity	0	Stable under normal conditions
	 Special Hazard	No	No

GHS Hazard Category

Description	Applicable to
Acute toxicity-oral	Category 3
Acute toxicity-inhalation	Category 3
Carcinogenicity	Category 1A
Toxicity to specific target organs-repeated exposure	Category 2
Hazards to aquatic environment-chronic hazard	Category 1

GHS Pictogram

Pictogram	  
Pictogram Number	GHS06 GHS08 GHS09
Signal Word	DANGER

Signal Word/Hazard Statements (GHS):

Code	Description
Signal Word: DANGER	

**VITAL MATERIALS CO LIMITED****Safety Data Sheet (SDS) for Arsenic Selenide**

Version:A/3

H301	Toxic if swallowed.
H331	Toxic if inhaled.
H350	May cause cancer.
H373	May cause damage to organs through prolonged or repeated exposure.
H410	Very toxic to aquatic life with long lasting effects.

Precautionary Statements**Precautionary Measures (GHS):**

Code	Description
P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P233	Keep container tightly closed.
P261	Avoid breathing dust/fume/gas/mist/vapors/spray.
P264	Wash whole body thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.

Response Precautionary Statements (GHS):

P301+P310	If swallowed: Immediately call a POISON CENTER/doctor.
P304+P340	If inhaled: Remove victim to fresh air and keep comfortable for breathing.
P308+P313	If exposed or concerned: Get medical advice/attention.
P311	Call a POISON CENTER/doctor.
P321	Specific treatment (see First-aid Measures in SDS).
P330	Rinse mouth.
P391	Collect spillage.

Safe Storage (GHS):

P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.



Safety Data Sheet (SDS) for Arsenic Selenide

Version:A/3

Disposal (GHS):

P501	Disposal of contents/containers in accordance with local regulations.
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Hazard Description:

Physical and Chemical Hazards	Releases toxic selenium oxide and arsenide fumes if heated at high temperature. Releases toxic hydrogen selenide gas if contact with acid.
Health Hazards	Invasion way: ingestion, inhalation Acute poisoning causes nausea, vomit, and headache. Causes damage to organs and risk of cancer through prolonged exposure.
Environment Hazards	Harmful to environment; very toxic to aquatic life with long lasting effects.

SECTION 3: Composition/Information on Ingredients

Ingredients	CAS No.	Concentration or Range of Concentration (Mass Fraction, %)
Arsenic Selenide	1303-36-2	>99.9%

SECTION 4: First-aid Measures**First-aid measures description**

General Advice	First aid measures are necessary; seek medical treatment and show SDS to the doctor.
Inhalation	Remove victim to fresh air. Loose tight clothes and keep the respiratory tract smooth. Take oxygen therapy in case of difficulty in breathing. Take rescue breathing in the event of breathing stop. Seek medical treatment.
Skin Contact	Take off contaminated clothes immediately and rinse skin with plenty of running clean water and soap. If feel unwell, seek medical treatment.
Eye Contact	Lift eyelids and wash eyes with clean running water or physiological saline. Seek medical treatment.
Ingestion	Do not feed anything to unconscious person through mouth. Feed plenty of warm water and promote emesis. Seek medical treatment.

Most Important Symptoms/Effects, Acute and Delayed

1	Acute poisoning causes nausea, vomit, and headache. Causes damage to organs and risk of cancer through prolonged exposure.
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**Safety Data Sheet (SDS) for Arsenic Selenide**

Version:A/3

Indication of any immediate medical attention and special treatment needed

1	No data available
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SECTION 5: Fire-Fighting Measures**Fire-fighting Media**

Suitable Media	Spray water, alkali-resist foam, dry powder and carbon dioxide
Unsuitable Media	No data available

Specific Hazards Arising from the Chemical or Mixture

1	Releases toxic selenium dioxide, arsenic trioxide gases under high temperature.
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Advice to Fire-fighters

1	Wear self-contained respiratory apparatus and fire-proof and anti-gas protective suits.
2	Put out the fire upwind. Choose proper extinguishing methods according to actual environment.
3	Evacuate non-related personnel to a safe area and restrict the access.
4	If possible, move container from fire site to open air as far as possible.

Fire-fighting Precautions and Protective Measures

1	Collect leak and fire-fighting water to prevent it from entering the sewer, groundwater and soil.
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SECTION 6: Accidental Release Measures**Personal Precautions, Protective Equipment and Emergency Procedures**

1	Ensure adequate ventilation.
2	Use suitable protective equipment to avoid dust inhalation, skin contact and eye contact.
3	If not in suitable protective equipment, do not touch the leak. Cut off the leak if possible.
4	Isolate the contaminated zone and restrict the access.
5	Cut off fire sources and heat sources.
6	See section 8 for personal protection.

Environmental Precautions and Protective Measures

**Safety Data Sheet (SDS) for Arsenic Selenide**

Version:A/3

1	Collect leaks to prevent environment pollution.
2	Prevent leaks from going into sewers, rivers, surface water or underground water.

Methods and Materials for Contain and Clean up a spill

1	Stop the leak if possible.
2	Clean up or scoop up carefully and do not make dust. Collect the leak in containers and transfer to a safe place for further treatment.
3	For high quantity leak, cover the leak with plastic clothing or canvas. Collect for recovery or transfer it to a waste treatment plant for disposal.

SECTION 7: Handling and Storage**Precautions for Safe Handling**

1	Provide sufficient local ventilation. Avoid making dust or fume. Operations should be mechanical and automatic if possible.
2	Operators should be specially trained and follow the operation instruction strictly.
3	Do not eat, drink or smoke in workplace.
4	Keep away from heat sources and fire sources.
5	It is recommended that the operators wear anti-gas mask (full-face), poison-proof protective clothing and rubber gloves. Avoid skin contact, eye contact and inhalation.
6	Handle carefully to avoid packaging damage and container damage. Prepare emergency devices for leaks. Empty containers may still contain harmful residues.
7	Wash completely after operation or contact.
8	Prepare suitable fire-fighting equipments.
9	Keep container tightly closed after use.

Precautions for Fire and Explosion Preventing

1	Forbid fire sources. Maintain good local ventilation and do not allow high temperature.
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Conditions and Precautions for Safe Storage

1	Store according to the State/ local regulations.
2	Keep away from fire sources and heat sources.
3	Keep container tightly closed. Store in a cool, dry and well-ventilated place far away from human



Safety Data Sheet (SDS) for Arsenic Selenide

Version:A/3

	steam and emergency exits.
4	Do not store together with strong oxidizers or strong acid.
5	Prepare suitable fire-fighting equipments and emergency facilities for leak.
6	Store locked up and post warning signs.

SECTION 8: Exposure Controls/Personal Protection




Control Parameters

Ingredients	State/ Region	PC-TWA (8h)		PC-STEL (Short Term)		MAC	
		ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³
Arsenic Selenide (base on selenium)	China	No spec.	0.1	No spec.	No spec.	No spec.	No spec.
	US OSHA	No data	No data	No data	No data	No data	No data
	US ACGIH	No data	No data	No data	No data	No data	No data

Engineering control

1	Operate in a well-ventilated and closed place. Avoid releasing dust and fume to the air in workplace.
2	Make sure the workplace is well-ventilated and the concentration in air is lower than OEL.
3	Set up emergency ventilation facilities.
4	Set up emergency evacuation route and necessary risk-elimination area.
5	Shower and eyewash equipment should be accessible.
6	Set up red zone warning line, warning signs and alarm system.

Individual Protection

General Requirements	  
Eye Protection	See respiratory protection or wear protective glasses.
Hand Protection	Wear chemical protective gloves. Gloves which are tested and approved by NIOSH (US) or EN166 (EU) are recommended. Check the gloves before use. Take off gloves carefully (do not touch the surface of the gloves). Disposal of contaminated gloves according to related laws, regulations and effective lab procedures.
Respiratory Protection	Wear anti-gas mask (full face). In emergency rescue or emergency evacuation, wear self-suction filter-type anti-gas mask N100 (US) or P3 (EN143), or other self-contained respirators which meet the governmental specifications such as NIOSH/US and CEN/EU.
Skin and Body Protection	Wear protective suits.
Other protection	Do not eat, drink or smoke in the workplace. Take a shower and change clothing after work. Keep contaminated clothing separately and wash it before reuse. Keep good health habit.

SECTION 9: Physical and Chemical Properties

Physical and chemical characteristics and safety features

Physical state	Deep brown solid particles or powder.
Odour	Odourless
Melting Point/Freezing Point (°C)	Around 360
Boiling point or initial boiling point and boiling range(°C)	No data available
Flammability	No data available
Upper Explosion Limit	No data available
Lower Explosion Limit	No data available
Flash Point (°C)	No data available
Auto-ignition temperature(°C)	No data available
Decomposition temperature(°C)	No data available
pH	N/A
Kinematic viscosity	No data available
Solubility	Insoluble in water; soluble in nitric acid, alkali liquor and alkali



Safety Data Sheet (SDS) for Arsenic Selenide

Version:A/3

	metal sulfide solution
Partition Coefficient: n-octanol/water (log value)	No data available
Vapour pressure (kPa)	No data available
Density and / or relative density	4.75
relative vapour density	No data available
Particle characteristics	Deep brown with metallic luster on surface

SECTION 10: Stability and Reactivity

Stability and Reactivity

Chemical Stability	Stable under recommended storage and handling conditions (see Section 7).
Possibilities of Hazardous Reactions	No hazardous polymerization is available.
Conditions to Avoid	Fire source, heat source, humid air
Incompatible Materials	Strong reductants, strong oxidizers, strong acid, strong alkali
Hazardous Decomposition Products	Toxic oxides fumes; does not decompose if used or stored according to instructions.

SECTION 11: Toxicological Information

Acute Toxicity

Ingredients	CAS No.	LD50 (Oral)	LD50 (Dermal)	LC50 (Inhalation)
Arsenic Selenide	1303-36-2	>5000 mg/kg (rat)	No data available	No data available

Other Information

Skin Corrosion/Irritation	No data available
Respiratory or Skin Sensitization	No data available
Serious Eye Damage/Irritation	No data available
Germ Cell Mutagenicity	No data available
Carcinogenicity	Classified as carcinogens or potential carcinogens in NPT, IARC, EPA,

**VITAL MATERIALS CO LIMITED****Safety Data Sheet (SDS) for Arsenic Selenide**

Version:A/3

	ACGIH and OSHA.
Reproductive Toxicity	No data available
STOS-Single Exposure	No data available
STOS-Repeated Exposure	May cause damage to organs through prolonged or repeated exposure.
Aspiration Hazard	No data available
Other	No data available

SECTION 12: Ecological Information**Acute Toxicity**

Ingredients	CAS No.	Fish	Water flea and Other Aquatic Invertebrates	Algae/Aquatic Plants
Arsenic Selenide	1303-36-2	No data available	No data available	No data available

Other Information

Persistence and Degradability	No data available
Bioaccumulation	No data available
Mobility in Soil	No data available
PBT and vPvB Assessment	No data available
Other Adverse Effects	Very toxic to aquatic life with long lasting effects.

SECTION 13: Disposal Considerations**Disposal Methods**

Product	1. Dispose of according to local laws and regulations; 2. Return left product or unused product to supplier or transfer it to authorized institute for disposal. Do not dispose it without authorization.
Contaminated Packaging	Follow related local laws and regulations. Also follow relevant local laws and regulations to dispose empty containers because they may still contain product residual.
Disposal Precautions	1. Consult with supplier for further advices; 2. Read related state and local laws and regulations before disposal; 3. Seal packaging well to prevent leaking.

**SECTION 14: Transport Information****Packing Label**

Packing Label	
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Packing Method

Pack with plastic bags (bottles) as inner packaging and with open iron drums, fiber paper drums or plastic drums as outer packaging. Fill the inner packaging with inert gas for protection. Seal the packaging well and keep. While packaging, protect the product from light.

N-ADR

UN No.	1557
UN Proper Shipping Name (Chinese)	固态砷化合物, 未另作规定的, 无机物, 包括: 砷酸盐, 未另作规定的; 亚砷酸盐, 未另作规定的; 硫化砷, 未另作规定的
UN Proper Shipping Name (English)	ARSENIC COMPOUND, SOLID,N.O.S., inorganic, including: Arsenates, n.o.s.; Arsenites, n.o.s.; and Arsenic sulphides, n.o.s.
Main Transport Hazard Class	6.1
Minor Transport Hazard Class	No
Packing Group	Category III
Special Transport Regulations	43 274
Limited Quantity	5kg
Excepted Quantity	E1

Marine Transport (IMDG-CODE)

UN No.	1557
UN Proper Shipping Name (Chinese)	固态砷化合物, 未另作规定的, 无机物, 包括: 砷酸盐, 未另作规定的; 亚砷酸盐, 未另作规定的; 硫化砷, 未另作规定的
UN Proper Shipping Name (English)	ARSENIC COMPOUND, SOLID,N.O.S., inorganic, including: Arsenates, n.o.s.; Arsenites, n.o.s.; and Arsenic sulphides, n.o.s.
Main Transport Hazard Class	6.1



VITAL MATERIALS CO LIMITED

Safety Data Sheet (SDS) for Arsenic Selenide

Version:A/3

Minor Transport Hazard Class	No
Packing Group	Category III
Special Transport Regulations	43 223 274
Limited Quantity	5kg
Excepted Quantity	E1
Marine Pollutant (Yes/No)	Yes
EmS No.	F-A, S-A

Air Transport (ICAO/IATA-DG)

UN No.	1557
UN Proper Shipping Name (Chinese)	固态砷化合物, 未另作规定的, 无机物, 包括: 砷酸盐, 未另作规定的; 亚砷酸盐, 未另作规定的; 硫化砷, 未另作规定的
UN Proper Shipping Name (English)	ARSENIC COMPOUND, SOLID,N.O.S., inorganic, including: Arsenates, n.o.s.; Arsenites, n.o.s.; and Arsenic sulphides, n.o.s.
Main Transport Hazard Class	6.1
Minor Transport Hazard Class	No
Packing Group	Category III
Excepted Quantity	E1
Limited Quantity Packing Guideline for Passenger Transport and Freight Transport	Y645
Maximum Net Weight of Single Cargo for Limited Quantity Transport in Passenger Transport and Freight Transport	10 kg
Packing Rules in Passenger Transport and Freight Transport	670
Maximum Net Weight of Single Cargo in Passenger Transport and Freight Transport	100 kg
Packing Guideline for Freight Transport	677
Maximum Net Weight of Single Cargo in Freight Transport	200 kg
Special Transport Regulations	A3, A5, A6
ERG Code	6L



Safety Data Sheet (SDS) for Arsenic Selenide

Version:A/3

Transportation Attention

1	Load the good in strict accordance with Dangerous Goods Loading Table in Transportation Of Dangerous Goods Code in railway transport.
2	In road transport, transport vehicles must drive on indicated routes, and do not stay in residential areas and densely populated areas; dangerous goods transport signs should be on the vehicles.
3	Before transport, check the packaging and containers and make sure they are undamaged and sealed well. Prevent the containers from leaking, collapsing, falling and damaging in transport.
4	Do not transport together with strong oxidizers, strong acid, food or food additive.
5	Prevent it from exposing to sunshine and rain, and avoid heat.

SECTION 15: Regulatory Information**China Chemicals Management Directory (Arsenic)**

Inventory of Existing Chemical Substances in China (2013)	Not Listed
Inventory of Hazardous Chemicals in China (2015)	Not Listed
Inventory of Hazardous Chemicals in Key Environmental Management	Not Listed
Management Regulations of the People's Republic of China on Monitored and Controlled Chemicals	Not Listed
Inventory of Explosive Hazardous Chemicals	Not Listed
Inventory of Toxic Chemicals under Strict Restraint on Import and Export in China	Not Listed
National Hazardous Waste Inventory	Not Listed
Inventory of Ozone Layer Depleting Substances under Import and Export Control in China	Not Listed

This SDS complies with the following national standards of People's Republic of China:

GB16483-2008, GB13690—2009, GB6944-2012, GB/T15098-2008, GB18218-2009, GB190-2009, GB191—2009, GB12268-2012, GBZ2.1-2007/GBZ2.2-2007, GB30000-2013

Hazard Classification

Description	Application
Classification(China)	Classified as toxic substance, carcinogen and substance harmful to environment in General Rule for Classification and Hazard Communication of Chemicals (GB13690-2009)



Safety Data Sheet (SDS) for Arsenic Selenide

Version:A/3

Classification(China)	Classified in category 6.1 toxic substance, and category 9 substance harmful to environment in Classification and Code of Dangerous Good (GB6944-2012)
Hazardous chemicals regulations	Safety using, production, storage, transportation and loading& unload requirements are stated in the Regulations on Safety Management of Hazardous Chemicals (2011.12.1).

SECTION 16: Other Information**Hazard Classification according to EU directive 67/548/EEC or 1999/45/EC**

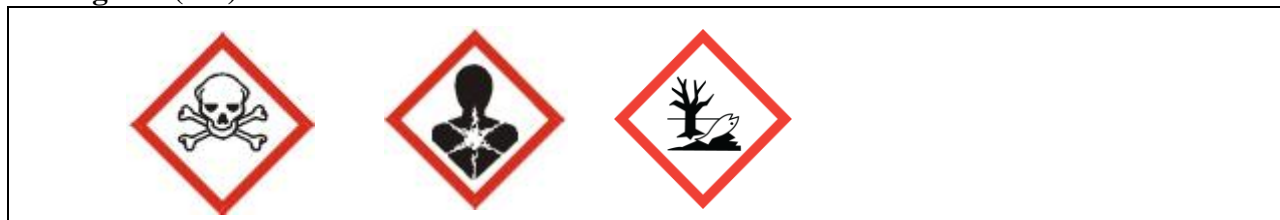
Risk Phrases (EU)	
Code	Description
R23/25	Toxic by inhalation and if swallowed.
R33	Danger of cumulative effects.
R45	May cause cancer.
R47	May cause birth defects
R48	Danger of serious damage to health by prolonged exposure.
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety phrase (EU)	
Code	Description
S01	Keep locked up
S3/9/14/49	Keep only in the original container in a cool ,well-ventilated place away from strong acid, oxidant.
S15	Keep away from heat.
S20/21	When using, do not eat ,drink or smoke.
S22	Do not breathe dust.
S23	Do not breathe gas/fume/vapor/spray
S24/25	Avoid contact with the skin and eyes.
S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S28	After contact with skin, wash immediately with plenty of water.
S29/56	Do not empty into drains,dispose of this material and its container at hazardous or special waste collection point.
S35	This material and its container must be disposed of in a safe way.

**VITAL MATERIALS CO LIMITED****Safety Data Sheet (SDS) for Arsenic Selenide**

Version:A/3

S37/39	Wear suitable gloves and eye/face protection.
S41	In case of fire and/or explosion do not breathe fumes.
S45	In case of accident or if you feel unwell, seek medical advice immediately (show label where possible)
S53	Avoid exposure-obtain special instructions before use.
S60	This material and/or its container must be disposed of as hazardous waste.
S61	Avoid release to the environment. Refer to special instructions/safety data sheets.

Pictogram (EU)**Revision Information**

Revision Date	Revision Reason/Revised Contents
2016-3-10	<ol style="list-style-type: none">1. Update the SDS according to the requirements of GHS of United Nations (Sixth revised edition) and GB/T17519-2013.2. Add NFPA Hazard Identification Label in Section 2.3. Revise the ordering of Section 9 Physical and Chemical Properties according to the requirements of GHS of United Nations (Sixth revised edition).4. Supplement the content of Section 11 Toxicological Information.5. Supplement the content of Section 14 Transport Information.6. Supplement Reference and Abbreviation in Section 16.7. Change the name MSDS to SDS according to GB/T17519-2013 and GB/T16483-2008.8. Add Hazard Classification according to EU directive 67/548/EEC or 1999/45/EC9. Add OEL in Section 8.10. Add end mark at the end of this SDS and page numbers.
2019-03-05	<ol style="list-style-type: none">1. Change the company information of part one.

Reference

【1】International Chemical Safety Cards (ICSC) database, International Programme on Chemical Safety, website:



VITAL MATERIALS CO LIMITED

Safety Data Sheet (SDS) for Arsenic Selenide

Version:A/3

<http://www.ilo.org/dyn/icsc/showcard.home>

【2】 International Agency for Research on Cancer, website: <http://www.iarc.fr>

【3】 The Global Portal to Information on Chemical Substances, Organization for Economic Co-operation and Development (OECD), website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en

【4】 US CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>

【5】 Chemical Database, US National Library of Medicine, website:

<http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>

【6】 Integrated Risk Information System, United States Environmental Protection Agency, website:

<http://cfpub.epa.gov/iris/>

Abbreviation

CAS–Chemical Abstracts Service	TSCA–Toxic Substance Control Act
PC-STEL–permissible concentration-Short term exposure limit	PC-TWA–permissible concentration-time weighted average
DNEL–derived no effect level	IARC– Agency for Research on Cancer
RPE–respiratory protective equipment	PNEC–predicted no effect concentration
LC50–50% lethal concentration	LD50–50% lethal dose
NOEC–no observed effect concentration	EC50–50% effective concentration
PBT–persistent, bioaccumulative and toxic	POW–partition coefficient: n-octanol/water
BCF–bioconcentration factor	vPvB–very persistent and very bioaccumulative
CMR–carcinogenic, mutagenic or toxic to reproduction	ICAO/IATA–International Civil Aviation Organization and International Air Transport Association
IMDG–International Marine Dangerous goods	ACGIH–American Conference of Governmental Industrial Hygienists
UN–United Nations	OECD–Organization for Economic Co-operation and Development
NFPA–National Fire Protection Association	

Disclaimer

This SDS is formulated in accordance with the requirements of GHS of United Nations (Sixth revised edition). Its data are from authoritative international databases and information currently available to us. It is believed to be reliable but Vital Materials Co. Limited does not make any warranty either expressed or implied as to its accuracy and completeness. This information is provided to serve as a guide for the safe and proper handling of the product. We assume no liability resulting from its use.

This is the end of this SDS.



VITAL MATERIALS CO LIMITED

Safety Data Sheet (SDS) for Arsenic Selenide

Version:A/3
