

Safety Data Sheet



Section 1: Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product identifier

Product Name	• Hydrogen Selenide
Synonyms	• Selenium hydride
CAS Number	• 7783-07-5
Product Code	• 20098
EC Number	• 231-978-9
Molecular Formula	• :H 2:Se 1:

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

Relevant identified use(s)	• Semiconductor Uses
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1.3 Details of the supplier of the safety data sheet

Manufacturer	• Air Liquide 2700 Post Oak Blvd. Houston, TX 77056 United States www.us.airliquide.com sds@airliquide.com
Telephone (Technical)	• 713-896-2896
Telephone (Technical)	• 800-819-1704

1.4 Emergency telephone number

Manufacturer	• 800-424-9300 - CHEMTREC
Manufacturer	• +1 703-527-3887 - Outside United States

Section 2: Hazards Identification

EU/EEC

According to Regulation (EC) No 1272/2008 (CLP)/REACH 1907/2006 [amended by 453/2010]
According to EU Directive 67/548/EEC (DSD) or 1999/45/EC (DPD)

2.1 Classification of the substance or mixture

CLP	• Flammable Gases 1 - H220 Liquefied Gas - H280 Skin Irritation 2 - H315 Eye Irritation 2 - H319 Acute Toxicity Inhalation 1 - H330 Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation - H335
DSD/DPD	• Extremely Flammable (F+) Very Toxic (T+) Irritant (Xi) R12, R26, R36/37/38

2.2 Label Elements

CLP

DANGER



- Hazard statements**
- H220 - Extremely flammable gas
 - H280 - Contains gas under pressure; may explode if heated
 - H315 - Causes skin irritation
 - H319 - Causes serious eye irritation
 - H330 - Fatal if inhaled
 - H335 - May cause respiratory irritation

Precautionary statements

- Prevention**
- P210 - Keep away from heat, sparks, open flames and/or hot surfaces. - No smoking.
 - P260 - Do not breathe fume/gas.
 - P264 - Wash thoroughly after handling.
 - P271 - Use only outdoors or in a well-ventilated area.
 - P280 - Wear protective gloves/protective clothing/eye protection/face protection.
 - P284 - Wear respiratory protection.
- Response**
- P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
 - P381 - Eliminate all ignition sources if safe to do so.
 - P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
 - P320 - Specific treatment is urgent, see supplemental first aid information.
 - P310 - Immediately call a POISON CENTER or doctor/physician.
 - P302+P352 - IF ON SKIN: Wash with plenty of soap and water.
 - P321 - Specific treatment, see supplemental first aid information.
 - P332+P313 - If skin irritation occurs: Get medical advice/attention.
 - P362 - Take off contaminated clothing and wash before reuse.
 - P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 - P337+P313 - If eye irritation persists: Get medical advice/attention.
- Storage/Disposal**
- P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
 - P405 - Store locked up.
 - P501 - Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

DSD/DPD



- Risk phrases**
- R12 - Extremely flammable.
 - R26 - Very toxic by inhalation.
 - R36/37/38 - Irritating to eyes, respiratory system and skin.
- Safety phrases**
- S9 - Keep container in a well ventilated place
 - S16 - Keep away from sources of ignition - No Smoking.
 - 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 ...
 - S36 - Wear suitable protective clothing.
 - S37 - Wear suitable gloves.
 - S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

2.3 Other Hazards

CLP

- Contact with gas or liquefied gas will cause burns, severe injury and/or frostbite. According to Regulation (EC) No. 1272/2008 (CLP) this material is considered hazardous.

DSD/DPD

- Contact with gas or liquefied gas will cause burns, severe injury and/or frostbite.

This product is considered dangerous according to the European Directive 67/548/EEC.

United States (US)

According to OSHA 29 CFR 1910.1200 HCS

2.1 Classification of the substance or mixture

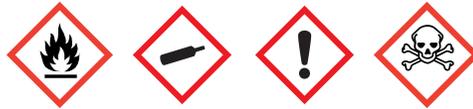
OSHA HCS 2012

- Flammable Gases 1 - H220
Liquefied Gas - H280
Skin Irritation 2 - H315
Eye Irritation 2A - H319
Acute Toxicity Inhalation 1 - H330
Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation - H335
Hazards Not Otherwise Classified - Health Hazard - Frostbite

2.2 Label elements

OSHA HCS 2012

DANGER



- Hazard statements**
- Extremely flammable gas - H220
 - Contains gas under pressure; may explode if heated - H280
 - Causes skin irritation - H315
 - Causes serious eye irritation - H319
 - Fatal if inhaled - H330
 - May cause respiratory irritation - H335

Precautionary statements

- Prevention**
- Keep away from heat, sparks, open flames and/or hot surfaces. - No smoking. - P210
 - Do not breathe fume/gas. - P260
 - Wash thoroughly after handling. - P264
 - Use only outdoors or in a well-ventilated area. - P271
 - Wear protective gloves/protective clothing/eye protection/face protection. - P280
 - Wear respiratory protection. - P284
 - In case of inadequate ventilation wear respiratory protection. - P285
- Response**
- Leaking gas fire: Do not extinguish, unless leak can be stopped safely. - P377
 - Eliminate all ignition sources if safe to do so. - P381
 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. - P304+P340
 - Specific treatment is urgent, see supplemental first aid information. - P320
 - Immediately call a POISON CENTER or doctor/physician. - P310
 - IF ON SKIN: Wash with plenty of soap and water. - P302+P352
 - Specific treatment, see supplemental first aid information. - P321
 - If skin irritation occurs: Get medical advice/attention. - P332+P313
 - Take off contaminated clothing and wash before reuse. - P362
 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. - P305+P351+P338
 - If eye irritation persists: Get medical advice/attention. - P337+P313
- Storage/Disposal**
- Store in a well-ventilated place. Keep container tightly closed. - P403+P233
 - Store locked up. - P405
 - Dispose of content and/or container in accordance with local, regional, national, and/or international regulations. - P501

2.3 Other hazards

OSHA HCS 2012

- Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

Canada

According to WHMIS

2.1 Classification of the substance or mixture

WHMIS

- Compressed Gas - A
- Flammable Gases - B1
- Very Toxic - D1A

2.2 Label elements

WHMIS



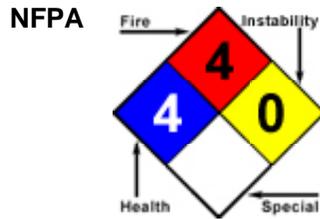
- Compressed Gas - A
- Flammable Gases - B1
- Very Toxic - D1A

2.3 Other hazards

WHMIS

- Contact with gas or liquefied gas will cause burns, severe injury and/or frostbite. In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

2.4 Other information



Section 3 - Composition/Information on Ingredients

3.1 Substances

Composition				
Chemical Name	Identifiers	%	LD50/LC50	Classifications According to Regulation/Directive
Hydrogen selenide	CAS:7783-07-5 EINECS:231-978-9	> 99%	NDA	EU DSD/DPD: Self Classified - F+, R12; Xi R36/37/38; T+ R26 EU CLP: Self Classified - Flam. Gas 1, H220; Press. Gas - Liq., H280; Skin Irrit. 2, H315; Eye Irrit. 2A, H319; Acute Tox. 1, H330; STOT SE 3: Resp. Irrit., H335 OSHA HCS 2012: Flam. Gas 1; Press Gas - Liq.; Skin Irrit. 2; Eye Irrit. 2A; Acute Tox. 1 (Inhl); STOT SE 3: Resp. Irrit.; HNOC - Health - Frostbite

3.2 Mixtures

- Material does not meet the criteria of a mixture in accordance with Regulation (EC) No 1272/2008.

Section 4 - First Aid Measures

4.1 Description of first aid measures

- Inhalation**
- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Administer oxygen if breathing is difficult. Give artificial respiration if victim is not breathing. If signs/symptoms continue, get medical attention.
- Skin**
- If frostbite has occurred, seek medical attention immediately; do NOT rub the affected area(s) or flush them with water. In order to prevent further tissue damage, do NOT attempt to remove frozen clothing from frostbitten areas. If frostbite has not occurred, immediately and thoroughly wash contaminated skin with soap and water.
- Eye**
- If eye tissue is frozen, seek medical attention immediately; if tissue is not frozen, immediately and thoroughly flush the eyes with large amounts of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. If irritation, pain, swelling, lacrimation or photophobia persist, get medical attention as soon as possible.
- Ingestion**
- If frostbite has occurred, seek medical attention immediately; do NOT rub the affected area(s) or flush them with water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting.

4.2 Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

4.3 Indication of any immediate medical attention and special treatment needed

- Notes to Physician**
- All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

4.4 Other information

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. RESCUERS SHOULD NOT ATTEMPT TO RETRIEVE VICTIMS OF EXPOSURE TO GASES WITHOUT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. At a minimum, Self-Contained Breathing Apparatus must be worn. Victim(s) who experience any adverse effect after over-exposure to this gas mixture must be taken for medical attention. Rescuers should be taken for medical attention if necessary. Take a copy of the label and the MSDS to physician or other health professional with victim(s).

Section 5 - Firefighting Measures

5.1 Extinguishing media

- Suitable Extinguishing Media**
- SMALL FIRES: Dry chemical or CO₂.
LARGE FIRES: Water spray or fog.

- Unsuitable Extinguishing Media**
- No data available

5.2 Special hazards arising from the substance or mixture

- Unusual Fire and Explosion Hazards**
- EXTREMELY FLAMMABLE
Will form explosive mixtures with air.
Vapors may travel to source of ignition and flash back.
Cylinders exposed to fire may vent and release flammable gas through pressure relief devices.
Containers may explode when heated.
Ruptured cylinders may rocket.

- Hazardous Combustion Products**
- Highly toxic selenium will be given off during combustion.

5.3 Advice for firefighters

- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.
Always wear thermal protective clothing when handling refrigerated/cryogenic liquids.
Wear positive pressure self-contained breathing apparatus (SCBA).
DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED
Move containers from fire area if you can do it without risk.
FIRE: If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1

mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.
 FIRE INVOLVING TANKS: ALWAYS stay away from tanks engulfed in fire.
 FIRE INVOLVING TANKS: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
 FIRE INVOLVING TANKS: Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
 FIRE INVOLVING TANKS: Cool containers with flooding quantities of water until well after fire is out.
 FIRE INVOLVING TANKS: Do not direct water at source of leak or safety devices; icing may occur.
 FIRE INVOLVING TANKS: For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

Section 6 - Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal Precautions

- Ventilate the area before entry. Do not walk through spilled material. Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Emergency Procedures

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions. LARGE SPILL: Consider initial downwind evacuation for at least 800 meters (1/2 mile) Keep unauthorized personnel away. Keep out of low areas. Stay upwind.

6.2 Environmental precautions

- Prevent spreading of vapors through sewers, ventilation systems and confined areas.

6.3 Methods and material for containment and cleaning up

Containment/Clean-up Measures

- Stop leak if you can do it without risk.
 If possible, turn leaking containers so that gas escapes rather than liquid.
 Isolate area until gas has dispersed.
 All equipment used when handling the product must be grounded.
 Use water spray to reduce vapors; do not put water directly on leak, spill area or inside container.
 Do not direct water at spill or source of leak.

6.4 Reference to other sections

- Refer to Section 8 - Exposure Controls/Personal Protection and Section 13 - Disposal Considerations.

Section 7 - Handling and Storage

7.1 Precautions for safe handling

Handling

- Keep away from heat and ignition sources – No Smoking. Use only with adequate ventilation. Ventilate closed spaces before entering. Wear appropriate personal protective equipment, avoid direct contact. Do not breathe gas. Avoid contact with skin, eyes, and clothing. Be aware of any signs of dizziness or fatigue, especially if work is done in a poorly ventilated area; exposures to fatal concentrations of this gas mixture could occur without any significant warning symptoms, due to olfactory fatigue or oxygen deficiency. Take precautionary measures against static charges. Use only non-sparking tools. All equipment used when handling the product must be grounded. Use explosion-proof - electrical, ventilating and/or lighting equipment. Cylinders should be firmly secured to prevent falling or being knocked-over. Do not attempt to repair, adjust, or in any other way modify cylinders. If there is a malfunction or another type of operational problem, contact nearest distributor immediately. Empty containers retain product residue and can be hazardous. Do not cut, weld, puncture or incinerate container.

7.2 Conditions for safe storage, including any incompatibilities

Storage

- Cylinders should be stored in dry, well-ventilated areas away from sources of heat, ignition and direct sunlight. Do not allow area where cylinders are stored to exceed 52C (125F). Cylinders must be protected from the environment, and preferably kept at room temperature approximately 21C (70F). Protect cylinders against physical damage. Cylinders should be firmly secured to prevent falling or being knocked-over. Store locked up.

7.3 Specific end use(s)

- Refer to Section 1.2 - Relevant identified uses.

Section 8 - Exposure Controls/Personal Protection**8.1 Control parameters**

Exposure Limits/Guidelines						
	Result	ACGIH	Canada Ontario	Canada Quebec	China	France
Hydrogen selenide (7783-07-5)	STELs	Not established	Not established	Not established	0.3 mg/m ³ STEL (as Se)	0.05 ppm STEL [VLCT] (indicative limit); 0.17 mg/m ³ STEL [VLCT] (indicative limit)
	TWAs	0.05 ppm TWA (as Se)	0.05 ppm TWA (as Se)	0.05 ppm TWAEV (as Se); 0.16 mg/m ³ TWAEV (as Se)	0.15 mg/m ³ TWA (as Se)	0.02 ppm TWA [VME] (indicative limit); 0.07 mg/m ³ TWA [VME] (indicative limit)

Exposure Limits/Guidelines (Con't.)						
	Result	Germany DFG	Germany TRGS	Ireland	Israel	Italy
Hydrogen selenide (7783-07-5)	STELs	Not established	Not established	0.05 ppm STEL (as Se); 0.17 mg/m ³ STEL (as Se)	Not established	0.05 ppm STEL; 0.17 mg/m ³ STEL
	TWAs	Not established	0.015 ppm TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 2); 0.05 mg/m ³ TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 2)	0.02 ppm TWA (as Se); 0.07 mg/m ³ TWA (as Se)	0.05 ppm TWA (as Se)	0.02 ppm TWA; 0.07 mg/m ³ TWA
	Ceilings	0.048 ppm Peak; 0.16 mg/m ³ Peak	Not established	Not established	Not established	Not established
	MAKs	0.006 ppm TWA MAK; 0.02 mg/m ³ TWA MAK	Not established	Not established	Not established	Not established

Exposure Limits/Guidelines (Con't.)						
	Result	NIOSH	OSHA	OSHA Vacated	Portugal	Spain
						0.02 ppm TWA [VLA-

Hydrogen selenide (7783-07-5)	TWAs	0.05 ppm TWA; 0.2 mg/m ³ TWA	0.05 ppm TWA (as Se); 0.2 mg/m ³ TWA (as Se)	0.05 ppm TWA (as Se); 0.2 mg/m ³ TWA (as Se)	0.05 ppm TWA [VLE-MP]	[ED] (indicative limit value); 0.07 mg/m ³ TWA [VLA-ED] (indicative limit value)
	STELs	Not established	Not established	Not established	Not established	0.05 ppm STEL [VLA-EC]; 0.17 mg/m ³ STEL [VLA-EC]

Exposure Limits/Guidelines (Con't.)

	Result	Sweden
Hydrogen selenide (7783-07-5)	STELs	0.05 ppm STV; 0.2 mg/m ³ STV
	TWAs	0.01 ppm LLV; 0.03 mg/m ³ LLV

Exposure Control Notations

Germany DFG

•Hydrogen selenide (7783-07-5): **Carcinogens:** (Category 3B (could be carcinogenic for man)) | **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to)

Exposure Limits Supplemental

Spain

•Hydrogen Selenide as Selenium Compounds: **Under Review:** (0.2 mg/m³ VLA-ED (except hydrogen selenide, as Se))

8.2 Exposure controls

Engineering Measures/Controls

- Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Use explosion-proof - electrical, ventilating and/or lighting equipment.

Personal Protective Equipment

Respiratory

- In case of insufficient ventilation, wear suitable respiratory equipment. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or symptoms are experienced.

Eye/Face

- Wear safety glasses.

Skin/Body

- Wear leather gloves when handling cylinders.

Environmental Exposure Controls

- Follow best practice for site management and disposal of waste. Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways.

Key to abbreviations

ACGIH = American Conference of Governmental Industrial Hygiene

LLV = Limit Level Value is the exposure limit for 8-hour work day

MAK = Maximale Arbeitsplatz Konzentration is the maximum permissible concentration

NIOSH = National Institute of Occupational Safety and Health

OSHA = Occupational Safety and Health Administration

STEL = Short Term Exposure Limits are based on 15-minute exposures

TWAEV = Time-Weighted Average Exposure Value

TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures

Section 9 - Physical and Chemical Properties

9.1 Information on Physical and Chemical Properties

Material Description			
Physical Form	Gas	Appearance/Description	Colorless gas with a disagreeable odor.
Color	Colorless	Odor	Disagreeable odor.
Odor Threshold	Data lacking		
General Properties			
Boiling Point	-41 C(-41.8 F)	Melting Point	-66 C(-86.8 F)
Decomposition Temperature	Data lacking	pH	Data lacking
Specific Gravity/Relative Density	Data lacking	Water Solubility	Data lacking
Viscosity	Data lacking	Explosive Properties	Data lacking
Oxidizing Properties:	Data lacking		
Volatility			
Vapor Pressure	4.5 atm @ 0.2 C(32.36 F)	Vapor Density	2.79 Air=1
Evaporation Rate	Data lacking		
Flammability			
Flash Point	Data lacking	UEL	Data lacking
LEL	Data lacking	Autoignition	Data lacking
Flammability (solid, gas)	Flammable gas.		
Environmental			
Octanol/Water Partition coefficient	Data lacking		

9.2 Other Information

- No additional physical and chemical parameters noted.

Section 10: Stability and Reactivity

10.1 Reactivity

- No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

- Stable under normal temperatures and pressures.

10.3 Possibility of hazardous reactions

- Hazardous polymerization will not occur.

10.4 Conditions to avoid

- Excess heat, sparks, open flame.

10.5 Incompatible materials

- Strong oxidizers, nitric acid, hydrogen peroxide, halogenated hydrocarbons, water.

10.6 Hazardous decomposition products

- Selenium

Section 11 - Toxicological Information

11.1 Information on toxicological effects

GHS Properties	Classification
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Acute toxicity	EU/CLP • Acute Toxicity - Inhalation 1 OSHA HCS 2012 • Acute Toxicity - Inhalation 1
Aspiration Hazard	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
Carcinogenicity	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
Germ Cell Mutagenicity	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
Skin corrosion/Irritation	EU/CLP • Skin Irritation 2 OSHA HCS 2012 • Skin Irritation 2
Skin sensitization	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
STOT-RE	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
STOT-SE	EU/CLP • Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation OSHA HCS 2012 • Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation
Toxicity for Reproduction	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
Respiratory sensitization	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
Serious eye damage/Irritation	EU/CLP • Eye Irritation 2 OSHA HCS 2012 • Eye Irritation 2A

Potential Health Effects

Inhalation

- Acute (Immediate)**
 - Fatal if inhaled. May cause respiratory irritation.
- Chronic (Delayed)**
 - No data available

Skin

- Acute (Immediate)**
 - Causes skin irritation. Contact with gas or liquefied gas will cause burns, severe injury and/or frostbite.
- Chronic (Delayed)**
 - No data available

Eye

- Acute (Immediate)**
 - Causes serious eye irritation. Contact with gas or liquefied gas will cause burns, severe injury and/or frostbite.
- Chronic (Delayed)**
 - No data available

Ingestion

- Acute (Immediate)**
 - Ingestion can cause burns similar to frostbite.
- Chronic (Delayed)**
 - No data available

Section 12 - Ecological Information

12.1 Toxicity

- Material data lacking.

12.2 Persistence and degradability

- Material data lacking.

12.3 Bioaccumulative potential

- Material data lacking.

12.4 Mobility in Soil

- Material data lacking.

12.5 Results of PBT and vPvB assessment

- PBT and vPvB assessment has not been conducted for this material.

12.6 Other adverse effects

- No studies have been found.

Section 13 - Disposal Considerations

13.1 Waste treatment methods

Product waste

- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Packaging waste

- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Section 14 - Transport Information

	14.1 UN number	14.2 UN proper shipping name	14.3 Transport hazard class(es)	14.4 Packing group	14.5 Environmental hazards
DOT	UN2202	Hydrogen selenide	2.1,2.3	NDA	NDA
TDG	UN2202	HYDROGEN SELENIDE, ANHYDROUS	2.1,2.3	NDA	NDA
IMO/IMDG	UN2202	HYDROGEN SELENIDE, ANHYDROUS	2.1,2.3	NDA	NDA
IATA/ICAO	NDA	Forbidden	NDA	NDA	NDA

14.6 Special precautions for user

- Cylinders should be transported in a secure position, in a well-ventilated vehicle. The transportation of compressed gas cylinders in automobiles or in closed-body vehicles can present serious safety hazards. If transporting these cylinders in vehicles, ensure these cylinders are not exposed to extremely high temperatures (as may occur in an enclosed vehicle on a hot day). Additionally, the vehicle should be well-ventilated during transportation. Germane has is Special Provision 1 Toxic-Inhalation Hazard Zone A

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

- Not relevant.

14.8 Other information

- DOT • Special Provision 1 Toxic-Inhalation Hazard Zone A

Section 15 - Regulatory Information

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

SARA Hazard Classifications • Acute, Fire, Pressure(Sudden Release of)

State Right To Know				
Component	CAS	MA	NJ	PA
Hydrogen selenide	7783-07-5	Yes	Yes	Yes

Inventory						
Component	CAS	Canada DSL	Canada NDSL	China	EU EINECS	EU ELNICS
Hydrogen selenide	7783-07-5	Yes	No	Yes	Yes	No

Inventory (Con't.)		
Component	CAS	TSCA
Hydrogen selenide	7783-07-5	Yes

Canada

Labor

Canada - WHMIS - Classifications of Substances

• Hydrogen selenide 7783-07-5 A, B1, D1A

Canada - WHMIS - Ingredient Disclosure List

• Hydrogen selenide 7783-07-5 0.1 %

Environment

Canada - CEPA - Priority Substances List

• Hydrogen selenide 7783-07-5 Not Listed

China

Environment

China - Ozone Depleting Substances - First Schedule

• Hydrogen selenide 7783-07-5 Not Listed

China - Ozone Depleting Substances - Second Schedule

• Hydrogen selenide 7783-07-5 Not Listed

China - Ozone Depleting Substances - Third Schedule

• Hydrogen selenide 7783-07-5 Not Listed

Other

China - Annex I & II - Controlled Chemicals Lists

• Hydrogen selenide 7783-07-5 Not Listed

China - Dangerous Goods List

• Hydrogen selenide 7783-07-5

China - Export Control List - Part I Chemicals

• Hydrogen selenide 7783-07-5 Not Listed

Europe

Other

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Classification

• Hydrogen selenide 7783-07-5 Not Listed

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Concentration Limits

• Hydrogen selenide	7783-07-5	Not Listed
EU - CLP (1272/2008) - Annex VI - Table 3.2 - Labelling		
• Hydrogen selenide	7783-07-5	Not Listed
EU - CLP (1272/2008) - Annex VI - Table 3.2 - Notes - Substances and Preparations		
• Hydrogen selenide	7783-07-5	Not Listed
EU - CLP (1272/2008) - Annex VI - Table 3.2 - Safety Phrases		
• Hydrogen selenide	7783-07-5	Not Listed

Germany

Environment

Germany - TA Luft - Types and Classes

• Hydrogen selenide	7783-07-5	Not Listed
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Germany - Water Classification (VwVwS) - Annex 1

• Hydrogen selenide	7783-07-5	Not Listed
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Germany - Water Classification (VwVwS) - Annex 2 - Water Hazard Classes

• Hydrogen selenide	7783-07-5	ID Number 284, hazard class 3 - severe hazard to waters
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Germany - Water Classification (VwVwS) - Annex 3

• Hydrogen selenide	7783-07-5	Not Listed
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Other

Germany - Specifically Regulated Chemicals in TRGS

• Hydrogen selenide	7783-07-5	Not Listed
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Portugal

Other

Portugal - Prohibited Substances

• Hydrogen selenide	7783-07-5	Not Listed
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United Kingdom

Environment

United Kingdom - Pollution Inventory - Schedule 1 - Thresholds for Releases to Air

• Hydrogen selenide	7783-07-5	Not Listed
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Other

United Kingdom - Workplace Exposure Limits (WELs) - Substances in Review

• Hydrogen selenide	7783-07-5	Not Listed
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United Kingdom - List of Dangerous Substances in Water

• Hydrogen selenide	7783-07-5	Not Listed
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United States

Labor

U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals

• Hydrogen selenide	7783-07-5	150 lb TQ
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U.S. - OSHA - Specifically Regulated Chemicals

• Hydrogen selenide	7783-07-5	Not Listed
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Environment**U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants**

• Hydrogen selenide	7783-07-5	Not Listed
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U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

• Hydrogen selenide	7783-07-5	Not Listed
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U.S. - CERCLA/SARA - Radionuclides and Their Reportable Quantities

• Hydrogen selenide	7783-07-5	Not Listed
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U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs

• Hydrogen selenide	7783-07-5	10 lb EPCRA RQ
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U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs

• Hydrogen selenide	7783-07-5	10 lb TPQ
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U.S. - CERCLA/SARA - Section 313 - Emission Reporting

• Hydrogen selenide	7783-07-5	Not Listed
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U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing

• Hydrogen selenide	7783-07-5	Not Listed
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United States - California**Environment****U.S. - California - Proposition 65 - Carcinogens List**

• Hydrogen selenide	7783-07-5	Not Listed
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U.S. - California - Proposition 65 - Developmental Toxicity

• Hydrogen selenide	7783-07-5	Not Listed
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U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)

• Hydrogen selenide	7783-07-5	Not Listed
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U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)

• Hydrogen selenide	7783-07-5	Not Listed
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U.S. - California - Proposition 65 - Reproductive Toxicity - Female

• Hydrogen selenide	7783-07-5	Not Listed
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U.S. - California - Proposition 65 - Reproductive Toxicity - Male

• Hydrogen selenide	7783-07-5	Not Listed
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United States - Pennsylvania**Labor****U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List**

• Hydrogen selenide	7783-07-5	
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U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances

• Hydrogen selenide	7783-07-5	Not Listed
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15.2 Chemical Safety Assessment

- No Chemical Safety Assessment has been carried out.
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Section 16 - Other Information

Last Revision Date

- 17/October/2014

Preparation Date

- 17/October/2014

Disclaimer/Statement of Liability

- To the best of Air Liquide's knowledge, the information contained herein is reliable and accurate as of this date; however, accuracy, suitability or completeness are not guaranteed and no warranties of any type, either express or implied, are provided. The information contained herein relates only to this specific product. If this gas mixture is combined with other materials, all component properties must be considered. Data may be changed from time to time. Be sure to consult the latest edition.

Key to abbreviations

NDA = No Data Available
