

Hydrogen selenide**ALSA072**

2.3 : Toxic gas.



2.1 : flammable gas.

Danger**SECTION 1. Identification of the substance/mixture and of the company/undertaking****Product identifier**

Trade name : Hydrogen selenide
SDS Nr : ALSA072
Chemical description : Hydrogen selenide
CAS No :007783-07-5
EC No :231-978-9
Index No :---
Registration-No. : Registration deadline not expired.
Chemical formula : H₂Se

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

Relevant identified uses : Industrial and professional. Perform risk assessment prior to use. Laboratory use Chemical reaction / Synthesis.
Contact supplier for more uses information

Details of the supplier of the safety data sheet

Company identification : AIR LIQUIDE (PTY) LTD
Crn Vereeniging Road & Andre Marais Street
Alrode, Alberton
Gauteng SOUTH AFRICA
Tel. : +27 87 288 1100
E-Mail address (competent person) : scr.sales@airliquide.com

Emergency telephone number

Emergency telephone number : +27 87 288 1100

SECTION 2. Hazards identification**Classification of the substance or mixture****Hazard Class and Category Code Regulation EC 1272/2008 (CLP)**

- Health hazards : Acute toxicity, Inhalation - Category 1 - Danger - (CLP : Acute Tox. 1) - H330
- Physical hazards : Flammable gases - Category 1 - Danger - (CLP : Flam. Gas 1) - H220
Gases under pressure - Liquefied gas - Warning - (CLP : Press. Gas) - H280
- Environmental hazards : Hazardous to the aquatic environment - Acute hazard - Category 1 - Warning - (CLP : Aquatic Acute 1) - H400
Hazardous to the aquatic environment - Chronic hazard - Category 1 - Warning - (CLP : Aquatic Chronic 1) - H410

Classification EC 67/548 or EC 1999/45

F+; R12
T+; R26

Not included in Annex VI.

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SECTION 2. Hazards identification (continued)
Label elements
Labelling Regulation EC 1272/2008 (CLP)

• Hazard pictograms



• Hazard pictograms code

: GHS06 - GHS02 - GHS04 - GHS09

• Signal word

: Danger

• Hazard statements

 : H330 - Fatal if inhaled.
 H220 - Extremely flammable gas.
 H280 - Contains gas under pressure; may explode if heated.
 H400 - Very toxic to aquatic life.
 H410 - Very toxic to aquatic life with long lasting effects.

• Precautionary statements

- Prevention

 : P260 - Do not breathe gas, vapours.
 P210 - Keep away from heat, sparks, open flames or hot surfaces. – No smoking.
 P273 - Avoid release to the environment.

- Response

 : P304+P340+P315 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get immediate medical advice / attention.
 P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
 P381 - Eliminate all ignition sources if safe to do so.

- Storage

 : P405 - Store locked up.
 P403 - Store in a well-ventilated place.

Other hazards

: None.

SECTION 3. Composition/information on ingredients
Substance / 3.2. Mixture

Substance.

Substance name	Contents	CAS No	EC No	Index No	Registration no	Classification
Hydrogen selenide	: 100 %	7783-07-5	231-978-9	----	* 2	F+; R12 T+; R26 N; R50-53 ----- Acute Tox. 1 (H330) Flam. Gas 1 (H220) Liq. Gas (H280) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)

Contains no other components or impurities which will influence the classification of the product.

* 1: Listed in Annex IV / V REACH, exempted from registration.

* 2: Registration deadline not expired.

* 3: Registration not required: Substance manufactured or imported < 1t/y

Full text of R-phrases see chapter 16. Full text of H-statements see chapter 16

SECTION 4. First aid measures
Description of first aid measures

- Inhalation : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.
- Skin contact : Adverse effects not expected from this product.
- Eye contact : Adverse effects not expected from this product.
- Ingestion : Ingestion is not considered a potential route of exposure.

Hydrogen selenide**ALSA072****SECTION 4. First aid measures (continued)****Most important symptoms and effects, both acute and delayed**

: Delayed adverse effects possible.
Refer to section 11.

Indication of any immediate medical attention and special treatment needed

: Obtain medical assistance.

SECTION 5. Fire-fighting measures**Extinguishing media****Extinguishing media**

- Suitable extinguishing media : All known extinguishants can be used.

Special hazards arising from the substance or mixture

Specific hazards : Exposure to fire may cause containers to rupture/explode.

Hazardous combustion products : If involved in a fire the following toxic and/or corrosive fumes may be produced by thermal decomposition :
Selenium and its oxides.

Advice for fire-fighters**Specific methods**

: Coordinate fire measure to the surrounding fire. Cool endangered containers with water spray jet from a protected position. Do not empty contaminated fire water into drains.
If possible, stop flow of product.
Use of water may result in the formation of very toxic aqueous solutions.
Specialist clean-up methods may be required.
Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire.

Special protective equipment for fire fighters

: Use self-contained breathing apparatus.

SECTION 6. Accidental release measures**Personal precautions, protective equipment and emergency procedures**

: Evacuate area.
Try to stop release.
Consider the risk of potentially explosive atmospheres.
Eliminate ignition sources.
Monitor concentration of released product.
Ensure adequate air ventilation.
Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.
Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

Environmental precautions

: Try to stop release.

Methods and material for containment and cleaning up

: Ventilate area.

Reference to other sections

: See also sections 8 and 13.

Hydrogen selenide**ALSA072****SECTION 7. Handling and storage****Precautions for safe handling****Safe use of the product**

: Only experienced and properly instructed persons should handle gases under pressure. The product must be handled in accordance with good industrial hygiene and safety procedures.
Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
Avoid exposure, obtain special instructions before use.
Take precautionary measures against static discharge.
Purge air from system before introducing gas.
Keep away from ignition sources (including static discharges).
Do not smoke while handling product.
Assess the risk of potentially explosive atmosphere and the need for explosion-proof equipment.
Consider the use only non-sparking tools.
Ensure the complete gas system was (or is regularly) checked for leaks before use.
Installation of a cross purge assembly between the cylinder and the regulator is recommended.
Avoid suck back of water, acid and alkalis.

Safe handling of the gas receptacle

: Refer to supplier's container handling instructions.
Do not allow backfeed into the container.
Protect cylinders from physical damage; do not drag, roll, slide or drop.
When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders.
Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use.
If user experiences any difficulty operating cylinder valve discontinue use and contact supplier.
Never attempt to repair or modify container valves or safety relief devices.
Damaged valves should be reported immediately to the supplier.
Keep container valve outlets clean and free from contaminants particularly oil and water.
Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment.
Close container valve after each use and when empty, even if still connected to equipment.
Never attempt to transfer gases from one cylinder/container to another.
Never use direct flame or electrical heating devices to raise the pressure of a container.
Do not remove or deface labels provided by the supplier for the identification of the cylinder contents.

Conditions for safe storage, including any incompatibilities

: Observe all regulations and local requirements regarding storage of containers.
Segregate from oxidant gases and other oxidants in store.
Keep container below 50°C in a well ventilated place. Containers should be stored in the vertical position and properly secured to prevent toppling. Stored containers should be periodically checked for general condition and leakage. Container valve guards or caps should be in place. Store containers in location free from fire risk and away from sources of heat and ignition. Keep away from combustible materials. All electrical equipment in the storage areas should be compatible with the risk of potentially explosive atmosphere.
Containers should not be stored in conditions likely to encourage corrosion.

Specific end use(s)

: None.

Hydrogen selenide**ALSA072****SECTION 8. Exposure controls/personal protection****Control parameters**

Occupational Exposure Limits : Hydrogen selenide : ILV (EU) - 8 H - [mg/m³] : 7
Hydrogen selenide : ILV (EU) - 8 H - [ppm] : 2
Hydrogen selenide : ILV (EU) - 15 min - [mg/m³] : 17
Hydrogen selenide : ILV (EU) - 15 min - [ppm] : 5
Hydrogen selenide : TLV© -TWA [ppm] : 0.05

DNEL: Derived no effect level : None available.

PNEC: Predicted no effect concentration : None available.

Exposure controls

Appropriate engineering controls : Product to be handled in a closed system and under strictly controlled conditions. Ensure exposure is below occupational exposure limits (where available). Consider work permit system e.g. for maintenance activities. Preferably use only permanent leak-tight installations (e.g. welded pipes). Systems under pressure should be regularly checked for leakages. Provide adequate general and local exhaust ventilation. Alarm detectors should be used when toxic gases may be released.

Individual protection measures, e.g. personal protective equipment : A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk. The following recommendations should be considered.
Protect eyes, face and skin from liquid splashes.
Keep self contained breathing apparatus readily available for emergency use.
Wear leather safety gloves and safety shoes when handling cylinders.
Consider the use of flame resistant anti-static safety clothing.
Wear safety glasses with side shields or goggles when transfilling or breaking transfer connections

Environmental exposure controls : Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

SECTION 9. Physical and chemical properties**Information on basic physical and chemical properties****Appearance**

- Physical state at 20°C / 101.3kPa : Gas.

- Colour : Colourless.

Odour : Poor warning properties at low concentrations.
Extremely disagreeable.
Mouldy.

Odour threshold : Odour threshold is subjective and inadequate to warn for overexposure.

Molar mass [g/mol] : 81

Melting point [°C] : -66

Boiling point [°C] : -41.4

Critical temperature [°C] : 138

Flash point [°C] : Not applicable for gases and gas-mixtures.

Evaporation rate (ether=1) : Not applicable for gases and gas-mixtures.

Flammability range [vol% in air] : 4 Not known.

Vapour pressure [20°C] : 9.5 bar

Relative density, gas (air=1) : 2.8

Relative density, liquid (water=1) : 2

Solubility in water [mg/l] : 7484

Partition coefficient n-octanol/water : Not applicable for inorganic gases.

Auto-ignition temperature [°C] : Not known.

Other information

Hydrogen selenide**ALSA072****SECTION 9. Physical and chemical properties (continued)**

Other data : Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

SECTION 10. Stability and reactivity**Reactivity**

: No reactivity hazard other than the effects described in sub-sections below.

Chemical stability

: Stable under normal conditions.

Possibility of hazardous reactions

: May react violently with oxidants.
Can form explosive mixture with air.

Conditions to avoid

: Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

Incompatible materials

: Moisture.
For additional information on compatibility refer to ISO 11114

Hazardous decomposition products

: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11. Toxicological information**Information on toxicological effects**

Acute toxicity : Delayed fatal pulmonary oedema possible.
Rat inhalation LC50 [ppm/4h] : 1
Skin corrosion/irritation : May cause inflammation of the skin.
Serious eye damage/irritation : Irritation to eyes.
Respiratory or skin sensitisation : No known effects from this product.
Carcinogenicity : No known effects from this product.
Germ cell mutagenicity : No known effects from this product.
Reproductive toxicity : No known effects from this product.
STOT-single exposure : Irritation to the respiratory tract.
Damage to kidneys and liver.
STOT-repeated exposure : No known effects from this product.
Aspiration hazard : Not applicable for gases and gas-mixtures.

SECTION 12. Ecological information**Toxicity**

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

Persistence - degradability

: No data available.

Bioaccumulative potential

: No data available.

Mobility in soil

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SECTION 12. Ecological information (continued)

: No data available.

Results of PBT and vPvB assessment

: No data available.

Other adverse effects

Effect on ozone layer : None.

Effect on the global warming : No known effects from this product.

SECTION 13. Disposal considerations**Waste treatment methods**

: Gas may be scrubbed in alkaline solution under controlled conditions to avoid violent reaction. Toxic and corrosive gases formed during combustion should be scrubbed before discharge to atmosphere.
Do not discharge into areas where there is a risk of forming an explosive mixture with air. Waste gas should be flared through a suitable burner with flash back arrestor.
Must not be discharged to atmosphere.
Refer to the code of practice of EIGA (Doc. 30/10 "Disposal of Gases, downloadable at <http://www.eiga.org>) for more guidance on suitable disposal methods

Additional information

: None.

SECTION 14. Transport information

UN number : 2202

Labelling ADR, IMDG, IATA

: 2.1 : flammable gas.
2.3 : Toxic gas.**Land transport (ADR/RID)**

H.I. nr : --

UN proper shipping name : HYDROGEN SELENIDE, ANHYDROUS

Transport hazard class(es) : 2

Classification code : 2 TF

Packing Instruction(s) : P200

Tunnel Restriction : D : Passage forbidden through tunnels of category D and E.

Environmental hazards : None.

Sea transport (IMDG)

Proper shipping name : HYDROGEN SELENIDE, ANHYDROUS

Class : 2.3

Packing group : P200

Emergency Schedule (EmS) - Fire : F-D

Emergency Schedule (EmS) - Spillage : S-U

Packing instruction : P200

Air transport (ICAO-TI / IATA-DGR)

Proper shipping name (IATA) : HYDROGEN SELENIDE, ANHYDROUS

Hydrogen selenide**ALSA072****SECTION 14. Transport information (continued)**

Class : 2.3
Passenger and Cargo Aircraft : DO NOT LOAD IN PASSENGER AIRCRAFT.
Cargo Aircraft only : FORBIDDEN.

Special precautions for user

: Avoid transport on vehicles where the load space is not separated from the driver's compartment.
Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency.
Before transporting product containers :
- Ensure that containers are firmly secured.
- Ensure cylinder valve is closed and not leaking.
- Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
- Ensure valve protection device (where provided) is correctly fitted.
- Ensure there is adequate ventilation.

SECTION 15. Regulatory information**Safety, health and environmental regulations/legislation specific for the substance or mixture****EU legislation**

Restrictions on use : None.
Seveso directive 96/82/EC : Covered

National legislation

: Ensure all national/local regulations are observed.

Chemical Safety Assessment

: This product is either exempt from REACH, does not meet the minimum volume threshold for a CSR or the CSA has not yet been carried out.

SECTION 16. Other information

Indication of changes : Revised safety data sheet in accordance with commission regulation (EU) No 453/2010
Training advice : Ensure operators understand the flammability hazard.
Users of breathing apparatus must be trained.
Ensure operators understand the toxicity hazard.
List of full text of R-phrases in section 3. : R12 : Extremely flammable.
R26 : Very toxic by inhalation.
R50/53 : Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
List of full text of H-statements in section 3. : H220 - Extremely flammable gas.
H280 - Contains gas under pressure; may explode if heated.
H330 - Fatal if inhaled.
H400 - Very toxic to aquatic life.
H410 - Very toxic to aquatic life with long lasting effects.
Note : This Safety Data Sheet has been established in accordance with the applicable European Union legislation.
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Details given in this document are believed to be correct at the time of going to press. Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.

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