

Safety Data Sheet



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

1.1 Product identifier

- Product Name** • Hydrogen Sulfide (100 ppm), Carbonyl Sulfide (100 ppm), Methyl Mercaptan (100 ppm), Ethyl Mercaptan (100 ppm), n-Propyl Mercaptan (100 ppm), Butyl Mercaptan (100 ppm), Methane (Balance)
- Product Code** • 90021

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

- Relevant identified use(s)** • Calibration Gas

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
Compressed Gas - H280
- DSD/DPD** • Extremely Flammable (F+)
R12

2.2 Label Elements

CLP

DANGER

- Hazard statements** • H220 - Extremely flammable gas
H280 - Contains gas under pressure; may explode if heated

Precautionary statements

Prevention • P210 - Keep away from heat, sparks, open flames and/or hot surfaces. - No smoking.

Response • P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 - Eliminate all ignition sources if safe to do so.

Storage/Disposal • P403 - Store in a well-ventilated place.

DSD/DPD



Risk phrases • R12 - Extremely flammable.

Safety phrases • S9 - Keep container in a well ventilated place
S16 - Keep away from sources of ignition - No Smoking.

2.3 Other Hazards

CLP

- This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces.
According to Regulation (EC) No. 1272/2008 (CLP) this material is considered hazardous.

DSD/DPD

- This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces.
According to European Directive 1999/45/EC this material is considered dangerous.

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
Compressed Gas - H280
Simple Asphyxiant

2.2 Label elements

OSHA HCS 2012

DANGER



Hazard statements • Extremely flammable gas - H220
Contains gas under pressure; may explode if heated - H280
May displace oxygen and cause rapid suffocation.

Precautionary statements

Prevention • Keep away from heat, sparks, open flames and/or hot surfaces. - No smoking. - P210

Response • Leaking gas fire: Do not extinguish, unless leak can be stopped safely. - P377
Eliminate all ignition sources if safe to do so. - P381

Storage/Disposal • Store in a well-ventilated place. - P403

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

2.2 Label elements

WHMIS



- Compressed Gas - A
- Flammable Gases - B1

2.3 Other hazards

WHMIS

- This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces.
In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

2.4 Other information

NFPA



Section 3 - Composition/Information on Ingredients

3.1 Substances

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

3.2 Mixtures

Composition				
Chemical Name	Identifiers	%	LD50/LC50	Classifications According to Regulation/Directive
n-Butanethiol	CAS:109-79-5 EINECS:203-705-3	100ppm	Ingestion/Oral-Rat LD50 • 1500 mg/kg Inhalation-Rat LC50 • 4020 ppm 4 Hour(s)	EU DSD/DPD: Self Classified: F; R11 Xn, R22 R67; Xi R36/37/38 EU CLP: Self Classified: Flam. Liq. 2, H225; Acute Tox. 4, H302; Skin Irrit. 2, H315; Eye Irrit. 2A, H319; STOT SE 3: Resp. Irrit., H335; STOT SE 3: Narc., H336 OSHA HCS 2012: Flam. Liq. 2; Acute Tox. 4 (Oral); Skin Irrit. 2; Eye Irrit. 2A; STOT SE 3: Resp. Irrit.; STOT SE 3: Narc.
Methanethiol	CAS:74-93-1 EC Number:200-822-1	100ppm	Inhalation-Rat LC50 • 675 ppm	EU DSD/DPD: Annex VI, Table 3.2: F+; R12 T; R23 N; R50-53 EU CLP: Annex VI: Flam. Gas. 1, H220; Press. Gas. Comp., H280; Acute Tox. 3, H331; Aquatic Acute 1, H400; Aquatic Chronic 1, H410 OSHA HCS 2012: Flam. Gas. 1; Press. Gas - Comp.; Eye Irrit. 2A; Skin Irrit. 2; STOT SE 3: Resp. Irrit. & Narc.; Acute Tox. 3 (Inhl)

Hydrogen sulfide	CAS: 7783-06-4 EC Number: 231-977-3	100ppm	Inhalation-Rat LC50 • 470 mg/m ³ 6 Hour(s)	EU DSD/DPD: Annex VI, Table 3.2: F+; R12 T+; R26 N; R50 EU CLP: Annex VI: Flam. Gas 1, H220; Press. Gas - Comp., H280; Acute Tox. 2, H330; Aquatic Acute 1, H400 OSHA HCS 2012: Flam. Gas 1; Press. Gas - Comp.; Acute Tox. 2 (Inhl)
Ethanethiol	CAS: 75-08-1	100ppm	Ingestion/Oral-Rat LD50 • 682 mg/kg Inhalation-Rat LC50 • 4420 ppm 4 Hour(s)	EU DSD/DPD: Annex VI, Table 3.2: F; R11 Xn; R20 N; R50-53 EU CLP: Annex VI: Flam. Liq. 2, H225; Acute Tox. 4, H332; Aquatic Acute 1, H400; Aquatic Chronic 1, H410 OSHA HCS 2012: Flam. Liq. 2; Eye Irrit. 2A; Skin Irrit. 2; STOT SE 3: Resp. Irrit. & Narc.; Acute Tox. 4 (Oral); Acute Tox. 4 (Inhl)
Carbonyl sulfide	CAS: 463-58-1 EINECS: 207-340-0	100ppm	Inhalation-Rat LC50 • 1070 ppm 4 Hour(s)	EU DSD/DPD: Self Classified: F+, R12; Xn R20, R67 EU CLP: Self Classified: Flam. Gas 1, H220; Press. Gas - Comp., H280.; Acute Tox. 3, H331; STOT SE 3: Narc., H335 OSHA HCS 2012: Flam. Gas 1; Press. Gas - Comp.; Acute Tox. 3 (Inhl); STOT SE 3: Narc.
1-Propanethiol	CAS: 107-03-9 EINECS: 203-455-5	100ppm	Ingestion/Oral-Rat LD50 • 1790 mg/kg Inhalation-Rat LC50 • 7300 ppm 4 Hour(s)	EU DSD/DPD: Self Classified: F, R11, Xi, R36/37/38, Xn, R22 EU CLP: Self Classified: Flam. Liq. 2, H220; Eye Irrit. 2, H319; Skin Irrit. 2, H315; STOT SE 3: Resp. Irrit., H335; Acute Tox. 4, H302 OSHA HCS 2012: Flam. Liq. 2; Eye Irrit. 2A; Skin Irrit. 2; STOT SE 3: Resp. Irrit.; Acute Tox 4 (Oral)
Methane	CAS: 74-82-8 EC Number: 200-812-7	Balance	NDA	EU DSD/DPD: Annex VI, Table 3.2: F+; R12 EU CLP: Annex VI: Flam. Gas 1, H220; Press. Gas - Comp., H280 OSHA HCS 2012: Flam. Gas 1; Press. Gas - Comp.; Simp. Asphyx.

See Section 11 for Toxicological Information. See Section 16 for full text of H-statements and R-phrases.

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

- Although exposure is unlikely, in case of contact immediately flush skin with running water. If skin irritation develops get medical advice/attention.

Eye

- First aid is not expected to be necessary if material is used under ordinary conditions and as recommended. If eye irritation persists: Get medical advice/attention.

Ingestion

- Ingestion is not considered a potential route of exposure.

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 • No data available

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.
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 • Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Do not touch or walk through spilled material. Ventilate the area before entry.

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. Stop leak if you can do it without risk. Keep unauthorized personnel away. Keep out of low areas. Stay upwind. LARGE SPILL: Consider initial downwind evacuation for at least 800 meters (1/2 mile)

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 • All equipment used when handling the product must be grounded.
Stop leak if you can do it without risk.
If possible, turn leaking containers so that gas escapes rather than liquid.

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.
Isolate area until gas has dispersed.

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. Take precautionary measures against static charges. All equipment used when handling the product must be grounded. Use only non-sparking tools. Use only with adequate ventilation. Ventilate closed spaces before entering. 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. Cylinders should be firmly secured to prevent falling or being knocked-over. Use explosion-proof - electrical, ventilating and/or lighting equipment. 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	China Highly Toxic Goods
Methane (74-82-8)	TWAs	1000 ppm TWA (listed under Aliphatic hydrocarbon gases: Alkane C1-4)	1000 ppm TWA	Not established	Not established	Not established
Hydrogen sulfide (7783-06-4)	Ceilings	Not established	Not established	Not established	10 mg/m3 Ceiling [MAC]	10 mg/m3 Ceiling
	STELs	5 ppm STEL	15 ppm STEL	15 ppm STEV; 21 mg/m3 STEV	Not established	Not established
	TWAs	1 ppm TWA	10 ppm TWA	10 ppm TWAEEV; 14 mg/m3 TWAEEV	Not established	Not established
Ethanethiol (75-08-1)	STELs	Not established	Not established	Not established	2.5 mg/m3 STEL	Not established
	TWAs	0.5 ppm TWA	0.5 ppm TWA	0.5 ppm TWAEEV; 1.3 mg/m3 TWAEEV	1 mg/m3 TWA	Not established
n-Butanethiol	STELs	Not established	Not established	Not established	5 mg/m3 STEL	Not established

(109-79-5)	TWAs	0.5 ppm TWA	0.5 ppm TWA	0.5 ppm TWA _{AEV} ; 1.8 mg/m ³ TWA _{AEV}	2 mg/m ³ TWA	Not established
Methanethiol (74-93-1)	STELs	Not established	Not established	Not established	2.5 mg/m ³ STEL	Not established
	TWAs	0.5 ppm TWA	0.5 ppm TWA	0.5 ppm TWA _{AEV} ; 0.98 mg/m ³ TWA _{AEV}	1 mg/m ³ TWA	Not established
Carbonyl sulfide (463-58-1)	TWAs	5 ppm TWA	Not established	Not established	Not established	Not established
Exposure Limits/Guidelines (Con't.)						
	Result	France	Germany DFG	Germany TRGS	Ireland	Israel
Methane (74-82-8)	TWAs	Not established	Not established	Not established	1000 ppm TWA	1000 ppm TWA (gas, listed under Aliphatic hydrocarbon gases: Alkane C1-4)
Hydrogen sulfide (7783-06-4)	STELs	10 ppm STEL [VLCT]; 14 mg/m ³ STEL [VLCT]	Not established	Not established	10 ppm STEL; 14 mg/m ³ STEL	5 ppm STEL
	TWAs	5 ppm TWA [VME]; 7 mg/m ³ TWA [VME]	Not established	5 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); 7.1 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)	5 ppm TWA; 7 mg/m ³ TWA	1 ppm TWA
	Ceilings	Not established	10 ppm Peak; 14.2 mg/m ³ Peak	Not established	Not established	Not established
	MAKs	Not established	5 ppm TWA MAK; 7.1 mg/m ³ TWA MAK	Not established	Not established	Not established
Ethanethiol (75-08-1)	TWAs	0.5 ppm TWA [VME]; 1 mg/m ³ TWA [VME]	Not established	0.5 ppm TWA AGW (exposure factor 2); 1.3 mg/m ³ TWA AGW (exposure factor 2)	0.5 ppm TWA; 1 mg/m ³ TWA	0.5 ppm TWA
	STELs	Not established	Not established	Not established	2 ppm STEL; 3 mg/m ³ STEL	Not established
	Ceilings	Not established	1 ppm Peak; 2.6 mg/m ³ Peak	Not established	Not established	Not established
	MAKs	Not established	0.5 ppm TWA MAK; 1.3 mg/m ³ TWA MAK	Not established	Not established	Not established
	TWAs	Not established	Not established	0.5 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); 1.9 mg/m ³ TWA AGW (The risk	0.5 ppm TWA; 1.8 mg/m ³ TWA	0.5 ppm TWA

n-Butanethiol (109-79-5)				of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 2)		
	Ceilings	Not established	1 ppm Peak; 3.8 mg/m3 Peak	Not established	Not established	Not established
	MAKs	Not established	0.5 ppm TWA MAK; 1.9 mg/m3 TWA MAK	Not established	Not established	Not established
Methanethiol (74-93-1)	TWAs	0.5 ppm TWA [VME]; 1 mg/m3 TWA [VME]	Not established	0.5 ppm TWA AGW (exposure factor 2); 1 mg/m3 TWA AGW (exposure factor 2)	0.5 ppm TWA; 1 mg/m3 TWA	0.5 ppm TWA
	Ceilings	Not established	1 ppm Peak; 2.0 mg/m3 Peak	Not established	Not established	Not established
	MAKs	Not established	0.5 ppm TWA MAK; 1.0 mg/m3 TWA MAK	Not established	Not established	Not established
Carbonyl sulfide (463-58-1)	TWAs	Not established	Not established	Not established	Not established	5 ppm TWA
Exposure Limits/Guidelines (Con't.)						
	Result	NIOSH	OSHA	Portugal	Spain	Sweden
Methane (74-82-8)	TWAs	Not established	Not established	1000 ppm TWA [VLE-MP]	1000 ppm TWA [VLA-ED]	Not established
Hydrogen sulfide (7783-06-4)	STELs	Not established	Not established	15 ppm STEL [VLE-CD]	10 ppm STEL [VLA-EC]; 14 mg/m3 STEL [VLA-EC]	Not established
	TWAs	Not established	Not established	10 ppm TWA [VLE-MP]	5 ppm TWA [VLA-ED]; 7 mg/m3 TWA [VLA-ED]	10 ppm LLV; 14 mg/m3 LLV
	Ceilings	10 ppm Ceiling (10 min); 15 mg/m3 Ceiling (10 min)	20 ppm Ceiling	Not established	Not established	15 ppm CLV; 20 mg/m3 CLV
Ethanethiol (75-08-1)	TWAs	Not established	Not established	0.5 ppm TWA [VLE-MP]	0.5 ppm TWA [VLA-ED]; 1.3 mg/m3 TWA [VLA-ED]	Not established
	Ceilings	0.5 ppm Ceiling (15 min); 1.3 mg/m3 Ceiling (15 min)	10 ppm Ceiling; 25 mg/m3 Ceiling	Not established	Not established	Not established
n-Butanethiol (109-79-5)	TWAs	Not established	10 ppm TWA (listed under Butyl mercaptan); 35 mg/m3 TWA (listed under Butyl mercaptan)	0.5 ppm TWA [VLE-MP]	0.5 ppm TWA [VLA-ED]; 1.9 mg/m3 TWA [VLA-ED]	Not established
	Ceilings	0.5 ppm Ceiling (15 min); 1.8 mg/m3 Ceiling (15 min)	Not established	Not established	Not established	Not established
Methanethiol (74-93-1)	TWAs	Not established	Not established	0.5 ppm TWA [VLE-MP]	0.5 ppm TWA [VLA-ED]; 1 mg/m3 TWA [VLA-ED]	1 ppm LLV (applies to the sum total of the concentrations of Dimethyl disulfide, Dimethyl sulfide and Methyl mercaptan)

	Ceilings	0.5 ppm Ceiling (15 min); 1 mg/m3 Ceiling (15 min)	10 ppm Ceiling; 20 mg/m3 Ceiling	Not established	Not established	Not established
1-Propanethiol (107-03-9)	Ceilings	0.5 ppm Ceiling (15 min); 1.6 mg/m3 Ceiling (15 min)	Not established	Not established	Not established	Not established

Exposure Control Notations

Ireland

•Methane (74-82-8): **Simple Asphyxiants:** (Asphyxiant)

Germany DFG

•Hydrogen sulfide (7783-06-4): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to)

•Methanethiol (74-93-1): **Pregnancy:** (classification not yet possible)

•Ethanethiol (75-08-1): **Pregnancy:** (classification not yet possible)

•n-Butanethiol (109-79-5): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to)

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.

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

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

STEV = Short Term Exposure Value

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

TWAEV = Time-Weighted Average Exposure Value

Section 9 - Physical and Chemical Properties

9.1 Information on Physical and Chemical Properties

Material Description			
Physical Form	Gas	Appearance/Description	Colorless compressed gas with a rotten egg-like odor.
Color	Colorless	Odor	Rotten-egg
Odor Threshold	Data lacking		
General Properties			
Boiling Point	-161 C(-257.8 F)	Melting Point	-183 C(-297.4 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	Data lacking	Vapor Density	Data lacking
Evaporation Rate	Data lacking		
Flammability			
Flash Point	-188.15 C(-306.67 F) CC (Closed Cup)	UEL	15 %
LEL	5 %	Autoignition	537 C(998.6 F)
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

- Incompatible with oxidizing materials.

10.6 Hazardous decomposition products

- No data available.

Section 11 - Toxicological Information

11.1 Information on toxicological effects

Components		
Hydrogen sulfide (100ppm)	7783-06-4	Acute Toxicity: Inhalation-Rat LC50 • 700 mg/m ³ 4 Hour(s); Irritation: Eye-Human • .000125 ppm 5 Hour(s); Reproductive: Inhalation-Rat TCLo • 10 mg/m ³ (48D pre/1-22D preg); <i>Reproductive Effects:Effects on Fertility:Pre-implantation mortality; Reproductive Effects:Effects on Fertility:Post-implantation mortality; Reproductive Effects:Specific Developmental Abnormalities:Urogenital system</i>
Carbonyl sulfide (100ppm)	463-58-1	Acute Toxicity: Inhalation-Rat LC50 • 1070 ppm 4 Hour(s); <i>Behavioral:Convulsions or effect on seizure threshold; Lungs, Thorax, or Respiration:Dyspnea; Nutritional and Gross Metabolic:Gross Metabolite Changes:Weight loss or decreased weight gain</i>
Methanethiol (100ppm)	74-93-1	Acute Toxicity: Inhalation-Rat LC50 • 675 ppm; <i>Lungs, Thorax, or Respiration:Other changes; Gastrointestinal:Hypermotility, diarrhea; Kidney, Ureter, and Bladder:Urine volume increased</i>
Ethanethiol (100ppm)	75-08-1	Acute Toxicity: Ingestion/Oral-Rat LD50 • 682 mg/kg; <i>Behavioral:Muscle weakness; Behavioral:Ataxia; Lungs, Thorax, or Respiration:Cyanosis</i> ; Inhalation-Rat LC50 • 4420 ppm 4 Hour(s); <i>Peripheral Nerve and Sensation:Spastic paralysis with or without sensory change; Behavioral:Excitement; Lungs, Thorax, or Respiration:Cyanosis; Irritation:</i> Eye-Rabbit • 100 mg 24 Hour(s) • Moderate irritation; Skin-Rabbit • 500 mg 24 Hour(s) • Mild irritation

1-Propanethiol (100ppm)	107-03-9	Acute Toxicity: Ingestion/Oral-Rat LD50 • 1790 mg/kg; Behavioral: Somnolence (general depressed activity); Lungs, Thorax, or Respiration:Respiratory depression; Behavioral:Coma; Inhalation-Rat LC50 • 7300 ppm 4 Hour(s); Lungs, Thorax, or Respiration:Respiratory stimulation; Behavioral:Somnolence (general depressed activity); Sense Organs and Special Senses:Eye:Lacrimation; Irritation: Eye-Rabbit • 83 mg • Severe irritation
n-Butanethiol (100ppm)	109-79-5	Acute Toxicity: Inhalation-Rat LC50 • 4020 ppm 4 Hour(s); Lungs, Thorax, or Respiration:Respiratory stimulation; Behavioral:Somnolence (general depressed activity); Sense Organs and Special Senses:Eye:Lacrimation; Irritation: Eye-Rabbit • 83 mg

GHS Properties	Classification
Acute toxicity	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
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 • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
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 • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
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 • Classification criteria not met OSHA HCS 2012 • Classification criteria not met

Route(s) of entry/exposure

- Inhalation, Skin, Eye

Potential Health Effects

Inhalation

Acute (Immediate)

- This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces. If this material is released in a small, poorly ventilated area (i.e. an enclosed or confined space), an oxygen-deficient environment may occur. Individuals breathing such an atmosphere may experience symptoms which include headaches, ringing in ears, dizziness, drowsiness, unconsciousness, nausea, vomiting, and depression of all the senses. Under some circumstances of over-exposure, death may occur. The following effects associated with decreased levels of oxygen: increase in breathing and pulse rate, emotional upset, abnormal fatigue, nausea, vomiting, collapse, loss of consciousness, convulsive movements, respiratory collapse and death.

Chronic (Delayed)

- No data available

Skin

Acute (Immediate)

- Under normal conditions of use, no health effects are expected.

- Chronic (Delayed)**
 - No data available
- Eye**
- Acute (Immediate)**
 - Under normal conditions of use, no health effects are expected.
- Chronic (Delayed)**
 - No data available
- Ingestion**
- Acute (Immediate)**
 - Ingestion is not anticipated to be a likely route of exposure to this product.
- Chronic (Delayed)**
 - Ingestion is not anticipated to be a likely route of exposure to this product.
- Carcinogenic Effects**
 - The components of this material are not found on the following lists: FEDERAL OSHA Z LIST, NTP and IARC; therefore, they are not considered to be, nor suspected to be, cancer-causing agents by these agencies.

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

- No PBT and vPvB assessment has been conducted.

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	UN1954	Compressed gas, flammable, n.o.s. (Methane)	2.1	NDA	NDA
TDG	UN1954	COMPRESSED GAS, FLAMMABLE, N.O.S. (Methane)	2.1	NDA	NDA
IMO/IMDG	UN1954	COMPRESSED GAS, FLAMMABLE, N.O.S. (Methane)	2.1	NDA	NDA

IATA/ICAO	UN1954	Compressed gas, flammable, n.o.s. (Methane)	2.1	NDA	NDA
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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.

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

- Not relevant.

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
1-Propanethiol	107-03-9	Yes	Yes	No
Carbonyl sulfide	463-58-1	Yes	Yes	Yes
Ethanethiol	75-08-1	Yes	Yes	Yes
Hydrogen sulfide	7783-06-4	Yes	Yes	Yes
Methane	74-82-8	Yes	Yes	Yes
Methanethiol	74-93-1	Yes	Yes	Yes
n-Butanethiol	109-79-5	Yes	Yes	Yes

Inventory						
Component	CAS	Canada DSL	Canada NDSL	China	EU EINECS	EU ELNICS
1-Propanethiol	107-03-9	Yes	No	Yes	Yes	No
Carbonyl sulfide	463-58-1	Yes	No	No	Yes	No
Ethanethiol	75-08-1	Yes	No	Yes	Yes	No
Hydrogen sulfide	7783-06-4	Yes	No	Yes	Yes	No
Methane	74-82-8	Yes	No	Yes	Yes	No
Methanethiol	74-93-1	Yes	No	Yes	Yes	No
n-Butanethiol	109-79-5	Yes	No	Yes	Yes	No

Inventory (Con't.)		
Component	CAS	TSCA
1-Propanethiol	107-03-9	Yes
Carbonyl sulfide	463-58-1	Yes
Ethanethiol	75-08-1	Yes
Hydrogen sulfide	7783-06-4	Yes
Methane	74-82-8	Yes
Methanethiol	74-93-1	Yes
n-Butanethiol	109-79-5	Yes

Canada

Labor

Canada - WHMIS - Classifications of Substances

• Hydrogen sulfide	7783-06-4	A, B1, D1A, D2B
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	B2
• Methane	74-82-8	A, B1
• n-Butanethiol	109-79-5	B2, D1B (listed under Butylmercaptan)
• Methanethiol	74-93-1	A, B1, D1A
• Carbonyl sulfide	463-58-1	Not Listed

Canada - WHMIS - Ingredient Disclosure List

• Hydrogen sulfide	7783-06-4	1 %
• 1-Propanethiol	107-03-9	1 %
• Ethanethiol	75-08-1	1 %
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	1 %
• Methanethiol	74-93-1	1 %
• Carbonyl sulfide	463-58-1	1 %

Environment

Canada - 2004 NPRI (National Pollutant Release Inventory)

• Hydrogen sulfide	7783-06-4	Part 1, Group 1 Substance
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Part 1, Group 1 Substance

Canada - 2005 NPRI (National Pollutant Release Inventory)

• Hydrogen sulfide	7783-06-4	Part 1, Group 1 Substance
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Part 1, Group 1 Substance

Canada - CEPA - Greenhouse Gases Subject to Mandatory Reporting

• Hydrogen sulfide	7783-06-4	Not Listed
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	21 GWP
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Not Listed

Canada - CEPA - Priority Substances List

• Hydrogen sulfide	7783-06-4	Not Listed
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed

• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Not Listed

Canada - DWQ (Drinking Water Quality) - IMACs

• Hydrogen sulfide	7783-06-4	Not Listed
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Not Listed

Other**Canada - Accelerated Reduction/Elimination of Toxics (ARET)**

• Hydrogen sulfide	7783-06-4	B-3
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Not Listed

Canada New Brunswick**Environment****Canada - New Brunswick - Ozone Depleting Substances - Schedule A**

• Hydrogen sulfide	7783-06-4	Not Listed
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Not Listed

Canada - New Brunswick - Ozone Depleting Substances - Schedule B

• Hydrogen sulfide	7783-06-4	Not Listed
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Not Listed

China**Environment****China - Ozone Depleting Substances - First Schedule**

• Hydrogen sulfide	7783-06-4	Not Listed
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed

• Carbonyl sulfide	463-58-1	Not Listed
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China - Ozone Depleting Substances - Second Schedule

• Hydrogen sulfide	7783-06-4	Not Listed
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Not Listed

China - Ozone Depleting Substances - Third Schedule

• Hydrogen sulfide	7783-06-4	Not Listed
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Not Listed

Other**China - Annex I & II - Controlled Chemicals Lists**

• Hydrogen sulfide	7783-06-4	Not Listed
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Not Listed

China - Dangerous Goods List

• Hydrogen sulfide	7783-06-4	
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	
• Methane	74-82-8	(compressed or refrigerated liquid)
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	
• Carbonyl sulfide	463-58-1	

China - Export Control List - Part I Chemicals

• Hydrogen sulfide	7783-06-4	Not Listed
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Not Listed

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

• Hydrogen sulfide	7783-06-4	F+; R12 T+; R26 N; R50
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• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	F; R11 Xn; R20 N; R50-53
• Methane	74-82-8	F+; R12
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	F+; R12 T; R23 N; R50-53
• Carbonyl sulfide	463-58-1	Not Listed

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

• Hydrogen sulfide	7783-06-4	Not Listed
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Not Listed

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

• Hydrogen sulfide	7783-06-4	F+ T+ N R:12-26-50 S:(1/2)-9-16-36-38-45-61
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	F Xn N R:11-20-50/53 S:(2)-16-25-60-61
• Methane	74-82-8	F+ R:12 S:(2)-9-16-33
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	F+ T N R:12-23-50/53 S:(2)-16-25-60-61
• Carbonyl sulfide	463-58-1	Not Listed

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Notes - Substances and Preparations

• Hydrogen sulfide	7783-06-4	Not Listed
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Not Listed

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

• Hydrogen sulfide	7783-06-4	S:(1/2)-9-16-36-38-45-61
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	S:(2)-16-25-60-61
• Methane	74-82-8	S:(2)-9-16-33
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	S:(2)-16-25-60-61
• Carbonyl sulfide	463-58-1	Not Listed

Germany**Environment****Germany - TA Luft - Types and Classes**

• Hydrogen sulfide	7783-06-4	inorganic gas Substance: 5.2.4, Class II
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	organic Substance: 5.2.5, Class I

• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	organic Substance: 5.2.5, Class I
• Methanethiol	74-93-1	organic Substance: 5.2.5, Class I
• Carbonyl sulfide	463-58-1	organic Substance: 5.2.5, Class I

Germany - Water Classification (VwVwS) - Annex 1

• Hydrogen sulfide	7783-06-4	Not Listed
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	ID Number 1343, not considered hazardous to water
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Not Listed

Germany - Water Classification (VwVwS) - Annex 2 - Water Hazard Classes

• Hydrogen sulfide	7783-06-4	ID Number 283, hazard class 2 - hazard to waters
• 1-Propanethiol	107-03-9	ID Number 144, hazard class 3 - severe hazard to waters
• Ethanethiol	75-08-1	ID Number 144, hazard class 3 - severe hazard to waters (except tert-Dodecanethiol)
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	ID Number 144, hazard class 3 - severe hazard to waters
• Methanethiol	74-93-1	ID Number 144, hazard class 3 - severe hazard to waters
• Carbonyl sulfide	463-58-1	Not Listed

Germany - Water Classification (VwVwS) - Annex 3

• Hydrogen sulfide	7783-06-4	Not Listed
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Not Listed

Other**Germany - Specifically Regulated Chemicals in TRGS**

• Hydrogen sulfide	7783-06-4	Not Listed
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Not Listed

Mexico

Other

Mexico - Hazard Classifications

• Hydrogen sulfide	7783-06-4	Hazard Class = 2.3 (2.1) UN1053
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Hazard Class = 3 PG = I UN2363
• Methane	74-82-8	Hazard Class = 2.1 (with high Methane content) UN1971; Hazard Class = 2.1 (with high Methane content) UN1972
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Hazard Class = 2.3 (2.1) UN1064
• Carbonyl sulfide	463-58-1	Hazard Class = 2.3 (2.1) UN2204

Mexico - Regulated Substances

• Hydrogen sulfide	7783-06-4	UN1053
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	UN2363
• Methane	74-82-8	UN1971 (with high Methane content); UN1972 (with high Methane content)
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	UN1064
• Carbonyl sulfide	463-58-1	UN2204

Portugal

Other

Portugal - Prohibited Substances

• Hydrogen sulfide	7783-06-4	Not Listed
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Not Listed

United Kingdom

Environment

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

• Hydrogen sulfide	7783-06-4	Not Listed
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	10000 kg
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Not Listed

United Kingdom - Substances Contained in Dangerous Substances or Preparations

• Hydrogen sulfide	7783-06-4	Not Listed
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed

• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Not Listed

Other

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

• Hydrogen sulfide	7783-06-4	Not Listed
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Not Listed

United Kingdom - List of Dangerous Substances in Water

• Hydrogen sulfide	7783-06-4	Not Listed
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Not Listed

United States

Labor

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

• Hydrogen sulfide	7783-06-4	1500 lb TQ
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	5000 lb TQ
• Carbonyl sulfide	463-58-1	Not Listed

U.S. - OSHA - Specifically Regulated Chemicals

• Hydrogen sulfide	7783-06-4	Not Listed
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Not Listed

Environment

U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants

• Hydrogen sulfide	7783-06-4	Not Listed
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	

U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

• Hydrogen sulfide	7783-06-4	100 lb final RQ; 45.4 kg final RQ
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	100 lb final RQ; 45.4 kg final RQ
• Carbonyl sulfide	463-58-1	100 lb final RQ; 45.4 kg final RQ

U.S. - CERCLA/SARA - Radionuclides and Their Reportable Quantities

• Hydrogen sulfide	7783-06-4	Not Listed
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Not Listed

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs

• Hydrogen sulfide	7783-06-4	100 lb EPCRA RQ
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	100 lb EPCRA RQ
• Carbonyl sulfide	463-58-1	Not Listed

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs

• Hydrogen sulfide	7783-06-4	500 lb TPQ
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	500 lb TPQ
• Carbonyl sulfide	463-58-1	Not Listed

U.S. - CERCLA/SARA - Section 313 - Emission Reporting

• Hydrogen sulfide	7783-06-4	1.0 % de minimis concentration
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	1.0 % de minimis concentration

U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing

• Hydrogen sulfide	7783-06-4	Not Listed
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed

• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Not Listed

U.S. - RCRA (Resource Conservation & Recovery Act) - Hazardous Constituents - Appendix VIII to 40 CFR 261

• Hydrogen sulfide	7783-06-4	waste number U135
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	waste number U153
• Carbonyl sulfide	463-58-1	Not Listed

U.S. - RCRA (Resource Conservation & Recovery Act) - U Series Wastes - Acutely Toxic Wastes & Other Hazardous Characteristics

• Hydrogen sulfide	7783-06-4	waste number U135
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	waste number U153 (Ignitable waste, Toxic waste)
• Carbonyl sulfide	463-58-1	Not Listed

United States - California

Environment

U.S. - California - Proposition 65 - Carcinogens List

• Hydrogen sulfide	7783-06-4	Not Listed
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Not Listed

U.S. - California - Proposition 65 - Developmental Toxicity

• Hydrogen sulfide	7783-06-4	Not Listed
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Not Listed

U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)

• Hydrogen sulfide	7783-06-4	Not Listed
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Not Listed

U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)

• Hydrogen sulfide	7783-06-4	Not Listed
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Female

• Hydrogen sulfide	7783-06-4	Not Listed
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Male

• Hydrogen sulfide	7783-06-4	Not Listed
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Not Listed

United States - Pennsylvania**Labor****U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List**

• Hydrogen sulfide	7783-06-4	
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	
• Carbonyl sulfide	463-58-1	

U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances

• Hydrogen sulfide	7783-06-4	Not Listed
• 1-Propanethiol	107-03-9	Not Listed
• Ethanethiol	75-08-1	Not Listed
• Methane	74-82-8	Not Listed
• n-Butanethiol	109-79-5	Not Listed
• Methanethiol	74-93-1	Not Listed
• Carbonyl sulfide	463-58-1	Not Listed

15.2 Chemical Safety Assessment

- No Chemical Safety Assessment has been carried out.

Section 16 - Other Information

Relevant Phrases (code & full text)

- H225 - Highly flammable liquid and vapour
- H302 - Harmful if swallowed
- H315 - Causes skin irritation
- H319 - Causes serious eye irritation
- H330 - Fatal if inhaled
- H331 - Toxic if inhaled
- H332 - Harmful if inhaled
- H335 - May cause respiratory irritation
- H336 - May cause drowsiness or dizziness
- H400 - Very toxic to aquatic life
- H410 - Very toxic to aquatic life with long lasting effects
- R11 - Highly flammable.
- R20 - Harmful by inhalation.
- R22 - Harmful if swallowed.
- R26 - Very toxic by inhalation.
- R36/37/38 - Irritating to eyes, respiratory system and skin.
- R50 - Very toxic to aquatic organisms.
- R53 - May cause long-term adverse effects in the aquatic environment.
- R67 - Vapours may cause drowsiness and dizziness.

Last Revision Date

Preparation Date

Disclaimer/Statement of Liability

- 05/September/2014
- 13/November/2012
- 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