Safety Data Sheet

Section 1: Identification

Product identifier

Product Name
- **Dimethyl Disulfide (0.0025%), Dimethyl Sulfide (0.0025%), Ethyl Methyl Sulfide (0.0025%), Nitrogen (Balance) [Sulfur Experts - 8]**

Product Code
- MSDS No. 90075

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

Recommended use
- Calibration Gas

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

Emergency telephone number

Manufacturer
- 800-424-9300 - CHEMTREC

Manufacturer
- +1 703-527-3887 - Outside United States

Section 2: Hazard Identification

United States (US)

According to OSHA 29 CFR 1910.1200 HCS

Classification of the substance or mixture

OSHA HCS 2012
- Compressed Gas - H280
  Simple Asphyxiant

Label elements

OSHA HCS 2012

WARNING

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

Precautionary statements

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

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

Classification of the substance or mixture

WHMIS
- Compressed Gas - A

Label elements

WHMIS

- Compressed Gas - A

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).

Section 3 - Composition/Information on Ingredients

Substances

- Material does not meet the criteria of a substance.

Mixtures

Hazardous Components					
Chemical Name	**Identifiers**	**%(weight)**	**LD50/LC50**	**Classifications According to Regulation/Directive**	**Comments**
Nitrogen	**CAS:**7727-37-9	99.9925%	NDA	**OSHA HCS 2012:** Press. Gas - Comp. ; Simp. Asphyx.	Balance
Dimethyl Disulfide	**CAS:**624-92-0	0.0025%	Ingestion/Oral-Rat LD50 • 190 mg/kg Skin-Rabbit LD50 • >2 g/kg Inhalation-Rat LC50 • 805 ppm 4 Hour(s)	**OSHA HCS 2012:** Acute Tox 3 (Oral); Acute Tox 1 (Inhalation); Flam. Liq. 2	NDA
Dimethyl Sulfide	**CAS:**75-18-3	0.0025%	Ingestion/Oral-Rat LD50 • 3300 mg/kg Inhalation-Rat LC50 • 40250 ppm Skin-Rabbit LD50 • >5 g/kg	**OSHA HCS 2012:** Eye Irrit. 2A; STOT SE 3: Narc	NDA
Ethyl Methyl Sulfide	**CAS:**624-89-5	0.0025%	NDA	**OSHA HCS 2012:** Not Classified - Data Lacking	NDA

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

Section 4: First-Aid Measures

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
- After contact with skin, take off immediately all contaminated clothing and wash immediately with plenty of (to be specified by manufacturer). If irritation develops and persists, get medical attention.

Eye
- Get medical attention if symptoms occur. Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first five minutes, then continue rinsing eye.

Ingestion
- First aid is not expected to be necessary if material is used under ordinary conditions and as recommended. Never give anything by mouth to an unconscious person. Do NOT induce vomiting.

Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

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.

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: Fire-Fighting Measures

Extinguishing media

Suitable Extinguishing Media
- Use extinguishing agent suitable for type of surrounding fire.
  SMALL FIRES: Dry chemical or CO2.
  LARGE FIRES: Water spray or fog.

Unsuitable Extinguishing Media
- No data available

Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards
- Contains gas under pressure; May explode if heated.

Hazardous Combustion Products
- No data available

Advice for firefighters

- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.
  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).
Move containers from fire area if you can do it without risk.
FIRE INVOLVING TANKS: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.

Section 6 - Accidental Release Measures

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

- Stop leak if you can do it without risk. Keep unauthorized personnel away. Keep out of low areas. Stay upwind. Do not direct water at spill or source of leak. LARGE SPILL: Consider initial downwind evacuation for at least 500 meters (1/3 mile)

Environmental precautions

- No data available

Methods and material for containment and cleaning up

Containment/Clean-up Measures

- Stop leak if you can do it without risk.
Do not direct water at spill or source of leak.
Use water spray to reduce vapors; do not put water directly on leak, spill area or inside container.
If possible, turn leaking containers so that gas escapes rather than liquid.
Isolate area until gas has dispersed.
Ventilate the area.
Allow substance to evaporate.

Section 7 - Handling and Storage

Precautions for safe handling

Handling

- 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. 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.

Conditions for safe storage, including any incompatibilities

Storage

- Store in a cool, dry, well-ventilated place. Protect cylinders against physical damage. Cylinders should be firmly secured to prevent falling or being knocked-over.

Section 8 - Exposure Controls/Personal Protection

Control parameters

Exposure Limits/Guidelines			
	Result	**ACGIH**	**Canada Ontario**
Dimethyl Disulfide (624-92-0)	TWAs	0.5 ppm TWA	0.5 ppm TWA
Dimethyl Sulfide (75-18-3)	TWAs	10 ppm TWA	10 ppm TWA

Exposure Control Notations

Canada Ontario

- Nitrogen (7727-37-9): **Simple Asphyxiants:** (Simple asphyxiant)
- Dimethyl Disulfide (624-92-0): **Skin:** (Absorption through skin, eyes, or mucous membranes)

Canada Quebec

- Nitrogen (7727-37-9): **Simple Asphyxiants:** (Simple asphyxiant)

ACGIH

- Nitrogen (7727-37-9): **Simple Asphyxiants:** (Simple asphyxiant)
- Dimethyl Disulfide (624-92-0): **Skin:** (Skin - potential significant contribution to overall exposure by the cutaneous route)

Exposure Limits Supplemental

ACGIH

- Nitrogen (7727-37-9): **TLV Basis - Critical Effects:** (asphyxia)
- Dimethyl Disulfide (624-92-0): **TLV Basis - Critical Effects:** (CNS impairment; upper respiratory tract irritation)
- Dimethyl Sulfide (75-18-3): **TLV Basis - Critical Effects:** (upper respiratory tract irritation)

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

- No data available

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

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

ACGIH = American Conference of Governmental Industrial Hygiene

Section 9 - Physical and Chemical Properties

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	-195.9 C(-320.62 F) Nitrogen	Melting Point	-210 C(-346 F) Nitrogen
Decomposition Temperature	Data lacking	pH	Data lacking
Specific Gravity/Relative Density	Data lacking	Water Solubility	0.0234 % @ 0 C(32 F) Nitrogen
Viscosity	0.0002 Poise (P, Ps) or dyne-second/cm2 @ 0 C(32 F)		

	Nitrogen		
Volatility			
Vapor Pressure	Data lacking	Vapor Density	0.967 Air=1 Nitrogen
Evaporation Rate	Data lacking		
Flammability			
Flash Point	Data lacking	UEL	Data lacking
LEL	Data lacking	Autoignition	Data lacking
Flammability (solid, gas)	Not flammable.		
Environmental			
Octanol/Water Partition coefficient	Data lacking		

Section 10: Stability and Reactivity

Reactivity

- No dangerous reaction known under conditions of normal use.

Chemical stability

- Stable under normal temperatures and pressures.

Possibility of hazardous reactions

- No data available

Conditions to avoid

- No data available

Incompatible materials

- No data available

Hazardous decomposition products

- No data available

Section 11 - Toxicological Information

Information on toxicological effects

Component Name	CAS	Data
Dimethyl Disulfide (0.0025%)	624-92-0	**Acute Toxicity:** orl-rat LD50:190 mg/kg; ihl-rat LC50:15850 ug/m3/4H; ihl-rat LC50:805 ppm/4H; skn-rbt LD50:>2 gm/kg
Dimethyl Sulfide (0.0025%)	75-18-3	**Acute Toxicity:** orl-rat LD50:3300 mg/kg; skn-rbt LD50:>5 gm/kg; **Irritation:** eye-rbt 250 ug/24H SEV; skn-rbt 500 mg/24H MLD

GHS Properties	Classification
Acute toxicity	**OSHA HCS 2012** • Classification criteria not met
Aspiration Hazard	**OSHA HCS 2012** • Classification criteria not met
Carcinogenicity	**OSHA HCS 2012** • Classification criteria not met
Germ Cell Mutagenicity	**OSHA HCS 2012** • Classification criteria not met
Respiratory sensitization	**OSHA HCS 2012** • Classification criteria not met
Serious eye damage/Irritation	**OSHA HCS 2012** • Classification criteria not met

Skin corrosion/Irritation	**OSHA HCS 2012** • Classification criteria not met
Skin sensitization	**OSHA HCS 2012** • Classification criteria not met
STOT-RE	**OSHA HCS 2012** • Classification criteria not met
STOT-SE	**OSHA HCS 2012** • Classification criteria not met
Toxicity for Reproduction	**OSHA HCS 2012** • Classification criteria not met

Potential Health Effects

Inhalation

Acute (Immediate)
- This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces.

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)
- No data available

Key to abbreviations

LD = Lethal Dose
MLD = Mild
SEV = Severe
LC = Lethal Concentration

Section 12 - Ecological Information

Toxicity

- No data available

Persistence and degradability

- No data available

Bioaccumulative potential

- No data available

Mobility in Soil

- No data available

Results of PBT and vPvB assessment

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

Other adverse effects

Section 13 - Disposal Considerations

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	UN1956	Compressed gas, n.o.s (Nitrogen)	2.2	NDA	NDA
TDG	UN1956	COMPRESSED GAS, N.O.S (Nitrogen)	2.2	NDA	NDA
IMO/IMDG	UN1956	COMPRESSED GAS, N.O.S (Nitrogen)	2.2	NDA	NDA
IATA/ICAO	UN1956	Compressed Gas, n.o.s (Nitrogen)	2.2	NDA	NDA

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.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
- Not relevant.

Section 15 - Regulatory Information

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

SARA Hazard Classifications
- Acute, Pressure(Sudden Release of)

State Right To Know			
Component	**CAS**	**MA**	**PA**
Nitrogen	7727-37-9	Yes	Yes
Dimethyl Disulfide	624-92-0	Yes	Yes
Dimethyl Sulfide	75-18-3	Yes	Yes
Ethyl Methyl Sulfide	624-89-5	No	No

Inventory				
Component	**CAS**	**Canada DSL**	**EU EINECS**	**TSCA**
Nitrogen	7727-37-9	Yes	Yes	Yes
Dimethyl Disulfide	624-92-0	Yes	Yes	Yes
Dimethyl Sulfide	75-18-3	Yes	Yes	Yes
Ethyl Methyl Sulfide	624-89-5	Yes	Yes	Yes

Australia

Environment

Australia - National Pollutant Inventory (NPI) Substance List

• Nitrogen	7727-37-9	99.9925%	15 tonne/yr Threshold category 3 (total)
• Ethyl Methyl Sulfide	624-89-5	0.0025%	Not Listed
• Dimethyl Disulfide	624-92-0	0.0025%	Not Listed
• Dimethyl Sulfide	75-18-3	0.0025%	Not Listed

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Canada

Labor

Canada - WHMIS - Classifications of Substances

• Nitrogen	7727-37-9	99.9925%	A
• Ethyl Methyl Sulfide	624-89-5	0.0025%	Not Listed
• Dimethyl Disulfide	624-92-0	0.0025%	B2, D1A, D2B
• Dimethyl Sulfide	75-18-3	0.0025%	B2, D2B

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United States - Pennsylvania

Labor

U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

• Nitrogen	7727-37-9	99.9925%	Not Listed
• Ethyl Methyl Sulfide	624-89-5	0.0025%	Not Listed
• Dimethyl Disulfide	624-92-0	0.0025%	
• Dimethyl Sulfide	75-18-3	0.0025%	

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Chemical Safety Assessment

- No Chemical Safety Assessment has been carried out.

Section 16 - Other Information

Last Revision Date
- 18/January/2013

Preparation Date
- 18/January/2013

Disclaimer/Statement of Liability
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