

## Section 1: Product and Company Identification

**Absolute Accuracy**  
4591 S Wayside Dr  
Houston, TX 77087  
(832) 571-2387

Product Code: 2946  
Part Number: 2946

**Synonyms:**  
**Recommended Use:**  
**Usage Restrictions:**

## Section 2: Hazards Identification



**Danger**

### Hazard Classification:

Acute Aquatic Toxicity (Category 1)  
Acute Oral Toxicity (Category 4)  
Chronic Aquatic Toxicity (Category 1)  
Eye Effects (Category 2.A)  
Gases Under Pressure  
Reproductive Toxicity (Category 2)  
Specific target organ toxicity (Repeated Exposure) (Category 1)  
Specific target organ toxicity (Single Exposure) (Category 3)

### Hazard Statements:

Causes damage to organs through prolonged or repeated exposure  
Causes serious eye irritation  
Contains gas under pressure; may explode if heated  
Harmful if swallowed  
May cause respiratory irritation;  
Suspected of damaging fertility or the unborn child  
Very toxic to aquatic life  
Very toxic to aquatic life with long lasting effects.

### Precautionary Statements

#### Prevention:

Wash thoroughly after handling.  
[In case of inadequate ventilation] wear respiratory protection.  
Do not eat, drink or smoke when using this product.

Do not handle until all safety precautions have been read and understood.  
 Do not breathe dust/fume/gas/mist/ vapors/spray..  
 Use only outdoors or in a well-ventilated area.  
 Wear protective gloves, protective clothing, eye protection and face protection.  
 Obtain special instructions before use.

**Response:**

If swallowed: Immediately call a poison center or doctor.  
 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 If inhaled: Remove person to fresh air and keep comfortable for breathing.  
 If exposed or concerned: Get medical advice/attention.

**Storage:**

Store locked up.  
 Protect from sunlight.  
 Store in a well-ventilated place. Keep container tightly closed.

**Disposal:**

Dispose of contents and/or container in accordance with applicable regulations.

## Section 3: Composition/Information on Ingredients

	CAS #	Concentration
Butyl Mercaptan	109-79-5	5 ppm
Carbon Disulfide	75-15-0	5 ppm
Carbonyl Sulfide	463-58-1	5 ppm
Dimethyl Sulfide	75-18-3	5 ppm
ethyl mercaptan	75-08-1	5 ppm
Hydrogen Sulfide	7783-06-4	5 ppm
Isobutyl Mercaptan	513-44-0	5 ppm
Methyl Mercaptan	74-93-1	5 ppm
Nitrogen	7727-37-9	Balance

	Chemical Substance	Chemical Family	Trade Names
Butyl Mercaptan	Butyl mercaptan	Thiols	1-Butanethiol; N-butanethiol; butanethiol; n-butyl mercaptan; 1-butyl mercaptan; n-butyl thioalcohol; butylthiol; n-butylthiol; thiobutyl alcohol; 1-mercaptobutane
Carbon Disulfide	CARBON DISULFIDE	Sulfides	CARBON BISULFIDE; CARBON BISULPHIDE; CARBON DISULPHIDE; CARBON SULFIDE; DITHIOCARBONIC ANHYDRIDE; SULPHOCARBONIC ANHYDRIDE; CARBON SULFIDE (CS <sub>2</sub> ); CARBON SULPHIDE; UN 1131; RCRA P022; CS <sub>2</sub>
Carbonyl Sulfide	CARBONYL SULFIDE	Carbonyls	CARBON OXY SULFIDE; CARBON OXIDE SULFIDE; OXYCARBON SULFIDE; COS; UN 2204
Dimethyl Sulfide	DIMETHYL SULFIDE	Sulfides	(CH <sub>3</sub> ) <sub>2</sub> S;(Methylsulfanyl)methane;2-Thiopropene;Dimethyl monosulfide; Dimethyl sulphide; Dimethyl thiomethane; dimethylmonosulfide; dimethylmonosulphide
ethyl mercaptan	ETHYL MERCAPTAN	Thiols	ETHANETHIOL; ETHYL SULFHYDRATE; MERCAPTOETHANE; ETHYL HYDROSULFIDE; ETHYL THIOALCOHOL; THIOETHANOL; THIOETHYL ALCOHOL; LPG ETHYL MERCAPTAN 1010; UN 2363; O-2712; 958-T; 7171-T; C <sub>2</sub> H <sub>6</sub> S
Hydrogen Sulfide	HYDROGEN SULFIDE	Inorganic gases	HYDROGEN SULFIDE (H <sub>2</sub> S); DIHYDROGEN MONOSULFIDE; DIHYDROGEN SULFIDE; HYDROSULFURIC ACID; SULFUR DIHYDRIDE; SULFURETED HYDROGEN; SULFUR HYDRIDE; STINK DAMP; SEWER GAS; RCRA U135; UN 1053; H <sub>2</sub> S

	Chemical Substance	Chemical Family	Trade Names
<b>Isobutyl Mercaptan</b>	2 Methyl-1 propanethiol	Thiols	2 methyl 1 propanethiol
<b>Methyl Mercaptan</b>	METHYL MERCAPTAN	Thiols	METHANETHIOL; THIOMETHANOL; MERCAPTOMETHANE; METHYL SULFHYDRATE; THIOMETHYL ALCOHOL; RCRA U153; STCC 4905520; UN 1064; CH4S
<b>Nitrogen</b>	NITROGEN, COMPRESSED GAS	Inorganic gases	DIATOMIC NITROGEN; DINITROGEN; NITROGEN; NITROGEN-14; NITROGEN GAS; UN 1066; N2

## Section 4: First Aid Measures

	Skin Contact	Eye Contact	Ingestion	Inhalation	Note to Physicians
<b>Butyl Mercaptan</b>	Wash skin with soap and water for 15 minutes	Flush eyes with plenty of water for at least 15 minutes. get medical attention.	Never make unconscious person vomit or drink fluids. Give sodium bicarbonate solution. When vomiting occurs, keep head lower than hips to help prevent aspiration. Get medical attention immediately.	Move to fresh air. Give artificial respiration if not breathing. Get medical attention.	For inhalation, consider oxygen. For ingestion, consider gastric lavage.
<b>Carbon Disulfide</b>	Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Administer CPR if necessary. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.	Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.	If swallowed, drink plenty of water, do NOT induce vomiting. Get immediate medical attention. Induce vomiting only at the instructions of a physician. Do not give anything by mouth to unconscious or convulsive person. Administer CPR if necessary.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.	For ingestion, consider gastric lavage.
<b>Carbonyl Sulfide</b>	Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.	Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.	If a large amount is swallowed, get medical attention.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.	For inhalation, consider oxygen.

	<b>Skin Contact</b>	<b>Eye Contact</b>	<b>Ingestion</b>	<b>Inhalation</b>	<b>Note to Physicians</b>
<b>Dimethyl Sulfide</b>	Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.	Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately. Do NOT allow victim to rub eyes or keep eyes closed. Extensive irrigation with water is required (at least 30 minutes).	Never give anything by mouth to an unconscious person. Get medical aid immediately. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.	Get medical aid immediately. Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.	Treat symptomatically and supportively.
<b>ethyl mercaptan</b>	Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.	Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.	If a large amount is swallowed, get medical attention. Do not induce vomiting.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.	For inhalation, consider oxygen.
<b>Hydrogen Sulfide</b>	Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.	Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.	If a large amount is swallowed, get medical attention.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.	For inhalation, consider oxygen.
<b>Isobutyl Mercaptan</b>	Wash with soap and water. consult physician	Flush with plenty of water. get medical attention	Do not induce vomiting. Rinse mouth with water. get medical attention	Move to fresh air. consult physician.	Show safety data sheet.
<b>Methyl Mercaptan</b>	If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.	Wash eyes immediately with large amounts of water, occasionally lifting upper and lower lids, until no evidence of chemical remains. Get medical attention immediately.	If a large amount is swallowed, get medical attention.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.	For inhalation, consider oxygen.

	<b>Skin Contact</b>	<b>Eye Contact</b>	<b>Ingestion</b>	<b>Inhalation</b>	<b>Note to Physicians</b>
<b>Nitrogen</b>	Wash exposed skin with soap and water.	Flush eyes with plenty of water.	If a large amount is swallowed, get medical attention.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.	For inhalation, consider oxygen.

## Section 5: Fire Fighting Measures

	<b>Suitable Extinguishing Media</b>	<b>Products of Combustion</b>	<b>Protection of Firefighters</b>
<b>Butyl Mercaptan</b>	Regular dry chemical, carbon dioxide, water, regular foam	Thermal decomposition or combustion products: oxides of carbon, oxides of sulfur, hydrogen sulfide	<ul style="list-style-type: none"> <li>▪ Not available</li> <li>▪ Not available</li> <li>▪ Not available</li> <li>▪ Not available</li> </ul>
<b>Carbon Disulfide</b>	Alcohol resistant foam, carbon dioxide, regular dry chemical, water Large fires: Use alcohol-resistant foam or flood with fine water spray. Fluoroprotein and protein foams are recommended over other types of foam.	Thermal decomposition products or combustion: oxides of carbon, oxides of sulfur	<ul style="list-style-type: none"> <li>▪ Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.</li> <li>▪ Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.</li> <li>▪ Protective material types: nitrile butadiene rubber (NBR), polyvinyl alcohol (PVA)</li> </ul>
<b>Carbonyl Sulfide</b>	Let burn unless leak can be stopped immediately. Large fires: Use regular foam or flood with fine water spray.	Oxides of carbon, hydrogen sulfide	<ul style="list-style-type: none"> <li>▪ Any self-contained breathing apparatus with a full facepiece. Use chemical protective suit.</li> <li>▪ Use chemical protective suit.</li> </ul>
<b>Dimethyl Sulfide</b>	Use foam, dry chemical, or carbon dioxide. Water may be ineffective. Do NOT use straight streams of water.	Sulfur oxides, hydrogen sulfide gas, carbon monoxide and carbon dioxide, mercaptans, methane and hydrogen sulfide	<ul style="list-style-type: none"> <li>▪ Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode. Use a chemical protective suit.</li> <li>▪ Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode. Use a chemical protective suit.</li> </ul>
<b>ethyl mercaptan</b>	Regular dry chemical, carbon dioxide, water, regular foam Large fires: Use regular foam or flood with fine water spray.	Oxides of sulfur, oxides of carbon, hydrogen sulfide	<ul style="list-style-type: none"> <li>▪ Any appropriate escape-type, self-contained breathing apparatus.</li> <li>▪ Any appropriate escape-type, self-contained breathing apparatus.</li> </ul>
<b>Hydrogen Sulfide</b>	Let burn unless leak can be stopped immediately. Large fires: Use regular foam or flood with fine water spray.	Sulfur oxides	<ul style="list-style-type: none"> <li>▪ Any self-contained breathing apparatus with a full facepiece.</li> <li>▪ Protective material types: butyl rubber, polyvinyl chloride (PVC), neoprene</li> </ul>
<b>Isobutyl Mercaptan</b>	For small fires, use media such as alcohol foam, dry chemical, or carbon dioxide. For large fires, apply water from as far away as possible.	Not available	<ul style="list-style-type: none"> <li>▪ Not available</li> <li>▪ Not available</li> <li>▪ Not available</li> <li>▪ Wear self-contained breathing apparatus for firefighting if necessary.</li> </ul>

	Suitable Extinguishing Media	Products of Combustion	Protection of Firefighters
<b>Methyl Mercaptan</b>	Carbon dioxide, alcohol resistant foam Let burn unless leak can be stopped immediately. Large fires: Use regular foam or flood with fine water spray.	Sulfur oxides, hydrogen sulfide	<ul style="list-style-type: none"> <li>▪ Any self-contained breathing apparatus with a full facepiece. Use a chemical protective suit.</li> <li>▪ Any self-contained breathing apparatus with a full facepiece. Use a chemical protective suit.</li> </ul>
<b>Nitrogen</b>	Non-flammable. Use suitable extinguishing media for surrounding fire. Cylinders may rupture or explode if exposed to heat.	Non-flammable	<ul style="list-style-type: none"> <li>▪ Respiratory protection may be needed for frequent or heavy exposure.</li> </ul>

## Section 6: Accidental Release Measures

	Personal Precautions	Environmental Precautions	Methods for Containment
<b>Butyl Mercaptan</b>	Avoid heat, flames, sparks, and other sources of ignition.	Small: Collect spilled material in appropriate container for disposal. large: dike for later disposal.	Small: Collect spilled material in appropriate container for disposal. large: dike for later disposal.
<b>Carbon Disulfide</b>	Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas. Do not touch spilled material.	Avoid heat, flames, sparks and other sources of ignition. Keep out of water supplies and sewers.	Stop leak if possible without personal risk. Reduce vapors with water spray. Reduce vapors with water spray. Dig holding area such as lagoon, pond or pit for containment. Dike for later disposal.
<b>Carbonyl Sulfide</b>	Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering.	Avoid heat, flames, sparks and other sources of ignition.	Stop leak if possible without personal risk. Reduce vapors with water spray. Remove sources of ignition.
<b>Dimethyl Sulfide</b>	Keep unnecessary people away, isolate hazard area and deny entry. Do not touch spilled material.	Avoid heat, flames, sparks and other sources of ignition.	Stop leak if possible without personal risk. Reduce vapors with water spray. Remove sources of ignition.
<b>ethyl mercaptan</b>	Keep unnecessary people away, isolate hazard area and deny entry.	Avoid heat, flames, sparks and other sources of ignition.	Stop leak if possible without personal risk. Reduce vapors with water spray. Remove sources of ignition.
<b>Hydrogen Sulfide</b>	Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas. Ventilate closed spaces before entering. Evacuation radius: 150 feet. For tank, rail car or tank truck: 800 meters (1/2 mile). Do not touch spilled material.	Avoid heat, flames, sparks and other sources of ignition.	Stop leak if possible without personal risk. Remove sources of ignition. Reduce vapors with water spray. Do not get water directly on material.
<b>Isobutyl Mercaptan</b>	Use personal protective equipment. Avoid breathing vapors, mist, or gas	Prevent further leakage or spillage if safe to do so.	Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet brushing and place in container for disposal according to local regulations.
<b>Methyl Mercaptan</b>	Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas. Ventilate closed spaces before entering. Evacuation radius: 150 feet. For tank, rail car or tank truck: 800 meters (1/2 mile). Do not get water directly on material. Do not touch spilled material.	Avoid heat, flames, sparks and other sources of ignition.	Stop leak if possible without personal risk. Remove sources of ignition. Reduce vapors with water spray.
<b>Nitrogen</b>	Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas.	No significant effects from contamination expected.	Stop leak if possible without personal risk.

	Methods for Cleanup	Other Information
<b>Butyl Mercaptan</b>	Stop leak if possible without personal risk. Reduce vapors with water spray. For small spills, absorb with sand or other non-combustible material.	Not available

	Methods for Cleanup	Other Information
<b>Carbon Disulfide</b>	Small spills: Absorb with sand or other noncombustible material. Collect spilled material in appropriate container for disposal. Large spills: Dike for later disposal. Absorb with sand or other non-combustible material. Add an alkaline material (lime, crushed limestone, sodium bicarbonate, or soda ash). Absorb with activated carbon. Collect spilled material using mechanical equipment.	Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA). Subject to California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).
<b>Carbonyl Sulfide</b>	Stop leak, evacuate and ventilate area.	Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).
<b>Dimethyl Sulfide</b>	Small spills: Absorb with sand or other noncombustible material. Collect spilled material in appropriate container for disposal. Large spills: Dike for later disposal.	None
<b>ethyl mercaptan</b>	Small spills: Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Large spills: Dike for later disposal.	Not available
<b>Hydrogen Sulfide</b>	Collect runoff for disposal as potential hazardous waste. Dike for later disposal. Absorb with sand or other non-combustible material. Add an alkaline material (lime, crushed limestone, sodium bicarbonate, or soda ash).	Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).
<b>Isobutyl Mercaptan</b>	Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet brushing and place in container for disposal according to local regulations.	not available
<b>Methyl Mercaptan</b>	Dig holding area such as lagoon, pond or pit for containment. Dike for later disposal. Absorb with sand or other non-combustible material. Absorb with activated carbon. Collect spilled material using mechanical equipment.	Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).
<b>Nitrogen</b>	N/A	N/A

## Section 7: Handling and Storage

	Handling	Storage
<b>Butyl Mercaptan</b>	Store and use with adequate ventilation. Firmly secure cylinders upright to keep them from falling or being knocked over. Screw valve protection cap firmly in place by hand. Store only where temperature will not exceed 125F (52C). Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full cylinders for long periods.	Do not get liquid in eyes, on skin, or clothing. Protect cylinders from damage. Use a suitable hand truck to move cylinders; do not drag, roll, slide, or drop. Open valve slowly. Close cylinder valve after each use; keep closed even when empty. If valve is hard to open, discontinue use and contact your supplier.

	<b>Handling</b>	<b>Storage</b>
<b>Carbon Disulfide</b>	Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.106. Protect from physical damage. Store outside or in a detached building. Avoid contact with light. Store at room temperature. Use diking sufficient to contain total contents plus 10%. Store under an inert atmosphere.	Avoid heat, flames, sparks and other sources of ignition. Grounding and bonding required. Keep separated from incompatible substances. Notify State Emergency Response Commission for storage or use at amounts greater than or equal to the TPQ (U.S. EPA SARA Section 302). SARA Section 303 requires facilities storing a material with a TPQ to participate in local emergency response planning (U.S. EPA 40 CFR 355.30).
<b>Carbonyl Sulfide</b>	Store and handle in accordance with all current regulations and standards.	Not available
<b>Dimethyl Sulfide</b>	Store and use with adequate ventilation. Firmly secure cylinders upright to keep them from falling or being knocked over. Screw valve protection cap firmly in place by hand. Store only where temperature will not exceed 125F (52C). Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full cylinders for long periods.	Do not get liquid in eyes, on skin, or clothing. Protect cylinders from damage. Use a suitable hand truck to move cylinders; do not drag, roll, slide, or drop. Open valve slowly. Close cylinder valve after each use; keep closed even when empty. If valve is hard to open, discontinue use and contact your supplier.
<b>ethyl mercaptan</b>	Store and use with adequate ventilation. Firmly secure cylinders upright to keep them from falling or being knocked over. Screw valve protection cap firmly in place by hand. Store only where temperature will not exceed 125F (52C). Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full cylinders for long periods.	Do not get liquid in eyes, on skin, or clothing. Protect cylinders from damage. Use a suitable hand truck to move cylinders; do not drag, roll, slide, or drop. Open valve slowly. Close cylinder valve after each use; keep closed even when empty. If valve is hard to open, discontinue use and contact your supplier
<b>Hydrogen Sulfide</b>	Store and handle in accordance with all current regulations and standards. Protect from physical damage. Store outside or in a detached building. Store in a cool, dry place. Store in a well-ventilated area. Avoid contact with light. Grounding and bonding required. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. Notify State Emergency Response Commission for storage or use at amounts greater than or equal to the TPQ (U.S. EPA SARA Section 302). SARA Section 303 requires facilities storing a material with a TPQ to participate in local emergency response planning (U.S. EPA 40 CFR 355.30). Keep separated from incompatible substances.	Subject to handling regulations: U.S. OSHA 29 CFR 1910.119.
<b>Isobutyl Mercaptan</b>	Store and use with adequate ventilation. Firmly secure cylinders upright to keep them from falling or being knocked over. Screw valve protection cap firmly in place by hand. Store only where temperature will not exceed 125F (52C). Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full cylinders for long periods.	Do not get liquid in eyes, on skin, or clothing. Protect cylinders from damage. Use a suitable hand truck to move cylinders; do not drag, roll, slide, or drop. Open valve slowly. Close cylinder valve after each use; keep closed even when empty. If valve is hard to open, discontinue use and contact your supplier



	Handling	Storage
<b>Methyl Mercaptan</b>	Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. Notify State Emergency Response Commission for storage or use at amounts greater than or equal to the TPQ (U.S. EPA SARA Section 302). SARA Section 303 requires facilities storing a material with a TPQ to participate in local emergency response planning (U.S. EPA 40 CFR 355.30).	Grounding and bonding required. Keep separated from incompatible substances.
<b>Nitrogen</b>	Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101.	Keep separated from incompatible substances.

## Section 8: Exposure Controls/Personal Protection

	Exposure Guidelines
<b>Butyl Mercaptan</b>	10 ppm (35 mg/m <sup>3</sup> ) OSHA TWA
<b>Carbon Disulfide</b>	CARBON DISULFIDE: 20 ppm OSHA TWA 30 ppm OSHA ceiling 100 ppm OSHA peak 30 minute(s) 4 ppm (12 mg/m <sup>3</sup> ) OSHA TWA (skin) (vacated by 58 FR 35338, June 30, 1993) 12 ppm (36 mg/m <sup>3</sup> ) OSHA STEL (vacated by 58 FR 35338, June 30, 1993) 1 ppm ACGIH TWA (skin) 1 ppm (3 mg/m <sup>3</sup> ) NIOSH recommended TWA 10 hour(s) (skin) 10 ppm (30 mg/m <sup>3</sup> ) NIOSH recommended STEL (skin)
<b>Carbonyl Sulfide</b>	CARBONYL SULFIDE: No occupational exposure limits established.
<b>Dimethyl Sulfide</b>	DIMETHYL SULFIDE: 10 ppm ACGIH TWA (cutaneous absorption danger)
<b>ethyl mercaptan</b>	ETHYL MERCAPTAN: 10 ppm (25 mg/m <sup>3</sup> ) OSHA ceiling 0.5 ppm (1.3 mg/m <sup>3</sup> ) OSHA TWA (vacated by 58 FR 35338, June 30, 1993) 0.5 ppm ACGIH TWA 0.5 ppm (1.3 mg/m <sup>3</sup> ) NIOSH recommended ceiling 15 minute(s)
<b>Hydrogen Sulfide</b>	HYDROGEN SULFIDE: 20 ppm OSHA ceiling 50 ppm OSHA peak 10 minute(s) (once if no other measurable exposure occurs) 10 ppm (14 mg/m <sup>3</sup> ) OSHA TWA (vacated by 58 FR 35338, June 30, 1993) 15 ppm (21 mg/m <sup>3</sup> ) OSHA STEL (vacated by 58 FR 35338, June 30, 1993) 10 ppm ACGIH TWA 15 ppm ACGIH STEL 10 ppm (15 mg/m <sup>3</sup> ) NIOSH recommended ceiling 10 minute(s) TLV-TWA: 1ppm Upper respiratory irritation (ACGIH)
<b>Isobutyl Mercaptan</b>	Not available
<b>Methyl Mercaptan</b>	METHYL MERCAPTAN: 10 ppm (20 mg/m <sup>3</sup> ) OSHA ceiling 0.5 ppm (1 mg/m <sup>3</sup> ) OSHA TWA (vacated by 58 FR 35338, June 30, 1993) 0.5 ppm ACGIH TWA 0.5 ppm (1 mg/m <sup>3</sup> ) NIOSH recommended ceiling 15 minute(s)
<b>Nitrogen</b>	NITROGEN, COMPRESSED GAS: NITROGEN: ACGIH (simple asphyxiant)

### Engineering Controls

Handle only in fully enclosed systems.

	Eye Protection	Skin Protection	Respiratory Protection
<b>Butyl Mercaptan</b>	Use splash resistant safety goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.	Wear appropriate chemical resistant clothing	Not available

	Eye Protection	Skin Protection	Respiratory Protection
<b>Carbon Disulfide</b>	Wear splash resistant safety goggles with a face shield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.	Wear appropriate chemical resistant clothing.	Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.
<b>Carbonyl Sulfide</b>	Wear splash resistant safety goggles with a face shield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.	Wear appropriate chemical resistant clothing.	Any self-contained breathing apparatus with a full facepiece. Use chemical protective suit.
<b>Dimethyl Sulfide</b>	Wear splash resistant safety goggles with a face shield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.	Wear appropriate chemical resistant clothing.	Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode. Use a chemical protective suit.
<b>ethyl mercaptan</b>	Wear splash resistant safety goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.	Wear appropriate chemical resistant clothing.	Any appropriate escape-type, self-contained breathing apparatus.
<b>Hydrogen Sulfide</b>	Wear splash resistant safety goggles with a face shield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.	Wear appropriate chemical resistant clothing.	Any self-contained breathing apparatus with a full facepiece.
<b>Isobutyl Mercaptan</b>	Face shield and safety glasses.	Impervious clothing	Not available
<b>Methyl Mercaptan</b>	Wear splash resistant safety goggles with a face shield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.	For the gas: Wear appropriate chemical resistant clothing. For the liquid: Wear appropriate protective, cold insulating clothing.	Any self-contained breathing apparatus with a full facepiece. Use a chemical protective suit.
<b>Nitrogen</b>	Eye protection not required, but recommended.	Protective clothing is not required.	Respiratory protection may be needed for frequent or heavy exposure.

#### General Hygiene considerations

- Avoid breathing vapor or mist
- Avoid contact with eyes and skin
- Wash thoroughly after handling and before eating or drinking

## Section 9: Physical and Chemical Properties

	Physical State	Appearance	Color	Change in Appearance	Physical Form	Odor	Taste
<b>Butyl Mercaptan</b>	Liquid	Colorless to yellow	Colorless to yellow	Not available	Liquid	Skunk-like odor	Bitter taste
<b>Carbon Disulfide</b>	Liquid	Clear	Colorless to yellow	N/A	Liquid	Rotten radish	N/A
<b>Carbonyl Sulfide</b>	Gas	Colorless	Colorless	N/A	Gas	Sulfide odor	N/A
<b>Dimethyl Sulfide</b>	Liquid	Clear	Colorless to yellow	N/A	Liquid	Irritating odor	N/A
<b>ethyl mercaptan</b>	Liquid	Colorless	Colorless	N/A	Liquid	Garlic odor	N/A
<b>Hydrogen Sulfide</b>	Gas	Colorless	Colorless	N/A	Gas	Rotten egg odor	N/A
<b>Isobutyl Mercaptan</b>	Liquid	Liquid	Not available	Not available	Liquid	Stench	Not available

	Physical State	Appearance	Color	Change in Appearance	Physical Form	Odor	Taste
<b>Methyl Mercaptan</b>	Gas	Clear	Colorless	N/A	Gas	Rotten cabbage, putrid	N/A
<b>Nitrogen</b>	Gas	Clear	Colorless	N/A	Gas	Odorless	Tasteless

	Flash Point	Flammability	Partition Coefficient	Autoignition Temperature	Upper Explosive Limits	Lower Explosive Limits
<b>Butyl Mercaptan</b>	Not available	Not available	Not available	Not available	Not available	Not available
<b>Carbon Disulfide</b>	-22 F (-30 C) (CC)	IB	16982.44 (log = 4.24) (estimated from water solubility)	194 F (90 C)	0.5	0.01
<b>Carbonyl Sulfide</b>	Not available	Not available	N/A	Not available	0.29	0.12
<b>Dimethyl Sulfide</b>	-48 deg C	IC		205 deg C (401 deg F)	19.7%	2.20%
<b>ethyl mercaptan</b>	-54.9 F (-48.3 C) (CC)	IA	1202.26 (log = 3.08) (estimated from water solubility)	570.0 F (298.9 C)	0.18	0.028
<b>Hydrogen Sulfide</b>	Flammable	Not available	Not available	500 F (260 C)	45.5%	3.9%
<b>Isobutyl Mercaptan</b>	-10 deg C	Not available	Not available	Not available	Not available	Not available
<b>Methyl Mercaptan</b>	<0 F (<-18 C) (OC)	Not available	Not available	Not available	0.218	0.039
<b>Nitrogen</b>	Not flammable	Not available	Not available	Nonflammable	Nonflammable	Nonflammable

	Boiling Point	Freezing Point	Vapor Pressure	Vapor Density	Specific Gravity	Water Solubility	pH	Odor Threshold	Evaporation Rate	Viscosity
<b>Butyl Mercaptan</b>	207-215.1 deg F	-176.6 deg F	83 mmHg at 25 deg C	3.1 (Air=1)	.83678 at 25 deg C	.595 g/L	Not available	.0001-.001 ppm	Not available	.56 cP at 20 deg C
<b>Carbon Disulfide</b>	115 F (46 C)	-168 F (-111 C)	300 mmHg @ 20 C	2.6 (Air=1)	1.261 @ 22 C	0.22% @ 22 C	Not available	Reported values vary widely and are not reliable; 0.022 ppm (detection); 0.21 ppm (recognition); 0.016 to 0.42 ppm (methods not specified).	22.6 (butyl acetate=1)	0.367 cP @ 20 C
<b>Carbonyl Sulfide</b>	-58 F (-50 C)	-218 F (-139 C)	Not available	2.1 (Air=1)	1.24 @ -87 C	Soluble	Not applicable	Not available	Not applicable	Not available

	Boiling Point	Freezing Point	Vapor Pressure	Vapor Density	Specific Gravity	Water Solubility	pH	Odor Threshold	Evaporation Rate	Viscosity
Dimethyl Sulfide	38 deg C @ 760 mm Hg	-98 deg C	502 mm Hg @ 25 deg C	2.14 (air=1)	0.840 g/ml	Insoluble	Not available	2.5 ppb	Not available	0.28 cP @ 20 C
Ethyl mercaptan	95.2 F (35.1 C)	-234.0 F (-147.8 C)	442 mmHg @ 20 C	2.14 (Air=1)	0.8315 @ 25 C	6.7% @ 20 C (reacts)	Not available	0.001 ppm	Not available	0.3155 cP @ 20 C
Hydrogen Sulfide	-78 to -77 F (-61 to -60.3 C)	-123 F (-86 C)	15200 mmHg @ 25 C	1.2 (Air=1)	1.192	2.58-2.9% @ 20 C	4.5-<7 (saturated solution)	0.13 ppm	Not applicable	0.0128 cP @ 25 C
Isobutyl Mercaptan	87-89 deg C	Not available	165 hPa at 37.8 deg C	3.11 (Air=1)	Not available	Not available	Not available	Not available	Not available	Not available
Methyl Mercaptan	43 F (6 C)	-189 F (-123 C)	1535 mmHg @ 21.1 C	1.66 (Air=1)	Not applicable	2.4% @ 20 C	Not applicable	0.0021 ppm	Not applicable	Not available
Nitrogen	-321 F (-196 C)	-346 F (-210 C)	760 mmHg @ -196 C	0.967 (Air=1)	Not applicable	1.6% @ 20 C	Not applicable	Not available	Not applicable	0.01787 cP @ 27 C

	Molecular Weight	Molecular Formula	Density	Weight per Gallon	Volatility by Volume	Volatility	Solvent Solubility
Butyl Mercaptan	90.19	CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> SH	Not available	Not available	Not available	Not available	Soluble: alcohol, ether, liquid hydrogen sulfide slightly soluble: chloroform
Carbon Disulfide	76.13	C-S <sub>2</sub>	Not available	Not available	0%	1	Soluble: Ethanol, methanol, ether, benzene, chloroform, carbon tetrachloride, oils
Carbonyl Sulfide	60.07	C-O-S	Not available	Not available	100%	Not applicable	Alcohol
Dimethyl Sulfide	62.13	C <sub>2</sub> H <sub>6</sub> S	Not available	Not available	Not available	Not available	Not available
Ethyl mercaptan	62.14	C <sub>2</sub> -H <sub>6</sub> -S	Not available	Not available	100%	Not available	Soluble: Alcohol, ether, naphtha, acetone, dilute alkali
Hydrogen Sulfide	34.08	H <sub>2</sub> -S	1.539 g/L @ 0 C	Not available	Not available	Not applicable	Soluble: Carbon disulfide, alcohol, ether, glycerol, gasolines, kerosene, crude oil, alkali solutions
Isobutyl Mercaptan	90.19 g/mol	C <sub>4</sub> H <sub>10</sub> S	.831G/CM <sup>3</sup> AT 25 DEG C	Not available	Not available	Not available	Not available

	Molecular Weight	Molecular Formula	Density	Weight per Gallon	Volatility by Volume	Volatility	Solvent Solubility
<b>Methyl Mercaptan</b>	48.11	C-H3-S-H	1.999 g/L @ 20 C	Not available	100%	Not applicable	Soluble: Alcohol, ether, petroleum ether, naphtha
<b>Nitrogen</b>	28.0134	N2	1.2506 g/L	Not available	100%	1	Soluble: Liquid ammonia

## Section 10: Stability and Reactivity

	Stability	Conditions to Avoid	Incompatible Materials
<b>Butyl Mercaptan</b>	Stable at normal temperatures and pressures	Stable at normal temperatures and pressures	Acids, oxidizing materials, nitric acid, calcium hypochlorite
<b>Carbon Disulfide</b>	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Metals, combustible materials, oxidizing materials, amines, halogens, metal oxides
<b>Carbonyl Sulfide</b>	Contact with water or moist air may form flammable and/or toxic gases or vapors.	Contact with water or moist air may form flammable and/or toxic gases or vapors.	Bases, oxidizing materials
<b>Dimethyl Sulfide</b>	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Oxidizing materials, bases, reducing materials
<b>ethyl mercaptan</b>	Contact with water or moist air may form flammable and/or toxic gases or vapors.	Contact with water or moist air may form flammable and/or toxic gases or vapors.	Acids, oxidizing materials, combustible materials, calcium hypochlorite, alkali metals, steel
<b>Hydrogen Sulfide</b>	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Combustible materials, metals, oxidizing materials, halogens, metal oxides, metal salts, bases, rust, oxidants, oxygen, copper powder, acetaldehyde, silver fulminate
<b>Isobutyl Mercaptan</b>	Stable under recommended storage conditions	Stable under recommended storage conditions	Not available
<b>Methyl Mercaptan</b>	Contact with water or moist air may form flammable and/or toxic gases or vapors.	Contact with water or moist air may form flammable and/or toxic gases or vapors.	Acids, metals, combustible materials, halo carbons, reducing agents, metal oxides, peroxides, oxidizing materials, nitric acid, mercury oxide, calcium hypochlorite
<b>Nitrogen</b>	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Metals, oxidizing materials

	Hazardous Decomposition Products	Possibility of Hazardous Reactions
<b>Butyl Mercaptan</b>	Oxides of carbon, oxides of sulfur, hydrogen sulfide	Will not occur
<b>Carbon Disulfide</b>	Oxides of carbon, oxides of sulfur	Will not polymerize.
<b>Carbonyl Sulfide</b>	Oxides of carbon, hydrogen sulfide	Will not polymerize.
<b>Dimethyl Sulfide</b>	Oxides of carbon, oxides of sulfur	Will not polymerize.
<b>ethyl mercaptan</b>	Oxides of sulfur, oxides of carbon	Will not polymerize.
<b>Hydrogen Sulfide</b>	Oxides of sulfur	Will not polymerize.
<b>Isobutyl Mercaptan</b>	Formed under fire conditions: carbon dioxides, sulphur oxides	Not available
<b>Methyl Mercaptan</b>	Oxides of sulfur	Will not polymerize.
<b>Nitrogen</b>	Oxides of nitrogen	Will not polymerize.

## Section 11: Toxicology Information

### Acute Effects

	Oral LD50	Dermal LD50	Inhalation
<b>Butyl Mercaptan</b>	1500 mg/kg rat	Not available	Irritation, lack of sense of smell, fever, nausea, vomiting, diarrhea, difficulty breathing, irregular heartbeat, headache, drowsiness, dizziness, loss of coordination. bluish skin color, lung congestion, kidney damage, paralysis, effects on the brain, convulsions, unconsciousness, coma
<b>Carbon Disulfide</b>	1200 mg/kg oral-rat LD50	Not established	Irritation, chest pain, headache, symptoms of drunkenness, disorientation, tingling sensation, dilated pupils, coma
<b>Carbonyl Sulfide</b>	Inhalation, LC50, 1 hr, mouse = 1700 ppmv.	Not available	Irritation, nausea, headache, symptoms of drunkenness, convulsions, coma

	Oral LD50	Dermal LD50	Inhalation
<b>Dimethyl Sulfide</b>	535-3,700 mg/kg (rat)	>5000 mg/kg (rat)	Causes respiratory tract irritation.
<b>ethyl mercaptan</b>	682 mg/kg oral-rat LD50	Not available	Irritation, cough, lack of sense of taste, changes in body temperature, nausea, vomiting, diarrhea, difficulty breathing, irregular heartbeat, headache, drowsiness, dizziness, loss of coordination, bluish skin color, lung congestion, heart disorders, kidney damage, liver damage, brain damage, convulsions, unconsciousness, coma
<b>Hydrogen Sulfide</b>	444 ppm inhalation-rat LC50	Irritation 0.000125 ppm/5 hour(s) eyes-human	Irritation, lack of sense of smell, sensitivity to light, nausea, vomiting, difficulty breathing, headache, drowsiness, dizziness, disorientation, tremors, visual disturbances, suffocation, lung congestion, internal bleeding, heart damage, nerve damage, brain damage, coma, death
<b>Isobutyl Mercaptan</b>	Rat 7,168 mg/kg	Not available	May be harmful if inhaled. causes respiratory tract irritation
<b>Methyl Mercaptan</b>	LC50, Inhalation, rat = 675 ppm.	Not available	Irritation, nausea, vomiting, wheezing, irregular heartbeat, headache, symptoms of drunkenness, bluish skin color, suffocation, lung congestion, blood disorders, kidney damage, liver damage, convulsions, coma
<b>Nitrogen</b>	Not available	Not available	Nausea, vomiting, difficulty breathing, headache, drowsiness, dizziness, tingling sensation, loss of coordination, convulsions, coma

	Eye Irritation	Skin Irritation	Sensitization
<b>Butyl Mercaptan</b>	Irritation	Irritation	Acute toxicity, Category 4, oral; H302: Harmful if swallowed. Acute toxicity, Category 4, inhalation; H332: Harmful if inhaled
<b>Carbon Disulfide</b>	Irritation (possibly severe), blurred vision	Irritation (possibly severe), chest pain, headache, symptoms of drunkenness, disorientation, tingling sensation, dilated pupils, coma, absorption may occur, symptoms of drunkenness	Acute toxicity, Category 4, oral; H302: Harmful if swallowed. Skin irritation, Category 2; H315: Causes skin irritation. Eye irritation, Category 2; H319: Causes serious eye irritation. Reproductive toxicity, Category 2; H361: Suspected of damaging fertility or the unborn child. Specific Target Organ Toxicity (repeated exposure), Category 1; H372: Causes damage to organs through prolonged or repeated exposure.
<b>Carbonyl Sulfide</b>	Irritation, blisters, tearing	Irritation, nausea, headache, symptoms of drunkenness	Acute toxicity, Category 3, inhalation; H331: Toxic if inhaled.
<b>Dimethyl Sulfide</b>	Irritation	Irritation	Eye irritation, Category 2; H319: Causes serious eye irritation.
<b>ethyl mercaptan</b>	Irritation	Mild irritation	Acute toxicity, Category 4, inhalation; H332: Harmful if inhaled. Hazardous to the aquatic environment, Acute Category 1; H400: Very toxic to aquatic life. Hazardous to the aquatic environment, Chronic Category 1; H410: Very toxic to aquatic life with long lasting effects.
<b>Hydrogen Sulfide</b>	Irritation, sensitivity to light, visual disturbances	Irritation liquid: frostbite	Acute toxicity, Category 2, inhalation; H330: Fatal if inhaled. Specific Target Organ Toxicity (single exposure), Category 3; H335: May cause respiratory irritation. Hazardous to the aquatic environment, Acute Category 1; H400: Very toxic to aquatic life
<b>Isobutyl Mercaptan</b>	Causes eye irritation	May be harmful if absorbed through skin. causes skin irritation	Skin irritation, Category 2; H315: Causes skin irritation. Eye irritation, Category 2; H319: Causes serious eye irritation. Specific Target Organ Toxicity (single exposure), Category 3; H335: May cause respiratory irritation.

	Eye Irritation	Skin Irritation	Sensitization
<b>Methyl Mercaptan</b>	Irritation, blurred vision	Irritation, blisters	Acute toxicity, Category 3, inhalation; H331: Toxic if inhaled. Hazardous to the aquatic environment, Acute Category 1; H400: Very toxic to aquatic life. Hazardous to the aquatic environment, Chronic Category 1; H410: Very toxic to aquatic life with long lasting effects.
<b>Nitrogen</b>	Contact with rapidly expanding gas may cause burns or frostbite	No information on significant adverse effects	Difficulty breathing

### Chronic Effects

	Carcinogenicity	Mutagenicity	Reproductive Effects	Developmental Effects
<b>Butyl Mercaptan</b>	Not available	Not available	Available	No data
<b>Carbon Disulfide</b>	Not available	Available.	Available.	No data
<b>Carbonyl Sulfide</b>	Not available	Not available	Not available	No data
<b>Dimethyl Sulfide</b>	Not listed by ACGIH, IARC, NTP, or CA Prop 65.	Not available	Not available	No data
<b>ethyl mercaptan</b>	Not available	Not available	Not available	No data
<b>Hydrogen Sulfide</b>	Not available	Not available	Available.	No data
<b>Isobutyl Mercaptan</b>	OSHA: not considered a carcinogen	Not available	Not available	No data
<b>Methyl Mercaptan</b>	Not available	Available.	Not available	No data
<b>Nitrogen</b>	Not hazardous	Not available	Not available	No data

## Section 12: Ecological Information

### Fate and Transport

	Eco toxicity	Persistence / Degradability	Bioaccumulation / Accumulation	Mobility in Environment
<b>Butyl Mercaptan</b>	Fish toxicity: 80000 ug/L 21 hours Channel catfish Invertebrate toxicity: not available Algal toxicity: not available Phyto toxicity: not available Other toxicity: not available	Not available	Not available	Not available
<b>Carbon Disulfide</b>	Fish toxicity: Acute LC50 2.99 mg/L Fresh water Fish - Guppy - Poecilia reticulata - Young - 2 cm 96 hours; 65000 ug/L 96 hour(s) LC50 (Mortality) Bleak (Alburnus al Invertebrate toxicity: 2100 ug/L 48 week(s) LC50 (Mortality) Water flea (Daphnia	Moderately toxic to aquatic life. Relatively non-persistent in the environment. Highly volatile from water.	Accumulates very little in the bodies of living organisms.	Or the sediment at a slow rate.

	magna) Algal toxicity: 21000 ug/L 96 week(s) EC50 (Growth) Green algae (Chlorella pyrenoidosa) Phyto toxicity: Not available Other toxicity: Not available			
<b>Carbo nyl Sulfide</b>	Fish toxicity: Not available Invertebrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Not available	Not available	Not available
<b>Dimeth yl Sulfide</b>	Fish toxicity: Not available Invertebrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Highly volatile from water.	Accumulates very little in the bodies of living organisms.	Leaches through the soil or the sediment at a moderate rate.
<b>ethyl merca ptan</b>	Fish toxicity: 20000 ug/L 0.033 hour(s) (Behavior) Aholehole (Kuhlia sandvicensis) Invertebrate toxicity: 170 ug/L 48 hour(s) LC50 (Mortality) Water flea (Daphnia magna) Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Highly volatile from water.	Accumulates very little in the bodies of living organisms.	Leaches through the soil or the sediment at a very rapid rate.
<b>Hydro gen Sulfide</b>	Fish toxicity: Acute LC50 7 ug/L Fresh water Fish - Fathead minnow - Pimephales promelas - FRY 96 hours; 14.9 ug/L 96 hour(s) LC50 (Mortality) Fathead minnow (Pimeph) Invertebrate toxicity: 9730 ug/L 1.5 hour(s) (Mortality) Mediterranean mussel (Mytilus galloprovincialis) Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Highly toxic to aquatic life.	Not available	Not available
<b>Isobut yl</b>	Fish toxicity: not available	Not available	Not available	Not available



<b>Mercaptan</b>	Invertebrate toxicity: not available Algal toxicity: not available Phyto toxicity: not available Other toxicity: not available			
<b>Methyl Mercaptan</b>	Fish toxicity: 500 ug/L 5 hour(s) (Mortality) Spotfin shiner (Notropis spilopterus) Invertebrate toxicity: 50000 ug/L 48 hour(s) (Mortality) Midge (Chironomus sp) Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Not available	Not available	Not available
<b>Nitrogen</b>	Fish toxicity: Not available Invertebrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Not available	Not available	Not available

## Section 13: Disposal Considerations

<b>Butyl Mercaptan</b>	Dispose in accordance with all applicable regulations
<b>Carbon Disulfide</b>	Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): P022.
<b>Carbonyl Sulfide</b>	Dispose in accordance with all applicable regulations.
<b>Dimethyl Sulfide</b>	Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.
<b>ethyl mercaptan</b>	Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001. D003. Dispose in accordance with all applicable regulations.
<b>Hydrogen Sulfide</b>	Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): U135.
<b>Isobutyl Mercaptan</b>	Burn in a chemical incinerator equipped with an afterburner and scrubber.
<b>Methyl Mercaptan</b>	Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): U153.
<b>Nitrogen</b>	Dispose in accordance with all applicable regulations.

## Section 14: Transportation Information

U.S. DOT 49 CFR 172.101

DOT Information For This Mixture

<b>Shipping Name</b>	Compressed gas, n.o.s. (Nitrogen, Dimethyl Sulfide)
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<b>UN Number</b>	UN1956
<b>Hazard Class</b>	2.2
<b>Hazard Information</b>	Non-Flammable Gas

### Individual Component Information

	Proper Shipping Name	ID Number	Hazard Class or Division	Packing Group	Labeling Requirements	Passenger Aircraft or Railcar Quantity Limitations	Cargo Aircraft Only Quantity Limitations	Additional Shipping Description
<b>B u t y l M e r c a p t a n</b>	Butyl Mercaptans	UN2347	3	II	3	Not available	Not available	Not available
<b>C a r b o n D i s u l f i d e</b>	Carbon disulfide	UN1131	3	I	3; 6.1	Forbidden	Forbidden	N/A
<b>C a r b o n y l S u l f i d e</b>	Carbonyl sulfide	UN2204	2.3	Not applicable	2.3; 2.1	Forbidden	Forbidden	Toxic-Inhalation Hazard Zone C
<b>D i m e t h y l S u l f i d e</b>	Dimethyl Sulfide	UN1164	3	II	3	N/A	N/A	N/A
<b>e t h y l m e r c a p t a n</b>	Ethyl mercaptan	UN2363	3	I	3	Forbidden	30 L	ETHYL MERCAPTAN
<b>H y d r o g e n S u l f i d e</b>	Hydrogen sulfide	UN1053	2.3	Not applicable	2.3; 2.1	Forbidden	Forbidden	Toxic-Inhalation Hazard Zone B

	Proper Shipping Name	ID Number	Hazard Class or Division	Packing Group	Labeling Requirements	Passenger Aircraft or Railcar Quantity Limitations	Cargo Aircraft Only Quantity Limitations	Additional Shipping Description
Isobutyl Mercaptan	Butyl Mercaptans	UN2347	3	II	Not available	Not available	Not available	Not available
Methyl Mercaptan	Methyl mercaptan	UN1064	2.3	Not applicable	2.3; 2.1	Forbidden	Forbidden	Toxic-Inhalation Hazard Zone C
Nitrogen	Nitrogen, compressed	UN1066	2.2	Not applicable	2.2	75 kg or L	150 kg	N/A

### Canadian Transportation of Dangerous Goods

	Shipping Name	UN Number	Class	Packing Group / Risk Group
Butyl Mercaptan	Butyl mercaptans	Un 2347	3	II
Carbon Disulfide	Carbon disulfide	UN1131	3; 6.1	I
Carbonyl Sulfide	Carbonyl sulphide	UN2204	2.3; 2.1	Not applicable
Dimethyl Sulfide	Dimethyl Sulfide	UN1164	3	II
Ethyl Mercaptan	Ethyl mercaptan	UN2363	3	I
Hydrogen Sulfide	HYDROGEN SULFIDE; or HYDROGEN SULPHIDE	UN1053	2.3; 2.1	Not applicable
Isobutyl Mercaptan	Butyl Mercaptans	UN2347	3	II
Met	Methyl mercaptan	UN1064	2.3; 2.1	Not applicable

hyl Mer capt an				
Nitr oge n	Nitrogen, compressed	UN1066	2.2	Not applicable

## Section 15: Regulatory Information

### U.S. Regulations

	CERCLA Sections	SARA 355.30	SARA 355.40
Butyl Mercapt an	Not available	Not available	Not available
Carbon Disulfid e	100 LBS RQ	10000 LBS TPQ	100 LBS RQ
Carbon yl Sulfide	100 LBS RQ	Not regulated.	Not regulated.
Dimethy l Sulfide	Not regulated.	Not regulated.	Not regulated.
ethyl mercapt an	Not regulated.	Not regulated.	Not regulated.
Hydrog en Sulfide	100 LBS RQ	500 LBS TPQ	100 LBS RQ
Isobutyl Mercapt an	Not available	Not available	Not available
Methyl Mercapt an	100 LBS RQ	500 LBS TPQ	100 LBS RQ
Nitroge n	Not regulated.	Not regulated.	Not regulated.

### SARA 370.21

	Acute	Chronic	Fire	Reactive	Sudden Release
Butyl Merc aptan	Yes	No	Yes	No	No
Carb on Disulf ide	Yes	Yes	Yes	No	No
Carb onyl Sulfid e	Yes	No	Yes	Yes	Yes
Dimet hyl Sulfid e	Yes	No	Yes	No	No
ethyl merc aptan	Yes	No	Yes	Yes	No
Hydr ogen Sulfid e	Yes	No	Yes	No	Yes
Isobu tyl Merc	Not available	Not available	Not available	Not available	Not available

<b>aptan</b>					
<b>Methyl Mercaptan</b>	Yes	No	Yes	No	Yes
<b>Nitrogen</b>	Yes	No	No	No	Yes

### SARA 372.65

<b>Butyl Mercaptan</b>	Not regulated
<b>Carbon Disulfide</b>	CARBON DISULFIDE
<b>Carbonyl Sulfide</b>	CARBONYL SULFIDE
<b>Dimethyl Sulfide</b>	Not regulated.
<b>ethyl mercaptan</b>	Not regulated.
<b>Hydrogen Sulfide</b>	HYDROGEN SULFIDE: Administrative stay issued Aug. 22, 1994
<b>Isobutyl Mercaptan</b>	Not available
<b>Methyl Mercaptan</b>	METHYL MERCAPTAN: Administrative stay issued Aug. 22, 1994
<b>Nitrogen</b>	Not regulated.

### OSHA Process Safety

<b>Butyl Mercaptan</b>	Not regulated
<b>Carbon Disulfide</b>	Not regulated.
<b>Carbonyl Sulfide</b>	Not regulated.
<b>Dimethyl Sulfide</b>	Not regulated.
<b>ethyl mercaptan</b>	Not regulated.
<b>Hydrogen Sulfide</b>	1500 LBS TQ
<b>Isobutyl Mercaptan</b>	Not available
<b>Methyl Mercaptan</b>	5000 LBS TQ
<b>Nitrogen</b>	Not regulated.

### State Regulations

	<b>CA Proposition 65</b>
<b>Butyl Mercaptan</b>	Not regulated
<b>Carbon Disulfide</b>	WARNING: This product can expose you to chemicals including Carbon Disulfide, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a> .
<b>Carbonyl Sulfide</b>	Not regulated.
<b>Dimethyl Sulfide</b>	Not regulated.
<b>ethyl mercaptan</b>	Not regulated.
<b>Hydrogen Sulfide</b>	Not regulated.
<b>Isobutyl Mercaptan</b>	Does not contain chemicals known to cause cancer, birth defects, or any other reproductive harm
<b>Methyl Mercaptan</b>	Not regulated.
<b>Nitrogen</b>	Not regulated.

### Canadian Regulations

	<b>WHMIS Classification</b>
<b>Butyl Mercaptan</b>	B2, D1B
<b>Carbon Disulfide</b>	B2, D1B, D2A, D2B
<b>Carbonyl Sulfide</b>	ABD1
<b>Dimethyl Sulfide</b>	B2, D2B
<b>ethyl mercaptan</b>	B2
<b>Hydrogen Sulfide</b>	A, B1, D1A, D2B.
<b>Isobutyl Mercaptan</b>	Not available
<b>Methyl Mercaptan</b>	ABD1
<b>Nitrogen</b>	A

### National Inventory Status

	<b>US Inventory (TSCA)</b>	<b>TSCA 12b Export Notification</b>	<b>Canada Inventory (DSL/NDSL)</b>
<b>Butyl Merca</b>	Listed	Not listed	Listed on dsl

<b>ptan</b>			
<b>Carbon Disulfide</b>	Listed on inventory.	CARBON DISULFIDE CAS NUMBER: 75-15-0 SECTION 4	Not determined.
<b>Carbonyl Sulfide</b>	Listed on inventory.	Not listed.	Not determined.
<b>Dimethyl Sulfide</b>	Listed on inventory.	Not listed.	Listed on DSL.
<b>ethyl mercaptan</b>	Listed on inventory.	Not listed.	Listed on DSL.
<b>Hydrogen Sulfide</b>	Listed on inventory.	Not listed.	Listed on inventory.
<b>Isobutyl Mercaptan</b>	Not available	Not available	Listed on dsl
<b>Methyl Mercaptan</b>	Listed on inventory.	METHANETHIOL CAS NUMBER: 74-93-1 SECTION 4	Not determined.
<b>Nitrogen</b>	Listed on inventory.	Not listed.	Listed on inventory.

## Section 16: Other Information

	<b>NFPA Rating</b>
<b>Butyl Mercaptan</b>	HEALTH=1, FIRE= 3, REACTIVITY =0
<b>Carbon Disulfide</b>	HEALTH=3 FIRE=3 REACTIVITY=0
<b>Carbonyl Sulfide</b>	HEALTH=3 FIRE=4 REACTIVITY=0
<b>Dimethyl Sulfide</b>	HEALTH=2 FIRE=3 REACTIVITY=0
<b>ethyl mercaptan</b>	HEALTH: 1 FIRE: 4 REACTIVITY: 1
<b>Hydrogen Sulfide</b>	HEALTH=4 FIRE=4 REACTIVITY=0
<b>Isobutyl Mercaptan</b>	Health: 2, Fire: 3, Reactivity :0
<b>Methyl Mercaptan</b>	HEALTH=3 FIRE=4 REACTIVITY=0
<b>Nitrogen</b>	HEALTH=0 FIRE=0 REACTIVITY=0 SPECIAL=SA

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard