

Linde Gas LLC (216) 642-6600  
 P.O. Box 94737  
 Cleveland, Ohio 44101  
 www.us.lindegas.com

MATERIAL  
 SAFETY  
 DATA SHEET

No. 44

<b>PRODUCT NAME</b> Methyl Mercaptan	<b>CAS #</b> 74-93-1
<b>TRADE NAME AND SYNONYMS</b> Methyl mercaptan (D.O.T.); Methanethiol	<b>DOT I.D. No.:</b> UN 1064 (RQ 100/45.4)
	<b>DOT Hazard Class:</b> Division 2.3
<b>CHEMICAL NAME AND SYNONYMS</b> Methyl Mercaptan; Methanethiol	<b>Formula</b> CH <sub>3</sub> SH
	<b>Chemical Family:</b> Aliphatic Mercapton
<b>ISSUE DATES AND REVISIONS</b> Revised January 1995	

### HEALTH HAZARD DATA

<p><b>TIME WEIGHTED AVERAGE EXPOSURE LIMIT</b>                   0.5 Molar PPM (ACGIH 1994-1995); OSHA 1993 Ceiling limit = 10 Molar PPM.</p>
<p><b>SYMPTOMS OF EXPOSURE</b>                  Symptoms of inhalation cause acute intoxication with symptoms of headache, vomiting, tremors, muscular weakness, and eventual coma, respiratory paralysis and death.                  The vapor and liquid will irritate the skin, eyes, and other mucosal tissue. (Continued on Page 4)</p>
<p><b>TOXICOLOGICAL PROPERTIES</b>                  Attacks the central nervous system causing respiratory paralysis.                  Dermatitis and conjunctivitis result from skin and eye contact. The conjunctivitis is generally accompanied with severe pain.                  Methyl mercaptan is not listed in the IARC, NTP or by OSHA as a carcinogen or potential carcinogen.                  Persons in ill health where such illness would be aggravated by exposure to methyl mercaptan should not be allowed to work with or handle this product.</p>
<p><b>RECOMMENDED FIRST AID TREATMENT</b>                  PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO METHYL MERCAPTAN. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS AND BE COGNIZANT OF EXTREME FIRE AND EXPLOSION HAZARD.  <u>Inhalation:</u> Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Unconscious persons should be moved to an uncontaminated area and given assisted respiration and supplemental oxygen. Keep the victim warm and quiet. Assure that mucus or vomited material does not obstruct the airway by positional drainage. Look for signs of pulmonary edema. (Continued on Page 4)</p>

Information contained in this material safety data sheet is offered without charge for use by technically qualified personnel at their discretion and risk. All statements, technical information and recommendations contained herein are based on tests and data which we believe to be reliable, but the accuracy or completeness thereof is not guaranteed and no warranty of any kind is made with respect thereto. This information is not intended as a license to operate under or a recommendation to practice or infringe any patent of this Company or others covering any process, composition of matter or use.  
 Since the Company shall have no control of the use of the product described herein, the Company assumes no liability for loss or damage incurred from the proper or improper use of such product.

METHYL MERCAPTAN

**HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES**

Methyl mercaptan is flammable over a wide range in air. It reacts with acids releasing toxic, flammable vapors which can react violently with oxidizing agents.

**PHYSICAL DATA**

BOILING POINT 42.7°F (5.96°C)	LIQUID DENSITY AT BOILING POINT 55.3 lb/ft <sup>3</sup> (886 kg/m <sup>3</sup> )
VAPOR PRESSURE @ 70°F (21.1°C) = 24.7 Psia (170 kPa)	GAS DENSITY AT 700F. 1 atm @ 68°F (20°C) = .125 lb/ft <sup>3</sup> (2.00 kg/m <sup>3</sup> )
SOLUBILITY IN WATER Slightly	FREEZING POINT -189.4°F (-123°C)
EVAPORATION RATE N/A (Gas)	SPECIFIC GRAVITY (AIR=1) @70°F (21.1°C) = 1.7
APPEARANCE AND ODOR Colorless gas with extremely unpleasant odor.	

**FIRE AND EXPLOSION HAZARD DATA**

FLASH POINT (Method used) Gas	AUTO IGNITION TEMPERATURE Not established	FLAMMABLE LIMITS % BY VOLUME (See Page 4) LEL 3.9 UEL 21.8
EXTINGUISHING MEDIA Carbon dioxide, dry chemical	ELECTRICAL CLASSIFICATION Not specified	
SPECIAL FIRE FIGHTING PROCEDURES If possible, stop flow of gas. Use water spray to cool surrounding containers.		
UNUSUAL FIRE AND EXPLOSION HAZARDS On heating, methyl mercaptan decomposes yielding highly toxic oxides of sulfur.		

**REACTIVITY DATA**

STABILITY Unstable		CONDITIONS TO AVOID None
Stable	X	
INCOMPATIBILITY (Materials to avoid) Acids and oxidizing agents		
HAZARDOUS DECOMPOSITION PRODUCTS Toxic oxides of sulfur		
HAZARDOUS POLYMERIZATION May Occur		CONDITIONS TO AVOID None
Will Not Occur	X	

**SPILL OR LEAK PROCEDURES**

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is in container or container valve, contact your closest supplier location or call the emergency telephone number listed herein.
WASTE DISPOSAL METHOD Do not attempt to dispose of waste or unused quantities. Return in the shipping container properly labeled, with any valve outlet plugs or caps secured and valve protection cap in place to your supplier. For emergency disposal assistance, contact your closest supplier location or call the emergency telephone number listed herein.

**SPECIAL PROTECTION INFORMATION**

RESPIRATORY PROTECTION (Specify type) Positive pressure air line with mask or self-contained breathing apparatus should be available for emergency use.		
VENTILATION  Hood with forced ventilation	LOCAL EXHAUST To prevent accumulation above the TWA	SPECIAL N/A
	MECHANICAL (Gen.) In accordance with electrical codes	OTHER N/A
PROTECTIVE GLOVES Teflon®		
EYE PROTECTION Safety goggles or glasses		
OTHER PROTECTIVE EQUIPMENT Safety shoes, safety shower, eyewash "fountain"		

**SPECIAL PRECAUTIONS\***

SPECIAL LABELING INFORMATION	
DOT Shipping Name: Methyl mercaptan	DOT Hazard Class: Division 2.3
DOT Shipping Label: Toxic Gas, Flammable Gas	I.D. No.: UN (1064 RQ 100/45.4)
SPECIAL HANDLING RECOMMENDATIONS	
<p>Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to lower pressure (&lt;100 psig) piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.</p> <p>For additional handling recommendations, consult Compressed Gas Association's Pamphlet P-1.</p>	
SPECIAL STORAGE RECOMMENDATIONS	
<p>Protect cylinders from physical damage. Store in cool, dry, well-ventilated area of noncombustible construction away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 125F (52C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in - first out" inventory system to prevent full cylinders being stored for excessive periods of time. Post "No Smoking or Open flames!" signs in the storage or use area. There should be no sources of ignition in the storage or use area.</p> <p>For additional storage recommendations, consult Compressed Gas Association's Pamphlet P-1.</p>	
SPECIAL PACKAGING RECOMMENDATIONS	
<p>Metallic installations with iron or steel should be passivated with dilute concentrations of methyl mercaptan or with hydrogen sulfide to form a protective ferrous sulfide coating. Teflon® is the preferred gasket material.</p>	
OTHER RECOMMENDATIONS OR PRECAUTIONS	
<p>Earth-ground and bond all lines and equipment associated with the methyl mercaptan system. Electrical equipment should be non-sparking or explosion proof. Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipment of a compressed gas cylinder which has not been filled by the owner or with his (written) consent is a violation of Federal Law (49CFR). (Continued on Page 4)</p>	

\*Various Government Agencies (i.e. Department of Transportation, Occupational Safety and Health Administration, Food and Drug Administration and others) may have specific regulations concerning the transportation, handling, storage or use of this product which will not be reflected in this data sheet. The customer should review these regulations to ensure that he is in full compliance.

## METHYL MERCAPTAN

### HEALTH HAZARD DATA

#### SYMPTOMS OF EXPOSURE: (Continued)

The extremely unpleasant odor of methyl mercaptan provides an adequate warning at levels far below toxic concentrations. Continuous exposure may cause olfactory fatigue.

#### RECOMMENDED FIRST AID TREATMENT: (Continued)

Eye Contact: PERSONS WITH POTENTIAL EXPOSURE TO METHYL MERCAPTAN SHOULD NOT WEAR CONTACT LENSES.

Flush contaminated eye(s) with copious quantities of water. Part eyelids to assure complete flushing. Continue for a minimum of 15 minutes.

Skin Contact: Flush affected area with copious quantities of water. Remove affected clothing as rapidly as possible.

### SPECIAL PRECAUTIONS

#### OTHER RECOMMENDATIONS OR PRECAUTIONS: (Continued)

Always secure cylinders in an upright position before transporting them. NEVER transport cylinders in trunks of vehicles, enclosed vans, truck cabs or in passenger compartments. Transport cylinders secured in open flatbed or in open pick-up type vehicles.

Methyl mercaptan is considered a toxic chemical and is subject to the reporting requirements of SARA, Title III, Section 313.

NFPA 704 NO. for methyl mercaptan = 4 4 0 None