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MATERIAL
SAFETY
DATA SHEET

No. 117

PRODUCT NAME Dimethyl Ether	CAS # 115-10-6
TRADE NAME AND SYNONYMS Dimethyl ether (D.O.T.)	DOT I.D. No.: UN 1033
CHEMICAL NAME AND SYNONYMS Dimethyl Ether, Methyl Ether	DOT Hazard Class: Division 2.1
ISSUE DATES AND REVISIONS Revised January 1995	Formula C₂H₆O or CH₃OCH₃
	Chemical Family: Aliphatic Ether

HEALTH HAZARD DATA

TIME WEIGHTED AVERAGE EXPOSURE LIMIT No TWA is listed (ACGIH 1994-1995). OSHA 1993 PEL (8 Hr. TWA) = None listed.
SYMPTOMS OF EXPOSURE Narcotic or anesthetic effects depend on the duration of exposure and vary from incoordination, headache, dizziness, periods of excitation, inability to see well, to anesthesia and eventual unconsciousness. Concentrated vapor or liquid causes dermatitis or if in the eyes, causes inflammation of the ocular membranes (conjunctivitis). (Continued on Page 4)
TOXICOLOGICAL PROPERTIES As a narcotic or anesthetic it is a depressant on the central nervous system. Its anesthetic "activity" is only about one-fourth that of diethyl ether. Irritation of the skin or eyes is manifested in a reddish inflammation. Frostbite effects are a change in color of the skin to gray or white, possibly followed by blistering. (Continued on Page 4)
RECOMMENDED FIRST AID TREATMENT PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO DIMETHYL ETHER. 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. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, given assisted respiration and supplemental oxygen. Further treatment should be symptomatic and supportive. <u>Eye Contact:</u> PERSONS WITH POTENTIAL EXPOSURE TO DIMETHYL ETHER SHOULD NOT WEAR CONTACT LENSES. (Continued on Page 4)

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Dimethyl Ether

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES

Dimethyl ether is flammable over a wide range in air. Oxidizing agents react explosively in its vapors. These include oxygen, ozone, nitric acid, fluorine, and chromic anhydride.

PHYSICAL DATA

BOILING POINT -12.68°F (-24.82°C)	LIQUID DENSITY AT BOILING POINT 45.86 lb/ft ³ (734.7 kg/m ³)
VAPOR PRESSURE @ 70°F (21.1°C) = 75.4 psia (520 kPa)	GAS DENSITY AT 70°F, 1 atm .122 lb/ft ³ (1.95 kg/m ³)
SOLUBILITY IN WATER Very soluble	FREEZING POINT -222.7°F(-141.5°C)
EVAPORATION RATE N/A (Gas)	SPECIFIC GRAVITY (AIR=1) @ 70°F (21.1°C) =1.63
APPEARANCE AND ODOR Colorless gas with an ether-like odor	

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) N/A (Gas)	AUTO IGNITION TEMPERATURE 662°F (350°C)	FLAMMABLE LIMITS % BY VOLUME (See Page 4) LEL 3.4 UEL 27
EXTINGUISHING MEDIA Water, carbon dioxide, dry chemical	ELECTRICAL CLASSIFICATION Class 1, Group Not specified	
SPECIAL FIRE FIGHTING PROCEDURES If possible, stop flow of dimethyl ether. Use water spray to cool surrounding containers.		
UNUSUAL FIRE AND EXPLOSION HAZARDS Dimethyl ether is heavier than air and may travel a considerable distance to a source of ignition. Should flame be extinguished and flow of gas continue, increase ventilation to prevent flammable mixture formation in low areas or pockets.		

REACTIVITY DATA

STABILITY Unstable		CONDITIONS TO AVOID None
Stable	X	
INCOMPATIBILITY (Materials to avoid)	Oxidizers	
HAZARDOUS DECOMPOSITION PRODUCTS	None	
HAZARDOUS POLYMERIZATION May Occur		CONDITIONS TO AVOID
Will Not Occur	X	None

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 <u>properly labeled, with any valve outlet plugs or caps secured and valve protection cap in place</u> 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 LEL	SPECIAL	N/A
	MECHANICAL (Gen.) In accordance with electrical codes	OTHER	N/A
PROTECTIVE GLOVES Buna N® rubber			
EYE PROTECTION Safety goggles or glasses			
OTHER PROTECTIVE EQUIPMENT Safety shoes, safety shower, eyewash "fountain"			

SPECIAL PRECAUTIONS*

SPECIAL LABELING INFORMATION	
DOT Shipping Name: Dimethyl ether	DOT Hazard Class: Division 2.1
DOT Shipping Label: Flammable Gas	I.D. No.: UN 1033
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 (<250 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>Dimethyl ether is non-corrosive and can be used with most common structural materials. Buna N® rubber is the only elastomer which exhibits reasonable resistance to its attack.</p>	
OTHER RECOMMENDATIONS OR PRECAUTIONS	
<p>Earth-ground and bond all lines and equipment associated with the dimethyl ether 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).</p> <p style="text-align: right;">(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.

Dimethyl Ether

HEALTH HAZARD DATA

SYMPTOMS OF EXPOSURE: (Continued)

Contact with rapidly evaporating liquid can cause cryogenic "burns" or frostbite.

TOXICOLOGICAL PROPERTIES: (Continued)

Persons in ill health where such illness would be aggravated by exposure to dimethyl ether should not be allowed to work with or handle this product.

Dimethyl ether is not listed in the IARC, NTP or by OSHA as a carcinogen or potential carcinogen.

RECOMMENDED FIRST AID TREATMENT: (Continued)

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

Dermal Contact or Frostbite: Remove contaminated clothing and flush affected areas with lukewarm water. DO NOT USE HOT WATER. A physician should see the patient promptly if the cryogenic "burn" has resulted in blistering of the dermal surface or deep tissue freezing.

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.

Reporting under SARA, Title III, Section 313 not required.

NFPA 704 No. for dimethyl ether - 2 4 1 None