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MATERIAL SAFETY DATA SHEET

No. 45

PRODUCT NAME Monoethylamine	CAS # 75-04-7
TRADE NAME AND SYNONYMS Monoethylamine; Ethylamine (D.O.T.); MEA	DOT I.D. No.: UN 1036 (RQ 100/45.4)
CHEMICAL NAME AND SYNONYMS Ethylamine	DOT Hazard Class: Division 2.1
ISSUE DATES AND REVISIONS Revised January 1995	Formula C ₂ H ₅ NH ₂
	Chemical Family: Alkyl Amine

HEALTH HAZARD DATA

<p>TIME WEIGHTED AVERAGE EXPOSURE LIMIT TWA = 5 Molar PPM; STEL = 15 Molar PPM with skin notation (ACGIH 1994-1995). OSHA 1993 PEL (8 Hr. TWA) = 10 Molar PPM.</p>
<p>SYMPTOMS OF EXPOSURE Corrosive and irritating to the upper and lower respiratory tracts, skin and eyes. Mild concentrations may cause skin irritation, conjunctivitis or bronchitis; while higher concentrations could result in chemical pneumonitis, pulmonary edema and skin burns or eye damage. Inhalation may also cause shortness of breath, headache, nausea and vomiting. Severe destruction of tissues will result from prolonged exposure.</p>
<p>TOXICOLOGICAL PROPERTIES</p> <p>Oral LD₅₀ = 400 mg/kg (rats) Dermal LD₅₀ = 390 mg/kg (rabbits) Inhalation LC₅₀ = 3,000 PPM/4 furs. (rats)</p> <p>Monoethylamine is irritating and corrosive to all living tissues. Toxic level exposure to dermal tissue causes severe burns. High level concentrations are extremely destructive to the airway and eyes. Inhalation may have fatal consequences as a result of spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema. Eye burns result in ulceration of the conjunctivae and cornea and may cause destruction of all ocular tissues. (Continued on Page 4)</p>
<p>RECOMMENDED FIRST AID TREATMENT</p> <p>PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO MONOETHYLAMINE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS AND BE COGNIZANT OF EXTREME FIRE AND EXPLOSION HAZARD.</p> <p>Inhalation: 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. Medical assistance should be sought immediately. (Continued on Page 4)</p>

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MONOETHYLAMINE

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES

Reacts violently when mixed with oxidizing agents such as perchlorates, nitrates, permanganates, chromates, nitric acid, halogens and peroxides.

PHYSICAL DATA

BOILING POINT 61.9°F (16.6°C)	LIQUID DENSITY AT BOILING POINT 42.9 lb/ft ³ (687 kg/m ³)
VAPOR PRESSURE @ 70°F(21.1°C) 16.7 psia (115 kPa)	GAS DENSITY AT 700F. 1 atm .117 lb/ft ³ (1.87 kg/m ³)
SOLUBILITY IN WATER Soluble	FREEZING POINT -113.8°F (-81°C)
EVAPORATION RATE (Butyl acetate = 1) = greater than 1; 99.9 + % volatile	SPECIFIC GRAVITY (AIR=1) @ 70°F (21.1°C) = 1.6
APPEARANCE AND ODOR Colorless liquid or gas with a strong ammoniacal odor.	

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) -40°F (-18°C) C.C.	AUTO IGNITION TEMPERATURE water sol.=725°F (385°C)	FLAMMABLE LIMITS % BY VOLUME @ 68°F (20°C) LEL 3.5 UEL 13.9
EXTINGUISHING MEDIA Water, carbon dioxide, dry chemical		ELECTRICAL CLASSIFICATION Class 1, Group B
SPECIAL FIRE FIGHTING PROCEDURES Fire fighters should wear self-contained breathing apparatus and butyl rubber boots. If possible, stop the flow of monoethylamine. Use water spray to cool surrounding containers. If water is used as extinguishing media, recognize that aqueous solutions of monoethylamine are also flammable.		
UNUSUAL FIRE AND EXPLOSION HAZARDS Monoethylamine 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) Silver, copper and its alloys, tin, commercial nickel, zinc and its alloys, oxidizing compounds.		
HAZARDOUS DECOMPOSITION PRODUCTS Ammonia		
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, 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 to your supplier for proper disposal. 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 Butyl rubber, PVC or polyethylene		
EYE PROTECTION Safety goggles or glasses		
OTHER PROTECTIVE EQUIPMENT Safety shoes, safety shower, eyewash fountain, face shield and polyethylene, PVC or butyl rubber apron		

SPECIAL PRECAUTIONS*

SPECIAL LABELING INFORMATION DOT Shipping Name: Ethylamine DOT Hazard Class: Division 2.1 DOT Shipping Label: Flammable Liquid I.D. No.: UN 1036 (RQ 100/45.4)
SPECIAL HANDLING RECOMMENDATIONS 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 (<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.
SPECIAL STORAGE RECOMMENDATIONS 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.
SPECIAL PACKAGING RECOMMENDATIONS Carbon steel, stainless steel and Monel® are acceptable for use with monoethylamine. Most other metals are not compatible - particularly silver, copper and its alloys, tin, nickel and zinc and its alloys. Lead is the preferred gasket material.
OTHER RECOMMENDATIONS OR PRECAUTIONS Earth-ground and bond all lines and equipment associated with the monoethylamine 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)

*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.

MONOETHYLAMINE

HEALTH HAZARD DATA

TOXICOLOGICAL PROPERTIES: (Continued)

Monoethylamine 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 monoethylamine should not be allowed to work with or handle this product.

RECOMMENDED FIRST AID TREATMENT: (Continued)

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

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

Skin Contact: Flush affected areas with copious quantities of water. Remove affected clothing as rapidly as possible. A physician should see the patient and be informed that the "burn" was caused by an alkaline solution. A weak (1-2%) acetic acid solution or vinegar may be used as a counteractant.

SPECIAL PRECAUTIONS

OTHER RECOMMENDATIONS OR PRECAUTIONS: (Continued)

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

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

NFPA 704 NO. for monoethylamine = 3 4 0 None