

Technical Bulletin**MONOMETHYLETHANOLAMINE (MMEA)**

Monomethylethanolamine is a clear, colorless liquid with an ammoniacal odor. It is miscible with water, alcohols, ethers, and aromatic solvents. Since it contains both a secondary amine group and a hydroxyl group, it undergoes reactions typical of both amines and alcohols.

**APPLICATIONS**

Monomethylethanolamine is largely used as an intermediate in the manufacture of antihistamines such as diphenhydramine hydrochloride or for local anesthetics. It is also used in a number of cathodic electrodeposition coating systems. As a secondary amine, MMEA is used to chain-extend high MW polyepoxides. MMEA also has applications in textile treating. MMEA is used as a brightening agent in the dyeing of polyester/cotton blends. Mixtures of MMEA, dimethylethanolamine and methyldiethanolamine salts of long-chain alkyl phosphates form antistatic agents for non-cellulosic, hydrophobic textile materials. MMEA can be reacted with methylmethacrylates to form the polyimide. Polymers produced from the methacrylates are useful as antistatic agents, soil conditioners, electrically conducting materials, paper auxiliaries and flocculating agents. Other suggested uses are textile softeners, pH control, and epoxy curing agents and photographic image developing.

SALES SPECIFICATIONS

<u>Property</u>	<u>Specifications</u>	<u>Test Method*</u>
Appearance	Clear and substantially free of suspended matter	ST-30.1
Color, Pt-Co	50 max.	ST-30.12
Equivalent weight	75.86 max.	ST-5.5
MMEA, wt%	99 min.	ST-35.167
Water, wt%	0.5 max.	ST-31.53, 6

*Methods of Test are available from Huntsman Corporation upon request.

ADDITIONAL INFORMATION

<u>Regulatory Information</u>		<u>Typical Physical Properties</u>	
DOT/TDG Classification	Corrosive liquids, toxic, N.O.S. (monomethylethanolamine)	Boiling point, °C (°F)	158 (316)
HMIS Code	3-2-0	Flash point, PMCC, °C (°F)	71 (160)
WHMIS Classification	D1A, E, B3	Freezing point, °C (°F)	-4 (24)
CAS Number	109-83-1	Specific gravity, 20/20°C	0.9
		Vapor pressure, mmHg, 20°C (68°F)	0.7
		Viscosity, cSt, 20°C (68°F)	14
		Water solubility (%)	> 10
<u>Chemical Control Laws</u>			
Canada, DSL	Listed		
United States, TSCA	Listed		

TOXICITY AND SAFETY**Acute Toxicity**

Monomethylethanolamine (MMEA) is considered to be slightly toxic by single oral exposures with an estimated oral LD₅₀ in rats ranging from 2.0 to 5.0 g/kg. It is considered to be moderately toxic by single dermal exposures, with an estimate dermal LD₅₀ in rabbits ranging from 0.5 to 1.0 g/kg.

MMEA is considered to be extremely irritating/corrosive to the skin of rabbits, with an estimated Draize dermal irritation score of 6.5 to 8.0 (maximum score 8.0). It is also considered to be extremely irritating/corrosive to the eyes of rabbits, with an estimated Draize dermal irritation score of 80 to 110 (maximum score 110).

Human Health Effects and First Aid

On the basis of the above animal toxicity studies, the principal health hazard from accidental exposure to MMEA is a moderate to severe irritation/ corrosion of the eyes, skin, and mucous membranes. Chemical-type goggles with face shield must be worn during handling or use of the undiluted product or concentrated solutions. Contact lenses should not be worn. Protective clothing and gloves resistant to chemicals and petroleum distillates must be worn. Should accidental eye and skin contact occur, flush eyes with large amounts of water for at least 15 minutes, after which a physician should be consulted. During flushing of the eyes, eyelids should be held apart to permit rinsing of entire surface of eye and lids. For skin contact, immediately flush skin with large amounts of water for at least 15 minutes. Clothing wet with the product must be removed immediately and laundered before reuse.

If MMEA is accidentally ingested and the individual is conscious and can swallow, they should be given two large glasses of water, after which a physician should be consulted. Since this product is expected to produce severe irritation/corrosion of mucous membranes, vomiting should **not** be induced due to the possibility of lung damage from aspiration of the product into the lungs during vomiting.

Under usual circumstances of handling and use, exposure to harmful quantities of MMEA vapor should not occur. However, certain situations such as poorly ventilated areas or heating of MMEA can result in exposure to appreciable concentrations of MMEA vapors, resulting in irritation to the eyes, nose, and throat, and producing temporary and reversible hazy or blurred vision. These symptoms disappear when exposure to MMEA is terminated. Adequate ventilation should be provided where a large quantity of product is exposed or where mists or vapors are generated. Spills in confined areas should be cleaned up promptly using appropriate personal protective equipment. For further information, please refer to the Material Safety Data Sheet (MSDS) for this product.

HANDLING AND STORAGE

In order to maintain the high degree of purity with which MMEA is manufactured and shipped, the following storage and handling considerations are recommended:

Dry Inert Gas Blanket: This product should be stored under a dry inert gas blanket such as nitrogen to minimize contamination resulting from contact with air and water.

Materials of Construction: Clean carbon steel is satisfactory as a material of construction for storage tanks and transfer systems, provided adequate precautions are observed to guard against rust contamination. In those cases where additional precautions are needed to preserve low color, stainless steel or aluminum should be used. Aluminum should not be used at elevated temperatures. Copper or alloys containing copper should be avoided. Carbon steel centrifugal pumps are satisfactory. Polypropylene or Teflon is the recommended gasket material. Nitriles such as Buna N or Viton should be avoided. Storage Temperature: MMEA freezes at approximately 24°F and may need heating unless stored inside.

Spills or Leaks: Eliminate all sources of ignition in case of spills or leaks. Spills should be removed by absorbent materials or by contained water washing.

AVAILABILITY

Monomethylethanolamine is available in bulk and in 55-gallon drums. Samples are available by contacting our sample department at 1-800-662-0924.

5010-0708

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