

MATERIAL SAFETY DATA SHEET

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Product Name: MONOETHANOLAMINE (99%)

Supplier's Name: APCO INDUSTRIES CO. LTD.
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Information Telephone: 416-421-6161

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PRODUCT IDENTIFICATION

Product Name: Monoethanolamine
Chemical Name: Monoethanolamine Solution
Synonyms: 2-Hydroxyethylamine, 2-Aminoethanol, 3-Aminoethyl
Alcohol, MEA
Chemical Family: Alkanolamines
Molecular Formula: $\text{NH}_2\text{CH}_2\text{CH}_2\text{OH}$
Product Use: Emulsion Paints and Polishes.

REGULATORY SECTION

Controlled Products Regulations Classification:
Class B, Division 3 Combustible Liquid
Class D, Division 1, Subdivision B Toxic (Acute Effects)
Class E Corrosive
OSHA Hazard Communication (29CFR 1910.1200) Classification:
Combustible Liquid, Toxic Agent, Corrosive Material.
CANADIAN TDG ACT SHIPPING DESCRIPTION
Shipping Name: Ethanolamine Solutions
Shipping Class/Division: 8
Product Identification No: UN2491
Packing Group: III

U.S. DOT Classification:
Identification: Ethanolamine
Hazard Class: 8
UN Identification: UN2491, Packing Group: III
Other Regulations: None known.

Read the entire MSDS for the complete hazard evaluation of
this product.

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HAZARDOUS INGREDIENTS OF MATERIAL

Hazardous Ingredients	%	ACGIH TLV	STEL TLV	CAS No.
Monoethanolamine	99-100	3PPM	6PPM	000141-43-5

PHYSICAL PROPERTIES

Physical State: Liquid
Appearance and Odour: Water-white viscous liquid with mild ammoniacal odour.
Odour Threshold: Not available.
Boiling Point: 171 Deg.C (340 Deg.F)
Melting/Freezing Point (Deg C): 10.3
Vapour Pressure: <1 mm Hg @ 20 Deg. C.
Specific Gravity: 1.018 @ 20 Deg. C/20 Deg. C (H2O=1)
Vapour Density: 2.1 (Air = 1.0).
Bulk Density: Not available.
Evaporation Rate: <0.01 (Butyl Acetate = 1.0)
Solubility: Soluble in water, alcohol and chloroform; slightly soluble in Benzene.
% Volatile by Volume: 100%
pH: 11.5 - 12.2 (Aqueous Solution)

REACTIVITY DATA

Stability:
Under Normal Conditions: Stable.
Under Fire Conditions: Flammable
Hazardous Polymerization: Will not occur.
Conditions to Avoid: High temperatures, sparks, open flames and all other sources of ignition.
Materials to Avoid: Avoid strong acids and bases, Oxidizing agents, aldehydes, ketones, acrylates, organic anhydrides and organic halides. Corrosive to copper, copper alloys, and galvanized iron. Reacts with aluminum, especially at higher temperatures.
Hazardous Decomposition or Combustion Products: Thermal decomposition products are toxic and may include oxides of carbon and nitrogen, and possibly irritating gases.

FIRE AND EXPLOSION DATA

Flash Point (Method): 85 Deg. Celsius (TCC).
Autoignition Temperature: 410 Deg. C
Flammability Limits in Air (%): LEL: Approx. 5.50%
UEL: Approx. 17.0%

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In contact with the skin: Prolonged and repeated contact may lead to dermatitis. May be absorbed through intact skin. May cause systemic poisoning.

In contact with the eyes: This product causes irritation, pain, severe burns and permanent corneal damage which may result in blindness.

Ingested: This product causes irritation, a burning sensation of the mouth, throat and respiratory tract and abdominal pain. May cause central nervous system (CNS) depression, liver and kidney damage. Aspiration may occur during swallowing and vomiting, resulting in lung injury.

Other Health Effects: CNS depression is characterized by headache, dizziness, drowsiness, nausea, vomiting and incoordination. Severe overexposures may lead to coma and possible death due to respiratory failure. Signs and symptoms of kidney damage generally progress from oliguria, to blood in the urine, to total renal failure.

FIRST AID PROCEDURES WHEN:

Inhaled: Move victim to fresh air. Give artificial respiration ONLY if breathing has stopped. Give cardiopulmonary resuscitation (CPR) if there is no breathing AND no pulse. Obtain medical advice IMMEDIATELY.

In contact with the skin: Flush skin with running water for a minimum of 20 minutes. Start flushing while removing contaminated clothing. If irritation persists, repeat flushing. Obtain medical attention IMMEDIATELY.

In contact with the eyes: Immediately flush eyes with running water for a minimum of 20 minutes. Hold eyelids open during flushing. If irritation persists, repeat flushing. Obtain medical attention IMMEDIATELY.

Ingested: If victim is alert and not convulsing, rinse out mouth and give 1/2 to 1 glass of water to dilute material. DO NOT induce vomiting. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer more water. IMMEDIATELY transport victim to an emergency facility.

Emergency Medical Care: Medical conditions that may be aggravated by exposure to this product include asthma and pulmonary disease. Treat symptomatically.

PREVENTATIVE MEASURES

Recommendations listed in this section indicate the type of equipment which will provide protection against overexposure to this product. Conditions of use, adequacy of engineering or other control measures, and actual exposures will dictate the need for specific protective devices at your workplace.

Engineering Controls: Local exhaust ventilation required.

Respiratory Protection: A NIOSH/MSHA-approved air-purifying respirator equipped with organic vapour cartridges for concentrations up to 30 ppm. An air-supplied respirator of concentrations are higher or unknown.

Skin Protection: Neoprene or vinyl gloves and protective clothing made from butyl rubber or neoprene. Prior to use, user should confirm impermeability.

Eye Protection: Use full face-shield and chemical safety goggles when there is potential for contact.

Other Personal protective Equipment: Wear an impermeable apron and boots. Locate safety shower and eyewash station close to chemical handling area.

Handling Procedures and Equipment: Use normal "good" industrial hygiene and housekeeping practices.

Storage Temperature (Deg C): See Below.

Storage Requirements: Store in a cool, well-ventilated area. Keep away from heat, sparks and flame. Keep containers closed. Do not expose sealed containers to temperatures above 49 Deg. Celsius.

Other Precautions: Use only with adequate ventilation and avoid breathing mists. Avoid contact with eyes, skin or clothing. Wash thoroughly with soap and water after handling. Wash contaminated clothing thoroughly before re-use.

ENVIRONMENTAL PROTECTION DATA

Steps to be Taken in the Event of a Spill or Leak: Collect product for recovery or disposal. For release to land, or storm water runoff, contain discharge by constructing dykes or applying inert absorbent; for release to water, utilize

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damming and/or water diversion to minimize the spread of contamination. Collect contaminated soil and water, and absorbent for disposal. Ventilate enclosed spaces. Eliminate all sources of ignition. Notify applicable government authority if release is reportable or could

adversely affect the environment.

Environmental Effects: May be harmful to aquatic life.

Deactivating Chemicals: Neutralize carefully with weak acid to a pH of 6 to 9.

Waste Disposal Methods: Dispose of waste material at an approved (hazardous) waste treatment/disposal facility in accordance with applicable local, provincial and federal regulations. Do not dispose of waste with normal garbage, or to sewer systems.

ADDITIONAL INFORMATION AND SOURCES USED

1. RTECS-Registry of Toxic Effects of Chemical Substances, On-line search, Canadian Centre for Occupational Health and Safety RTECS database, Vol. I-V, 1985-86 edition, Doris V. Sweet, Ed., National Institute for Occupational Safety and Health, U.S. Dept. of Health and Human Services, Cincinnati, 1987.
2. Clayton, G.D. and Clayton, F.E., Eds., Patty's Industrial Hygiene and Toxicology, 3rd ed., Vol. IIA,B,C, John Wiley and Sons, New York, 1981.
3. Supplier's Material Safety Data Sheets. Monoethanolamine, July 1990.
4. Threshold Limit Values and Biological Exposure Indices for 1990-91, American Conference of Governmental Industrial Hygienists, Cincinnati, 1990.

The information provided in this Material Safety Data Sheet has been obtained from sources believed to be reliable. Apco Industries Co. Ltd. provides no warranties express or implied and assumes no responsibility for the accuracy or the completeness of the data contained herein.