

SAFETY DATA SHEET



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ETHANOLAMINE

SDS No. M0091

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Ethanolamine

Synonyms: Monoethanolamine, beta-Aminoethanol, 2-Aminoethanol, MEA, Ethylolamine; Glycinol

Recommended Use: This product is recommended for laboratory and manufacturing use only. It is not recommended for drug, food or household use.

2. HAZARDS IDENTIFICATION



Classification:

Flammable Liquids: GHS Category 4

Acute Toxicity, Oral: GHS Category 4

Acute Toxicity, Inhalation: GHS Category 4

Acute Toxicity, Dermal: GHS Category 4

Skin Corrosion: GHS Category 1B

Serious Eye Damage: GHS Category 1

Acute Aquatic Toxicity: GHS Category 3

Chronic Aquatic Toxicity: GHS Category 3

Label Elements

Signal Word: DANGER!

Hazard Statements:

H225 - Highly flammable liquid and vapor.

H302 - Harmful if swallowed.

H312 - Harmful in contact with skin.

H314 - Causes severe skin burns and eye damage.

H332 - Harmful if inhaled.

H336 - May cause drowsiness and dizziness.

Precautionary Statements:

P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P280 - Wear protective gloves/protective clothing/eye protection/face protection.

P284 - Wear respiratory protection.

P301+P310 - If SWALLOWED: Immediately call or POISON CENTER or a doctor/physician.

Clear focus. Consistent results. Complete confidence.

P303+P361+P353 – If on skin or hair: Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.

P304+P312 – IF INHALED: Call a POISON CENTER or doctor/physician if you feel unwell.

Emergency Overview

Causes burns by all routes of exposure. Harmful if swallowed, inhaled, or absorbed through the skin. May cause liver, kidney, and lung damage. May cause cardiac disturbances. May cause central nervous system effects. Combustible liquid and vapor. Target Organs: Kidneys, central nervous system, lungs, eyes, mucous membranes, and liver.

HMIS Rating:

Health – 3 Flammability – 2 Physical Hazard – 0 PPE – User supplied

NOTE: HMIS ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. These ratings are based on the inherent properties of this chemical under expected conditions of normal use and are not intended to be used in emergency situations. PPE is determined by the user based on their needs and conditions.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

<u>Ingredient</u>	<u>CAS No</u>	<u>Percent</u>	<u>Hazardous</u>
Ethanolamine	141-43-5	>98%	Yes

4. FIRST-AID MEASURES

Inhalation: Get medical aid immediately. Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.

Ingestion: Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

Skin Contact: Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Destroy contaminated shoes.

Eye Contact: Extensive irrigation with water is required (at least 30 minutes). Get medical aid immediately. Do NOT allow victim to rub eyes or keep eyes closed.

Notes to Physician: Treat symptomatically and supportively.

5. FIRE FIGHTING MEASURES

Flammability: Flammable liquid and vapor (GHS Category 4).

Auto-ignition Temperature: 410° C (770° F)

Flash Point: 85° C (185° F)

Flammable Limits: Lower Limit – 3.0 vol %, Upper Limit – 23.5 vol %

Products of Combustion: May decompose into irritating and highly toxic gases under fire conditions (carbon monoxide, carbon dioxide, nitrogen oxides).

Specific Fire Hazards: As in any fire, always wear self-contained breathing apparatus in pressure-demand (MSA/NIOSH approved or equivalent), and full protective gear. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. Use water spray to keep fire-exposed containers cool. Containers may explode in the heat of a fire.

Specific Explosion Hazards: Vapors may form an explosive mixture with air.

Fire Fighting Media: use dry chemical, carbon dioxide, water spray or alcohol-resistant foam.

National Fire Protective Association: Health - 3, Flammability - 2, Reactivity - 0

NOTE: NFPA ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. They are for use by emergency personnel to address the hazards that are presented by short term, acute exposure to this product under fire, spill, or similar emergencies. Ratings involve data and interpretations that may vary from company to company.

6. ACCIDENTAL RELEASE MEASURES

Absorb spilled liquid with sorbent pads, socks, or other inert material such as vermiculite, sand, or earth. Use spark-proof tools. Provide ventilation to the affected area and remove all ignition sources. Approach the spill from upwind and pick up absorbed material and place it in a suitable container. Always use proper personal protective equipment as described in section 8.

7. HANDLING AND STORAGE

Precautions: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Use spark-proof tools and explosion proof equipment. Do not breathe dust, vapor, mist, or gas. Do not get in eyes, on skin, or on clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Do not ingest or inhale. Use only in a chemical fume hood. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

Storage: Keep away from sources of ignition. Store in a cool, dry place. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area. Store protected from moisture.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Use explosion-proof ventilation equipment. Facilities storing or using the material should be equipped with eyewash station and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Personal Protection: Wear protective chemical goggles or other appropriate eye protection. Use butyl rubber gloves and protective clothing to prevent skin exposure. A respiratory protection program that meets OSHA 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever possible. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

Exposure Limits:

ACGIH – 3 ppm TWA, 6 ppm STEL
 NIOSH – 3 ppm, 8 mg/m³ TWA, 30 ppm IDLH
 OSHA Final PELs – 3 ppm, 6 mg/m³ TWA
 OSHA Vacated PELs: 3 ppm, 8 mg/m³ TWA

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State and Appearance: Clear, viscous liquid.

Odor: Ammonia, fish-like, objectionable odor

Molecular Formula: H₂NCH₂CH₂OH

Molecular Weight: 61.08

Auto-ignition Temperature: 410° C (770° F)

Flash Point: 85° C (185° F)

Flammable Limits: Lower Limit – 3.0 vol %, Upper Limit – 23.5 vol %

pH: 12.1 at 1N

Boiling Point: 170° C @ 760 mm Hg

Freezing/Melting Point: 10° C

Decomposition Temperature: Not available.

Specific Gravity: 1.018 g/cm³

Vapor Density (Air=1): 2.1

Vapor Pressure: 48 mm Hg @ 20° C.

Evaporation Rate (Butyl acetate = 1): >1.

Viscosity: 24 cP @ 20° C.

Solubility: Soluble

Conductivity: Conductive; Conductivity = 1.1×10^9 pS/m; Dielectric Constant = 37.72; Relaxation Time Constant = 3.0×10^{-7} seconds

10. STABILITY AND REACTIVITY

Stability: Absorbs carbon dioxide from air to form nonvolatile carbonate.

Conditions to Avoid: Ignition sources, excess heat.

Incompatibility With Various Substances: Reacts violently with acetic acid, acetic anhydride, acrolein, acrylic acid, acrylonitrile, cellulose, chlorosulfonic acid, epichlorohydrin, HCl, HF, mesityl oxide, HNO₃, oleum, H₂SO₄, b-propiolactone, vinyl acetate.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide, nitrogen oxides.

Hazardous Polymerization: Has not been reported.

11. TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation, skin absorption, skin contact

Acute Exposure Hazards:

INHALATION HAZARD: Inhalation of high concentrations may cause central nervous system effects characterized by nausea, headache, dizziness, unconsciousness and coma. Causes chemical burns to the respiratory tract. Aspiration may lead to pulmonary edema. May cause systemic effects. Inhalation at high concentrations may cause CNS depression and asphyxiation.

INGESTION HAZARD: May cause severe and permanent damage to the digestive tract. May cause gastrointestinal irritation with nausea, vomiting and diarrhea. Causes gastrointestinal tract burns. May cause perforation of the digestive tract. May cause systemic effects.

SKIN CONTACT HAZARD: Causes moderate skin irritation. Harmful if absorbed through the skin. Causes skin burns. May cause dermatitis. May cause cyanosis of the extremities. May cause skin rash (in milder cases), and cold and clammy skin with cyanosis or pale color.

EYE CONTACT HAZARD: Causes eye burns. May cause chemical conjunctivitis and corneal damage.

Chronic Exposure Hazards: May cause liver and kidney damage. Effects may be delayed.

Animal Toxicity:

Draize test, rabbit, eye: 250 ug Severe;

Oral, mouse: LD₅₀ = 700 mg/kg;

Oral, rabbit: LD₅₀ = 1 gm/kg;

Oral, rat: LD₅₀ = 1720 mg/kg;

Skin, rabbit: LD₅₀ = 1 mL/kg.

Carcinogenicity: Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65

Epidemiology: No information available.

Teratogenicity: No information available.

Reproductive Effects: TDLo (Oral, rat) = 500 mg/kg; Effects on Embryo or Fetus - fetotoxicity (except death, e.g., stunted fetus), fetal death, Specific Developmental Abnormalities - musculoskeletal system; TDLo (Oral, rat) = 500 mg/kg; Reproductive - Specific Developmental Abnormalities - urogenital system.

Mutagenicity: Cytogenetic analysis(Human Lymphocyte) =100 umol/L Sister chromatid exchange (Human Lymphocyte) =1 mmol/L.

Neurotoxicity: No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity:

Fish: Goldfish: LC₅₀ = 170.0 mg/L; 96 Hr.;

Unspecified Bacteria: Phytobacterium phosphoreum: EC₅₀ = 13.7 mg/L; 30 minutes; Microtox test No data available;

Environmental Fate: If released to soil ethanolamine is expected to biodegrade fairly rapidly following acclimation (half-life on the order of days to weeks). Ethanolamine is expected to leach in soil. Volatilization from soil surfaces is not expected to be an important fate process. If released to water, ethanolamine should undergo biodegradation. The half-life of this

compound is expected to range from a few days to a few weeks depending, in large part, on the degree of acclimation of the system. Based on a vapor pressure of 0.26 mm Hg at 25 deg C ethanolamine is expected to exist almost entirely in the vapor phase in the atmosphere. The dominant removal mechanism is expected to be reaction with photochemically generated hydroxyl radicals (half-life 4 hours). The complete solubility of ethanolamine in water suggests that this compound may also be removed from the atmosphere in precipitation. A bioconcentration factor (BCF) of <1 was estimated for ethanolamine based on a log Kow of -1.31. This BCF value and complete solubility of ethanolamine in water suggest that this compound does not bioconcentrate significantly in aquatic organisms.

13. DISPOSAL CONSIDERATIONS

Material that cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Processing, use or contamination of this product may change the waste management options. Waste generators must decide if discarded material is a hazardous waste. State and local disposal regulations may differ from federal disposal definitions found in 40 CFR 261.3. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. TRANSPORT INFORMATION

US DOT, IATA, IMO

Proper Shipping Name: Ethanolamine

Hazard Class: 8

UN Number: UN2491

Packing Group: III

Canada TDG

Additional Information: Not available

15. REGULATORY INFORMATION

US Federal Regulations:

TSCA: CAS# 141-43-5 is listed on the TSCA Inventory.

Health and Safety Reporting List: Not listed.

Chemical Test Rules: Not listed.

Section 12b: Not listed.

TSCA Significant New Use Rule: Does not have an SNUR under TSCA.

CERCLA Hazardous Substances: CAS# 141-43-5 does not have an RQ

SARA Section 302: CAS# 141-43-5 does not have a TPQ

SARA Codes: CAS# 141-43-5 – immediate, fire

Section 313: Ethanolamine (CAS# 141-43-5) is not subject to SARA Title III Section 313 40 CFR 373 reporting requirements.

Clean Air Act: CAS# 141-43-5 is not listed as a hazardous air pollutant (HAP). It is not a Class 1 Ozone Depleter. It is not a Class 2 Ozone Depleter.

Clean Water Act: CAS# 141-43-5 is not listed as a Hazardous Substance. It is not a Priority Pollutant. It is not a Toxic Pollutant.

OSHA: Not considered highly hazardous by OSHA.

US State Regulations:

CAS# 141-43-5 is on the following state right-to-know lists: California, New Jersey, Pennsylvania, Minnesota, and Massachusetts

California Prop 65: California No Significant Risk Level: Not listed

Canada:

DSL/NDL: CAS# 141-43-5 is listed on Canada's DSL list.

WHMIS: This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and this MSDS contains all the information required by those regulations.

Ingredient Disclosure List: CAS# 141-43-5 is listed on Canada's Ingredient Disclosure list.

DSCL (EEC):

Hazard Symbols: C

Risk Phrases: R20/21/22 – Harmful by inhalation, in contact with skin, or when swallowed; R34 – Causes burns.

Safety Phrases: S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.;

S36/37/39 - Wear suitable protective clothing, gloves, and eye/face protection; S45 -In case of accident or if you feel unwell, seek medical advice immediately (show the label whenever possible).

WGK (Water Danger/protection): CAS# 141-43-5: 1

16. OTHER INFORMATION

Originally Prepared: 6/30/2006

Last Revised: 9/17/2014 – Updated pictograms, hazard categories, and hazard statements in Section 2.

The information contained herein is based on current knowledge and experience; no responsibility is accepted that the information is sufficient or correct in all cases. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers and the protection of the environment.

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