

SAFETY DATA SHEET



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DIETHANOLAMINE

SDS No. M0063

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Diethanolamine

Synonyms: 2,2'-Iminodiethanol

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:

Acute Toxicity, Oral: GHS Category 5

Skin Irritation: GHS Category 3

Eye Irritation: GHS Category 2A

Label Elements

Signal Word: WARNING!

Hazard Statements:

H303 – May be harmful if swallowed.

H315 – Causes skin irritation.

H319 – Causes serious eye irritation.

H333 – May be harmful if swallowed.

Precautionary Statements:

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

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

Emergency Overview

Causes severe eye irritation. Causes skin irritation. May be harmful if swallowed, inhaled, or absorbed through the skin. May cause respiratory tract irritation. Repeated exposure may cause liver and kidney damage. Hygroscopic. Target Organs: Blood, kidney, liver, eyes, and skin.

HMIS Rating:

Health – 2* Flammability – 1 Physical Hazard – 0 PPE – User supplied

Clear focus. Consistent results. Complete confidence.

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>
Diethanolamine	111-42-2	>99%	Yes

4. FIRST-AID MEASURES

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Ingestion: If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.

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: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Notes to Physician: Treat symptomatically and supportively.

5. FIRE FIGHTING MEASURES

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

Auto-ignition Temperature: 662° C (1223° F)

Flash Point: 138° C (280° F)

Flammable Limits: Lower Limit – 1.6 vol %, Upper Limit – 9.8 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, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas.

Specific Explosion Hazards: None.

Fire Fighting Media: Use water fog, dry chemical, carbon dioxide or alcohol type foam.

National Fire Protective Association: Health - 2, Flammability - 1, 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

Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up or absorb material, then place into a suitable clean, dry, closed container for disposal. Avoid generating dusty conditions. Provide ventilation. 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. Avoid breathing dust, vapor, mist, or gas. Do not get in eyes. Avoid contact with skin and clothing. Do not add nitrites or other nitrosating agents. A nitrosamine, which may cause cancer, may be formed.

Storage: Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Do not store in aluminum containers. Do not store in copper or copper alloy storage vessels.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: 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 chemical splash goggles or 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 – 2 mg/m³ TWA; Skin - potential significant contribution to overall exposure by the cutaneous route.

NIOSH – 3 ppm, 15 mg/m³ TWA

OSHA Final PELs – None established.

OSHA Vacated PELs: 3 ppm, 15 mg/m³ TWA

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State and Appearance: Solid or liquid.

Odor: Mild ammonia-like odor

Molecular Formula: (HOCH₂CH₂)₂NH

Molecular Weight: 105.14

Auto-ignition Temperature: 662° C (1223° F)

Flash Point: 138° C (280° F)

Flammable Limits: Lower Limit – 1.6 vol %, Upper Limit – 9.8 vol %

pH: 11.0 (0.1N aq soln)

Boiling Point: 268° C @ 760 mm Hg

Freezing/Melting Point: 28° C

Decomposition Temperature: Not available.

Specific Gravity: 1.09 g/cm³

Vapor Density (Air=1): 3.65

Vapor Pressure: 0.01 mm Hg @ 20° C.

Evaporation Rate (Butyl acetate = 1): <0.01

Viscosity: 352 cP @ 30° C.

Solubility: Soluble

10. STABILITY AND REACTIVITY

Stability: Stable under normal temperatures and pressures. Amines absorb carbon dioxide from the air to form carbamate salts. Deliquescent (tending to absorb atmospheric water vapor and become liquid).

Conditions to Avoid: Temperatures above 250°C, exposure to moist air or water.

Incompatibility With Various Substances: Strong oxidizing agents, strong acids, aluminum, copper, copper alloys, galvanized iron, zinc.

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: May cause respiratory tract irritation. Material has a very low vapor pressure at room temperature, so inhalation exposures are not expected unless material is heated or misted. Dow Chemical says to avoid temperatures above 250°C as it may undergo self-sustaining thermal decomposition.

INGESTION HAZARD: Causes gastrointestinal irritation with nausea, vomiting and diarrhea. May be harmful if swallowed.

SKIN CONTACT HAZARD: Causes skin irritation. Prolonged or widespread skin contact may result in the material being absorbed in harmful amounts.

EYE CONTACT HAZARD: Causes severe eye irritation. May cause transient corneal injury. May cause inflammation of the cornea and iris. Dow Chemical eye testing data in rabbits indicates that injury is not permanent. "All eyes were healed by 7 days."

Chronic Exposure Hazards: Chronic exposure may cause blood effects. Prolonged or repeated exposure may cause liver or kidney damage.

Animal Toxicity:

Dermal, guinea pig: LD50 = 11900 uL/kg;
 Draize test, rabbit, eye: 5500 mg Severe;
 Draize test, rabbit, eye: 750 ug/24H Severe;
 Draize test, rabbit, skin: 500 mg/24H Mild;
 Oral, mouse: LD50 = 3300 mg/kg;
 Oral, rabbit: LD50 = 2200 mg/kg;
 Oral, rat: LD50 = 620 uL/kg;
 Skin, rabbit: LD50 = 7640 uL/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: Adverse reproductive effects have occurred in experimental animals.

Mutagenicity: No information available.

Neurotoxicity: No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity:

Fish: Bluegill/Sunfish: 1800mg/L; 24H;

Fish: Goldfish: 800mg/L; 24H;

Fish: Fathead Minnow: LC50 = >100.00 mg/L; 96 Hr.; Static Condition

Bacteria: Phytobacterium phosphoreum: EC50 = 5000 mg/L; 5 minutes; Microtox test No data available;

Environmental Fate: Terrestrial: Expected to biodegrade fairly rapidly following acclimation (half-life on the order of days to weeks). Expected to leach in soil. Aquatic: If released to water, diethanolamine (DEA) should biodegrade. Atmospheric: Expected to exist almost entirely in the vapor phase in the atmosphere. Reaction with photochemically generated hydroxyl radicals is expected to be the dominant removal mechanism (half-life 4 hours). Not expected to bioconcentrate.

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

Not regulated for transportation.

15. REGULATORY INFORMATION

US Federal Regulations:

TSCA: CAS# 111-42-2 is listed on the TSCA Inventory.

Health and Safety Reporting List: CAS# 111-42-2 Effective 4/13/89, Sunset 6/30/98 .

Chemical Test Rules: CAS# 111-42-2 is not listed.

Section 12b: CAS# 111-42-2 is not listed.

TSCA Significant New Use Rule: CAS# 111-42-2 does not have an SNUR under TSCA.

CERCLA Hazardous Substances: CAS# 111-42-2 - 100 lb final RQ; 45.4 kg final RQ

SARA Section 302: CAS# 111-42-2 does not have a TPQ

SARA Codes: CAS# 111-42-2 – immediate, delayed

Section 313: Diethanolamine (CAS# 111-42-2) is subject to SARA Title III Section 313 40 CFR 373 reporting requirements.

Clean Air Act: CAS# 111-42-2 is 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# 111-42-2 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# 111-42-2 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/NDSL: CAS# 111-42-2 is listed on Canada's DSL list.

WHMIS: This product has a WHMIS classification of D2B. 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# 111-42-2 is listed on Canada's Ingredient Disclosure list.

DSCL (EEC):

Hazard Symbols: Xn

Risk Phrases: R22 – Harmful when swallowed; R38 Irritating to skin; R41 Risk of serious damage to eye; R48/22 Harmful : danger of serious damage to health by prolonged exposure if swallowed.

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; S46 -If swallowed, seek medical advice immediately and show this container or label if possible.

WGK (Water Danger/protection): CAS# 111-42-2: 1

16. OTHER INFORMATION

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Last Revised: 12/19/2011 - Converted to GHS format.

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