NAVXPORT WORLDWIDE LLP • EXPORTER & CONTRACT MANUFACTURER

SAFETY DATA SHEET (SDS / MSDS)

MONOETHANOLAMINE (MEA) • CAS: 141-43-5

Document No: NXW/SDS/MEA/2026/V4.0 • Revision Date: September 2026

SECTION 1: IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY

Product Name	**MONOETHANOLAMINE**
Chemical Name / Synonyms	monoethanolamine, 2-aminoethanol, ethanolamine, 2-hydroxyethylamine, beta-aminoethyl alcohol, beta-ethanolamine, beta-hydroxyethylamine, ethylolamine, glycinol, colamine, olamine, thiofaco M-50, DurMEA 5954, 23335
Proper Shipping Name	ETHANOLAMINE or ETHANOLAMINE SOLUTION
CAS Number	141-43-5
EC / EINECS Number	205-483-3
Chemical Formula	C_2H_7NO / $H_2NCH_2CH_2OH$ (Molecular Weight: 61.10 g/mol)
Relevant Identified Uses & Uses Advised Against	**Identified Uses:** Catalyst for production of polyurethanes / polyisocyanurates. Scrubbing acid gases (H_2S, CO_2) from gas streams, especially in ammonia synthesis. Used in pharmaceutical preparations. Base of non-ionic detergents for drycleaning, wool treatment, water paints, polishes, agricultural sprays, chemical intermediates, corrosion inhibitors, rubber accelerators. **Uses Advised Against:** None identified where proper industrial ventilation and chemical-resistant PPE are deployed.
Company Details	**NAVXPORT WORLDWIDE LLP** *Exporter & Contract Manufacturer* NMR-A-47, New Minal, Govindpura Industrial Area, Bhopal - 462023, Madhya Pradesh, INDIA **Email:** sales@navxport.com | **Website:** www.navxport.com
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SECTION 2: HAZARDS IDENTIFICATION

GHS Classification:

- Corrosive to Metals – Category 1 (H290)
- Acute Toxicity (Oral) – Category 4 (H302)
- Acute Toxicity (Dermal) – Category 4 (H312)
- Acute Toxicity (Inhalation) – Category 4 (H332)
- Skin Corrosion / Irritation – Category 1B (H314)
- Serious Eye Damage – Category 1 (H318)
- Specific Target Organ Toxicity (Single Exposure, Respiratory Tract Irritation) – Category 3 (H335)

Signal Word: DANGER

GHS Hazard Pictograms:

Hazard Statements:

- **H290:** May be corrosive to metals.
- **H302:** Harmful if swallowed.
- **H312:** Harmful in contact with skin.
- **H332:** Harmful if inhaled.

- **H314:** Causes severe skin burns and eye damage.
- **H318:** Causes serious eye damage.
- **H335:** May cause respiratory irritation.

Precautionary Statements:

Prevention	**P234:** Keep only in original container. **P260:** Do not breathe dust/fume/gas/mist/vapours/spray. **P264:** Wash skin thoroughly after handling. **P270:** Do not eat, drink or smoke when using this product. **P271:** Use only outdoors or in a well-ventilated area. **P280:** Wear protective gloves/protective clothing/eye protection/face protection.
Response	**P301 + P330 + P331:** IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. **P301 + P312:** IF SWALLOWED: Call a POISON CENTER/doctor/physician/first aider if you feel unwell. **P302 + P352:** IF ON SKIN: Wash with plenty of water and soap. **P303 + P361 + P353:** IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. **P304 + P340:** IF INHALED: Remove person to fresh air and keep comfortable for breathing. **P310:** Immediately call a POISON CENTER/doctor/physician/first aider. **P305 + P351 + P338:** IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. **P362 + P364:** Take off contaminated clothing and wash it before reuse. **P363:** Wash contaminated clothing before reuse. **P390:** Absorb spillage to prevent material damage.
Storage & Disposal	**P405:** Store locked up. **P501:** Dispose of contents/container to authorized chemical landfill or if organic to high temperature incineration in accordance with local, regional, and national regulations.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	EC Number	Concentration (% w/w)
Monoethanolamine	141-43-5	205-483-3	> 99.0% (Pure industrial grade ≥ 99.0%)
Water / Residual Process Traces	7732-18-5	231-791-2	< 0.5% max

SECTION 4: FIRST AID MEASURES

Eye Contact	Immediately hold eyelids apart and flush eyes continuously with low-pressure flowing water, preferably from an eye wash fountain, for at least 15–30 minutes. Ensure complete irrigation by spreading eyelids open with fingers and rolling eyes in all directions. Remove contact lenses after initial flushing if easy to do. Transport to hospital or ophthalmologist without delay.
Skin Contact	Promptly remove all contaminated clothing, shoes, rings, watches, and belts under a safety shower. Wash skin and hair with running water and soap for at least 15–30 minutes. Immediately transport to hospital or physician. Launder or dry-clean contaminated clothing before reuse; **discard contaminated leather articles such as shoes, belts, and watchbands**. Treat skin burns as thermal burns; consider cold packs and topical antibiotics after thorough decontamination.
Inhalation	Promptly move affected individual to fresh air. Lay patient down; keep calm, warm, and rested. Remove prostheses (e.g., false teeth). If breathing is difficult, administer oxygen by qualified personnel. If breathing has stopped, apply artificial respiration (preferably with a demand valve resuscitator or pocket mask). Inhalation of mists or vapors can cause delayed pulmonary edema; maintain complete rest in semi-recumbent posture under medical observation for at least 24 hours. Administration of a dexamethasone or beclomethasone derivative aerosol may be considered by an authorized physician.
Ingestion	**Do NOT induce vomiting.** If conscious and alert, rinse mouth thoroughly and give 1 to 2 glasses of water or milk to drink slowly. Never give anything by mouth to an unconscious or convulsing person. If vomiting occurs naturally, lean patient forward to prevent aspiration. Transport immediately to hospital.
Notes to Physician	Treat as alkaline corrosive injury causing liquefaction necrosis. Neutralizing agents are contraindicated as exothermic reaction compounds injury. Gastric lavage and catharsis are contraindicated. If lavage is performed due to co-ingestants, endotracheal/esophagoscopic control is suggested. Withhold oral feedings initially; assess transmucosal necrosis if endoscopy is indicated. Support respiratory and cardiovascular function.

SECTION 5: FIREFIGHTING MEASURES

Suitable Extinguishing Media	Water spray or fog, Alcohol-resistant foam, Dry chemical powder, Carbon dioxide (CO_2), BCF (where regulations permit).
Unsuitable Extinguishing Media	High volume water jet (may scatter and spread burning material).
Specific Hazards	Combustible liquid (Flash Point: 93°C). Sealed containers may rupture violently upon heating. On combustion, emits toxic and corrosive fumes of carbon monoxide (CO), carbon dioxide (CO_2), nitrogen oxides (NO_x), and dense acrid smoke. Mists containing combustible materials may be explosive. Spills on hot fibrous insulation may decompose or self-ignite.
Special Protective Equipment for Firefighters	Wear self-contained breathing apparatus (SCBA) with full face-piece operated in positive-pressure demand mode and full-body chemical protective turnout gear. Cool fire-exposed containers with water spray from a protected location. Prevent firefighting runoff from entering sewers or waterways.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions	Eliminate all ignition sources. Evacuate non-essential personnel and remain upwind. Wear positive-pressure SCBA, long-sleeve chemical-resistant coveralls/suits, rubber boots, and chemical protective gloves (butyl, neoprene, nitrile; DO NOT use latex). Ensure emergency eyewash and safety showers are functional.
Environmental Precautions	Dike to prevent material from entering drains, surface water, or watercourses. Install retention basins for pH adjustment and dilution where appropriate. Inform environmental authorities immediately in case of water contamination.
Cleanup & Containment	**Land Spill Sorbent Priority:** (1) Cross-linked polymer particulate/pillow; (2) Sorbent clay particulate; (3) Expanded mineral particulate; (4) Foamed glass pillow/particulate. Contain spill with sand, earth, or inert absorbent. Carefully neutralize residue with dilute acid (e.g., 5% acetic acid) followed by thorough water washdown. Collect neutralized material into properly labeled drums for disposal.

SECTION 7: HANDLING AND STORAGE

Safe Handling Advice	Do not breathe vapors, aerosols, or mists. Avoid all contact with eyes, skin, and clothing. Wash thoroughly after handling. Use only in well-ventilated areas with local exhaust. Launder contaminated work clothes separately. Keep containers securely sealed when not in use.
Reactivity Hazards with Metals	**Reaction with Iron:** Monoethanolamine reacts with iron to form an unstable tris-ethanolamineiron complex that can spontaneously decompose at temperatures between 130°C and 160°C in air. Maintain drum and storage heating strictly below 130°C using low-pressure steam in stainless steel coils. **Reaction with Aluminum & Light Metals:** Heating above 60°C in contact with aluminum generates hydrogen gas. Corrosive to zinc, copper, copper alloys (brass/bronze), lead, tin, and galvanized surfaces.
Conditions for Safe Storage	Store in original lined metal cans, lined pails, plastic pails, or polyliner drums. Store in a cool, dry, well-ventilated area away from direct sunlight, heat, ignition sources, strong acids, and oxidizing agents. Protect from atmospheric moisture and carbon dioxide (hygroscopic). **Incompatible Containers:** DO NOT USE aluminum, galvanized, tin-plated, lead, brass, or copper containers/stirrers.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational Exposure Limits	**ACGIH TLV:** TWA: 3 ppm | STEL: 6 ppm (Eye & skin irritation) **OSHA PEL / NIOSH REL:** TWA: 3 ppm (6 mg/m³) | STEL: 6 ppm (15 mg/m³) **IDLH:** 30 ppm (Revised) / 1,000 ppm (Original) **Emergency Limits (TEEL):** TEEL-1: 6 ppm | TEEL-2: 6 ppm | TEEL-3: 1,000 ppm **Odour Threshold:** 3 – 4 ppm (Odour Safety Factor OSF = 0.77)
Engineering Controls	Use process enclosures and local exhaust ventilation designed to maintain capture velocity between 0.5 to 2.5 m/s depending on mist/vapor generation rate. Ensure eyewash fountains and deluge safety showers are installed adjacent to work areas.
Eye & Face Protection	Chemical workers safety goggles and full face shield (ANSI Z87.1 / EN 166). Ordinary safety glasses do not prevent vapor irritation. **DO NOT wear contact lenses** when working with amines as they can concentrate caustic alkaline liquid against corneal tissue.
Hand Protection	Chemical-resistant protective gloves conforming to EN 374. **Best Selection (CPI Index A):** Butyl rubber, Butyl/Neoprene, Hypalon, Natural+Neoprene, Neoprene, Neoprene/Natural, Nitrile, Polyvinyl alcohol (PVA), Viton. **Satisfactory (CPI Index B):** Natural rubber, Nitrile+PVC, PVC. **CRITICAL PRECAUTION: DO NOT USE LATEX** for liquid chemical handling. Class 5 (>240 min breakthrough) recommended for prolonged contact.
Skin & Body Protection	Wear PVC apron, rubber safety boots, and full-body chemical protective suit where severe splashing is possible. Wear trousers outside boots to prevent liquid ingress.
Respiratory Protection	Type EK-P combination filter respirator of sufficient capacity (conforming to AS/NZS 1716/1715, EN 143/149). For vapor concentrations exceeding exposure limits or unquantified emergency releases, use positive-pressure full-facepiece Self-Contained Breathing Apparatus (SCBA).

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Clear, colourless, hygroscopic, viscous liquid	**Colour**	Colourless / Clear
Odour	Mild ammoniacal amine odour	**Odour Threshold**	3 – 4 ppm
pH as a solution (1%)	12.1	**Melting / Freezing Point**	-12°C to -10.5°C (Pure freezing pt: 10.3–10.5°C)
Initial Boiling Point / Range	170.5°C (338.9°F)	**Flash Point**	94.5°C (DIN 51758) / 93°C
Evaporation Rate	0.1 (n-BuAc = 1)	**Flammability (solids/gas)**	Combustible Liquid (Class IIIB)
Upper Explosive Limit (UEL)	13.1 %	**Lower Explosive Limit (LEL)**	2.5 %
Vapour Pressure	0.79 kPa @ 60°C (0.13 hPa / 0.01 kPa @ 20°C)	**Relative Vapour Density (Air = 1)**	2.11
Relative Density (Water = 1)	1.02 @ 20°C	**Solubility in Water**	Miscible (Completely soluble in water, methanol, acetone)
Partition Coefficient (n-octanol/water)	log Kow = -1.31	**Auto-ignition Temperature**	410°C (770°F)
Dynamic Viscosity	24 mPa·s (cP) @ 20°C	**Decomposition Temperature**	> 130°C (with iron in air) / > 250°C
Molecular Weight	61.10 g/mol	**Volatile Component**	100 % vol

SECTION 10: STABILITY AND REACTIVITY

Reactivity & Chemical Stability	Stable under normal recommended storage conditions. Absorbs atmospheric moisture and carbon dioxide. Hazardous polymerisation will not occur.
Possibility of Hazardous Reactions	Reacts violently with strong acids and strong oxidizers with spattering. Forms explosive mixtures with sodium perchlorate. Reacts exothermically with halogenated organic solvents.
Conditions to Avoid	Open flames, sparks, static discharge, overheating (>130°C), and contact with incompatible materials.
Incompatible Materials	Strong acids, strong oxidizers, acid chlorides, acid anhydrides, chloroformates, acetic acid, acetic anhydride, acrolein, acrylates, acrylic acid, acrylonitrile, alcohols, aldehydes, alkali metals, alkylene oxides, caprolactam solution, cellulose nitrate, chlorosulfonic acid, cresols, epichlorohydrin, glycols, halogenated hydrocarbons, isocyanates, ketones, mesityl oxide, oleum, phenols, beta-propiolactone, vinyl acetate, sodium perchlorate. Corrosive to aluminum, copper, brass, bronze, lead, tin, zinc, and galvanized surfaces. Attacks plastics, coatings, and rubber.
Hazardous Decomposition Products	Carbon monoxide (CO), carbon dioxide (CO_2), nitrogen oxides (NO_x), and dense corrosive/toxic fumes.

SECTION 11: TOXICOLOGICAL INFORMATION

Acute Oral Toxicity	**LD_{50} (Rat):** 1,091.4 mg/kg (Harmful if swallowed). Signs of toxicity include piloerection, kyphosis, unsteady gait, emaciation, and gastrointestinal ulceration.
Acute Dermal Toxicity	**LD_{50} (Rabbit):** 1,020 mg/kg (Harmful in contact with skin). Single prolonged skin contact causes rapid absorption and systemic toxicity.
Acute Inhalation Toxicity	**LC_{50} (Rat, 4h):** Harmful if inhaled. Vapors and mists cause chemical burns of respiratory mucous membranes, coughing, chest tightness, and delayed pulmonary edema.
Skin Irritation / Corrosion	**Skin (Rabbit):** 505 mg open-moderate; causes severe erythema, edema, necrosis, ulceration, and deep chemical burns. Untreated wounds heal slowly.
Eye Damage / Irritation	**Eye (Rabbit):** 0.76 mg – SEVERE. Liquid contact causes corneal opacity, iritis, edema, vascularization, permanent scarring, and loss of sight. Transient visual disturbance ("blue haze" / "glaucopsia") can occur from vapor exposure.
Sensitisation	Many amines can induce histamine liberation triggering bronchoconstriction, asthma-like symptoms, and rhinitis. Reactive Airways Dysfunction Syndrome (RADS) may occur following acute exposure to high vapor concentrations.
Mutagenicity & Carcinogenicity	In vitro and animal mutagenicity studies are negative. Not listed as a carcinogen by IARC, NTP, OSHA, or ACGIH. Alkanolamines in contact with nitrites or nitrosating agents may form carcinogenic N-nitrosamines.
Reproductive / Developmental Toxicity	Slight developmental delays have been observed in animal gavage studies only at high maternally toxic doses. No teratogenic effects observed via dermal route.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity to Fish	**Goldfish (Carassius auratus, 96h LC_{50}):** 170 mg/L **Rainbow Trout (Oncorhynchus mykiss, LC_{50}):** 150 mg/L **Fathead Minnow (Pimephales promelas, 96h LC_{50}):** 125 – 206 mg/L **Carp (Cyprinus carpio, 96h LC_{50}):** 349 mg/L **Bluegill Sunfish (LC_{50}):** 300 – 1,000 mg/L **Mosquito fish (LC_{50}):** 337.5 mg/L | **Golden orfe (LC_{50}):** 224 – 525 mg/L
Ecotoxicity to Aquatic Invertebrates	**Daphnia magna (48h EC_{50}):** 65 mg/L | **(24h EC_{50}):** 120 – 140 mg/L **Daphnia LC_{50}:** 33 – 114 mg/L
Ecotoxicity to Algae & Microorganisms	**Green Algae (72h EC_{50}):** 22 mg/L | **Algae NOEC (192h):** 0.75 – 0.97 mg/L **Activated Sludge (0.5h EC_{50}):** > 1,000 mg/L | **Bacteria (17h EC_{50}):** 100 mg/L
Persistence and Degradability	Readily biodegradable (OECD criteria). **BOD5:** 800 mg/g (60–70% of ThOD) | **DOC Reduction (OECD 301A):** > 90% **OECD 301B (CO_2 evolution):** 97% (28 d) | **OECD 301F:** 90–100% (28 d) **COD:** 1.27 – 1.28 | **ThOD:** 2.49 (calculated: 1.31–1.54 mg/mg) Atmospheric half-life: ~11 hours via reaction with photochemically produced hydroxyl radicals.
Bioaccumulative Potential	Low bioaccumulation potential (log Kow = -1.31; BCF < 1 to 2.3). High water solubility and rapid environmental breakdown prevent tissue accumulation.
Mobility in Soil	High mobility in soil (Koc = 1 to 50; log Koc ~ 0.70). Product will leach into groundwater if released uncontained. Henry's Law constant: 4.00E-08 atm·m³/mol. Neutralization is required prior to industrial wastewater discharge.

SECTION 13: DISPOSAL CONSIDERATIONS

Do not discharge into sewers, waterways, or soil. Dispose of product and contaminated wash water in full compliance with local, state, and national environmental regulations. Preferred disposal is high-temperature incineration in a licensed facility equipped with scrubbers for nitrogen oxides (NO_x). Alternatively, neutralize with dilute acid at an authorized treatment plant before biological processing. Container disposal: Empty drums must be

decontaminated, punctured to prevent reuse, and sent to an authorized reconditioner or chemical landfill. The responsibility for proper disposal rests with the waste generator.

SECTION 14: TRANSPORT INFORMATION

UN Number	**UN 2491**
UN Proper Shipping Name	**ETHANOLAMINE** or **ETHANOLAMINE SOLUTION**
Transport Hazard Class	**Class 8 (Corrosive Liquid)** • Subrisk: Not Applicable
Packing Group	**PG III (Minor Hazard)**
Environmental Hazards / Marine Pollutant	NO (Not classified as Marine Pollutant under IMDG Code)
Special Provisions & Limited Quantities	Special Provisions: **223** | Limited Quantity: **5 L**
Maritime Transport (IMDG / GGVSee)	EmS Number: **F-A, S-B**
Air Transport (ICAO / IATA-DGR)	ERG Code: **8L** | Special Provisions: **A3, A803** **Passenger & Cargo:** Max 5 L (PI 852) **Cargo Aircraft Only:** Max 60 L (PI 856) **Limited Quantity:** Max 1 L (PI Y841)
MARPOL 73/78 Annex II & IBC Code	Noxious Liquid Substance Carried in Bulk: **Pollution Category: Y**

SECTION 15: REGULATORY INFORMATION

Safety, Health and Environmental Inventory Status:

- **USA (TSCA):** On the inventory (Yes)
- **Europe (EINECS / ELINCS / NLP):** Listed (EC 205-483-3) (Yes)
- **Canada (DSL / NDSL):** DSL: Yes | NDSL: No
- **Australia (AICS):** On the inventory (Yes)
- **New Zealand (NZIoC):** On the inventory (Yes)
- **China (IECSC):** On the inventory (Yes)
- **Japan (ENCS / ISHL):** On the inventory (2-301) (Yes)
- **Korea (KECI):** On the inventory (KE-01425) (Yes)
- **Philippines (PICCS):** On the inventory (Yes)

SECTION 16: OTHER INFORMATION

NFPA 704 Rating: Health: 3 (Severe) | Flammability: 2 (Moderate) | Instability: 0 (Stable) | Special Hazard: None

Emergency Limits (TEEL): TEEL-1: 6 ppm | TEEL-2: 6 ppm | TEEL-3: 1,000 ppm

Key Abbreviations: GHS = Globally Harmonized System; TLV = Threshold Limit Value; TWA = Time Weighted Average; STEL = Short Term Exposure Limit; IDLH = Immediately Dangerous to Life or Health; SCBA = Self-Contained Breathing Apparatus; BCF = Bioconcentration Factor; BOD = Biochemical Oxygen Demand; COD = Chemical Oxygen Demand; ThOD = Theoretical Oxygen Demand; RADS = Reactive Airways Dysfunction Syndrome; CPI = Clothing Performance Index.

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