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Material Safety Data Sheet

N-Ethylmorpholine MSDS

Section 1: Chemical Product and Company Identification

Product Name: N-Ethylmorpholine

Catalog Codes: SLE1468

CAS#: 100-74-3

RTECS: QE4025000

TSCA: TSCA 8(b) inventory: N-Ethylmorpholine

CI#: Not available.

Synonym: 4-Ethylmorpholine

Chemical Name: 4-Ethylmorpholine

Chemical Formula: C₆H₁₃NO

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Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
N-Ethylmorpholine	100-74-3	100

Toxicological Data on Ingredients: N-Ethylmorpholine: ORAL (LD50): Acute: 1780 mg/kg [Rat]. VAPOR (LC50): Acute:18000 mg/m 2 hours [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:

Hazardous in case of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant, permeator).

Potential Chronic Health Effects:

Slightly hazardous in case of skin contact (sensitizer). CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention.

Skin Contact:

Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops. Cold water may be used.

Serious Skin Contact:

Not available.

Inhalation:

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

Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek medical attention.

Ingestion:

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion:

Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: Not available.

Flash Points: CLOSED CUP: 27°C (80.6°F). OPEN CUP: 32°C (89.6°F).

Flammable Limits: LOWER: 1% UPPER: 9.8%

Products of Combustion: These products are carbon oxides (CO, CO₂), nitrogen oxides (NO, NO₂...).

Fire Hazards in Presence of Various Substances:

Flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:

Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill:

Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

Large Spill:

Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:

Keep locked up.. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Avoid contact with eyes. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, acids.

Storage:

Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:

Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:

TWA: 5 STEL: 20 (ppm) [United Kingdom (UK)] SKIN TWA: 5 (ppm) from ACGIH (TLV) [United States] SKIN TWA: 24 STEL: 96 (mg/m³) [United Kingdom (UK)] SKIN TWA: 5 (ppm) from NIOSH [United States] Inhalation TWA: 5 (ppm) from ACGIH (TLV) [United States] TWA: 20 (ppm) from OSHA (PEL) [United States] TWA: 5 (ppm) [Canada] SKIN TWA: 23 (mg/m³) [Canada] SKIN STEL: 29 (ppm) [Canada] SKIN STEL: 94 (mg/m³) [Canada] SKIN Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Not available.

Taste: Not available.

Molecular Weight: 115.17 g/mole

Color: Clear Colorless to light yellow.

pH (1% soln/water): Not available.

Boiling Point: 138°C (280.4°F) - 139 C

Melting Point: -62.78°C (-81°F)

Critical Temperature: Not available.

Specific Gravity: 0.8996 (Water = 1)

Vapor Pressure: 0.8 kPa (@ 20°C)

Vapor Density: 4 (Air = 1)

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether, acetone.

Solubility: Easily soluble in cold water, hot water, Ethanol, diethyl ether. Soluble in acetone.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ignition sources, incompatible materials

Incompatibility with various substances: Reactive with oxidizing agents, acids.

Corrosivity: Not available.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry:

Absorbed through skin. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:

WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE.
Acute oral toxicity (LD50): 1780 mg/kg [Rat]. Acute toxicity of the vapor (LC50): 18000 mg/m³ 2 hours [Mouse].

Chronic Effects on Humans:

MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast.

Other Toxic Effects on Humans:

Hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant, permeator).

Special Remarks on Toxicity to Animals:

Not available.

Special Remarks on Chronic Effects on Humans:

May affect genetic material (mutagenic)

Special Remarks on other Toxic Effects on Humans:

Acute Potential Health Effects: Skin: It causes skin irritation. It may absorbed through intact skin. Eyes: It causes eye irritation. It may cause chemical conjunctivitis, corneal edema or corneal haziness. Inhalation: May cause respiratory tract (nose and throat) irritation and burning sensation in the chest. Inhalation of vapors may affect behavior/central nervous system (dizziness, drowsiness,), vision (seeing halos around light, foggy vision)and may cause suffocation. I can also damage the sense of smell. Aspiration may lead to pulmonary edema. Ingestion: May cause gastrointestinal tract irritation with nausea, vomiting, and diarrhea. Ingestion of large amounts may effect behavior/central nervous system (CNS depression - symptoms similar to that of inhalation) Chronic Potential Health Effects: Skin: Repeated or prolonged skin contact may cause dermatitis.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation: Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid. Class 8: Corrosive material

Identification: : 4-Ethylmorpholine UNNA: 1993 PG: III

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:

Illinois toxic substances disclosure to employee act: N-Ethylmorpholine Rhode Island RTK hazardous substances: N-Ethylmorpholine Pennsylvania RTK: N-Ethylmorpholine Minnesota: N-Ethylmorpholine Massachusetts RTK: N-Ethylmorpholine Massachusetts spill list: N-Ethylmorpholine New Jersey: N-Ethylmorpholine California Director's List of Hazardous Substances: N-Ethylmorpholine TSCA 8(b) inventory: N-Ethylmorpholine

Other Regulations:

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):

CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2B: Material causing other toxic effects (TOXIC).

DSCL (EEC):

R10- Flammable. R20/22- Harmful by inhalation and if swallowed. R36- Irritating to eyes. S9- Keep container in a wellventilated place. S16- Keep away from sources of ignition - No smoking. S24/25- Avoid contact with skin and eyes. S33- Take precautionary measures against static discharges. S36/37/39- Wear suitable protective clothing, gloves and eye/face protection.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 2

Reactivity: 0

Specific hazard:

Protective Equipment:

Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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