

# Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
  	<p>Flammable material; avoid heat and sources of ignition.                      Corrosive to eyes and skin on contact.                      Toxic compound, do not ingest or inhale. Avoid all contact with this material.                      Hygroscopic -- keep container tightly sealed.                      Readily absorbed through skin.</p>	

## Section I. Chemical Product and Company Identification

Chemical Name	<b>N-Ethylmorpholine</b>		
Catalog Number	E0145	Supplier	TCl America 9211 N. Harborgate St. Portland OR 1-800-423-8616
Synonym	Not available.		
Chemical Formula	C <sub>6</sub> H <sub>13</sub> NO		
CAS Number	100-74-3	In case of Emergency Call	<b>Chemtrec®</b> <b>(800) 424-9300 (U.S.)</b> <b>(703) 527-3887 (International)</b>

## Section II. Composition and Information on Ingredients

Chemical Name	CAS Number	Percent (%)	TLV/PEL	Toxicology Data
N-Ethylmorpholine	100-74-3	Min. 99.0 (GC)	TWA: NIOSH 5 ppm (23 mg/m <sup>3</sup> )[skin]	Rat LD <sub>50</sub> (oral) 1780 mg/kg Rabbit LD <sub>50</sub> (dermal) 900 mg/kg Mouse LD <sub>50</sub> (oral) 1200 mg/kg

## Section III. Hazards Identification

Acute Health Effects	<p>Corrosive to skin, eyes, and respiratory system. Liquid or spray mist may produce tissue damage, particularly in mucous membranes of the eyes, mouth and respiratory tract. Skin contact may produce burns. Eye contact can result in corneal damage or blindness. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Corrosive materials may cause serious injury if ingested. Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death.                      Readily absorbed through skin.                      Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.</p>
Chronic Health Effects	<p><b>CARCINOGENIC EFFECTS</b> : Not available.  <b>MUTAGENIC EFFECTS</b> : Not available.  <b>TERATOGENIC EFFECTS</b> : Not available.  <b>DEVELOPMENTAL TOXICITY</b> Not available.                      Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection.</p>

## Section IV. 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. Get medical attention.
Skin Contact	In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
Inhalation	If the victim is not breathing, perform mouth-to-mouth resuscitation. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, oxygen can be administered. Seek medical attention if respiration problems do not improve.
Ingestion	DO NOT INDUCE VOMITING. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive.

## Section V. Fire and Explosion Data

Flammability	Flammable.	Auto-Ignition	Not available.
Flash Points	32°C (89.6°F). (O.C.)	Flammable Limits	LOWER: 1% UPPER: 11.8%
Combustion Products	These products are toxic carbon oxides (CO, CO <sub>2</sub> ), nitrogen oxides (NO, NO <sub>2</sub> ).		
Fire Hazards	Not available.		
Explosion Hazards	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.		

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Emergency phone number (800) 424-9300

## Fire Fighting Media and Instructions

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. Consult with local fire authorities before attempting large scale fire-fighting operations. Consult with local fire authorities before attempting large scale fire-fighting operations.

**Section VI. Accidental Release Measures**

## Spill Cleanup Instructions

Flammable Material. Corrosive Material. Toxic Material. Hygroscopic Material. Readily absorbed through skin. Keep away from heat. Mechanical exhaust required. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. DO NOT get water inside container. DO NOT touch spilled material. Use water spray curtain to divert vapor drift. Prevent entry into sewers, basements or confined areas; dike if needed. Consult federal, state, and/or local authorities for assistance on disposal. Consult federal, state, and/or local authorities for assistance on disposal.

**Section VII. Handling and Storage**

## Handling and Storage Information

FLAMMABLE. CORROSIVE. TOXIC. HYGROSCOPIC. READILY ABSORBED THROUGH SKIN. Keep container dry. Keep away from heat. Mechanical exhaust required. Avoid excessive heat and light. DO NOT ingest. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Treat symptomatically and supportively. Always store away from incompatible compounds such as oxidizing agents, acids.

**Section VIII. 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 station and safety shower is proximal to the work-station location.

## Personal Protection

Face shield. Lab coat. Vapor respirator. Gloves. Boots. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product. Be sure to use a MSHA/NIOSH approved respirator or equivalent.



## Exposure Limits

TWA: NIOSH 5 ppm (23 mg/m<sup>3</sup>)[skin]

**Section IX. Physical and Chemical Properties**

Physical state @ 20°C	Liquid. (Colorless)	Solubility	Very soluble in Ether, Ethanol, Water. Soluble in Acetone.
Specific Gravity	0.91 (water=1)		
Molecular Weight	115.18	Partition Coefficient	Not available.
Boiling Point	136 to 139°C (276.8 to 282.2°F)	Vapor Pressure	0.8 kPa (@ 20°C)
Melting Point	Freezing Point -63°C (-81.4°F)	Vapor Density	4 (Air = 1)
Refractive Index	1.442	Volatility	Not available.
Critical Temperature	Not available.	Odor	Ammonia-Like
Viscosity	0.001 Pas @ 20°C	Taste	Not available.

**Section X. Stability and Reactivity Data**

## Stability

This material is stable if stored under proper conditions. (See Section VII for instructions)

## Conditions of Instability

Avoid excessive heat and light.

## Incompatibilities

Reactive with strong oxidizing agents, strong acids.

**Section XI. Toxicological Information**

## RTECS Number

QE4025000

## Routes of Exposure

Eye Contact. Ingestion. Inhalation. Skin contact.

## Toxicity Data

Rat LD<sub>50</sub> (oral) 1780 mg/kg  
 Rabbit LD<sub>50</sub> (dermal) 900 mg/kg  
 Mouse LD<sub>50</sub> (oral) 1200 mg/kg

## Chronic Toxic Effects

**CARCINOGENIC EFFECTS** : Not available.  
**MUTAGENIC EFFECTS** : Not available.  
**TERATOGENIC EFFECTS** : Not available.  
**DEVELOPMENTAL TOXICITY** Not available.  
 Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection.

## Acute Toxic Effects

Corrosive to skin, eyes, and respiratory system. Liquid or spray mist may produce tissue damage, particularly in mucous membranes of the eyes, mouth and respiratory tract. Skin contact may produce burns. Eye contact can result in corneal damage or blindness. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Corrosive materials may cause serious injury if ingested. Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death.  
Readily absorbed through skin.  
Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

**Section XII. Ecological Information**

## Ecotoxicity

Not available.

## Environmental Fate

N-Ethylmorpholine's use as an intermediate for dyestuffs, pharmaceuticals, rubber accelerators, and emulsifying agents may result in its release to the environment through various waste streams. If released to water, N-ethylmorpholine will be essentially non-volatile. Insufficient data are available to predict the relative importance or rate of biodegradation in soil or water. If released to the atmosphere, N-ethylmorpholine will exist primarily in the vapor phase and will degrade in the atmosphere by reaction with photochemically produced hydroxyl radicals with an estimated half-life of approximately 2.5 hours. Removal of atmospheric N-ethylmorpholine may occur through wet deposition. If released to soil, N-ethylmorpholine is expected to have very high mobility based on an estimated Koc value of 12. Volatilization of N-ethylmorpholine is not expected from moist soils, but will be important from dry soils. Occupational exposure to morpholines, such as N-ethylmorpholine, can occur through inhalation, dermal contact, and ingestion. (SRC) [Peer Reviewed]

**Section XIII. Disposal Considerations**

## Waste Disposal

Recycle to process, if possible. Consult your local regional authorities. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. Observe all federal, state and local regulations when disposing of the substance.

**Section XIV. Transport Information**

## DOT Classification

DOT CLASS 3: Flammable Liquid.  
DOT CLASS 8: Corrosive Material.

## PIN Number

UN2924

## Proper Shipping Name

Flammable, liquid, corrosive n.o.s.

## Packing Group (PG)

II

## DOT Pictograms

**Section XV. Other Regulatory Information and Pictograms**

## TSCA Chemical Inventory (EPA)

This compound is **ON** the EPA Toxic Substances Control Act (TSCA) inventory list.

## WHMIS Classification (Canada)

On DSL.

## EINECS Number (EEC)

202-885-0

## EEC Risk Statements

R10- Flammable.  
R18- In use, may form flammable/explosive vapor-air mixture.  
R34- Causes burns.  
R23/24/25- Toxic by inhalation, in contact with skin and if swallowed.

## Japanese Regulatory Data

ENCS No. 5-860

**Section XVI. Other Information****Version 1.0****Validated on 1/14/2005.****Printed 2/16/2005.****Notice to Reader**

TCl laboratory chemicals are for research purposes only and are NOT intended for use as drugs, food additives, households, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our MSDS sheets are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated MSDS sheets for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, facial mask, fume hood). For proper handling and disposal, always comply with federal, state, and local regulations.