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For Emergency Assistance involving chemicals call - CHEMTREC (800) 424-9300

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The Version Date for this MSDS is : 03/26/2001

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PRODUCT IDENTIFICATION  
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PRODUCT NAME: TRIETHANOLAMINE, 99% LOW FREEZING GRADE (PM-4024)  
MSDS NUMBER: ucn0131i  
DATE ISSUED: 6/23/2000  
SUPERCEDES; 7/15/98  
ISSUED BY: 009053

Union Carbide urges each customer or recipient of this MSDS to study it carefully to become aware of and understand the hazards associated with the product. The reader should consider consulting reference works or individuals who are experts in ventilation, toxicology, and fire prevention, as necessary or appropriate to use and understand the data contained in this MSDS.

To promote safe handling, each customer or recipient should: 1) Notify its employees, agents, contractors and others whom it knows or believes will use this material of the information in this MSDS and any other information regarding hazards or safety; 2) Furnish this same information to each of its customers for the product; and 3) Request its customers to notify their employees, customers, and other users of the product of this information.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

1.1 IDENTIFICATION

Product Name  
TRIETHANOLAMINE, 99% LOW FREEZING GRADE (PM-4024)  
Chemical Name  
Triethanolamine, Aqueous  
Chemical Family  
Alkanolamines  
Formula  
Not Applicable  
Synonym  
None

1.2 COMPANY IDENTIFICATION

Union Carbide Corporation  
A Subsidiary of The Dow Chemical Company  
39 Old Ridgebury Road  
Danbury, CT 06817-0001

### 1.3 EMERGENCY TELEPHONE NUMBER

24 hours a day: CHEMTREC 1-800-424-9300.  
Number for non-emergency questions concerning MSDS (732) 563-5522  
Additional information on this product may be obtained by calling the Union Carbide Corporation Customer Service Center at 1-800-568-4000.

### 2. COMPOSITION INFORMATION

Component

CAS #

Amount (%W/W )

Triethanolamine

102-71-6

85 %

Water

7732-18-5

15 %

### 3. HAZARDS IDENTIFICATION

#### 3.1 EMERGENCY OVERVIEW

Appearance

Transparent colorless to pale amber

Physical State

Liquid

Odor

Mild ammoniacal

Hazards of product

WARNING!

HARMFUL IF SWALLOWED.

CAUSES EYE AND SKIN IRRITATION.

REPEATED EXPOSURE MAY CAUSE LIVER AND KIDNEY DAMAGE.

#### 3.2 POTENTIAL HEALTH EFFECTS

Effects of Single Acute Overexposure

Inhalation Vapor or mist from heated material may cause irritation of the respiratory tract, experienced as nasal discomfort and discharge, with chest pain and coughing.

Eye Contact May cause irritation, experienced as stinging with excess blinking and tear production. Excess redness and swelling of the conjunctiva may occur.

Skin Contact Brief contact may cause slight irritation with itching and local redness. Prolonged contact may cause severe irritation, with local discomfort or pain, and local redness and swelling.

Skin Absorption No evidence of harmful effects from available information.

Swallowing May cause burning or painful sensations in the mouth, throat, chest, and abdomen, nausea, vomiting, and diarrhea. May cause dizziness, drowsiness, faintness, weakness, collapse, and coma.

#### Chronic, Prolonged or Repeated Overexposure

Effects of Repeated Overexposure Repeated overexposure may cause damage to kidneys and liver.

Other Effects of Overexposure Skin contact may cause sensitization and an allergic skin reaction in a small proportion of individuals.

#### Medical Conditions Aggravated by Exposure

Skin contact may aggravate an existing dermatitis.

### 3.3 POTENTIAL ENVIRONMENTAL EFFECTS

See Section 12 for Ecological Information.

## 4. FIRST AID PROCEDURES

### 4.1 INHALATION

Remove to fresh air.

### 4.2 EYE CONTACT

Immediately flush eyes with water and continue washing for several minutes. Remove contact lenses, if worn. Obtain medical attention if discomfort persists.

### 4.3 SKIN CONTACT

Remove contaminated clothing. Wash skin with soap and water. Obtain medical attention if irritation persists. Wash clothing before reuse.

### 4.4 SWALLOWING

If patient is fully conscious, give two glasses of water. Induce vomiting. This should be done only by medical or experienced first-aid personnel. Obtain medical attention.

### 4.5 NOTES TO PHYSICIAN

There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient. The hazards of this material are due mainly to its severely irritant properties on skin and mucosal surfaces.

## 5. FIRE FIGHTING MEASURES

### 5.1 FLAMMABLE PROPERTIES

Flash Point - Closed Cup: None.

Flash Point - Open Cup: Cleveland Open Cup ASTM D 92 None.

Autoignition Temperature: Not currently available.

Flammable Limits In Air:  
Lower

Not Determined, Aqueous System  
Upper

Not Determined, Aqueous System

### 5.2 EXTINGUISHING MEDIA

Non-flammable (aqueous solution): After water evaporates, remaining material

will burn. Use alcohol-type or all-purpose-type foam, applied by manufacturer's recommended techniques for large fires. Use carbon dioxide or dry chemical media for small fires.

#### 5.3 EXTINGUISHING MEDIA TO AVOID

No information currently available.

#### 5.4 SPECIAL FIRE FIGHTING PROCEDURES

Do not direct a solid stream of water or foam into burning molten material; this may cause spattering and spread the fire.

#### 5.5 SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS

Use self-contained breathing apparatus, eye protection, and protective clothing.

#### 5.6 UNUSUAL FIRE AND EXPLOSION HAZARDS

During fire, oxides of nitrogen may be evolved.

#### 5.7 HAZARDOUS COMBUSTION PRODUCTS

Burning can produce the following products: Oxides of carbon and nitrogen. Carbon monoxide is highly toxic if inhaled; carbon dioxide in sufficient concentrations can act as an asphyxiant. Acute overexposure to the products of combustion may result in irritation of the respiratory tract.

### 6. ACCIDENTAL RELEASE MEASURES

#### Steps to be Taken if Material is Released or Spilled:

Collect for disposal. It should be feasible to flush a small spill to a sanitary sewer with large amounts of water. If spilled material cannot be collected, it may be possible to neutralize with dilute hydrochloric acid, and then landfill the resulting salt.

Personal Precautions: Wear suitable protective equipment. Avoid contact with eyes and skin.

Environmental Precautions: A large spill might be detrimental to aquatic life.

### 7. HANDLING AND STORAGE

#### 7.1 HANDLING

##### General Handling

Do not swallow.

Avoid contact with eyes, skin, and clothing.

Keep container closed.

Use with adequate ventilation.

Wash thoroughly after handling.

#### FOR INDUSTRY USE ONLY.

##### Ventilation

General (mechanical) room ventilation is expected to be satisfactory for use at room temperature.

##### Other Precautions

Do not add nitrites or other nitrosating agents. A nitrosamine, which may cause cancer, may be formed.

#### 7.2 STORAGE

Store in accordance with good industrial practices. Storage information may be obtained from product-specific Union Carbide Storage and Handling Guides, or by calling a Union Carbide Customer Service Representative.

### 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

#### 8.1 EXPOSURE LIMITS

Component  
Exposure Limits  
Skin  
Form

Triethanolamine  
5 mg/m<sup>3</sup> TWA8 ACGIH

In the Exposure Limits Chart above, if there is no specific qualifier (i.e., Aerosol) listed in the Form Column for a particular limit, the listed limit includes all airborne forms of the substance that can be inhaled.

A "Yes" in the Skin Column indicates a potential significant contribution to overall exposure by the cutaneous (skin) route, including mucous membranes and the eyes, either by contact with vapors or by direct skin contact with the substance. A "Blank" in the Skin Column indicates that exposure by the cutaneous (skin) route is not a potential significant contributor to overall exposure.

## 8.2 PERSONAL PROTECTION

Respiratory Protection:

Use self-contained breathing apparatus in high vapor concentrations.

Ventilation:

General (mechanical) room ventilation is expected to be satisfactory for use at room temperature.

Eye Protection:

Monogoggles

Protective Gloves:

Butyl  
Polyvinyl chloride coated

Other Protective Equipment:

Eye bath, safety shower, and chemical apron.

## 8.3 ENGINEERING CONTROLS

Use good housekeeping and acceptable industrial engineering practices.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid

Appearance: Transparent colorless to pale amber

pH: Not currently available.

Solubility in Water (by weight): 20 C 100 %

Odor: Mild ammoniacal

Percent Volatiles : 15.05 Wt%

Boiling Point (760 mmHg): 119.1 C 246.4 F

Freezing Point: -5 C 23 F

Specific Gravity (H2O = 1): 1.123 20 C / 20 C

Vapor Pressure at 20 C: 1.3 kPa 9.7 mmHg

Vapor Density (air = 1): 2.5

Evaporation Rate (Butyl Acetate = 1): 0.9

Melting Point: Not applicable.

## 10. STABILITY AND REACTIVITY

### 10.1 STABILITY/INSTABILITY Stable

Conditions to Avoid: Temperatures above 250 degrees C. May undergo self-sustaining thermal decomposition.

Incompatible Materials: Strong oxidizing agents. Strong bases. Strong acids. Aldehydes. Ketones. Acrylates. Organic anhydrides. Organic halides.

### 10.2 HAZARDOUS POLYMERIZATION Will Not Occur.

### 10.3 INHIBITORS/STABILIZERS Not applicable.

## 11. TOXICOLOGICAL INFORMATION

Acute toxicity ACUTE TOXICITY

Peroral

Peroral

Rat; female; LD50 = 4.92 (3.58 - 6.78) ml/kg

Major Signs: sluggishness, lacrimation, piloerection, unsteady gait, diarrhea, and red or brown discharge on perinasal and perigenital fur

Gross Pathology: discolored lungs, stomach, intestines. Clear to dark red liquid in stomach and intestine

Peroral

Rat; male; LD50 = 8.57 (5.80 - 12.7) ml/kg

Major Signs: sluggishness, lacrimation, piloerection, unsteady gait, diarrhea, and red or brown discharge on perinasal and perigenital fur

Gross Pathology: discolored lungs, stomach, intestines. Clear to dark red liquid in stomach and intestine

Percutaneous

Percutaneous

Rabbit; female = 16 ml/kg; 24 h occluded.

Mortality: 0/5

Major Signs: sluggishness, unsteady gait, emaciation

Gross Pathology: discolored lungs, thymus, spleen, kidneys; stomach and intestines gas- and/or liquid-filled

Percutaneous

Percutaneous

Rabbit; male = 16 ml/kg; 24 h occluded.

Mortality: 0/5

Major Signs: sluggishness, unsteady gait, emaciation

Gross Pathology: discolored lungs, thymus, spleen, kidneys; stomach and intestines gas- and/or liquid-filled

Inhalation

Inhalation

static generation Rat; female; 6 h; 25 C.

Mortality: 0/5

Major Signs: None.

Gross Pathology: None.

Inhalation

Inhalation

static generation Rat; male; 6 h; 25 C.

Mortality: 0/5

Major Signs: None.

Gross Pathology: None.

#### SIGNIFICANT DATA WITH POSSIBLE RELEVANCE TO HUMANS

Recent analyses of Diethanolamine and Triethanolamine for N-nitrosodiethanolamine have not revealed its presence at the detection limit of the test (20ppb). However, amines may react with nitrites or other nitrosating agents to form nitrosamines. Some nitrosamines have been shown to be carcinogenic in laboratory animals.

#### 12. ECOLOGICAL INFORMATION

##### 12.1 ENVIRONMENTAL FATE

Information may be available, call Union Carbide.

##### 12.2 ECOTOXICITY

Information may be available, call Union Carbide.

Ecotoxicity to Micro-organismsEcotoxicity to Aquatic Invertebrates

Ecotoxicity to Aquatic PlantsEcotoxicity to Fish

##### 12.3 FURTHER INFORMATION

None.

#### 13. DISPOSAL CONSIDERATIONS

##### 13.1 WASTE DISPOSAL METHOD

Incinerate in a furnace where permitted under Federal, State, and local regulations. Dispose in accordance with all applicable Federal, State, and local environmental regulations. Empty containers should be recycled or disposed of through an approved waste management facility.

##### 13.2 DISPOSAL CONSIDERATIONS

Laboratory tests show that, at very low concentrations (about 10 ppm), triethanolamine can be degraded in a biological wastewater treatment system.

Disposal methods identified are for the product as sold. For proper disposal of used material, an assessment must be completed to determine the proper and permissible waste management options permissible under applicable rules, regulations and/or laws governing your location.

#### 14. TRANSPORT INFORMATION

##### 14.1 U.S. D.O.T.

NON-BULK

Proper Shipping Name : NOT REGULATED

BULK

Proper Shipping Name : OTHER REGULATED SUBSTANCES, LIQUID, NOS

Technical Name : CONTAINS DIETHANOLAMINE

ID Number : NA3082

Hazard Class : 9

Packing Group : PG III

Reportable Quantity : 42,017 LB

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

#### 15. REGULATORY INFORMATION

##### 15.1 FEDERAL/NATIONAL

COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT OF 1980  
SECTION 103 (CERCLA)

The following components of this product are specifically listed as hazardous substances in 40 CFR 302.4 (unlisted hazardous substances are not identified)

a

nd are present at levels which could require reporting:

None.

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 TITLE III (EPCRA)  
SECTIONS 302 AND 304

The following components of this product are listed as extremely hazardous substances in 40 CFR Part 355 and are present at levels which could require reporting and emergency planning:

None.

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 TITLE III (EPCRA)  
SECTION 313

The following components of this product are listed as toxic chemicals in 40 CFR 372.65 and are present at levels which could require reporting and customer notification under Section 313 and 40 CFR Part 372:

This product does not contain toxic chemicals at levels which require reporting under the statute.



SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 TITLE III (EPCRA)  
SECTIONS 311 AND 312

Delayed Hazard : Yes  
Fire Hazard : No  
Immediate Health Hazard : Yes  
Reactive Hazard : No  
Sudden Release of Pressure Hazard : No

TOXIC SUBSTANCES CONTROL ACT (TSCA)

All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements.

EUROPEAN INVENTORY OF EXISTING COMMERCIAL CHEMICAL SUBSTANCES (EINECS)

The components of this product are on the EINECS inventory.

CEPA - DOMESTIC SUBSTANCES LIST (DSL)

The components of this product are on the DSL or are exempt from reporting under the New Substances Notification Regulations.

15.2 STATE/LOCAL

PENNSYLVANIA (WORKER AND COMMUNITY RIGHT-TO-KNOW ACT)

This product is subject to the Worker and Community Right-to-Know Act. The following components of this product are at levels which could require identification in the MSDS:

Component

CAS #

Amount

Triethanolamine

102-71-6

<= 85.0000 %

MASSACHUSETTS (HAZARDOUS SUBSTANCES DISCLOSURE BY EMPLOYERS)

The following components of this product appear on the Massachusetts Substance List and are present at levels which could require identification in the MSDS:

Component

CAS #

Amount

Triethanolamine

102-71-6

<= 85.0000 %

CALIFORNIA PROPOSITION 65 (SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986)

This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

CALIFORNIA SCAQMD RULE 443.1 (SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 443.1, LABELING OF MATERIALS CONTAINING ORGANIC SOLVENTS)

VOC : Vapor pressure 9.7 mmHg @ 20 C  
2 g/l  
3 g/l less water and less exempted solvents

This section provides selected regulatory information on this product including its components. This is not intended to include all regulations. It is the responsibility of the user to know and comply with all applicable rules, regulations and laws relating to the product being used.

## 16. OTHER INFORMATION

### 16.1 AVAILABLE LITERATURE AND BROCHURES

ADDITIONAL INFORMATION: Additional product safety information on this product may be obtained by calling your Union Carbide Corporation Sales or Customer Service contact.

Ask for the brochure:

Ethanolamines (Family Brochure)

Ethanolamines Storage and Handling (Brochure)

### 16.2 SPECIFIC HAZARD RATING SYSTEM

HMIS

ratings for this product are:

H - 2

F - 1

R - 0

NFPA

ratings for this product are:

H - 1

F - 1

R - 0

These ratings are part of specific hazard communications program(s) and should be disregarded where individuals are not trained in the use of these hazard rating systems. You should be familiar with the hazard communication applicable to your workplace.

### 16.3 RECOMMENDED USES AND RESTRICTIONS

FOR INDUSTRY USE ONLY

### 16.4 REVISION

Revision: 06/23/2000

### 16.5 LEGEND

Note that below the phrase code prints in Col 1 and the Phrase in Col2.

Symbol is for MSDS Phrase 2

A

Asphyxiant

Note that below the phrase code prints in Col 1 and the Phrase in Col2.

Symbol is for MSDS Phrase 2

Bacterial/NA

Non Acclimated Bacteria

Note that below the phrase code prints in Col 1 and the Phrase in Col2.

Symbol is for MSDS Phrase 2

F

Fire

Note that below the phrase code prints in Col 1 and the Phrase in Col2.

Symbol is for MSDS Phrase 2

H

Health

Note that below the phrase code prints in Col 1 and the Phrase in Col2.

Symbol is for MSDS Phrase 2

HMIS

Hazardous Materials Information System

Note that below the phrase code prints in Col 1 and the Phrase in Col2.

Symbol is for MSDS Phrase 2

N/A

Not available

Note that below the phrase code prints in Col 1 and the Phrase in Col2.

Symbol is for MSDS Phrase 2

NFPA

National Fire Protection Association

Note that below the phrase code prints in Col 1 and the Phrase in Col2.

Symbol is for MSDS Phrase 2

O

Oxidizer

Note that below the phrase code prints in Col 1 and the Phrase in Col2.

Symbol is for MSDS Phrase 2

P

Peroxide Former

Note that below the phrase code prints in Col 1 and the Phrase in Col2.

Symbol is for MSDS Phrase 2

R

Reactivity

Note that below the phrase code prints in Col 1 and the Phrase in Col2.

Symbol is for MSDS Phrase 2

TS

Trade Secret

Note that below the phrase code prints in Col 1 and the Phrase in Col2.

Symbol is for MSDS Phrase 2

VOL/VOL

Volume/Volume

Note that below the phrase code prints in Col 1 and the Phrase in Col2.

Symbol is for MSDS Phrase 2

W

Water Reactive

Note that below the phrase code prints in Col 1 and the Phrase in Col2.

Symbol is for MSDS Phrase 2

W/W

Weight/Weight

UNION CARBIDE CORPORATION

A Subsidiary of The Dow Chemical Company

MATERIAL SAFETY DATA SHEET

Product Name: TRIETHANOLAMINE, 99% LOW FREEZING GRADE (PM-4024)

Effective Date: 06/23/2000

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**For Additional Information:**

**Contact: MSDS Coordinator - Univar USA**

**During business hours, Pacific Time - (425) 889-3400**

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END OF MSDS