

READ AND UNDERSTAND MATERIAL SAFETY DATA SHEET BEFORE HANDLING OR DISPOSING
OF PRODUCT

PRODUCT CODE AND NAME : **TEA99 TRIETHANOLAMINE-99%**
ISSUE DATE : **9/12/2000**
MSDS CD DATE : **1/1/2002**

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MATERIAL IDENTITY

PRODUCT CODE AND NAME

TEA99 TRIETHANOLAMINE-99%

Chemical Name and/or Family or Description:

Alkanolamine

COMPANY INFORMATION

Huntsman Petrochemical Corporation
P.O. Box 27707
Houston, TX 77227-7707

TELEPHONE NUMBERS

Transportation Emergency

Company: (409) 727-0831

CHEMTREC: (800) 424-9300

Medical Emergency: (409) 722-9673 (24 Hour)

General MSDS Assistance: (713) 235-6432

Technical Information: (512) 459-6543

2. COMPOSITION AND INFORMATION ON INGREDIENTS

THE CRITERIA FOR LISTING COMPONENTS IN THE COMPOSITION SECTION ARE AS FOLLOWS: CARCINOGENS ARE LISTED WHEN PRESENT AT 0.1 % OR GREATER; COMPONENTS WHICH ARE OTHERWISE HAZARDOUS ACCORDING TO OSHA ARE LISTED WHEN PRESENT AT 1.0 % OR GREATER; NON-HAZARDOUS COMPONENTS ARE LISTED AT 3.0 % OR GREATER. THIS IS NOT INTENDED TO BE COMPLETE COMPOSITIONAL DISCLOSURE. REFER TO SECTION 14 FOR APPLICABLE STATES' RIGHT TO KNOW AND OTHER REGULATORY INFORMATION.

Product and/or Component(s) Carcinogenic According to:

OSHA IARC NTP OTHER NONE X

Composition:

Chemical Name	CAS Number	Exposure Limits	Range in %
Ethanol, 2,2',2"-nitrilotris (Common Name-Triethanolamine)	102-71-6	5 mg/m3 TWA-ACGIH	99.00-99.90
Ethanol, 2,2'-iminobis- (Common Name-Diethanolamine)	111-42-2	3 ppm TWA-OSHA 0.46 ppm TWA-ACGIH (SKIN)	0.10-1.00

THIS PRODUCT IS CONSIDERED HAZARDOUS ACCORDING TO OSHA (1910.1200).

PRODUCT CODE AND NAME : TEA99 TRIETHANOLAMINE-99%
ISSUE DATE : 9/12/2000
MSDS CD DATE : 1/1/2002
COMPANY : HUNTSMAN

3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW

Appearance:

Clear liquid or moist white solid

Odor:

Ammonia-like odor

WARNING STATEMENT

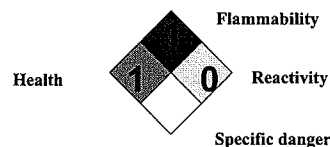
CAUTION !

MAY CAUSE KIDNEY DAMAGE BASED ON ANIMAL DATA
MAY CAUSE EYE IRRITATION

**Hazardous Material
Information System
(United States)**

Health	1
Fire	1
Reactivity	0
Personal protection	○

**National Fire Protection
Association NFPA
(United States)**



POTENTIAL HEALTH EFFECTS

Primary Route of Exposure

Eye X Skin X Inhalation X Ingestion

Effects of Overexposure

Acute:

- Eyes:** May cause irritation, experienced as mild discomfort and seen as slight excess redness of the eye.
- Skin:** Brief contact may cause slight irritation. Prolonged contact, as with clothing wetted with material, may cause more severe irritation and discomfort, seen as local redness and swelling. Other than the potential skin irritation effects noted above, acute (short term) adverse effects are not expected from brief skin contact; see other effects, below, and Section 11 for information regarding potential long term effects.
- Inhalation:** Vapors or mist, in excess of permissible concentrations, or in unusually high concentrations generated from spraying, heating the material or as from exposure in poorly ventilated areas or confined spaces, may cause irritation of the nose and throat, headache, nausea, and drowsiness. Prolonged or repeated overexposure may result in the absorption of potentially harmful amounts of material.
- Ingestion:** May cause abdominal discomfort, nausea, and diarrhea.
- Sensitization Properties:** This product is not expected to be a human skin sensitizer based on animal data.

Chronic:

No adverse effects have been documented in humans as a result of chronic exposure. Section 11 may contain applicable animal data.

Medical Conditions Aggravated by Exposure:

Repeated overexposure may aggravate existing kidney disease.

Other Remarks:

None

PRODUCT CODE AND NAME : TEA99 TRIETHANOLAMINE-99%
ISSUE DATE : 9/12/2000
MSDS CD DATE : 1/1/2002
COMPANY : HUNTSMAN

4. FIRST AID MEASURES

Eyes:

Immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids apart while flushing to rinse entire surface of eye and lids with water. Get medical attention.

Skin:

Wash skin with plenty of soap and water for several minutes. Get medical attention if skin irritation develops or persists.

Ingestion:

If patient is conscious and can swallow, give two glasses of water (16 oz.). Induce vomiting as directed by medical personnel. Do not induce vomiting or give anything by mouth to an unconscious or convulsing person.

Inhalation:

If irritation, headache, nausea, or drowsiness occurs, remove to fresh air. Get medical attention if breathing becomes difficult or respiratory irritation persists.

Other Instructions:

None

5. FIRE-FIGHTING MEASURES

Ignition Temperature - AIT (degrees C):

Not determined.

Flash Point (degrees C):

201.7 (395 F) (CC)

Flammable Limits % (Lower-Upper):

Lower: 1

Upper: 10

Recommended Fire Extinguishing Agents And Special Procedures:

Use water spray, dry chemical, foam, or carbon dioxide to extinguish flames. Use water spray to cool fire-exposed containers. Water or foam may cause frothing.

Unusual or Explosive Hazards:

None

Special Protective Equipment for Firefighters:

Wear full protective clothing and positive pressure breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES (Transportation Spills: CHEMTREC (800)424-9300)

Procedures in Case of Accidental Release, Breakage or Leakage:

Ventilate area. Avoid breathing vapor. Pressure demand air supplied respirators should always be worn when the airborne concentration of the contaminant or oxygen is unknown. Otherwise, wear respiratory protection and other personal protective equipment as appropriate for the potential exposure hazard. Contain spill if possible. Shovel up material and place in air-tight container. Avoid contact with skin, eyes, or clothing.

PRODUCT CODE AND NAME : TEA99 TRIETHANOLAMINE-99%
ISSUE DATE : 9/12/2000
MSDS CD DATE : 1/1/2002
COMPANY : HUNTSMAN

7. HANDLING AND STORAGE

Precautions to be Taken in

Handling:

Minimum feasible handling temperatures should be maintained.

Storage:

Periods of exposure to high temperatures should be minimized. Water contamination should be avoided. Store above 72 F (22 C) to prevent crystallization.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Protective Equipment (Type)

Eye/Face Protection:

Safety glasses, chemical type goggles, or face shield recommended to prevent eye contact.

Skin Protection:

Workers should wash exposed skin several times daily with soap and water. Soiled work clothing should be laundered or dry-cleaned.

Respiratory Protection:

Airborne concentrations should be kept to lowest levels possible. If vapor, mist or dust is generated and the occupational exposure limit of the product, or any component of the product, is exceeded, use appropriate NIOSH or MSHA approved air purifying or air supplied respirator after determining the airborne concentration of the contaminant. Air supplied respirators should always be worn when airborne concentration of the contaminant or oxygen content is unknown.

Ventilation:

Adequate to meet occupational exposure limits (see below).

Exposure Limit for the Total Product:

None established for product; refer to Section 2 for component exposure limits.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:

Clear liquid or moist white solid

Odor:

Ammonia-like odor

Boiling Point (degrees C):

360 (680 F)

Melting/Freezing Point (degrees C):

21.1 (70 F)

Specific Gravity (water=1):

1.12

pH:

11

Vapor Pressure:

PRODUCT CODE AND NAME : TEA99 TRIETHANOLAMINE-99%
ISSUE DATE : 9/12/2000
MSDS CD DATE : 1/1/2002
COMPANY : HUNTSMAN

< .01 mmHg at 20 C (68 F)

Viscosity:

527 cSt at 25 C (77 F)

VOC Content:

1% by ASTM D 2369

Vapor Density (Air=1):

5.3

Solubility in Water (%):

>10

Other:

None

10. STABILITY AND REACTIVITY

This Material Reacts Violently With:

Air **Water** **Heat** **Strong Oxidizers** **Others** X **None of these**

Comments:

This material reacts violently with acids.

Products Evolved When Subjected to Heat or Combustion:

Toxic levels of ammonia, combustion products of nitrogen, carbon monoxide, carbon dioxide, irritating aldehydes and ketones may be formed on burning in a limited air supply.

Hazardous Polymerizations:

DO NOT OCCUR

11. TOXICOLOGICAL INFORMATION

TOXICOLOGICAL INFORMATION (ANIMAL TOXICITY DATA)

Oral:

LD50 Believed to be > 2.00 - 5.00 g/kg (rat) slightly toxic

Inhalation:

Not determined.

Dermal:

LD50 > 10.00 g/kg (rabbit) practically non-toxic

IRRITATION INDEX, ESTIMATION OF IRRITATION (SPECIES)

Skin:

(Draize) Believed to be > .50 - 3.00 /8.0 (rabbit) slightly irritating

Eyes:

(Draize) Believed to be 15.00 - 25.00 /110 (rabbit) slightly irritating

Sensitization:

(Buehler) Negative - skin (guinea pig)

Other:

TRIETHANOLAMINE

Subchronic Toxicity

Prolonged and repeated ingestion of triethanolamine has caused kidney damage in laboratory animals.

Carcinogenicity:

A report from a chronic (lifetime) dermal exposure study in rats and mice exposed to triethanolamine (TEA) has been released by the sponsor of this study, the National Toxicology Program (NTP). In this report, NTP has concluded that there is "no

PRODUCT CODE AND NAME : TEA99 TRIETHANOLAMINE-99%
ISSUE DATE : 9/12/2000
MSDS CD DATE : 1/1/2002
COMPANY : HUNTSMAN

evidence" of cancer in female rats and "equivocal evidence" of kidney cancer in male rats. NTP has also concluded that both the male and female mouse studies are considered "inadequate" studies for determining the carcinogenic potential of TEA, due to the infection of the study animals with a bacterial infection (*Helicobacter hepaticus*), known to cause liver tumors. To clarify the carcinogenic potential of TEA in mice, NTP is currently sponsoring repeat male and female mouse carcinogenicity studies with uninfected animals.

It should be recognized, however, that previous carcinogenicity bioassays using TEA, in both rats and mice, have not resulted in any significant increases in tumors from these exposures. Given the weight-of-the-evidence of these negative carcinogenicity studies, any additional risk of carcinogenicity to humans from exposures to TEA is expected to be minimal.

DIETHANOLAMINE

Carcinogenicity:

A report from a chronic (lifetime) dermal exposure study using rats and mice exposed to diethanolamine (DEA) have been recently released by the sponsor of these studies, the National Toxicology Program (NTP). In this report, NTP has concluded that there is "no evidence" of cancer in male and female rats, and "clear evidence" of liver and kidney cancer in male mice, and "clear evidence" of liver cancer in female mice.

These findings in mice are not consistent with the findings of other studies conducted with DEA to determine its carcinogenic potential. Most importantly, in the other NTP-sponsored study, an increase in tumors was not observed in the rats dermally exposed to DEA. In addition, DEA has not been shown to be mutagenic (causing gene mutations) in test-tube and laboratory animal studies. Finally, several confounding factors were noted in the conduct of this study; 1) the strain of mice used in the NTP study is known to have a high incidence of spontaneous tumors, which could affect the outcome of these studies, and 2) the dermal site of exposure was not occluded (covered) to prevent the ingestion of DEA in ethanol dosing solution.

Given the presence of these confounding factors, the relevance (if any) of these mouse tumors to humans is not known. The CMA Alkanolamines Panel and other organizations are sponsoring additional research to determine the possible mechanisms of DEA toxicity/carcinogenicity in mice and the relevance of these mechanisms to human carcinogenicity. Preliminary data seem to indicate that the carcinogenicity response in mice occurs through a mechanism that is not relevant to humans. Given the weight-of-the-evidence of the available data, any additional risk of carcinogenicity to humans from exposures to DEA is expected to be minimal.

Developmental and Reproductive Toxicity:

Laboratory animal studies investigating the developmental toxicity of DEA have indicated that DEA exposures, either oral (gavage) or dermal, do not result in any specific developmental toxicity. Although some minor developmental delays were observed in rat dermal exposure studies, these effects were secondary to extreme maternal toxicity from exposure to relatively high levels of DEA.

12. DISPOSAL CONSIDERATIONS:

Waste Disposal Methods:

This product has been evaluated for RCRA characteristics and does not meet the criteria of a hazardous waste if discarded in its purchased form. Under RCRA, it is the responsibility of the user of the product to determine at the time of disposal, whether the product meets RCRA criteria for hazardous waste. This is because product uses, transformations, mixtures, processes, etc. may render the resulting materials hazardous.

Remarks:

None

13. TRANSPORT INFORMATION

Transportation

DOT:

Proper Shipping Name:

Not regulated for drums. For larger containers, consult MSDS (Section 14) and shipping papers for proper shipping description.

Hazard Class:

PRODUCT CODE AND NAME : TEA99 TRIETHANOLAMINE-99%
ISSUE DATE : 9/12/2000
MSDS CD DATE : 1/1/2002
COMPANY : HUNTSMAN

Not regulated

Identification Number:

Not regulated

Packing Group:

Not regulated

Label Required:

Not regulated

Depending on container size, spills of this product may require reporting under SARA 304 and/or CERCLA 102(A) regulations. Please refer to Sections 2 and 14 of MSDS for composition and component RQ information.

IMDG

Proper Shipping Name:

Not regulated for drums. For larger containers, consult MSDS (Section 14) and shipping papers for proper shipping description.

Hazard Class

Not regulated

Identification Number

Not regulated

Packing Group

Not regulated

Label Required

Not regulated

ICAO

Proper Shipping Name:

Not regulated

TDG

Proper Shipping Name:

Not regulated

Hazard Class:

Not regulated

Identification Number:

Not regulated

Label Required:

Not regulated

14. REGULATORY INFORMATION

Federal Regulations:

SARA Title III:

Section 302/304 Extremely Hazardous Substances

Chemical Name

CAS Number

Range in %

TPQ

RQ

None.

Section 311 Hazardous Categorization:

Acute X Chronic X Fire Pressure Reactive N/A

Section 313 Toxic Chemical

PRODUCT CODE AND NAME : TEA99 TRIETHANOLAMINE-99%
ISSUE DATE : 9/12/2000
MSDS CD DATE : 1/1/2002
COMPANY : HUNTSMAN

Chemical Name	CAS Number	Concentration
Ethanol, 2,2'-iminobis- (Common Name- Diethanolamine)	111-42-2	0.10-1.00

CERCLA 102(a)/DOT Hazardous Substances:

Chemical Name	CAS Number	Range in %	RQ
Ethanol, 2,2'-iminobis- (Common Name- Diethanolamine)	111-42-2	0.10-1.00	100

States Right-to-Know Regulations:

Chemical Name	State Right-to-know
Ethanol, 2,2',2"-nitrilotris (Common Name- Triethanolamine)	FL, MA, PA, RI
Ethanol, 2,2'-iminobis- (Common Name- Diethanolamine)	FL, IL, MA, NJ, PA, RI

State list: CT (Connecticut), FL (Florida), IL (Illinois), MI (Michigan), LA (Louisiana), MA (Massachusetts), NJ (New Jersey), PA (Pennsylvania), RI (Rhode Island)

California Prop. 65:

The following detectable components of this product are substances, or belong to classes of substances, known to the State of California to cause cancer and/or reproductive toxicity.

Chemical Name	CAS Number
None.	

INTERNATIONAL REGULATIONS:

TSCA Inventory Status:

This product, or its components, are listed on, or are exempt from the Toxic Substance Control Act (TSCA) Chemical Substance Inventory.

WHMIS Classification:

Not regulated

Canadian Inventory Status:

This product, or its components, are listed on or are exempt from the Canadian Domestic Substance List (DSL).

EINECS Inventory Status:

This product, or its components, are listed on or are exempt from the European Inventory of Existing Chemical Substances (EINECS) or the European List of Notified Chemical Substances (ELINCS).

Australian Inventory Status:

This product, or its components, are listed on or are exempt from the Australian Inventory of Chemical Substances (AICS).

Japan Inventory Status:

This product, or its components, are listed on or are exempt from the Japan Ministry of International Trade and Industry (MITI) inventory.

15. ENVIRONMENTAL INFORMATION

Aquatic Toxicity:

TEA is expected to have low toxicity to aquatic species.

Mobility:

TEA is not expected to selectively partition and absorb to soil or sediments.

Persistence and Biodegradability:

TEA is readily biodegradable and is not expected to persist in the environment.

Potential to Bioaccumulate:

PRODUCT CODE AND NAME : TEA99 TRIETHANOLAMINE-99%
ISSUE DATE : 9/12/2000
MSDS CD DATE : 1/1/2002
COMPANY : HUNTSMAN

TEA is not expected to bioaccumulate (log K_{ow} = -1.75).

Remarks:

None

16. OTHER INFORMATION 9/12/2000

Do not add nitrites. This product contains amines which can combine with nitrites or other nitrosating agents to form nitrosamines. Many nitrosamines have been found to cause cancer in laboratory animals.

"SKIN" notation in Section 2 indicates possible adverse health effects as a result of absorption through the skin, mucous membranes and eyes, by contact with vapor, mist, spray or liquid. Appropriate measures should be taken to minimize contact.

Supercedes: 4/1/1999

The following section has been revised: 13

Print Date: 12/19/2001

THE INFORMATION IN THIS DATA SHEET IS PROVIDED INDEPENDENTLY OF ANY SALE OF THE PRODUCT. IT IS PROVIDED FOR THE PURPOSE OF HAZARD COMMUNICATION AS PART OF HUNTSMAN'S PRODUCT SAFETY PROGRAM. IT IS INTENDED ONLY AS A GUIDE TO THE APPROPRIATE PRECAUTIONARY HANDLING OF THE PRODUCT BY A PROPERLY TRAINED PERSON. YOU ARE ENCOURAGED AND REQUESTED TO ADVISE THOSE WHO MAY COME IN CONTACT WITH SUCH PRODUCTS OF THE INFORMATION CONTAINED HEREIN. THE DATA RELATES ONLY TO THE SPECIFIC PRODUCT DESIGNATED, AND DOES NOT RELATE TO USE OF THE PRODUCT IN COMBINATION WITH ANY OTHER MATERIAL OR USE OF THE PRODUCT IN ANY PROCESS. THE DATA IS NOT INTENDED TO CONSTITUTE PERFORMANCE INFORMATION CONCERNING THE PRODUCT. NO EXPRESS WARRANTY, OR IMPLIED WARRANTY OF MERCHANTABILITY FOR FITNESS FOR A PARTICULAR PURPOSE IS MADE WITH RESPECT TO THE PRODUCT, ITS COMPOSITION, ITS SAFETY OR THE INFORMATION CONTAINED IN THIS DATA SHEET.

TO DETERMINE THE APPLICABILITY OR THE EFFECTS OF ANY LAW OR REGULATION WITH RESPECT TO THE PRODUCT, THE USER SHOULD CONSULT A LEGAL ADVISOR OR THE APPROPRIATE GOVERNMENT AGENCY. HUNTSMAN DOES NOT UNDERTAKE TO FURNISH ADVICE ON SUCH MATTERS.

CURRENT DATA SHEETS ARE AVAILABLE FOR ALL HUNTSMAN PRODUCTS. YOU ARE URGED TO OBTAIN DATA SHEETS FOR ALL HUNTSMAN PRODUCTS YOU BUY, USE OR DISTRIBUTE BY CALLING (713) 235-6432 OR DIRECTING YOUR INQUIRIES TO:

*HUNTSMAN
COORDINATOR, PRODUCT SAFETY
P.O. Box 27707
HOUSTON, TX 77227-7707*

NO PERSON OR ORGANIZATION EXCEPT A DULY AUTHORIZED HUNTSMAN EMPLOYEE IS AUTHORIZED TO PROVIDE OR MAKE AVAILABLE DATA SHEETS FOR HUNTSMAN PRODUCTS. DATA SHEETS FROM UNAUTHORIZED SOURCES MAY CONTAIN INFORMATION THAT IS NO LONGER CURRENT OR ACCURATE. NO PART OF THIS DATA SHEET MAY BE REPRODUCED OR TRANSMITTED IN ANY FORM, OR BY ANY MEANS, WITHOUT PERMISSION IN WRITING FROM HUNTSMAN. ALL REQUESTS FOR PERMISSION TO REPRODUCE MATERIAL FROM THIS DATA SHEET SHOULD BE DIRECTED TO HUNTSMAN, COORDINATOR, PRODUCT SAFETY AT THE ABOVE ADDRESS.

COPYRIGHT © 2001 BY HUNTSMAN CORPORATION. ALL RIGHTS RESERVED.