SAFETY DATA SHEET

Preparation Date: No data available **Revision Date:** 04/29/2015 **Revision Number:** G1

Product identifier

Product code: TR117
Product Name: TRIETHYLAMINE, REAGENT

Other means of identification

Synonyms: (Diethylamino)ethane
N,N-Diethylethanamine
Ethanamine, N,N-diethyl-
CAS #: 121-44-8
RTECS # YE0175000
CI#: Not available

Recommended use of the chemical and restrictions on use

Recommended use: Chemical intermediate. Catalyst.
Uses advised against No information available

Supplier: Spectrum Chemicals and Laboratory Products, Inc.
14422 South San Pedro St.
Gardena, CA 90248
(310) 516-8000
Order Online At: https://www.spectrumchemical.com

Emergency telephone number Chemtrec 1-800-424-9300
Contact Person: Martin LaBenz (West Coast)
Contact Person: Ibad Tirmiz (East Coast)

2. HAZARDS IDENTIFICATION

Classification

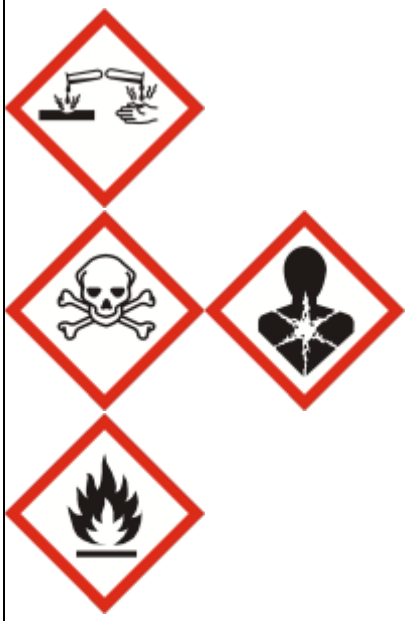
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute toxicity - Oral	Category 4
Acute toxicity - Dermal	Category 3
Acute toxicity - Inhalation (Gases)	Category 3
Acute toxicity - Inhalation (Vapors)	Category 3
Acute toxicity - Inhalation (Dusts/Mists)	Category 4
Skin corrosion/irritation	Category 1Sub-category A
Serious eye damage/eye irritation	Category 1
Specific target organ toxicity (single exposure)	Category 3
Specific target organ toxicity (repeated exposure)	Category 2
Flammable liquids	Category 2

Label elements

Danger

Hazard statements
Harmful if swallowed
Toxic in contact with skin
Toxic if inhaled
Causes severe skin burns and eye damage
May cause respiratory irritation. May cause drowsiness or dizziness
May cause damage to organs through prolonged or repeated exposure
Highly flammable liquid and vapor



Hazards not otherwise classified (HNOC)
Not Applicable

Other hazards
Not available

Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Use only outdoors or in a well-ventilated area
Do not breathe dust/fume/gas/mist/vapors/spray
Wear protective gloves/protective clothing/eye protection/face protection
Keep away from heat/sparks/open flames/hot surfaces. — No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting/ .? /equipment
Use only non-sparking tools
Take precautionary measures against static discharge
Keep cool

Precautionary Statements - Response
Specific treatment (see .? on this label)
Immediately call a POISON CENTER or doctor/physician
Specific treatment (see .? on this label)
In case of fire: Use CO2, dry chemical, or foam to extinguish.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Immediately call a POISON CENTER or doctor/physician.
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell. Immediately call a POISON CENTER or doctor/physician.
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth
Do NOT induce vomiting

Precautionary Statements - Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS-No.	Weight %	Trade Secret
Triethylamine 121-44-8	121-44-8	100	*

4. FIRST AID MEASURES

First aid measures

General Advice: Poison information centers in each State capital city can provide additional assistance for scheduled poisons (13 1126)

Skin Contact: Wash off immediately with soap and plenty of water. Continue flushing with plenty of water for at least 15 minutes. Remove all contaminated clothes and shoes. Immediate medical attention is required. Call a physician or Poison Control Centre immediately. Toxic in contact with skin.

Eye Contact: Flush eye with water for 15 minutes. Immediate medical attention is required. Call a physician immediately.

Inhalation: Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. WARNING! It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled or ingested material is toxic, infectious or corrosive. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.

Ingestion: Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Immediate medical attention is required.

Most important symptoms and effects, both acute and delayed

Symptoms Causes severe skin burns. Causes eye damage. Harmful if swallowed. Toxic by inhalation and in contact with skin. Irritating to respiratory system. Coughing. Dyspnea (Difficulty breathing and shortness of breath). May cause pulmonary edema. May cause bronchitis. May cause inflammation of the lungs (pneumonitis). May affect eyes/vision.

Indication of any immediate medical attention and special treatment needed

Notes to Physician: Treat symptomatically

Protection of first-aiders

First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste

5. FIRE-FIGHTING MEASURES

Extinguishing Media

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media: Carbon dioxide (CO2). Dry chemical. Alcohol-resistant foam. Water spray.

Unsuitable Extinguishing Media: Do not use a solid (straight) water stream as it may scatter and spread fire.

Specific hazards arising from the chemical

Hazardous Combustion Products: Carbon monoxide, carbon dioxide, nitrogen oxides

Specific hazards: Flammable
May be ignited by heat, sparks or flames
Container explosion may occur under fire conditions or when heated
Vapor may travel considerable distance to source of ignition and flash back
Vapors may form explosive mixtures with air
Most vapors are heavier than air. They will spread along the ground and collect in low or confined areas (sewers, basements, tanks)

Special Protective Actions for Firefighters

Specific Methods: Water mist may be used to cool closed containers. For larger fires, use water spray or fog. Cool containers with flooding quantities of water until well after fire is out. Dike fire-control water for later disposal; do not scatter the material.

Special Protective Equipment for Firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions: Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid contact with skin, eyes and clothing. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Use personal protective equipment. Remove all sources of ignition. Pay attention to flashback. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use spark-proof tools and explosion-proof equipment. In case of large spill, water spray or vapor suppressing foam may be used to reduce vapors, but may not prevent ignition in closed spaces.

Environmental precautions Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Prevent entry into waterways, sewers, basements or confined areas. In case of large spill, dike if needed. Dike far ahead of liquid spill for later disposal.

Methods and material for containment and cleaning up

Methods for containment Stop leak if you can do it without risk. Absorb spill with inert material (e.g. vermiculite, dry sand or earth). In case of large spill, dike if needed. Dike far ahead of liquid spill for later disposal.

Methods for cleaning up Use appropriate tools to put the spilled material in a suitable chemical waste disposal container. Use only non-sparking tools. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Precautions for safe handling

Technical Measures/Precautions:
Provide sufficient air exchange and/or exhaust in work rooms. Remove all sources of ignition. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Keep away from incompatible materials.

Safe Handling Advice:
Wear personal protective equipment. Use only in well-ventilated areas. Avoid contact with skin, eyes and clothing. Keep away from heat and sources of ignition. Do not breathe vapors or spray mist. Do not ingest. When using do not smoke. Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Technical Measures/Storage Conditions:
Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Store away from incompatible materials. Store in a segrated and approved area.

Incompatible Materials:
Strong oxidizing agents. Strong acids. Chlorine. Halogenated compounds. hypochlorite.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

National occupational exposure limits

United States

Components	OSHA	NIOSH	ACGIH	AIHA WHEEL
Triethylamine - 121-44-8	25 ppm TWA 100 mg/m^3 TWA	None	= 3 ppm STEL	None

Canada

Components	Alberta	British Columbia	Ontario	Quebec
Triethylamine - 121-44-8	= 1 ppm TWA = 4.1 mg/m^3 TWA	= 1 ppm TWA	1 ppm TWA	5 ppm TWAEV 20.5 mg/m^3 TWAEV 15 ppm STEV 61.5 mg/m^3 STEV

Australia and Mexico

Components	Australia	Mexico
Triethylamine 121-44-8	17 mg/m^3 STEL 4 ppm STEL 2 ppm TWA 8 mg/m^3 TWA	= 100 mg/m^3 TWA = 25 ppm TWA

Appropriate engineering controls

Engineering measures to reduce exposure: Ensure adequate ventilation. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors and mist below their respective threshold limit value.

Individual protection measures, such as personal protective equipment

Personal Protective Equipment

Eye protection: Goggles. Safety glasses with side-shields.

Skin and body protection: Chemical resistant apron. Gloves. Long sleeved clothing.

Respiratory protection: Vapor respirator. Be sure to use an approved/certified respirator or equivalent.

Hygiene measures: Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. When using, do not eat, drink or smoke.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:
Liquid

Appearance:
Oily.

Color:
Colorless.

Odor:
Ammoniacal.

Taste
No information available

Molecular/Formula weight:
101.10

Formula:
C6H15N

Flash point (°C):
-8.3

Flashpoint (°C/°F):
Closed cup: -8.3°C/17.1°F
Open cup: -7°C/19.4°F

Flash Point Tested according to:
Closed cup
Open cup

Lower Explosion Limit (%):
1.2

Upper Explosion Limit (%):
8

Autoignition Temperature (°C/°F):
215-249°C/419-480°F

pH:
No information available

Melting point/range(°C/°F):
-115°C/(-175°F)

Boiling point/range(°C/°F):
89.7°C/193.5°F

Decomposition temperature(°C/°F):
No information available

Bulk density:
No information available

Specific gravity:
0.73

Density (g/cm3):
No information available

Vapor pressure @ 20°C (kPa):
6.9-7.2

Evaporation rate:
No information available

Vapor density:
3.48

VOC content (g/L):
No information available

Odor threshold (ppm):
0.27

Partition coefficient (n-octanol/water):
1.45

Viscosity:
No information available

Miscibility:
No information available

Solubility:
Soluble in cold water
Solubility in Water: 5.5 g/100 g water @ 20 deg. C
Soluble in diethyl ether
Soluble in Ethanol
Soluble in Carbon tetrachloride
Very soluble in chloroform
Very soluble in Benzene
Very soluble in Acetone

10. STABILITY AND REACTIVITY

Reactivity
Reactive with acids
Reactive with oxidizing agents

Chemical stability
Stability: Stable under recommended storage conditions

Possibility of Hazardous Reactions: Hazardous polymerization does not occur

Conditions to avoid: Heat. Ignition sources. Incompatible materials.

Incompatible Materials: Strong oxidizing agents. Strong acids. Chlorine. Halogenated compounds. hypochlorite.

Hazardous decomposition products: Carbon monoxide. Carbon dioxide. Nitrogen oxides (NOx).

Other Information

Corrosivity: No information available

Special Remarks on Corrosivity: No information available

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Principal Routes of Exposure:
Eyes. Inhalation.

Acute Toxicity

The following values are calculated based on chapter 3.1 of the GHS document .
ATEmix (inhalation-dust/mist) 1.5mg/l

Component Information

Triethylamine - 121-44-8
LD50/oral/rat = = 460 mg/kg Oral LD50 Rat
LD50/oral/mouse = 546 mg/kg Oral LD50 Mouse
LD50/dermal/rat = No information available
LD50/dermal/rabbit = 416 mg/kg Dermal LD50Rabbit (EU Commission datatset)
415mg/kgDermal LD50Rabbit (LOLI)
LC50/inhalation/rat = 3496 ppm Inhalation LC50 Rat 1 h
1250 ppm Inhalation LC50 Rat 4 h
4.2 mg/L Inhalation LC50 Rat 4 h
LC50/inhalation/mouse = No infomation available
Other LD50 or LC50information = No information available

Product Information

LD50/oral/rat =
VALUE- Acute Tox Oral = 460mg/kg

LD50/oral/mouse =
Value - Acute Tox Oral = 546mg/kg

LD50/dermal/rabbit
VALUE-Acute Tox Dermal = 415mg/kg

LD50/dermal/rat
VALUE -Acute Tox Dermal = No information available

LC50/inhalation/rat
VALUE-Vapor = 4.2mg/l (4-hr)
VALUE-Gas = 1250ppm (4-hr)
VALUE-Dust/Mist = No information available

LC50/Inhalation/mouse

VALUE-Vapor = No information available
VALUE - Gas = No information available
VALUE - Dust/Mist = No information available

Symptoms

Skin Contact: Causes severe irritation and burns. Toxic in contact with skin.

Eye Contact: Causes severe eye irritation and possible burns.

Inhalation Toxic by inhalation. Irritating to respiratory system. May cause, runny nose, coughing, shortness of breath and difficulty breathing, laryngospasm, bronchitis, pneumonitis, pulmonary edema. May also cause transient headache, nausea, faintness and axienty, visual disturbances (hazing of vision, blue/gray vision, halos, corneal opacity).

Ingestion Harmful if swallowed. Corrosive to the mouth, throat, and stomach. Causes digestive (gastrointestinal) tract irritation. Causes digestive or gastrointestinal tract burns.

Aspiration hazard No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Chronic Toxicity No information available

Sensitization: No information available

Mutagenic Effects: No information available

Carcinogenic effects: Not considered carcinogenic

Components	ACGIH - Carcinogens	IARC	NTP	OSHA HCS - Carcinogens	Australia - Prohibited Carcinogenic Substances	Australia - Notifiable Carcinogenic Substances
Triethylamine	A4 Not Classifiable as a Human Carcinogen	Not listed	Not listed	Not listed	Not listed	Not listed

Reproductive toxicity No data is available

Reproductive Effects: No information available
Developmental Effects: No information available
Teratogenic Effects: No information available

Specific Target Organ Toxicity

STOT - single exposure No information available
STOT - repeated exposure May cause damage to organs through prolonged or repeated exposure.
Target Organs: Kidneys. Liver. Respiratory system.

12. ECOLOGICAL INFORMATION

Ecotoxicity

12. ECOLOGICAL INFORMATION

Ecotoxicity effects: Aquatic environment.

Triethylamine - 121-44-8

Freshwater Fish Species Data: 43.7 mg/L LC50 Pimephales promelas 96 h static 1

Water Flea Data: 200 mg/L EC50 Daphnia magna 48 h

Persistence and degradability: No information available

Bioaccumulative potential: No information available

Mobility: No information available

13. DISPOSAL CONSIDERATIONS

Disposal Methods

Waste from residues / unused products:
Waste must be disposed of in accordance with Federal, State and Local regulation.

Contaminated packaging:
Empty containers should be taken for local recycling, recovery or waste disposal

Components	RCRA - F Series Wastes	RCRA - K Series Wastes	RCRA - P Series Wastes	RCRA - U Series Wastes
Triethylamine	None	None	None	U404

14. TRANSPORT INFORMATION

DOT

UN-No: UN1296
Proper Shipping Name: Triethylamine
Hazard Class: 3
Subsidiary Risk: 8
Packing Group: II
ERG No: 132
Marine Pollutant No data available
DOT RQ (lbs): No information available
Symbol(s): R5

TDG (Canada)

UN-No: UN1296
Proper Shipping Name: Triethylamine
Hazard Class: 3
Subsidiary Risk: (8)
Packing Group: II
Description: No information available

ADR

UN-No: UN1296
Proper Shipping Name: Triethylamine
Hazard Class: 3
Packing Group: II

14. TRANSPORT INFORMATION

Subsidiary Risk: 8
Classification Code: No information available
Description: No information available
CEFIC Tremcard No: No information available

IMO / IMDG

UN-No: UN1296
Proper Shipping Name: Triethylamine
Hazard Class: 3
Subsidiary Risk: 8
Packing Group: II
Description: No information available
IMDG Page: No information available
Marine Pollutant No information available
EMS: F-E
MFAG: No information available
Maximum Quantity: No information available

RID

UN-No: UN1296
Proper Shipping Name: Triethylamine
Hazard Class: 3
Subsidiary Risk: 8
Packing Group: II
Classification Code: No information available
Description: No information available

ICAO

UN-No: UN1296
Proper Shipping Name: Triethylamine
Hazard Class: 3
Subsidiary Risk: 8
Packing Group: II
Description: No information available

IATA

UN-No: UN1296
Proper Shipping Name: Triethylamine
Hazard Class: 3
Subsidiary Risk: 8
Packing Group: II
ERG Code: 3CH
Description: No information available

15. REGULATORY INFORMATION

International Inventories

Components	U.S. TSCA	KOREA KECL	Philippines (PICCS)	Japan ENCS	CHINA	Australia (AICS)	EINECS-No.
Triethylamine	Present	Present KE-10472	Present	Present (2)-141	Present	Present	Present 204-469-4

U.S. Regulations

Triethylamine

Massachusetts RTK: Present
New Jersey RTK Hazardous Substance List: 1907
New Jersey (EHS) List: 1907 500 lb TPQ
New Jersey - Discharge Prevention - List of Hazardous Substances: Present
Pennsylvania RTK: Environmental hazard
Pennsylvania RTK - Environmental Hazard List Present
Pennsylvania RTK - Special Hazardous Substances Present
RI RTK - Hazardous Substances List: Present
Minnesota - Hazardous Substance List: Present
New York Release Reporting - List of Hazardous Substances:
= 1 lb RQ
= 5000 lb RQ
Louisana Reportable Quantity List for Pollutants: Listed
California Directors List of Hazardous Substances: Present

FDA - 21 CFR - Total Food Additives 175.105 177.1580 177.1585

California Prop. 65: Safe Drinking Water and Toxic Enforcement Act of 1986.

Chemicals Known to the State of California to Cause Cancer:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Chemicals Known to the State of California to Cause Reproductive Toxicity:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Components	Carcinogen	Developmental Toxicity	Male Reproductive Toxicity	Female Reproductive Toxicity:
Triethylamine	Not Listed	Not Listed	Not Listed	Not Listed

CERCLA/SARA

Components	CERCLA - Hazardous Substances and their Reportable Quantities	Section 302 Extremely Hazardous Substances and TPQs	Section 302 Extremely Hazardous Substances and RQs	Section 313 - Chemical Category	Section 313 - Reporting *de minimis*
Triethylamine	= 2270 kg final RQ	None	None	None	1.0 % de minimis concentration

U.S. TSCA

Components	TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)	TSCA 8(d) -Health and Safety Reporting
Triethylamine	Not Applicable	01/13/1984 01/13/1994

Canada

WHMIS hazard class:
B2 Flammable liquid
D1B Toxic materials
E Corrosive material

Canada Controlled Products Regulation:
This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

Components	WHMIS Ingredient Disclosure List -
Triethylamine	1 %

Inventory

Components	Canada (DSL)	Canada (NDSL)
Triethylamine	Present	Not Listed

Components	CEPA Schedule I - Toxic Substances	CEPA - 2010 Greenhouse Gases Subject to Manditory Reporting
Triethylamine	Not listed	Not listed

EU Classification

R-phrase(s)
R11 - Highly flammable.
R35 - Causes severe burns.
R20/21/22 - Harmful by inhalation, in contact with skin and if swallowed.

S -phrase(s)
S 3 - Keep in a cool place.
S16 - Keep away from sources of ignition - No smoking.
S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S29 - Do not empty into drains.
S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection.

Components	Classification	Concentration Limits:	Safety Phrases
Triethylamine	F; R11 Xn; R20/21/22 C; R35	25%<=C: C; R20/21/22-35 10%<=C<25%: C; R35 5%<=C<10%: C; R34 1%<=C<5%: Xi; R36/37/38	S1/2 S3 S16 S26 S29 S36/37/39 S45

The product is classified in accordance with Annex VI to Directive 67/548/EEC

Indication of danger:
C - Corrosive.
Xn - Harmful.
Flammable

C

Xn

F

16. OTHER INFORMATION

16. OTHER INFORMATION

Revision Date: 04/29/2015
Prepared by: Sonia Owen

Disclaimer: All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. The physical properties reported in this SDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.

End of Safety Data Sheet