

## Safety Data Sheet TRIETHANOLAMINE

SDS no. 9ZQQWF7 • Version 1.0 • Date of issue: 2023-03-04

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### SECTION 1: Identification

#### GHS Product identifier

Product name TRIETHANOLAMINE

#### Recommended use of the chemical and restrictions on use

Intermediate in the manufacture of surface active agents used as detergents and emulsifying, wetting, foaming and dispersing agents in cleaners, dry cleaning, polishes, cosmetics, pharmaceuticals, toiletries, drilling and cutting oils, metal-working compounds and agricultural sprays, additives in lubricants for textile industry, electroplating and textile processing, corrosion inhibitor, chelating agent, humectant and plasticizer, rubber accelerator, cement additive, water repellents, increasing penetration of organic liquids into wood and paper, softening agent, solvent, manufacture of synthetic resins, piperazine, polyurethane foam, polymers industry, used as an initiator for poly triol production, intermediate in various products including paints, inks, lacquers, polishes, and varnishes, petroleum demulsifiers, gas purification (used in the recovery of hydrogen sulfide from sour natural gases and sour crude petroleums) and laboratory reagent.

#### Supplier's details

Name ChemSupply Australia Pty Ltd  
Address 38-50 Bedford Street  
5013 Gillman South Australia  
Australia

Telephone 08 8440 2000  
email [www.chemsupply.com](http://www.chemsupply.com)

#### Emergency phone number

CHEMCALL 1800 127 406 (Australia) / +64-4-917-9888 (International)

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### SECTION 2: Hazard identification

#### General hazard statement

Not classified as dangerous goods according to the Australian Dangerous Goods Code (ADG).

Classified as Hazardous according to the Globally Harmonised System of classification and labelling of Chemicals (GHS) including Work, Health and Safety regulations, Australia.

#### Classification of the substance or mixture

##### GHS classification in accordance with: UN GHS revision 7

- Serious eye damage/eye irritation, Cat. 1
- Skin corrosion/irritation, Cat. 2
- Specific target organ toxicity following repeated exposure, Cat. 2

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### GHS label elements, including precautionary statements

#### Pictograms



#### Signal word

**Danger**

#### Hazard statement(s)

H315 Causes skin irritation  
H318 Causes serious eye damage  
H373 May cause damage to organs [organs] through prolonged or repeated exposure [route]

#### Precautionary statement(s)

P260 Do not breathe dust/fume/gas/mist/vapors/spray.  
P280 Wear protective gloves/protective clothing/eye protection/face protection.  
P302+P352 IF ON SKIN: Wash with plenty of water/soap  
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P310 Immediately call a POISON CENTER/doctor/physician  
P314 Get medical advice/attention if you feel unwell.  
P332+P313 If skin irritation occurs: Get medical advice/attention.  
P362+P364 Take off contaminated clothing and wash it before reuse.  
P501 Dispose of contents/container to an approved waste disposal facility

## SECTION 3: Composition/information on ingredients

#### Mixtures

Molecular weight: 149.19

#### Components

Component	Concentration
Triethanolamine (CAS no.: 102-71-6; EC no.: 203-049-8)	85 - 85 % (weight)
CLASSIFICATIONS: No data available. HAZARDS: No data available.	
Diethanolamine (CAS no.: 111-42-2; EC no.: 203-868-0; Index no.: 603-071-00-1)	15 - 15 % (weight)
CLASSIFICATIONS: Acute toxicity, oral, Cat. 4; Specific target organ toxicity following repeated exposure, Cat. 2; Skin corrosion/irritation, Cat. 2; Serious eye damage/eye irritation, Cat. 1. HAZARDS: H302 - Harmful if swallowed; H315 - Causes skin irritation; H318 - Causes serious eye damage; H373 - May cause damage to organs [organs] through prolonged or repeated exposure [route].	

## SECTION 4: First-aid measures

#### Description of necessary first-aid measures

General advice First Aid Facilities: Maintain eyewash fountain and drench facilities in work area.

If inhaled If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.

In case of skin contact If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water.

In case of eye contact If in eyes, hold eyelids apart and flush eye continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre (e.g. phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor, or for at least 15 minutes.

If swallowed

If swallowed, do NOT induce vomiting. Consult a physician.

**Most important symptoms/effects, acute and delayed**

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

**Indication of immediate medical attention and special treatment needed, if necessary**

Treat symptomatically based on judgement of doctor and individual reactions of the patient.

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**SECTION 5: Fire-fighting measures**

**Suitable extinguishing media**

Small fire: Use dry chemical, CO<sub>2</sub>, water spray or foam.

Large fire: Use water spray, fog or foam.

If safe to do so, move undamaged containers from the fire area. Cool containers with flooding quantities of water until well after the fire is out.

**Specific hazards arising from the chemical**

Irritating, corrosive and highly toxic gases or fumes, including oxides of carbon (CO, CO<sub>2</sub>), oxides of nitrogen (NO, NO<sub>2</sub>, etc) and hydrogen cyanides.

May burn but do not ignite readily. Runoff may pollute waterways. Fire may produce irritating, poisonous and/or corrosive fumes.

Containers may explode when heated.

**Special protective actions for fire-fighters**

Fire fighters should wear full protective clothing and self-contained breathing apparatus (SCBA) operated in positive pressure mode. Fight fire from safe location.

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**SECTION 6: Accidental release measures**

**Personal precautions, protective equipment and emergency procedures**

Ensure adequate ventilation. Use personal protective equipment. For personal protection see section 8.

**Methods and materials for containment and cleaning up**

Soak up with inert absorbent material and dispose of in accordance with local and national regulations. Keep in suitable, closed containers for disposal.

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**SECTION 7: Handling and storage**

**Precautions for safe handling**

Avoid ingestion and inhalation of gas/fumes/vapour/spray mists. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure. DO NOT store or use in confined spaces. Minimise accumulation and generation of mists, vapours or aerosols in the atmosphere. Keep container closed. Ensure good ventilation at the workplace. Use with adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Wear suitable protective clothing. It is essential that all who come into contact with this material maintain high standards of personal hygiene ie. washing hands prior to eating, drinking, smoking or using toilet facilities. Do not eat, drink, or smoke during work. Keep away from incompatibles such as oxidizing agents, reducing agents, organic materials, metals, acids.

**Conditions for safe storage, including any incompatibilities**

Store in tightly closed, light-resistant containers, in a cool, dry, well-ventilated area away from incompatible substances, foodstuffs, and clothing. Very hygroscopic - turns brown on exposure to air and light. Light sensitive. Protect from light and air, direct sunlight and moisture and against physical damage. Store away from oxidizing agents and acids. Isolate from any source of heat or ignition. Inspect regularly for deficiencies such as damage or leaks. Avoid freezing the product.

Corrosive in presence of steel and galvanized iron, of aluminium, of zinc, of copper, brass and other copper alloys.

May separate and freeze below 16 °C. Avoid freezing the product. Store at room temperature (16 to 23°C recommended).

Recommended Materials: Carbon steel (Iron), Stainless steel, high density polyethylene (HDPE), Glass, Low density polyethylene (LDPE).

[84] Unsuitable Materials: Galvanised steel, aluminium, copper, copper alloys, light metals, nonferrous metals and zinc.

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## SECTION 8: Exposure controls/personal protection

### Appropriate engineering controls

Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, gas, etc.) below recommended exposure limits. If the engineering controls are not sufficient to maintain concentrations of vapours/mists below the exposure standards, suitable respiratory protection must be worn.

### Individual protection measures, such as personal protective equipment (PPE)

#### Eye/face protection

The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336.

#### Skin protection

Clean impervious clothing should be worn. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.

Hand Protection: Normally not required but if in doubt ensure hand protection should comply with AS 2161, Occupational protective gloves - Selection, use and maintenance.

#### Body protection

Suitable protective workwear, e.g. cotton overalls buttoned at neck and wrist is recommended. Chemical resistant apron is recommended where large quantities are handled.

#### Respiratory protection

If engineering controls are not effective in controlling airborne exposure then an approved respirator with a replaceable vapor/ mist filter should be used. Refer to relevant regulations for further information concerning respiratory protective requirements. Reference should be made to Australian Standards AS/ NZS 1715, Selection, Use and Maintenance of Respiratory Protective Devices; and AS/NZS 1716, Respiratory Protective Devices, in order to make any necessary changes for individual circumstances.

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## SECTION 9: Physical and chemical properties

### Basic physical and chemical properties

Physical state	Liquid
Appearance	Colourless to pale yellow, hygroscopic crystals or viscous liquid. Turns brown on exposure to air and light.
Color	No data available.
Odor	Characteristic slight ammonia-like odour.
Odor threshold	No data available.
Melting point/freezing point	15.8 °C; 17.9 - 21 °C. Super cools easily.
Boiling point or initial boiling point and boiling range	335.4 °C (760 mm Hg); 360 °C.
Flammability	No data available.
Lower and upper explosion limit/flammability limit	Flammable Limits - Lower: 3.6 vol%; 1.3 vol%. Flammable Limits - Upper: 7.2 vol%; 8.5 vol%.
Flash point	190.5 °C (OC); 179 °C (CC).

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#### Explosive properties

Above flash point, vapour-air mixtures are explosive within flammable limits noted above. Slightly flammable in presence of open flames, sparks and static discharge.

Auto-ignition temperature  
Decomposition temperature  
Oxidizing properties  
pH

315 °C; 325 °C.  
> 325 °C; 335 °C.  
No data available.

Kinematic viscosity  
Solubility

10.5 (15 g/L, H<sub>2</sub>O, 20 °C); strong base; slightly less alkaline than ammonia.

Dynamic Viscosity: 601 cP (601 mPa.s) @ 25 °C.  
Solubility in Water: Miscible (soluble) in all proportions. [13]  
Solubility in Organic Solvents: Miscible in methanol, acetone; soluble in benzene, chloroform; slightly soluble in petroleum ether; very slightly soluble in diethyl ether, n-octanol, carbon tetrachloride and n-heptane.

Partition coefficient n-octanol/water (log value)  
Vapor pressure  
Evaporation rate  
Density and/or relative density  
Relative vapor density

Log P (o/w): -2.3 at 25 °C.  
0.000000477 hPa at 25 °C (measured); 0.00005 hPa at 40 °C.  
<0.005 compared to (n-BuAc=1).  
Specific Gravity: 1.124 g/cm<sup>3</sup> at 20 °C.  
5.1 (Air= 1).

#### Particle characteristics

No data available.

#### Supplemental information regarding physical hazard classes

[AN] Surface Tension: 0.0484 N/m @ 20 °C.

#### Further safety characteristics (supplemental)

Other Information: Index of refraction: 1.4852 @ 20 °C.  
Critical temperature: 514.3 °C.  
Critical pressure: 24.2 mmHg.

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## SECTION 10: Stability and reactivity

#### Reactivity

Not classified as a reactivity hazard.

#### Chemical stability

Stable under ordinary conditions of use and storage. Air-, moisture- and light-sensitive. Hygroscopic: absorbs moisture or water from the air. Darkens/turns brown on exposure to air or light.

#### Possibility of hazardous reactions

The substance is a weak base. Highly reactive with oxidizing agents, acids. Reactive with reducing agents, organic materials, metals. Slightly reactive to reactive with moisture. Product may potentially react with various halogenated organic solvents, resulting in temperature and/or pressure increases. Reaction with inorganic acid chloride releases poisonous gas/fumes. Heating above 50 °C in the presence of aluminium results in excessive corrosion and potential chemical reaction releasing flammable hydrogen gas.

#### Conditions to avoid

Extremes of temperature, excess heat, ignition sources, exposure to light, direct sunlight air, moist air, moisture, or water and incompatible materials.

#### Incompatible materials

Acids, oxidizing agents, reducing agents, organic materials, anhydrides, nitrites, nitriles and nitrous acid (formation of: nitrosamines), halogenating agents, moisture, metals, copper, copper alloys, galvanized iron, aluminium, and zinc.

#### Hazardous decomposition products

Irritating, corrosive and highly toxic gases or fumes, including oxides of carbon (CO, CO<sub>2</sub>), oxides of nitrogen (NO, NO<sub>2</sub>, etc) and hydrogen cyanides.

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## **SECTION 11: Toxicological information**

### **Information on toxicological effects**

#### **Acute toxicity**

Anticipated to have low acute toxicity, with effects mainly resulting from its alkalinity. Significant caustic injury is not expected from this substance. May cause irritation or burns in the mouth, pharynx, and oesophagus, and gastrointestinal irritation with abdominal pain, nausea, vomiting and diarrhoea. Rapidly absorbed. May also affect behaviour, sense organs, kidney, liver and urinary system.

The chemical was of low acute toxicity in animal tests following oral exposure. The median lethal dose (LD<sub>50</sub>) in experimental animals (rats, mice and guinea pigs) is 5200–11300 mg/kg bw. Observed sub-lethal effects included agitation, elevated respiration and reduced grooming (NIWL, 2003; CIR, 2011).

Inhalation: Inhalation of mist, vapour and aerosols may cause respiratory tract irritation. Symptoms may include coughing, sore throat, breathing difficulty, headache, nausea and dizziness. Inhalation of vapor from heated material or mist may cause irritation of the respiratory tract, experienced as nasal discomfort and discharge, chest pain, coughing and hypoxia. May also affect the liver, blood, urinary system and cardiovascular system.

Due to the low vapour pressure of the chemical, the highest attainable vapour concentration is 1.8 mg/m<sup>3</sup>. In a study conducted in rats (strain not specified) exposed to the chemical (1.8 mg/m<sup>3</sup>), no deaths were reported. One out of 12 rats exposed showed signs of chronic bronchitis (REACH).

// ----- From the Suggestion report (08/03/2023, 8:16 AM) ----- //

The ATE (oral) of the mixture is: 3333.33 mg/kg bw

#### **Skin corrosion/irritation**

May cause mild skin irritation, with burning pain, itching, and redness, especially on prolonged or repeated contact. Allergic contact allergies have been reported following dermal exposures, but reports have been confounded by exposure to other chemicals or to ethanolamines and other chemicals at high temperatures. Chemical by-products resulting from heating may have a role in the development of adverse effects.

The chemical was of low acute toxicity in animal tests following dermal exposure. The median lethal dose (LD<sub>50</sub>) in rabbits is greater than 2000 mg/kg bw. Observed sublethal effects included mild erythema 24 hours after exposure, resolving after 6–10 days (REACH; CIR, 2011).

#### **Serious eye damage/irritation**

May cause mild to moderate eye irritation, with burning pain, stinging, redness, blurring, tearing and possible permanent corneal damage.

#### **Respiratory or skin sensitization**

No data available.

#### **Germ cell mutagenicity**

Mutagenic effects have been observed on tests with human lymphocytes.

May affect genetic material: cytogenic analysis (human lymphocyte) = 100 µmol/L; sister chromatid exchange (human lymphocyte) = 1 mmol/L.

Triethanolamine did not induce mutations in bacteria, unless nitrite was also present. It did not influence the frequency of micronuclei in mouse peripheral blood in vivo after dermal application. Triethanolamine did not induce unscheduled DNA synthesis, sister chromatid exchange, chromosomal aberrations or cell transformation in rodent cells in vitro. Triethanolamine had no effect on sex-linked recessive lethal mutations in *Drosophila melanogaster* or on gene conversion in *Saccharomyces cerevisiae*.

#### **Carcinogenicity**

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Triethanolamine [102-71-6] Considering the animal studies conducted, there is no evidence of carcinogenicity through the oral route and equivocal evidence of carcinogenicity through the dermal route. The available data do not warrant hazard classification.

The International Agency for Research on Cancer (IARC) has classified the chemical as 'not classifiable as to its carcinogenicity to humans' (Group 3), based on inadequate evidence for carcinogenicity in humans and experimental animals (IARC, 2000).

### Reproductive toxicity

The chemical does not show specific reproductive or developmental toxicity through the dermal route and is equivocal through the oral route. The available data do not warrant a hazard classification.

### Specific target organ toxicity (STOT) - single exposure

No data available.

### Specific target organ toxicity (STOT) - repeated exposure

Specific target organ toxicity - Single Exposure Category 2 (respiratory tract irritation)

### Aspiration hazard

No data available

### Additional information

Chronic Effects: Prolonged and/or repeated contact may cause mild skin irritation, burning of the skin, skin necrosis, ulceration of the skin, dermatitis, and/or skin sensitization. Repeated dermal application of high concentrations of triethanolamine to rats led to a necrotizing inflammatory process in the skin. Danger of serious damage to health by prolonged exposure if swallowed. Prolonged and repeated ingestion and skin exposure may cause liver, kidney, lung, adrenal and nerve damage. Heart and nervous system effects were also observed in animals given exaggerated doses of diethanolamine. Under given conditions, contact with nitrites or nitric acid can lead to the formation of nitrosamines, which have shown themselves to be carcinogenic in animal experiments.

Other Information: NICNAS - <qt>HUMAN HEALTH TIER II ASSESSMENT FOR Ethanol, 2,2',2''-nitrilotris- CAS Number: 102-71-6

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## SECTION 12: Ecological information

### Toxicity

Acute Toxicity - Fish: Pimephales promelas LC50: 11800 mg/l /96 h.

Acute Toxicity - Daphnia: Daphnia EC50: 2038 mg/l /24 h.

### Persistence and degradability

Biological degradableness: 96 % modified OECD Screening T.

Readily biodegradable.

ThOD: 2.04 g/g, COD: 1.50 g/g, BOD5: 0.90 g/g.

### Bioaccumulative potential

No bioaccumulation is to be expected (log P(o/w) <1).

Bioconcentration factor: <0.4 (42 d), Cyprinus carpio (OECD Guideline 305C)

### Mobility in soil

Distribution: log P(o/w): -1.32.

The substance will not evaporate into the atmosphere from the water surface. Adsorption to solid soil phase is not expected.

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## SECTION 13: Disposal considerations

### Disposal methods

### Product disposal

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers.

**Sewage disposal**

No bioaccumulation is to be expected (log P(o/w) <1).  
Bioconcentration factor: <0.4 (42 d), Cyprinus carpio (OECD Guideline 305C)

**Other disposal recommendations**

Do not discharge this material into waterways, drains and sewers.

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**SECTION 14: Transport information**

**ADG (Road and Rail)**

Not dangerous goods

**IMDG**

Not dangerous goods

**IATA**

Not dangerous goods

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**SECTION 15: Regulatory information**

**Safety, health and environmental regulations specific for the product in question**

**Australia SUSMP**

Poison Schedule: S5

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**SECTION 16: Other information**

**Further information/disclaimer**

ChemSupply Australia Pty Ltd does not warrant that this product is suitable for any use or purpose. The user must ascertain the suitability of the product before use or application intended purpose. Preliminary testing of the product before use or application is recommended. Any reliance or purported reliance upon ChemSupply Australia Pty Ltd with respect to any skill or judgement or advice in relation to the suitability of this product of any purpose is disclaimed. Except to the extent prohibited at law, any condition implied by any statute as to the merchantable quality of this product or fitness for any purpose is hereby excluded. This product is not sold by description. Where the provisions of Part V, Division 2 of the Trade Practices Act apply, the liability of ChemSupply Australia Pty Ltd is limited to the replacement of supply of equivalent goods or payment of the cost of replacing the goods or acquiring equivalent goods.