



chem-supply

Safety Data Sheet

infosafe
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Infosafe No™ 1CH79

Issue Date : March 2013

RE-ISSUED by CHEMSUPP

Product Name **TRIETHANOLAMINE**

Classified as hazardous

1. Identification

GHS Product Identifier TRIETHANOLAMINE**Company Name** CHEM-SUPPLY PTY LTD (ABN 19 008 264 211)**Address** 50 Bedford Street GILLMAN
SA 5013 Australia**Telephone/Fax Number** Tel: (08) 8440-2000
Fax: (08) 8440-2001**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.**Other Names**

<u>Name</u>	<u>Product Code</u>
TRIETHANOLAMINE 85% LR	TL019
TEA	
Triethylolamine	
Tri(2-hydroxyethyl)amine	
2,2',2'-Trihydroxytriethylamine	
Tris(2-hydroxyethyl)amine	
TRIETHANOLAMINE 85% TG	TT019
Nitrilo-2,2',2'-triethanol	

Other InformationEMERGENCY CONTACT NUMBER: +61 08 8440 2000
Business hours: 8:30am to 5:00pm, Monday to Friday.

Chem-Supply 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 Chem-Supply 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 Chem-Supply 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.

2. Hazard Identification

GHS classification of the substance/mixture Eye Damage/Irritation: Category 1
Acute Toxicity - Oral: Category 4**Signal Word (s)** DANGER**Hazard Statement (s)** H302 Harmful if swallowed.
H318 Causes serious eye damage.**Pictogram (s)** Corrosion, Exclamation mark



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Precautionary statement – Prevention	P264 Wash ... thoroughly after handling. P270 Do not eat, drink or smoke when using this product. P280 Wear protective gloves/protective clothing/eye protection/face protection.
Precautionary statement – Response	P301+P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. P310 Immediately call a POISON CENTER or doctor/physician. P330 Rinse mouth. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

3. Composition/information on ingredients

Chemical Characterization	Liquid				
Ingredients	<u>Name</u>	<u>CAS</u>	<u>Proportion</u>	<u>Hazard Symbol</u>	<u>Risk Phrase</u>
	Triethanolamine	102-71-6	85 %		
	Diethanolamine	111-42-2	15 %		

4. First-aid measures

Inhalation	Remove from exposure, rest and keep warm. If breathing has stopped, apply artificial respiration. If breathing is difficult, give oxygen. Seek medical advice if effects persist.
Ingestion	Rinse mouth thoroughly with water immediately. Give water to drink. DO NOT induce vomiting. If vomiting occurs give further water to achieve effective dilution. Seek medical attention in severe cases, or if large amounts ingested.
Skin	Wash affected areas with copious quantities of water immediately. Remove contaminated clothing and wash before re-use. If irritation occurs seek medical advice.
Eye contact	Immediately irrigate with copious quantity of water for at least 15 minutes. Eyelids to be held open. Seek immediate medical assistance.
First Aid Facilities	Maintain eyewash fountain and drench facilities in work area.
Advice to Doctor	Treat symptomatically and supportively. Support respiratory, cardiovascular, and renal function.

5. Fire-fighting measures

Hazards from Combustion Products	Irritating, corrosive and highly toxic gases or fumes, including oxides of carbon (CO, CO ₂), oxides of nitrogen (NO, NO ₂ , etc) and hydrogen cyanides.
Specific Methods	Small fire: Use dry chemical, CO ₂ , 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. 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.
Specific hazards arising from the chemical	
Decomposition Temp.	> 325 °C; 335 °C.
Precautions in connection with Fire	Wear SCBA and structural firefighter's uniform.

6. Accidental release measures

Spills & Disposal	Eliminate all ignition sources (no smoking, flares, sparks or flame) within at least 15m. Do NOT touch or walk through this product. Stop leak if safe to do so. Prevent entry into waterways, drains, confined areas. Cover with DRY earth, sand or other compatible, non-combustible material followed by a plastic sheet to minimize spreading or contact with rain. Use clean non-sparking tools to collect material and place it into loosely-covered plastic containers for later disposal. SEEK EXPERT ADVICE ON HANDLING AND DISPOSAL.
Personal Protection	Wear protective clothing specified for normal operations (see Section 8)



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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. Do NOT pressurise, cut, heat or weld containers as they may contain hazardous residues. Outside or detached storage is preferred. Inspect regularly for deficiencies such as damage or leaks. Avoid freezing the product.
Corrosiveness	Corrosive in presence of steel and galvanized iron, of aluminium, of zinc, of copper, brass and other copper alloys.
Storage Regulations	Classified as C2 (Combustible Liquid) for the purpose of storage and handling in accordance with AS1940. Refer Australian Standard AS 1940-2004 'The storage and handling of flammable and combustible liquids'.
Storage Temperatures Recommended	May separate and freeze below 16 °C. Avoid freezing the product. Store at room temperature (16 to 23°C recommended).
Materials Unsuitable Materials	Stainless steel. Galvanised steel, aluminium, copper, copper alloys, light metals, nonferrous metals and zinc.

8. Exposure controls/personal protection

Occupational exposure limit values	Name	STEL		TWA		Footnote
		mg/m3	ppm	mg/m3	ppm	
	Triethanolamine			5		Triethanol amine
	Diethanolamine			13	3	
Other Exposure Information	A time weighted average (TWA) has been established for Triethanolamine (Worksafe Aust) of 5 mg/m ³ and for Diethanolamine (Worksafe Aust) of 13 mg/m ³ (3 ppm). The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week.					
Appropriate engineering controls	Provide sufficient ventilation to ensure that the working environment is below the TWA (time weighted average). Where vapours or mists are generated, particularly in enclosed areas, and natural ventilation is inadequate, a flame proof exhaust ventilation system is required. Refer to AS 1940-The storage and handling of flammable and combustible liquids and AS 2430-Explosive gas atmospheres for further information concerning ventilation requirements.					
Respiratory Protection	Where ventilation is not adequate, respiratory protection may be required. Avoid breathing vapours or mists. Select and use respirators in accordance with AS 1716 - Respiratory Protective Devices and be selected in accordance with AS 1715 - Selection, Use and Maintenance of Respiratory Protective Devices. When mists or vapours exceed the exposure standards then the use of the following is recommended: Approved respirator with organic vapour and dust/mist filters. Filter capacity and respirator type depends on exposure levels.					
Eye 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.					



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Hand Protection	Hand protection should comply with AS 2161, Occupational protective gloves - Selection, use and maintenance. Recommendation: Excellent: Supported Nitrile. Supported Neoprene. Unsupported Neoprene. Supported Polyvinyl Chloride (PVC) gloves. Good: Supported Polyvinyl Alcohol (PVA) gloves. Unsupported Natural Rubber Latex.
Body Protection	Flame retardant protective clothing. Clean clothing or protective clothing should be worn, preferably with an apron. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.
Hygiene Measures	Always wash hands before smoking, eating or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.

9. Physical and chemical properties

Form	Liquid
Appearance	Colourless to pale yellow, hygroscopic crystals or viscous liquid. Turns brown on exposure to air and light.
Odour	Characteristic slight ammonia-like odour.
Decomposition Temperature	> 325 °C; 335 °C.
Melting Point	15.8 °C; 17.9 - 21 °C. Super cools easily.
Boiling Point	335.4 °C (760 mm Hg); 360 °C.
Solubility in Water	Miscible (soluble) in all proportions.
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.
Specific Gravity	1.124 g/cm ³ at 20 °C.
pH	10.5 (15 g/L, H ₂ O, 20 °C); strong base; slightly less alkaline than ammonia.
Vapour Pressure	0.000000477 hPa at 25 °C (measured); 0.00005 hPa at 40 °C.
Vapour Density (Air=1)	5.1 (Air= 1).
Evaporation Rate	<0.005 compared to (n-BuAc=1).
Volatile Component	0 %vol @ 21 °C
Partition Coefficient: n-octanol/water	Log P (o/w): -2.3 at 25 °C.
Surface Tension	0.0484 N/m @ 20 °C.
Flash Point	190.5 °C (OC); 179 °C (CC).
Flammability	Combustible.
Auto-Ignition Temperature	315 °C; 325 °C.
Flammable Limits - Lower	3.6 vol%; 1.3 vol%.
Flammable Limits - Upper	7.2 vol%; 8.5 vol%.
Explosion 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.
Molecular Weight	149.19
Dynamic Viscosity	601 cP (601 mPa.s) @ 25 °C.
Other Information	Index of refraction: 1.4852 @ 20 °C. Critical temperature: 514.3 °C. Critical pressure: 24.2 mmHg.

10. Stability and reactivity



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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.
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 ₂), oxides of nitrogen (NO, NO ₂ , etc) and hydrogen cyanides.
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.
Hazardous Polymerization	Will not occur.

11. Toxicological Information

Ingestion	May be harmful if swallowed. 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.
Inhalation	May be harmful if inhaled. 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.
Skin	The principal route of exposure causing toxicity is through the skin. Readily absorbed through the skin, affecting the liver, metabolism, and urinary tract. 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.
Eye	May cause mild to moderate eye irritation, with burning pain, stinging, redness, blurring, tearing and possible permanent corneal damage. Risk of serious damage to eyes.
Skin Sensitisation	Positive patch test response to triethanolamine has been reported.
Carcinogenicity	Triethanolamine [102-71-6] is evaluated in the IARC Monographs (Vol. 77; 2000) as Group 3: Not classifiable as to carcinogenicity to humans.
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.
Mutagenicity	Mutagenic effects have been observed on tests with human lymphocytes. May affect genetic material: cytogenetic analysis (human lymphocyte) = 100 µmol/L; sister chromatid exchange (human lymphocyte) = 1 mmol/L.



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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*.

12. Ecological information

Ecotoxicity	Toxic for aquatic organisms. Harmful effect due to pH shift. Hazard for drinking water supplies.
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.
Mobility	Distribution: log P(o/w): -1.32.
Bioaccumulative Potential	No bioaccumulation is to be expected (log P(o/w) <1).
Environmental Protection	Do not allow to enter waters, waste water, or soil!
Acute Toxicity - Fish	<i>Leuciscus idus</i> LC50: > 10000 mg/l /96 h.
Acute Toxicity - Daphnia	<i>Daphnia</i> EC50: 1390 mg/l /24 h.
Acute Toxicity - Bacteria	Bacteria EC50: > 10000 mg/l /16 h.

13. Disposal considerations

Disposal Considerations	Dispose of according to relevant local, state and federal government regulations.
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14. Transport information

Transport Information	Not classified as a Dangerous Good according to the Australian Code for the Transport of Dangerous Goods by Road and Rail.
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15. Regulatory information

Poisons Schedule	S5
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16. Other Information

Literature References	'Standard for the Uniform Scheduling of Medicines and Poisons No. 3', Commonwealth of Australia, June 2012. Lewis, Richard J. Sr. 'Hawley's Condensed Chemical Dictionary 13th. Ed.', Rev., John Wiley and Sons, Inc., NY, 1997. National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.', 2007. 'Labelling of Hazardous Workplace Chemicals, Code of Practice' Safe Work Australia. Standards Australia 'AS 1940-2004 The Storage and Handling of Flammable and Combustible Liquids. Standards Australia, 'SAA/SNZ HB 76:2010 Dangerous Goods - Initial Emergency Response Guide', Standards Australia/Standards New Zealand, 2010. Worksafe Australia, 'Approved Criteria for Classifying Hazardous Substances [NOHSC:1008(2004)]'. Worksafe Australia, 'Hazardous Substances Information System, 2005'. Worksafe Australia, 'National Code of Practice for the Labelling of Workplace Substances [NOHSC:2012(1994)]'. Worksafe Australia, 'National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003(1995)]'.
Contact Person/Point	Paul McCarthy Ph. (08) 8440 2000 DISCLAIMER STATEMENT: All information provided in this data sheet or by our technical representatives is compiled from the best knowledge available to us. However, since data, safety standards and government regulations are subject to change and the conditions of handling and use, or misuse, are beyond our control, we make no warranty either expressed or implied, with respect to the completeness



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Empirical Formula & Structural Formula

Empirical Formula: C₆H₁₅N-O₃.
Structural Formula: (HOCH₂CH₂)₃N.

User Codes

User Field Title

User Code

CAS No. 102-71-6
First Aid Phrases A, G3, E1, S1

Other Information

Previously labelled as :
R36/37/38 Irritating to eyes, respiratory system and skin.
R41 Risk of serious damage to eyes.
R48/22 Harmful: danger of serious damage to health by prolonged exposure if swallowed.
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
...End Of MSDS...

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