



Infosafe No™	1CH79	Issue Date : March 2018	RE-ISSUED by CHEMSUPP
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Product Name : **TRIETHANOLAMINE**

Classified as hazardous

1. Identification

GHS Product Identifier	TRIETHANOLAMINE	
Company Name	CHEM-SUPPLY PTY LTD (ABN 19 008 264 211)	
Address	38 - 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 petroleum) and laboratory reagent.	
Other Names	Name	Product Code
	TRIETHANOLAMINE 85% LR	TL019
	TEA	
	Triethylamine	
	Tri(2-hydroxyethyl)amine	
	2,2',2'-Trihydroxytriethylamine	
	Tris(2-hydroxyethyl)amine	
	TRIETHANOLAMINE 85% TG	TT019
	Nitrilo-2,2',2'-triethanol	
Other Information	EMERGENCY 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	Acute Toxicity - Dermal: Category 2 Eye Damage/Irritation: Category 2A Specific target organ toxicity - Single Exposure Category 3 (respiratory tract irritation)
Signal Word (s)	WARNING
Hazard Statement (s)	H315 Causes skin irritation. H319 Causes serious eye irritation. H335 May cause respiratory irritation.
Pictogram (s)	Exclamation mark



Precautionary statement – Prevention	P261 Avoid breathing dust/fume/gas/mist/vapours/spray. P264 Wash thoroughly after handling. P271 Use only outdoors or in a well-ventilated area. P280 Wear protective gloves/protective clothing/eye protection/face protection.
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Precautionary statement – Response	P302+P352 IF ON SKIN: Wash with plenty of soap and water. P332+P313 If skin irritation occurs: Get medical advice/attention. P362 Take off contaminated clothing and wash before reuse. P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. P312 Call a POISON CENTER or doctor/physician if you feel unwell. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337+P313 If eye irritation persists: Get medical advice/attention.
Precautionary statement – Storage	P403+P233 Store in a well-ventilated place. Keep container tightly closed.
Precautionary statement – Disposal	P405 Store locked up. P501 Dispose of contents/container to an approved waste disposal plant.

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. If rapid recovery does not occur, obtain medical attention
First Aid Facilities	Maintain eyewash fountain and drench facilities in work area.
Advice to Doctor	Treat symptomatically based on judgement of doctor and individual reactions of the patient.
Other Information	For advice, contact a Poisons Information Centre (Phone eg Australia 13 1126; New Zealand 0800 764 766) or a doctor.

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.
Specific hazards arising from the chemical	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.
Decomposition Temp.	> 325 °C; 335 °C.
Precautions in connection with Fire	Wear SCBA and structural firefighter's uniform.

6. Accidental release measures

Personal Protection	Wear protective clothing specified for normal operations (see Section 8)
Clean-up Methods - Small Spillages	Absorb or contain liquid with sand, earth or spill control material. Shovel up using non sparking tools and place in a labelled, sealable container for subsequent safe disposal. Put leaking containers in a labelled drum or overdrum.



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Clean-up Methods - Large Spillages Prevent from spreading by making a barrier with sand, earth or other containment material. Pump off product.
For residue see small spillage.

Environmental Precautions Do not discharge into drains, surface water or ground water. Do not discharge to subsoil/soil.

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.

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 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).

Unsuitable Materials 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 (Safe Work Australia) of 5 mg/m³ and for Diethanolamine (Safe Work Australia) of 13 mg/m³ (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.

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)



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Personal Protective Equipment	gloves. Unsupported Natural Rubber Latex. Final choice of personal protective equipment will depend on individual circumstances and/or according to risk assessments undertaken.
Footwear	Safety boots in industrial situations is advisory, foot protection should comply with AS 2210, Occupational protective footwear - Guide to selection, care and use.
Body Protection	Flame retardant antistatic 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

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.



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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	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 (LD50) 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 ³ . In a study conducted in rats (strain not specified) exposed to the chemical (1.8 mg/m ³), no deaths were reported. One out of 12 rats exposed showed signs of chronic bronchitis (REACH).
Skin	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 (LD50) 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).
Eye	May cause mild to moderate eye irritation, with burning pain, stinging, redness, blurring, tearing and possible permanent corneal damage.
Carcinogenicity	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.
STOT-single exposure	Specific target organ toxicity - Single Exposure Category 3 (respiratory tract irritation)
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.



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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*.
Other Information: NICNAS - 'HUMAN HEALTH TIER II ASSESSMENT FOR Ethanol, 2,2',2"-nitritoltris- CAS Number: 102-71-6'

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.
The substance will not evaporate into the atmosphere from the water surface. Adsorption to solid soil phase is not expected.
Bioaccumulative Potential No bioaccumulation is to be expected (log P(o/w) < 1).
Environmental Protection Bioconcentration factor: < 0.4 (42 d), *Cyprinus carpio* (OECD Guideline 305C)
Do not allow to enter waters, waste water, or soil!
Acute Toxicity - Fish *Pimephales promelas* LC50: 11800 mg/l /96 h.
Acute Toxicity - Daphnia *Daphnia* EC50: 2038 mg/l /24 h.

13. Disposal considerations

Disposal Considerations Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and disposed of according to relevant local, state and federal government regulations. Dispose of as unused product. When uncleaned empty containers/packing material is passed on the recipient must be warned of any possible hazard that may be caused by the residues.

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.

15. Regulatory information

Regulatory Information All of the significant ingredients in this formulation are compliant with NICNAS regulations. Not listed under WHS Regulation 2011, Schedule 10 - Prohibited carcinogens, restricted carcinogens and restricted hazardous chemicals.
Poisons Schedule S5

16. Other Information

Literature References 'Standard for the Uniform Scheduling of Medicines and Poisons.', Commonwealth of Australia.
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.
Safe Work Australia, 'National Code of Practice for the Preparation of Safety Data Sheets for Hazardous Chemicals', 2011.
Standards Australia, 'SAA/SNZ HB 76:2010 Dangerous Goods - Initial Emergency Response Guide', Standards Australia/Standards New Zealand, 2010.
Safe Work Australia, 'Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004)]'.
Safe Work Australia, 'Hazardous Substances Information System, 2005'.
Safe Work Australia, 'National Code of Practice for the Labelling of Safe Work Hazardous Substances (2011)'.
Safe Work Australia, 'National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003(1995) 3rd Edition]'.
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



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Safety Data Sheet

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