

### 1. IDENTIFICATION

<b>Product Name</b>	<b>Triisopropanolamine</b>
<b>Other Names</b>	2-Propanol, 1,1',1''-nitritoltris-; TIPA; Tris(2-hydroxypropyl)amine
<b>Uses</b>	No Data Available
<b>Chemical Family</b>	No Data Available
<b>Chemical Formula</b>	C9H21NO3
<b>Chemical Name</b>	Triisopropanolamine
<b>Product Description</b>	No Data Available

#### Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
Redox Pty Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox Pty Ltd	11 Mayo Road Wiri Auckland 2104 New Zealand	+64-9-2506222
Redox Inc.	3960 Paramount Boulevard Suite 107 Lakewood CA 90712 USA	+1-424-675-3200
Redox Chemicals Sdn Bhd	Level 2, No. 8, Jalan Sapir 33/7 Seksyen 33, Shah Alam Premier Industrial Park 40400 Shah Alam Sengalor, Malaysia	+60-3-5614-2111

#### Emergency Contact Details

*For emergencies only; DO NOT contact these companies for general product advice.*

Organisation	Location	Telephone
Poisons Information Centre	Westmead NSW	1800-251525 131126
Chemcall	Australia	1800-127406 +64-4-9179888
Chemcall	Malaysia	+64-4-9179888
Chemcall	New Zealand	0800-243622 +64-4-9179888
National Poisons Centre	New Zealand	0800-764766
CHEMTREC	USA & Canada	1-800-424-9300 CN723420 +1-703-527-3887

### 2. HAZARD IDENTIFICATION

**Poisons Schedule (Aust)** Not scheduled

#### Globally Harmonised System

<b>Hazard Classification</b>	Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)
<b>Hazard Categories</b>	Serious Eye Damage/Irritation - Category 1 Skin Corrosion/Irritation - Category 2 Specific Target Organ Toxicity (Single Exposure) - Category 3 Long-term Hazard To The Aquatic Environment - Category 3

**Pictograms**



**Signal Word** Danger

<b>Hazard Statements</b>	<b>H315</b>	Causes skin irritation.
	<b>H318</b>	Causes serious eye damage.
	<b>H335</b>	May cause respiratory irritation.
	<b>H412</b>	Harmful to aquatic life with long lasting effects.

<b>Precautionary Statements</b>	Prevention	<b>P261</b>	Avoid breathing dust/fume/gas/mist/vapours/spray.
		<b>P264</b>	Wash with soap and water thoroughly after handling.
		<b>P271</b>	Use only outdoors or in a well-ventilated area.
		<b>P280</b>	Wear protective gloves/protective clothing/eye protection/face protection.
	Response	<b>P302 + P352</b>	IF ON SKIN: Wash with plenty of soap and water.
		<b>P304 + P340</b>	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
		<b>P305 + P351 + P338</b>	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
		<b>P310</b>	Immediately call a POISON CENTER or doctor/physician.
		<b>P312</b>	Call a POISON CENTER or doctor/physician if you feel unwell.
		<b>P321</b>	Specific treatment (see First Aid Measures on Safety Data Sheet).
		<b>P332 + P313</b>	If skin irritation occurs: Get medical advice/attention.
	Storage	<b>P362</b>	Take off contaminated clothing and wash before reuse.
		<b>P403 + P233</b>	Store in a well-ventilated place. Keep container tightly closed.
	Disposal	<b>P405</b>	Store locked up.
		<b>P501</b>	Dispose of contents/container in accordance with local / regional / national / international regulations.

**National Transport Commission (Australia)**

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

**Dangerous Goods Classification** NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

**Environmental Protection Authority (New Zealand)**

Hazardous Substances and New Organisms Amendment Act 2015

<b>HSNO Classifications</b>	Health Hazards	<b>6.1E</b>	Substances that are acutely toxic –May be harmful, Aspiration hazard
		<b>6.3A</b>	Substances that are irritating to the skin
		<b>8.3A</b>	Substances that are corrosive to ocular tissue
	Environmental Hazards	<b>9.1C</b>	Substances that are harmful in the aquatic environment

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

#### Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Triisopropanolamine	No Data Available	122-20-3	>85.0 %
Water	No Data Available	7732-18-5	<15.0 %

### 4. FIRST AID MEASURES

#### Description of necessary measures according to routes of exposure

<b>Swallowed</b>	Rinse mouth and then drink plenty of water. Do not induce vomiting. Never induce vomiting or give anything by mouth if the victim is unconscious or having convulsions. Immediate medical attention required.
<b>Eye</b>	Immediately flush eyes in clear running water for at least 15 minutes lifting upper and lower lids periodically. Get medical attention immediately and preferable an eye specialist.
<b>Skin</b>	Wash affected areas with water while removing contaminated clothing. Remove contaminated clothing. Immediate medical attention required. Wash soiled clothing immediately.
<b>Inhaled</b>	Remove the affected individual into fresh air and keep the person calm. Assist in breathing if necessary. Immediate medical attention required.
<b>Advice to Doctor</b>	Treat symptomatically based on judgement of doctor and individual reactions of patient.
<b>Medical Conditions Aggravated by Exposure</b>	Data available do not indicate that there are medical conditions that are generally recognized as being aggravated by exposure to this substance/product.

### 5. FIRE FIGHTING MEASURES

<b>General Measures</b>	If safe to do so, remove containers from the path of fire.
<b>Flammability Conditions</b>	Product is a Combustible Liquid.
<b>Extinguishing Media</b>	In case of fire, appropriate extinguishing media include water fog, carbon dioxide, dry chemical, foam. Alcohol resistant foams are preferred if available. Do not use direct water stream as it will spread fire.
<b>Hazardous Products of Combustion</b>	No Data Available
<b>Special Fire Fighting Instructions</b>	Clear fire area of all non-emergency personnel. Stay upwind. Keep out of low areas. Eliminate ignition sources. Move fire exposed containers from fire area if it can be done without risk. Do NOT allow fire fighting water to reach waterways, drains or sewers. Store fire fighting water for treatment.
<b>Personal Protective Equipment</b>	Fire fighters should wear a positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves).
<b>Flash Point</b>	154 - (on dry basis) °C Closed Cup
<b>Lower Explosion Limit</b>	No Data Available
<b>Upper Explosion Limit</b>	No Data Available
<b>Auto Ignition Temperature</b>	No Data Available
<b>Hazchem Code</b>	No Data Available

### 6. ACCIDENTAL RELEASE MEASURES

<b>General Response Procedure</b>	The fire source should be removed first and keep room ventilated. People dealing with the leakage should be protected as the section 5 has said and use enough sodium acid sulfate to cover the leakage. Then saturate with alkali. The waste liquid should be collected and put in open containers.  For large amounts: Pump off product.
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<b>Clean Up Procedures</b>	For residues: Pick up with suitable absorbent material (e.g. sand, sawdust, general-purpose binder, kieselguhr). Soak up spilled product using absorbent non-combustible material such as sand or soil. Avoid using sawdust or cellulose. When saturated, collect the material and transfer to a suitable, labelled chemical waste container and dispose of promptly as hazardous waste.
<b>Containment</b>	Stop leak if safe to do so.
<b>Environmental Precautionary Measures</b>	Do not allow product to reach drains, sewers or waterways. If product does enter a waterway, advise the Environmental Protection Authority or your local Waste Authority.
<b>Evacuation Criteria</b>	Evacuate all unnecessary personnel.
<b>Personal Precautionary Measures</b>	Personnel involved in the clean up should wear full protective clothing as listed in section 8.

## 7. HANDLING AND STORAGE

<b>Handling</b>	Handle with care. The container should be protected from attack, high pressure, collapse, friction and it is not suitable to roll in the case. Labels outside the container should be kept in place. All the related electronic equipment should conform to certain fire standards. Most important of all, the outer packaging should not be damaged.
<b>Storage</b>	Store in a cool, dry, well-ventilated area. Keep containers tightly closed when not in use. Inspect regularly for deficiencies such as damage or leaks. Do not roll containers. Protect against physical damage. Store away from incompatible materials including strong oxidizing agents, acids, alkalis, copper, toxic, combustible or corrosive materials, and sources of ignition. Protect from direct sunlight, moisture and static discharges. Store at temperatures not exceeding 20°C, and for periods not exceeding 24 months. Product may yellow after lengthy storage. This product is classified as a 'C2' Combustible Liquid for the purposes of storage and handling, in accordance with requirements of AS1940.
<b>Container</b>	Store the product in stainless steel containers. Avoid contact with copper or copper containing metals. Seal the closure mechanically with Teflon resin if available.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<b>General</b>	No exposure standard has been established for this product by the Australian Safety and Compensation Council (ASCC).
<b>Exposure Limits</b>	No Data Available
<b>Biological Limits</b>	No information available on biological limit values for this product.
<b>Engineering Measures</b>	A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.
<b>Personal Protection Equipment</b>	RESPIRATOR: Wear an approved respirator with suitable filter for organic gases and vapours if engineering controls are inadequate (AS1715/1716). EYES: Chemical goggles to prevent splashing in the eyes (AS1336/1337). HANDS: Chemical resistant protective gloves (AS2161). CLOTHING: Long-sleeved protective clothing and safety footwear (AS3765/2210).
<b>Work Hygienic Practices</b>	No Data Available

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical State</b>	Liquid
<b>Appearance</b>	Liquid
<b>Odour</b>	Light ammonia odour
<b>Colour</b>	Colourless to Slight Yellow
<b>pH</b>	No Data Available
<b>Vapour Pressure</b>	No Data Available
<b>Relative Vapour Density</b>	No Data Available
<b>Boiling Point</b>	100 °C

<b>Melting Point</b>	0 °C
<b>Freezing Point</b>	No Data Available
<b>Solubility</b>	Soluble in water and any ethanol °C
<b>Specific Gravity</b>	1.027
<b>Flash Point</b>	154 - (on dry basis) °C Closed Cup
<b>Auto Ignition Temp</b>	No Data Available
<b>Evaporation Rate</b>	No Data Available
<b>Bulk Density</b>	No Data Available
<b>Corrosion Rate</b>	No Data Available
<b>Decomposition Temperature</b>	No Data Available
<b>Density</b>	No Data Available
<b>Specific Heat</b>	No Data Available
<b>Molecular Weight</b>	No Data Available
<b>Net Propellant Weight</b>	No Data Available
<b>Octanol Water Coefficient</b>	No Data Available
<b>Particle Size</b>	No Data Available
<b>Partition Coefficient</b>	No Data Available
<b>Saturated Vapour Concentration</b>	No Data Available
<b>Vapour Temperature</b>	No Data Available
<b>Viscosity</b>	240-300cps (@ No Data Available)
<b>Volatile Percent</b>	No Data Available
<b>VOC Volume</b>	No Data Available
<b>Additional Characteristics</b>	No Data Available
<b>Potential for Dust Explosion</b>	Product is a liquid.
<b>Fast or Intensely Burning Characteristics</b>	No Data Available
<b>Flame Propagation or Burning Rate of Solid Materials</b>	No Data Available
<b>Non-Flammables That Could Contribute Unusual Hazards to a Fire</b>	No Data Available
<b>Properties That May Initiate or Contribute to Fire Intensity</b>	No Data Available
<b>Reactions That Release Gases or Vapours</b>	No Data Available
<b>Release of Invisible Flammable Vapours and Gases</b>	No Data Available

## 10. STABILITY AND REACTIVITY

<b>General Information</b>	Combustible liquid. Product will absorb water and carbon dioxide if left uncovered in open air.
<b>Chemical Stability</b>	Product is stable under recommended conditions of use, storage and temperature.
<b>Conditions to Avoid</b>	Avoid excessive heat, direct sunlight, static discharges, moisture, freezing and high temperatures.
<b>Materials to Avoid</b>	Incompatible with strong oxidising agents, acids, alkalis, copper, combustible or corrosive materials, and sources of ignition.
<b>Hazardous Decomposition Products</b>	No information available for Hazardous decomposition products.
<b>Hazardous Polymerisation</b>	No Data Available

## 11. TOXICOLOGICAL INFORMATION

<b>General Information</b>	Oral LD50 Rat : 4000mg/Kg Oral LD50 Rabbit : 10000mg/Kg Skin Irritation : (Rabbit) Non irritant Eye Irritation : (Rabbit) Slightly irritating Inhalation Risk Test (IRT): No mortality within 8 hours as shown in animal studies. The inhalation of a highly saturated vapour-air mixture represents no acute hazard.
<b>Eye/Irritant</b>	May cause severe irritation with corneal injury.
<b>Ingestion</b>	Single dose oral toxicity is considered to be low. Small amounts swallowed incidental to normal handling operations are not likely to cause injury but swallowing large amounts may cause injury.
<b>Inhalation</b>	At room temperature, exposure to vapours are unlikely due to physical properties. Higher temperature may generate vapour levels sufficient to cause irritation.
<b>Skin/Irritant</b>	Prolonged or repeated exposure may cause skin irritation, even a burn. A single prolonged exposure is likely to result in harmful amounts.
<b>Carcinogen Category</b>	No Data Available

## 12. ECOLOGICAL INFORMATION

<b>Ecotoxicity</b>	Golden Orfe LC50/96hr : > 2200 - < 4600mg/L Daphnia Magna EC50/48hr : > 500mg/L Green Algae EC50/72hr : > 100mg/L Bacterium/Toxic limit concentration/18hr : > 2000mg/L The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.
<b>Persistence/Degradability</b>	Biodegradation: Test method: OECD 302B; ISO 9888; 88/302/EEC, part C. Method of analysis: DOC reduction Degree of elimination: < 30% Evaluation: Poorly Eliminated from water
<b>Mobility</b>	Soluble
<b>Environmental Fate</b>	Do NOT allow product to enter waterways, drains and sewers.
<b>Bioaccumulation Potential</b>	No Data Available
<b>Environmental Impact</b>	No Data Available

## 13. DISPOSAL CONSIDERATIONS

<b>General Information</b>	Dispose of in accordance with all local, state and federal regulations. All empty packaging should be disposed of in accordance with Local, State, and Federal Regulations or recycled/reconditioned at an approved facility.
<b>Special Precautions for Land Fill</b>	Contact a specialist disposal company or the local waste regulator for advice. This material may be suitable for approved landfill. Incinerate in suitable incineration plant, observing local authority regulations.

## 14. TRANSPORT INFORMATION

### Land Transport (Australia)

ADG Code

<b>Proper Shipping Name</b>	TRIISOPROPANOLAMINE
<b>Class</b>	C2 Combustible Liquids - Flash Point >93°C, Closed Cup, Not Excluded Flammable
<b>Subsidiary Risk(s)</b>	No Data Available No Data Available
<b>UN Number</b>	No Data Available
<b>Hazchem</b>	No Data Available

**Pack Group** No Data Available  
**Special Provision** No Data Available

### Land Transport (Malaysia)

ADR

**Proper Shipping Name** TRIISOPROPANOLAMINE  
**Class** C2 Combustible Liquids - Flash Point >93°C, Closed Cup, Not Excluded Flammable  
**Subsidiary Risk(s)** No Data Available  
No Data Available  
**UN Number** No Data Available  
**Hazchem** No Data Available  
**Pack Group** No Data Available  
**Special Provision** No Data Available

### Land Transport (New Zealand)

NZS5433

**Proper Shipping Name** TRIISOPROPANOLAMINE  
**Class** No Data Available  
**Subsidiary Risk(s)** No Data Available  
No Data Available  
**UN Number** No Data Available  
**Hazchem** No Data Available  
**Pack Group** No Data Available  
**Special Provision** No Data Available

### Land Transport (United States of America)

US DOT

**Proper Shipping Name** TRIISOPROPANOLAMINE  
**Class** No Data Available  
**Subsidiary Risk(s)** No Data Available  
No Data Available  
**UN Number** No Data Available  
**Hazchem** No Data Available  
**Pack Group** No Data Available  
**Special Provision** No Data Available

### Sea Transport

IMDG Code

**Proper Shipping Name** TRIISOPROPANOLAMINE  
**Class** No Data Available  
**Subsidiary Risk(s)** No Data Available  
**UN Number** No Data Available  
**Hazchem** No Data Available  
**Pack Group** No Data Available  
**Special Provision** No Data Available  
**EMS** No Data Available  
**Marine Pollutant** No

### Air Transport

IATA DGR

<b>Proper Shipping Name</b>	TRIISOPROPANOLAMINE
<b>Class</b>	No Data Available
<b>Subsidiary Risk(s)</b>	No Data Available
<b>UN Number</b>	No Data Available
<b>Hazchem</b>	No Data Available
<b>Pack Group</b>	No Data Available
<b>Special Provision</b>	No Data Available

#### **National Transport Commission (Australia)**

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

<b>Dangerous Goods Classification</b>	NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)
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### **15. REGULATORY INFORMATION**

<b>General Information</b>	No Data Available
<b>Poisons Schedule (Aust)</b>	Not scheduled

#### **Environmental Protection Authority (New Zealand)**

Hazardous Substances and New Organisms Amendment Act 2015

<b>Approval Code</b>	HSR003649
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#### **National/Regional Inventories**

<b>Australia (AICS)</b>	Listed
<b>Canada (DSL)</b>	Not Determined
<b>Canada (NDSL)</b>	Not Determined
<b>China (IECSC)</b>	Not Determined
<b>Europe (EINECS)</b>	Not Determined
<b>Europe (REACH)</b>	Not Determined
<b>Japan (ENCS/METI)</b>	Not Determined
<b>Korea (KECI)</b>	Not Determined
<b>Malaysia (EHS Register)</b>	Not Determined
<b>New Zealand (NZIoC)</b>	Listed
<b>Philippines (PICCS)</b>	Not Determined
<b>Switzerland (Giftliste 1)</b>	Not Determined
<b>Switzerland (Inventory of Notified Substances)</b>	Not Determined
<b>Taiwan (NCSR)</b>	Not Determined



## 16. OTHER INFORMATION

<b>Related Product Codes</b>	TRISPR2000, TRISPR3000, TRISPR3100, TRISPR3200, TRISPR3300
<b>Revision</b>	3
<b>Revision Date</b>	16 Nov 2015
<b>Reason for Issue</b>	Update SDS
<b>Key/Legend</b>	<p>&lt; Less Than &gt; Greater Than  <b>AICS</b> Australian Inventory of Chemical Substances  <b>atm</b> Atmosphere  <b>CAS</b> Chemical Abstracts Service (Registry Number)  <b>cm<sup>2</sup></b> Square Centimetres  <b>CO<sub>2</sub></b> Carbon Dioxide  <b>COD</b> Chemical Oxygen Demand  <b>deg C (°C)</b> Degrees Celcius  <b>EPA (New Zealand)</b> Environmental Protection Authority of New Zealand  <b>deg F (°F)</b> Degrees Farenheit  <b>g</b> Grams  <b>g/cm<sup>3</sup></b> Grams per Cubic Centimetre  <b>g/l</b> Grams per Litre  <b>HSNO</b> Hazardous Substance and New Organism  <b>IDLH</b> Immediately Dangerous to Life and Health  <b>immiscible</b> Liquids are insoluable in each other.  <b>inHg</b> Inch of Mercury  <b>inH<sub>2</sub>O</b> Inch of Water  <b>K</b> Kelvin  <b>kg</b> Kilogram  <b>kg/m<sup>3</sup></b> Kilograms per Cubic Metre  <b>lb</b> Pound  <b>LC<sub>50</sub></b> LC stands for lethal concentration. LC<sub>50</sub> is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.  <b>LD<sub>50</sub></b> LD stands for Lethal Dose. LD<sub>50</sub> is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.  <b>ltr</b> or <b>L</b> Litre  <b>m<sup>3</sup></b> Cubic Metre  <b>mbar</b> Millibar  <b>mg</b> Milligram  <b>mg/24H</b> Milligrams per 24 Hours  <b>mg/kg</b> Milligrams per Kilogram  <b>mg/m<sup>3</sup></b> Milligrams per Cubic Metre  <b>Misc</b> or <b>Miscible</b> Liquids form one homogeneous liquid phase regardless of the amount of either component present.  <b>mm</b> Millimetre  <b>mmH<sub>2</sub>O</b> Millimetres of Water  <b>mPa.s</b> Millipascals per Second  <b>N/A</b> Not Applicable  <b>NIOSH</b> National Institute for Occupational Safety and Health  <b>NOHSC</b> National Occupational Health and Safety Commission  <b>OECD</b> Organisation for Economic Co-operation and Development  <b>Oz</b> Ounce  <b>PEL</b> Permissible Exposure Limit  <b>Pa</b> Pascal  <b>ppb</b> Parts per Billion  <b>ppm</b> Parts per Million  <b>ppm/2h</b> Parts per Million per 2 Hours  <b>ppm/6h</b> Parts per Million per 6 Hours  <b>psi</b> Pounds per Square Inch  <b>R</b> Rankine  <b>RCP</b> Reciprocal Calculation Procedure  <b>STEL</b> Short Term Exposure Limit  <b>TLV</b> Threshold Limit Value  <b>tne</b> Tonne  <b>TWA</b> Time Weighted Average  <b>ug/24H</b> Micrograms per 24 Hours  <b>UN</b> United Nations  <b>wt</b> Weight</p>

