

1. IDENTIFICATION

Product Name	Diethylenetriamine
Other Names	DETA; N-(2-Aminoethyl)-1,2-ethanediamine
Uses	General industrial products.
Chemical Family	No Data Available
Chemical Formula	C4H13N3
Chemical Name	1,2-Ethanediamine, N-(2-aminoethyl)-
Product Description	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

Hazard Classification	Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)
Hazard Categories	Acute Toxicity (Oral) - Category 4 Acute Toxicity (Dermal) - Category 3 Acute Toxicity (Inhalation) - Category 2 Skin Corrosion/Irritation - Category 1A Serious Eye Damage/Irritation - Category 1 Sensitisation (Respiratory) - Category 1 Sensitisation (Skin) - Category 1 Acute Hazard To The Aquatic Environment - Category 3

Pictograms



Signal Word Danger

Hazard Statements	H302	Harmful if swallowed.
	H311	Toxic in contact with skin.
	H314	Causes severe skin burns and eye damage.
	H317	May cause an allergic skin reaction.
	H330	Fatal if inhaled.
	H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
	H402	Harmful to aquatic life.

Precautionary Statements	Prevention	P280	Wear protective gloves/protective clothing/eye protection/face protection.
		P260	Do not breathe mist/vapour/spray.
		P284	Wear respiratory protection.
		P273	Avoid release to the environment.
		P270	Do not eat, drink or smoke when using this product.
		P271	Use only outdoors or in a well-ventilated area.
		P272	Contaminated work clothing should not be allowed out of the workplace.
	Response	P304 + P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
		P310	Immediately call a POISON CENTER or doctor/physician.
		P303 + P361 + P353	IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
		P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
		P301 + P330 + P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
		P363	Wash contaminated clothing before reuse.
		P333 + P313	If skin irritation or rash occurs: Get medical advice/attention.
		P391	Collect spillage.
	Storage	P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
		P405	Store locked up.
	Disposal	P501	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

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

HSNO Classifications			
	Health Hazards	6.1B	Substances that are acutely toxic - Fatal
		6.1D	Substances that are acutely toxic - Harmful
		6.5A	Substances that are respiratory sensitisers
		6.5B	Substances that are contact sensitisers
		6.8B	Substances that are suspected human reproductive or developmental toxicants
		6.9B	Substances that are harmful to human target organs or systems
		8.1A	Substances that are corrosive to metals
		8.2B	Substances that are corrosive to dermal tissue UN PGII
		8.3A	Substances that are corrosive to ocular tissue
	Environmental Hazards	9.1D	Substances that are slightly harmful to the aquatic environment or are otherwise designed for biocidal action
		9.2B	Substances that are ecotoxic in the soil environment
		9.3B	Substances that are ecotoxic to terrestrial vertebrates

3. COMPOSITION/INFORMATION ON INGREDIENTS*Ingredients*

Chemical Entity	Formula	CAS Number	Proportion
Diethylenetriamine	C4H13N3	111-40-0	>99 %

4. FIRST AID MEASURES*Description of necessary measures according to routes of exposure*

Swallowed	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call a Poison Centre or doctor/physician for advice. Never give anything by mouth to an unconscious person.
Eye	IF IN EYES: Immediately flush eyes with running water for several minutes, holding eyelids open and occasionally lifting the upper and lower lids. Immediately call a Poison Centre or doctor/physician for advice. Remove contact lenses if present and easy to do. Continue rinsing for at least 15 minutes. Obtain immediate medical care - Symptoms may be delayed.
Skin	IF ON SKIN: Remove contaminated clothing and shoes immediately (wear protective gloves to avoid further contact). Flush skin with running water for at least 15 minutes. Immediately call a Poison Centre or doctor/physician for advice. For minor skin contact, avoid spreading material on unaffected skin. Obtain immediate medical care - Symptoms may be delayed.
Inhaled	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a Poison Centre or doctor/physician for advice. Apply resuscitation if victim is not breathing - Do not use direct mouth-to-mouth method if victim ingested or inhaled the substance; use alternative respiratory method or proper respiratory device; Administer oxygen if breathing is difficult. Obtain immediate medical care.
Advice to Doctor	Keep victim calm and warm - Obtain immediate medical care. Symptoms may be delayed. Ensure that attending medical personnel are aware of identity and nature of product(s) involved, and take precautions to protect themselves.
Medical Conditions Aggravated by Exposure	May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction.

5. FIRE FIGHTING MEASURES

General Measures	If safe to do so, move undamaged containers from fire area. Cool containers with water spray until well after fire is out. Avoid getting water inside containers.
Flammability Conditions	Combustible liquid; May burn but does not ignite readily.
Extinguishing Media	Use dry chemical, Carbon dioxide (CO ₂), foam or water spray for extinction - Do not use water jets.
Fire and Explosion Hazard	Containers may explode when heated. When heated, vapours may form explosive mixtures with air. Contact with metals may evolve flammable hydrogen gas.
Hazardous Products of Combustion	Fire will produce irritating, toxic and/or corrosive gases, including Carbon monoxide, Carbon dioxide and Nitrogen oxides.
Special Fire Fighting Instructions	Contain runoff from fire control or dilution water - Runoff may be toxic and/or corrosive and may pollute waterways.
Personal Protective Equipment	Liquid-tight chemical protective clothing (splash suit) in combination with self-contained breathing apparatus (SCBA) should be used. Structural firefighter's uniform is NOT effective for this material.
Flash Point	104 °C [COC]
Lower Explosion Limit	2.0 %
Upper Explosion Limit	6.7 %
Auto Ignition Temperature	395 °C
Hazchem Code	2X

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Ensure adequate ventilation - Ventilate enclosed spaces before entering. ELIMINATE all ignition sources. Do not touch or walk through spilled material. Do not breathe mist/vapours and prevent contact with eyes, skin and clothing.
Clean Up Procedures	Absorb with earth, sand or other non-combustible material and transfer to a suitable container for disposal (see SECTION 13).
Containment	Stop leak if safe to do so - Prevent entry into waterways, drains or confined areas.
Decontamination	No information available.
Environmental Precautionary Measures	Spillages and decontamination runoff should be prevented from entering drains and watercourses - Runoff may be toxic and/or corrosive and may pollute waterways.
Evacuation Criteria	Spill or leak area should be isolated immediately. Keep unauthorised personnel away. Keep upwind and to higher ground. Large spill: Immediately contact Police or Fire Brigade; Consider downwind evacuation.
Personal Precautionary Measures	Do not touch damaged containers or spilled material unless wearing appropriate protective clothing (see SECTION 8). Large spills: Wear SCBA and chemical splash suit.

7. HANDLING AND STORAGE

Handling	Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation - Use only outdoors or in a well-ventilated place. Handle with care and in accordance with good industrial hygiene and safety practice. Do not breathe mist/vapours/spray and prevent contact with eyes, skin and clothing. Do not ingest. Wear protective gloves/protective clothing/eye protection/face protection; Wear respiratory protection (see SECTION 8). Combustible liquid: Keep away from heat and all sources of ignition - No smoking. Take precautionary measures against static discharge. Avoid release to the environment.
Storage	Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed. Protect from moisture/humid air (hygroscopic). Keep away from heat and all sources of ignition - No smoking. Keep away from food/feedstuffs and incompatible materials (see SECTION 10). Store locked up.
Container	Keep only in the original container or use containers made of zinc phosphate-treated carbon steel, tin coat steel, polyethylene and stainless-steel. Corrosive to copper and its alloy.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	For Diethylenetriamine (CAS No. 111-40-0): - Safe Work Australia Exposure Standard: TWA = 1 ppm (4.2 mg/m ³); Absorption through the skin may be a significant source of exposure (Sk); Respiratory and/or skin sensitiser (Sen). - New Zealand WES: TWA = 1 ppm (4.2 mg/m ³); Skin absorption (skin). - NIOSH REL: TWA = 1 ppm (4 mg/m ³) [skin].
Exposure Limits	No Data Available
Biological Limits	No information available.
Engineering Measures	Use a closed system, local exhaust ventilation and explosion-proof electrical equipment.
Personal Protection Equipment	- Respiratory protection: Wear respiratory protection. Recommended: Supplied air (SA) respirator (refer to AS/NZS 1715 & 1716). - Eye/face protection: Wear appropriate eye protection to prevent eye contact. Recommended: Safety glasses and face shield or eye protection in combination with breathing protection. - Hand protection: Wear protective gloves. Recommended: Impervious, chemical-resistant gloves, e.g. rubber or resin. - Skin/body protection: Wear appropriate personal protective clothing to prevent skin contact. Recommended: Impervious, chemical-resistant clothing, protective apron and protective boots.
Special Hazards Precautions	The vapour is heavier than air.
Work Hygienic Practices	Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Remove contaminated clothing and shoes immediately and wash before reuse. Contaminated work clothing should not be allowed out of the workplace.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Transparent liquid
Odour	Ammonia-like
Colour	Colourless
pH	12.5 (25% aqueous solution, 25 °C)
Vapour Pressure	37 Pa (@ 20 °C)
Relative Vapour Density	3.56 Air = 1
Boiling Point	207 °C
Melting Point	-39 °C
Freezing Point	-39 °C
Solubility	Readily soluble in water
Specific Gravity	0.952
Flash Point	104 °C [COC]
Auto Ignition Temp	395 °C
Evaporation Rate	No Data Available
Bulk Density	No Data Available
Corrosion Rate	No Data Available
Decomposition Temperature	No Data Available
Density	No Data Available
Specific Heat	No Data Available
Molecular Weight	No Data Available
Net Propellant Weight	No Data Available
Octanol Water Coefficient	-1.3
Particle Size	No Data Available
Partition Coefficient	No Data Available
Saturated Vapour Concentration	No Data Available
Vapour Temperature	No Data Available
Viscosity	No Data Available
Volatile Percent	No Data Available
VOC Volume	No Data Available

Additional Characteristics	Hygroscopic - absorbs moisture from the air. Reaction with oxygen in the air may discolour the product. Reacts with carbon dioxide gas, forming crystalline salts.
Potential for Dust Explosion	Not applicable.
Fast or Intensely Burning Characteristics	No information available.
Flame Propagation or Burning Rate of Solid Materials	No information available.
Non-Flammables That Could Contribute Unusual Hazards to a Fire	No information available.
Properties That May Initiate or Contribute to Fire Intensity	Combustible liquid; May burn but does not ignite readily.
Reactions That Release Gases or Vapours	Fire/decomposition will produce irritating, toxic and/or corrosive gases, including Carbon monoxide, Carbon dioxide and Nitrogen oxides.
Release of Invisible Flammable Vapours and Gases	When heated, vapours may form explosive mixtures with air. Contact with metals may evolve flammable hydrogen gas.

10. STABILITY AND REACTIVITY

General Information	The solution in water is a strong base. It reacts violently with acid and is corrosive. Reacts violently with oxidants, nitric acid and organic nitro compounds. Attacks many metals in the presence of water.
Chemical Stability	Stable under recommended storage conditions.
Conditions to Avoid	Keep away from heat and all sources of ignition. Protect from moisture/humid air.
Materials to Avoid	Incompatible/reactive with oxidants, acids and organic nitro compounds. Corrosive to copper and its alloy.
Hazardous Decomposition Products	Fire/decomposition will produce irritating, toxic and/or corrosive gases, including Carbon monoxide, Carbon dioxide and Nitrogen oxides.
Hazardous Polymerisation	No information available.

11. TOXICOLOGICAL INFORMATION

General Information	<ul style="list-style-type: none"> - Acute toxicity: Harmful if swallowed; Corrosive on ingestion. Toxic in contact with skin. Fatal if inhaled. - Skin corrosion/irritation: Corrosive to skin; Causes severe and skin burns. - Eye damage/irritation: Corrosive to eyes; Causes serious eye damage. - Respiratory/skin sensitisation: May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction. - Germ cell mutagenicity: Negative (in vivo somatic cell mutagenicity test (micronucleus assay)). - Carcinogenicity: Not considered to be carcinogenic. - Reproductive toxicity: Developmental effects for DETA cannot be ruled out; However, classification is not considered warranted. - STOT (single exposure): Corrosive to the respiratory tract. Inhalation of the vapour may cause lung odema. - STOT (repeated exposure): Not considered to cause serious damage to health from repeated oral exposure. Not considered to cause serious systemic effects from repeated dermal exposure. Not expected to cause serious damage to health from repeated inhalation exposure. - Aspiration toxicity: No information available.
Acute	
Ingestion	Acute toxicity (Oral): - LD50, Rat: 1,140 mg/kg [SIDS]
Other	Acute toxicity (Dermal): - LD50, Rabbit: 672 mg/kg [SIDS].
Inhalation	Acute toxicity (Inhalation): - LC50, Rat: 0.07 mg/l (4 h).
Carcinogen Category	None

12. ECOLOGICAL INFORMATION

Ecotoxicity	Aquatic toxicity: - Acute EC50, Crustacea (Daphnia magna): 16 mg/L (48 h) [SIDS].
Persistence/Degradability	No information available.
Mobility	No information available.
Environmental Fate	Prevent entry into soils, drains and waterways.
Bioaccumulation Potential	No information available.
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	Dispose of residual waste via specialised industrial waste disposal collector or service and in accordance with local/regional/national regulations.
Special Precautions for Land Fill	Contaminated containers/packaging: Empty contents completely before disposal.

14. TRANSPORT INFORMATION

Land Transport (Australia)

ADG Code

Proper Shipping Name	DIETHYLENETRIAMINE
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
EPG	36 Toxic And/Or Corrosive Substances Combustible
UN Number	2079
Hazchem	2X
Pack Group	II
Special Provision	No Data Available

Land Transport (Malaysia)

ADR Code

Proper Shipping Name	DIETHYLENETRIAMINE
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
EPG	36 Toxic And/Or Corrosive Substances Combustible
UN Number	2079
Hazchem	2X
Pack Group	II
Special Provision	No Data Available

Land Transport (New Zealand)

NZS5433

Proper Shipping Name	DIETHYLENETRIAMINE
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
EPG	36 Toxic And/Or Corrosive Substances Combustible

UN Number	2079
Hazchem	2X
Pack Group	II
Special Provision	No Data Available

Land Transport (United States of America)

US DOT

Proper Shipping Name	DIETHYLENETRIAMINE
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
ERG	154 Substances - Toxic and/or Corrosive (Non-Combustible)
UN Number	2079
Hazchem	2X
Pack Group	II
Special Provision	No Data Available

Sea Transport

IMDG Code

Proper Shipping Name	DIETHYLENETRIAMINE
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
UN Number	2079
Hazchem	2X
Pack Group	II
Special Provision	No Data Available
EMS	F-A, S-B
Marine Pollutant	No

Air Transport

IATA DGR

Proper Shipping Name	DIETHYLENETRIAMINE
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
UN Number	2079
Hazchem	2X
Pack Group	II
Special Provision	No Data Available

National Transport Commission (Australia)

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

Dangerous Goods Classification	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

General Information	No Data Available
Poisons Schedule (Aust)	Not Scheduled

Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

Approval Code HSR002966

National/Regional Inventories

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

16. OTHER INFORMATION

Related Product Codes	DIETTR1000, DIETTR1001, DIETTR1002, DIETTR1003, DIETTR1004, DIETTR2000, DIETTR3000, DIETTR3001, DIETTR3002, DIETTR4000, DIETTR5000
Revision	3
Revision Date	27 Nov 2015
Key/Legend	< Less Than > Greater Than AICS Australian Inventory of Chemical Substances atm Atmosphere CAS Chemical Abstracts Service (Registry Number) cm² Square Centimetres CO₂ Carbon Dioxide COD Chemical Oxygen Demand deg C (°C) Degrees Celcius EPA (New Zealand) Environmental Protection Authority of New Zealand deg F (°F) Degrees Fahrenheit g Grams g/cm³ Grams per Cubic Centimetre g/l Grams per Litre HSNO Hazardous Substance and New Organism IDLH Immediately Dangerous to Life and Health immiscible Liquids are insoluble in each other.

inHg Inch of Mercury
inH₂O Inch of Water
K Kelvin
kg Kilogram
kg/m³ Kilograms per Cubic Metre
lb Pound
LC₅₀ LC stands for lethal concentration. LC₅₀ 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.
LD₅₀ LD stands for Lethal Dose. LD₅₀ is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.
ltr or **L** Litre
m³ Cubic Metre
mbar Millibar
mg Milligram
mg/24H Milligrams per 24 Hours
mg/kg Milligrams per Kilogram
mg/m³ Milligrams per Cubic Metre
Misc or **Miscible** Liquids form one homogeneous liquid phase regardless of the amount of either component present.
mm Millimetre
mmH₂O Millimetres of Water
mPa.s Millipascals per Second
N/A Not Applicable
NIOSH National Institute for Occupational Safety and Health
NOHSC National Occupational Health and Safety Commission
OECD Organisation for Economic Co-operation and Development
Oz Ounce
PEL Permissible Exposure Limit
Pa Pascal
ppb Parts per Billion
ppm Parts per Million
ppm/2h Parts per Million per 2 Hours
ppm/6h Parts per Million per 6 Hours
psi Pounds per Square Inch
R Rankine
RCP Reciprocal Calculation Procedure
STEL Short Term Exposure Limit
TLV Threshold Limit Value
tne Tonne
TWA Time Weighted Average
ug/24H Micrograms per 24 Hours
UN United Nations
wt Weight