SAFETY DATA SHEET
TRICHLOROETHYLENE (TCE)
REVISION 5, DATE 17 OCT 2024

1. IDENTIFICATION

Product Name	**Trichloroethylene (TCE)**
Other Names	Trichloroethene
Uses	Industrial solvent and metal degreasing agent.
Chemical Family	No Data Available
Chemical Formula	C2HCl3
Chemical Name	Ethene, trichloro-
Product Description	No Data Available

Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
Redox Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox 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	Suite 13A.03, Menara Summit Persiaran Kewajipan USJ1 47600 UEP Subang Jaya Selangor, 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	Australia – Westmead NSW	1800-251525 131126
Chemcall	Australia	1800-127406 +64-4-9179888
Chemcall	Malaysia	+64-4-9179888
National Poison Centre	Malaysia	+60-4-6536-999
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)	6

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 (Inhalation) - Category 4

Skin Corrosion/Irritation - Category 2

Serious Eye Damage/Irritation - Category 2

Germ Cell Mutagenicity - Category 2

Carcinogenicity - Category 1B

Specific Target Organ Toxicity (Single Exposure) - Category 3

Specific Target Organ Toxicity (Repeated Exposure) - Category 2

Long-term Hazard To The Aquatic Environment - Category 2

Pictograms

Signal Word

Danger

Hazard Statements

H315	Causes skin irritation.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H336	May cause drowsiness or dizziness.
H341	Suspected of causing genetic defects.
H350	May cause cancer.
H373	May cause damage to organs through prolonged or repeated exposure.
H411	Toxic to aquatic life with long lasting effects.

Precautionary Statements

Prevention	**P280**	Wear protective gloves/protective clothing/eye protection/face protection and suitable respirator.
	P201	Obtain special instructions before use.
	P260	Do not breathe mist/vapour/spray.
	P273	Avoid release to the environment.
	P271	Use only outdoors or in a well-ventilated area.
Response	**P308 + P313**	IF exposed or concerned: Get medical attention.
	P312	Call a POISON CENTER or doctor if you feel unwell.
	P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
	P337 + P313	If eye irritation persists: Get medical attention.
	P391	Collect spillage.
	P304 + P340	IF INHALED: Remove victim to fresh air and keep comfortable for breathing.
	P332 + P313	If skin irritation occurs: Get medical attention.
	P362 + P364	Take off contaminated clothing and wash it before reuse.
	P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
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)

Safe Work Australia
National Guide for Classifying Hazardous Chemicals under the Model WHS Regulations

Hazard Classification	Hazardous according to the criteria of Safe Work Australia under Model WHS Regulations

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Trichloroethylene	C2HCl3	79-01-6	<=100 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. For advice, contact a Poisons Information Centre (e.g. phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor. 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. Remove contact lenses if present and easy to do. Continue rinsing for at least 15 minutes. If eye irritation persists, get medical advice/attention.
Skin	IF ON SKIN (or hair): Remove and isolate contaminated clothing and shoes. Immediately flush skin and hair with running water for at least 15 minutes. Wash skin with soap and water. If skin irritation occurs, get medical advice/attention. Wash contaminated clothing and shoes before reuse. *For minor skin contact, avoid spreading material on unaffected skin.
Inhaled	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a Poison Centre or doctor/physician for advice. Give artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult.
Advice to Doctor	If exposed or concerned, get medical advice/attention. Treat symptomatically. Keep victim calm and warm. Ensure that attending medical personnel are aware of the identity and nature of the product(s) involved, and take precautions to protect themselves. *Most important symptoms and effects, both acute and delayed: Causes skin irritation. Causes serious eye irritation. Harmful if inhaled. May cause drowsiness or dizziness. Suspected of causing genetic defects. May cause cancer. May cause damage to organs through prolonged or repeated exposure.
Medical Conditions Aggravated by Exposure	Use of alcoholic beverages enhances the harmful effect.

5. FIRE FIGHTING MEASURES

General Measures	Move containers from fire area if you can do it without risk. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire.
Flammability Conditions	This material may burn but does not ignite readily.

Extinguishing Media	Use dry chemical, Carbon dioxide (CO2), foam or water spray for extinction. Dike fire-control water for later disposal; do not scatter the material.
Fire and Explosion Hazard	Most vapours are heavier than air. Air/vapour mixtures may explode when ignited. Container may explode in heat of fire.
Hazardous Products of Combustion	Fire may produce irritating and/or toxic gases, including phosgene, hydrogen chloride.
Special Fire Fighting Instructions	Contain runoff from fire control or dilution water - Runoff may cause pollution.
Personal Protective Equipment	Wear positive pressure self-contained breathing apparatus (SCBA). Wear chemical protective clothing - Structural firefighters' protective clothing will only provide limited protection.
Flash Point	No Data Available
Lower Explosion Limit	8 %
Upper Explosion Limit	10.5 %
Auto Ignition Temperature	410 °C
Hazchem Code	2Z

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Ensure adequate ventilation - Ventilate enclosed spaces before entering. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Do not touch or walk through spilled material. Do not breathe mist/vapours and avoid contact with eyes, skin and clothing.
Clean Up Procedures	Pick up with sand, earth or other non-combustible absorbent material (see SECTION 13).
Containment	Stop leak if you can do it without risk. Prevent entry into waterways, sewers, basements or confined areas. Dike far ahead of large spill for later disposal.
Decontamination	No information available.
Environmental Precautionary Measures	Spillages and decontamination runoff should be prevented from entering drains and watercourses. If contamination of sewers or waterways has occurred advise local emergency services.
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 initial downwind evacuation of areas within at least 100 m.
Personal Precautionary Measures	Wear protective gloves/protective clothing/eye protection/face protection and suitable respirator (see SECTION 8).

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. Obtain special instructions before use - Do not handle until all safety directions have been read and understood. Do not breathe mist/vapours and avoid contact with eyes, skin and clothing. Do not ingest. Wear protective gloves/protective clothing/eye protection/face protection and suitable respirator (see SECTION 8). Keep away from heat and sources of ignition - No smoking. Avoid release to the environment - Collect spillage (see SECTION 6). Keep away from heat and sources of ignition - No smoking.
Storage	Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed when not in use. Avoid exposure to moisture. Keep away from heat and sources of ignition - No smoking. Keep away from feedstuffs and incompatible materials (see SECTION 10). Store locked up.
Container	Keep in the original container.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	For Trichloroethylene (CAS No. 79-01-6):

	- Safe Work Australia Exposure Standard: TWA = 10 ppm (54 mg/m3); STEL = 40 ppm (216 mg/m3); Presumed to have carcinogenic potential for humans (Carc. 1B); Absorption through the skin may be a significant source of exposure (Sk). - New Zealand Workplace Exposure Standard [Adopted 2017]: TWA = 10 ppm (55 mg/m3); STEL = 25 ppm (135 mg/m3); Known or presumed human carcinogen (carcinogen category 1); Ototoxin (oto). - OSHA PEL: TWA = 100 ppm; C 200 ppm; 300 ppm (5-minute maximum peak in any 2 hours). *Immediately dangerous to life or health (IDLH) concentration: 1,000 ppm.
Exposure Limits	No Data Available
Biological Limits	No information available.
Engineering Measures	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.
Personal Protection Equipment	- Respiratory protection: In case of inadequate ventilation, wear respiratory protection. Recommended: Organic vapour respirator (refer to AS/NZS 1715 & 1716). - Eye/face protection: Wear appropriate eye protection to avoid eye contact. Recommended: Chemical goggles. - Hand protection: Wear protective gloves. Recommended: Impervious gloves. - Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Overalls, safety shoes/boots.
Special Hazards Precaustions	Vapour heavier than air - prevent concentration in hollows or sumps. Do NOT enter confined spaces where vapour may have collected.
Work Hygienic Practices	Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Clear liquid
Odour	Sweetish, chloroform-like
Colour	Colourless
pH	No Data Available
Vapour Pressure	7.8 kPa (@ 20 °C)
Relative Vapour Density	4.5 Air = 1
Boiling Point	87 °C
Melting Point	-73 °C
Freezing Point	No Data Available
Solubility	0.1 g/100 mL water 20°C
Specific Gravity	1.5 (Water = 1)
Flash Point	No Data Available
Auto Ignition Temp	410 °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	No Data Available
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	No information available.
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	This material may burn but does not ignite readily.
Reactions That Release Gases or Vapours	Fire/decomposition may produce irritating and/or toxic gases, including phosgene, hydrogen chloride.
Release of Invisible Flammable Vapours and Gases	Air/vapour mixtures may explode when ignited.

10. STABILITY AND REACTIVITY

General Information	Reacts violently with finely divided metals, generating fire and explosion hazard.
Chemical Stability	Stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
Conditions to Avoid	Keep away from heat and sources of ignition. Protect from sunlight and moisture.
Materials to Avoid	Incompatible/reactive with strong caustics and alkalis, metal powders/chemically-active metals (such as barium, lithium, sodium, magnesium, titanium & beryllium).
Hazardous Decomposition Products	Fire/decomposition may produce irritating and/or toxic gases, including phosgene, hydrogen chloride.
Hazardous Polymerisation	No information available.

11. TOXICOLOGICAL INFORMATION

General Information

Information on toxicological effects:
- Acute toxicity: Harmful if inhaled.
- Skin corrosion/irritation: Causes skin irritation.
- Eye damage/irritation: Causes serious eye irritation.
- Respiratory/skin sensitisation: No information available.
- Germ cell mutagenicity: Suspected of causing genetic defects.
- Carcinogenicity: May cause cancer. Trichloroethylene (CAS No. 79-01-6) is classified by the IARC Monographs as "Carcinogenic to humans" (Group 1).
- Reproductive toxicity: No information available.
- STOT (single exposure): May cause drowsiness or dizziness.
- STOT (repeated exposure): May cause damage to organs through prolonged or repeated exposure.
- Aspiration toxicity: No information available.

Information on toxicological effects:
- Ingestion: Swallowing can result in nausea, vomiting and central nervous system depression.
- Eye contact: Causes serious eye irritation. May cause redness and tearing of the eyes
- Skin contact: Causes skin irritation. Will have a degreasing action on the skin. May be absorbed through the skin in

harmful amounts.
- Inhalation: May cause central nervous system depression with nausea, headache, dizziness, vomiting, and incoordination. Inhalation of vapours in high concentration may cause irritation of respiratory system. Vapours can have a narcotic effect. High concentrations lead to unconsciousness - life threatening.
Chronic effects: May cause damage to organs through prolonged or repeated exposure.

Acute

Ingestion	Acute toxicity (Oral): - LD50, Rat: 4,920 mg/kg
Inhalation	Acute toxicity (Inhalation); - LC50, Rat: 4,800 ppm [CCID].
Other	Acute toxicity (Dermal): - LD50, Rabbit: 29,000 mg/kg
Carcinogen Category	Cat. 1B

12. ECOLOGICAL INFORMATION

Ecotoxicity	Aquatic toxicity: - LC50, Fish (Pimephales promelas): 31.4 - 71.8 mg/L (96 h). - EC50, Crustacea (Daphnia magna): 2.2 mg/L (48 h). - IC50, Algae (Pseudokirchneriella subcapitata): 175 mg/L (96 h).
Persistence/Degradability	No information available.
Mobility	No information available.
Environmental Fate	Toxic to aquatic life with long lasting effects - Avoid release to the environment.
Bioaccumulation Potential	Does not bioaccumulate.
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	Dispose of contents/container through a licensed waste contractor and in accordance with local/regional/national regulations.
Special Precautions for Land Fill	Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. TRANSPORT INFORMATION

Land Transport (Australia)
ADG Code

Proper Shipping Name	TRICHLOROETHYLENE
Class	6.1 Toxic and Infectious Substances - Toxic Substances
Subsidiary Risk(s)	No Data Available
EPG	160 Halogenated Solvents
UN Number	1710
Hazchem	2Z
Pack Group	III
Special Provision	No Data Available

Land Transport (Malaysia)
ADR Code

Proper Shipping Name	TRICHLOROETHYLENE
Class	6.1 Toxic and Infectious Substances - Toxic Substances
Subsidiary Risk(s)	No Data Available
EPG	160 Halogenated Solvents
UN Number	1710
Hazchem	2Z
Pack Group	III
Special Provision	No Data Available

Land Transport (New Zealand)
NZS5433

Proper Shipping Name	TRICHLOROETHYLENE
Class	6.1 Toxic and Infectious Substances - Toxic Substances
Subsidiary Risk(s)	No Data Available
EPG	160 Halogenated Solvents
UN Number	1710
Hazchem	2Z
Pack Group	III
Special Provision	No Data Available

Land Transport (United States of America)
US DOT

Proper Shipping Name	TRICHLOROETHYLENE
Class	6.1 Toxic and Infectious Substances - Toxic Substances
Subsidiary Risk(s)	No Data Available
ERG	160 Halogenated Solvents
UN Number	1710
Hazchem	2Z
Pack Group	III
Special Provision	No Data Available

Sea Transport
IMDG Code

Proper Shipping Name	TRICHLOROETHYLENE
Class	6.1 Toxic and Infectious Substances - Toxic Substances
Subsidiary Risk(s)	CP Marine Pollutant
UN Number	1710
Hazchem	2Z
Pack Group	III
Special Provision	No Data Available
EMS	F-A, S-A
Marine Pollutant	Yes

Air Transport
IATA DGR

Proper Shipping Name	TRICHLOROETHYLENE
Class	6.1 Toxic and Infectious Substances - Toxic Substances
Subsidiary Risk(s)	No Data Available
UN Number	1710
Hazchem	2Z
Pack Group	III
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)

15. REGULATORY INFORMATION

General Information	TRICHLOROETHYLENE
Poisons Schedule (Aust)	6

Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

Approval Code	HSR001555

National/Regional Inventories

Australia (AIIC)	Listed
Canada (DSL)	Listed
Canada (NDSL)	Not Determined
China (IECSC)	Listed
Europe (EINECS)	Listed
Europe (REACh)	Not Determined
Japan (ENCS/METI)	Listed
Korea (KECI)	Listed
Malaysia (List of Classified Substances)	Not Determined
New Zealand (NZIoC)	Listed
Philippines (PICCS)	Listed
Taiwan (TCSI)	Listed
USA (TSCA)	Listed

Mexico (INSQ)	Not Determined

16. OTHER INFORMATION

Related Product Codes	TRCHLO0900, TRCHLO1000, TRCHLO1001, TRCHLO1002, TRCHLO1003, TRCHLO1004, TRCHLO1005, TRCHLO1006, TRCHLO1007, TRCHLO1008, TRCHLO1009, TRCHLO1010, TRCHLO1011, TRCHLO1012, TRCHLO1013, TRCHLO1014, TRCHLO1015, TRCHLO1016, TRCHLO1017, TRCHLO1018, TRCHLO1020, TRCHLO1021, TRCHLO1022, TRCHLO1023, TRCHLO1100, TRCHLO1200, TRCHLO1201, TRCHLO1300, TRCHLO1400, TRCHLO1500, TRCHLO1600, TRCHLO1700, TRCHLO1800, TRCHLO1801, TRCHLO1802, TRCHLO1803, TRCHLO1804, TRCHLO1805, TRCHLO1806, TRCHLO1807, TRCHLO1808, TRCHLO1809, TRCHLO1810, TRCHLO1811, TRCHLO1812, TRCHLO1813, TRCHLO1814, TRCHLO1815, TRCHLO1816, TRCHLO1817, TRCHLO2000, TRCHLO2100, TRCHLO2200, TRCHLO2300, TRCHLO2500, TRCHLO3000, TRCHLO3010, TRCHLO3020, TRCHLO4000, TRCHLO4500, TRCHLO5000, TRCHLO5100, TRCHLO6000, TRCHLO7000
Revision	5
Revision Date	17 Oct 2024
Key/Legend	< Less Than > Greater Than **AICS** Australian Inventory of Chemical Substances **atm** Atmosphere **CAS** Chemical Abstracts Service (Registry Number) **cm^2** 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 Farenheit **g** Grams **g/cm^3** 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 insoluable in each other. **inHg** Inch of Mercury **inH2O** Inch of Water **K** Kelvin **kg** Kilogram **kg/m^3** 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 **m^3** Cubic Metre **mbar** Millibar **mg** Milligram **mg/24H** Milligrams per 24 Hours **mg/kg** Milligrams per Kilogram **mg/m^3** 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 Heath 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