

1. IDENTIFICATION

Product Name	Perchloroethylene
Other Names	1,1,2,2-Tetrachloroethene; Ethylene tetrachloride; PCE; Perchlor; Tetrachloroethylene
Uses	Industrial solvent.
Chemical Family	No Data Available
Chemical Formula	C ₂ Cl ₄
Chemical Name	Ethene, tetrachloro-
Product Description	No Data Available

Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
UDS Pty Ltd	3 Spireton Place Pendle Hill NSW 2145 Australia	+61-2-9688 2022

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

2. HAZARD IDENTIFICATION

Poisons Schedule (Aust)	Schedule 6
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Globally Harmonised System

Hazard Classification	Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)
Hazard Categories	Skin Corrosion/Irritation - Category 2 Serious Eye Damage/Irritation - Category 2A Sensitisation (Skin) - Category 1B Carcinogenicity - Category 2 Specific Target Organ Toxicity (Single Exposure) - Category 3

Long-term Hazard To The Aquatic Environment - Category 2

Pictograms



Signal Word

Warning

Hazard Statements

H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H351 Suspected of causing cancer.
H411 Toxic to aquatic life with long lasting effects.

Precautionary Statements

Prevention	P280	Wear protective gloves/protective clothing/eye protection/face protection.	
	P261	Avoid breathing mist/vapours/spray.	
	P201	Obtain special instructions before use.	
	P273	Avoid release to the environment.	
	P272	Contaminated work clothing should not be allowed out of the workplace.	
	P271	Use only outdoors or in a well-ventilated area.	
	Response	P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
		P337 + P313	If eye irritation persists: Get medical advice/attention.
		P333 + P313	If skin irritation or rash occurs: Get medical advice/attention.
		P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P312		Call a POISON CENTER or doctor/physician if you feel unwell.	
Storage	P391	Collect spillage.	
	P362	Take off contaminated clothing and wash 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.	
Disposal	P304 + P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.	
	P403 + P233	Store in a well-ventilated place. Keep container tightly closed.	
	P405	Store locked up.	
	P501	Dispose of contents/container in accordance with local / regional / national / international regulations.	

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Perchloroethylene	C2Cl4	127-18-4	<=100 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Call a Poison Centre or doctor/physician for advice. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. 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 flushing until advised to stop by a Poisons Information Centre or a doctor, or for at least 15 minutes. If eye irritation persists, get medical advice/attention.

Skin	IF ON SKIN (or hair): Remove contaminated clothing and shoes immediately. Flush skin and hair with running water for at least 15 minutes. For minor skin contact, avoid spreading material on unaffected skin. If skin irritation or rash occurs, get medical advice/attention. Wash contaminated clothing and shoes before reuse.
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. 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.
Advice to Doctor	If exposed or concerned, get medical advice/attention. Medical examination necessary even on suspicion (only) of intoxication. Keep victim calm and warm - Obtain immediate medical care. Ensure that attending medical personnel are aware of the identity and nature of the product(s) involved, and take precautions to protect themselves.
Medical Conditions Aggravated by Exposure	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	Non-combustible; Material itself does not burn, but decomposes in a fire to hydrogen chloride and phosgene.
Extinguishing Media	If material is involved in a fire, 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. Contact with metals may evolve flammable hydrogen gas. The vapour is heavier than air and may accumulate in lowered spaces causing a deficiency of oxygen.
Hazardous Products of Combustion	Fire or heat will produce irritating, toxic and/or corrosive gases, including Carbon monoxide, Chlorine, Hydrogen chloride gas, phosgene.
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	Wear self-contained breathing apparatus (SCBA) and chemical splash suit. Fully-encapsulating, gas-tight suits should be worn for maximum protection. Structural firefighter's uniform is NOT effective for this material.
Flash Point	No Data Available
Lower Explosion Limit	No Data Available
Upper Explosion Limit	No Data Available
Auto Ignition Temperature	No Data Available
Hazchem Code	2Z

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. Avoid breathing vapours and contact with eyes, skin and clothing.
Clean Up Procedures	Large spill: Transfer by mechanical means such as vacuum truck to a salvage tank for product recovery or safe disposal. Absorb small spillage/residues with earth, sand or other non-combustible material and transfer to a labelled, sealable container for disposal (see SECTION 13).
Containment	Stop leak if safe to do so - Prevent entry into waterways, drains or confined areas. Cover with dry earth, sand or other non-combustible material followed by plastic sheet to minimise spreading and to slow down evaporation. Use bunds to contain the spill; Cover drains. *The vapour is heavier than air and may accumulate in lowered spaces causing a deficiency of oxygen.
Decontamination	Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely.
Environmental Precautionary Measures	Spillages and decontamination runoff should be prevented from entering drains and watercourses. Spillages or uncontrolled discharges must be alerted to the appropriate regulatory body.
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 250 m. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing (see SECTION 8). Large spill: Wear SCBA and chemical splash suit. Fully-encapsulating, gas-tight suits should be worn for maximum

Personal Precautionary Measures protection.

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 area. Obtain special instructions before use - Do not handle until all safety precautions have been read and understood. Minimise workplace exposure concentrations. Avoid breathing mist/vapours and contact with eyes, skin and clothing. Do not ingest. Wear protective gloves/protective clothing/eye protection/face protection (see SECTION 8). Forms dangerous gas near radiators or naked flames: Keep away from heat, hot surfaces and sources of ignition - No smoking. Take precautionary measures against static discharges. Avoid splash filling. Do not use compressed air for filling, discharging or handling operations. Avoid release to the environment - Collect spillage (see SECTION 6).

Storage Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed. Keep away from heat, hot surfaces and sources of ignition - No smoking. Keep away from foodstuffs and incompatible materials (see SECTION 10). Store locked up. Locate bulk storage outdoors. Bulk storage tanks should be diked (bunded).

Container Keep in the original container or appropriate packaging, i.e. Stainless steel, Steel (drums) or glass. Do not store in Aluminium.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General For Perchloroethylene (CAS No. 127-18-4):

- Safe Work Australia Exposure Standard: TWA = 50 ppm (340 mg/m³); STEL = 150 ppm (1,020 mg/m³).
- New Zealand Workplace Exposure Standard (2018): TWA = 20 ppm (136 mg/m³); STEL = 40 ppm (271 mg/m³); Skin absorption (skin); Confirmed carcinogen (6.7A).
- NIOSH REL: Minimise workplace exposure concentrations; NIOSH considers tetrachloroethylene to be a potential occupational carcinogen as defined by the OSHA carcinogen policy.
- OSHA PEL: TWA = 100 ppm; Ceiling = 200 ppm (for 5 minutes in any 3-hour period), with a maximum peak of 300 ppm.
- Immediately dangerous to life or health (IDLH) concentration: 150 ppm [Note: NIOSH recommends as part of its carcinogen policy that the "most protective" respirators be worn for tetrachloroethylene at any detectable concentration].

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. The use of local exhaust ventilation is recommended to control emissions near the source.

Personal Protection Equipment

- Respiratory protection: Wear respiratory protection at any detectable concentration. Recommended: Supplied-air respirator or self-contained breathing apparatus (SCBA) that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (refer to AS/NZS 1715 & 1716).
- Eye/face protection: Wear appropriate eye protection to prevent eye contact. Recommended: Chemical splash goggles.
- Hand protection: Wear protective gloves. Recommended: Impervious gloves, e.g. Fluorocarbon rubber. Unsuitable glove materials: PVC, Polyethylene, Neoprene, Nitrile rubber.
- Skin/body protection: Wear appropriate personal protective clothing to prevent skin contact. Recommended: Use protective clothing which is chemical resistant to this material. Safety shoes and boots should also be chemical-resistant.

Special Hazards Precautions Depending on the degree of exposure, periodic medical examination is suggested.

Work Hygienic Practices Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Wash hands and exposed skin before breaks and immediately after handling the product. Contaminated work clothing should not be allowed out of the workplace.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State Liquid

Appearance Liquid

Odour	Ether-like
Colour	Colourless
pH	No Data Available
Vapour Pressure	25 hPa (@ 25 °C)
Relative Vapour Density	5.7 - 5.83 Air = 1
Boiling Point	121.2 °C
Melting Point	No Data Available
Freezing Point	-22 °C
Solubility	Slightly soluble in water (150 mg/l @ 25 °C) - Soluble in organic solvents 20°C
Specific Gravity	1.62 - 1.63
Flash Point	No Data Available
Auto Ignition Temp	No Data Available
Evaporation Rate	No Data Available
Bulk Density	No Data Available
Corrosion Rate	No Data Available
Decomposition Temperature	>=140 °C
Density	No Data Available
Specific Heat	No Data Available
Molecular Weight	165.85 g/mol
Net Propellant Weight	No Data Available
Octanol Water Coefficient	Log Pow: 2.53 @ 20 °C
Particle Size	No Data Available
Partition Coefficient	No Data Available
Saturated Vapour Concentration	No Data Available
Vapour Temperature	No Data Available
Viscosity	0.891 mPa•s (@ 20 °C)
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	Non-combustible; Material itself does not burn, but decomposes in a fire to hydrogen chloride and phosgene.
Reactions That Release Gases or Vapours	Decomposition will produce irritating, toxic and/or corrosive gases, including Carbon monoxide, Chlorine, Hydrogen chloride gas, phosgene.
Release of Invisible Flammable Vapours and Gases	Contact with metals may evolve flammable hydrogen gas.

10. STABILITY AND REACTIVITY

General Information	Decomposes slowly on contact with moisture and on long exposure to light. Reacts violently with finely divided metals; This generates fire and explosion hazard.
Chemical Stability	Stable under normal conditions of use.
Conditions to Avoid	Avoid direct sunlight. Keep away from heat, hot surfaces and sources of ignition.
Materials to Avoid	Incompatible/reactive with oxidising agents, strong bases, metal salts, plastic, non-iron metals (Aluminium, Magnesium, Zinc).

Hazardous Decomposition Products	Decomposition will produce irritating, toxic and/or corrosive gases, including Carbon monoxide, Chlorine, Hydrogen chloride gas, phosgene.
Hazardous Polymerisation	No information available.

11. TOXICOLOGICAL INFORMATION

General Information	<ul style="list-style-type: none"> - Acute toxicity: If swallowed the substance may cause vomiting and could result in aspiration pneumonitis. Vapour is harmful to health on prolonged exposure. Use of alcoholic beverages enhances the harmful effect. - Skin corrosion/irritation: Causes skin irritation. Solvents may de-grease the skin. Repeated or prolonged contact with skin may cause dermatitis. - Eye damage/irritation: Causes serious eye irritation. - Respiratory/skin sensitisation: May cause an allergic skin reaction. - Germ cell mutagenicity: Not classified. Did not show mutagenic effects in animal experiments. - Carcinogenicity: Suspected of causing cancer. Tetrachloroethylene (Perchloroethylene) is classified by the IARC Monograph as "Probably carcinogenic to humans" (Group 2A). - Reproductive toxicity: Not classified. - STOT (single exposure): May cause drowsiness or dizziness. May cause irritation of respiratory tract and shortness of breath. Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting. The substance may cause effects on the central nervous system. Exposure at high levels could cause unconsciousness. - STOT (repeated exposure): Not classified. The substance may have effects on the liver, kidneys and central nervous system. - Aspiration toxicity: Not classified.
Acute	
Ingestion	Acute toxicity (Oral): - LD50, Rats (male/female): 3,005 - 3,835 mg/kg
Inhalation	Acute toxicity (Inhalation): - LC50, Rat: 3,786 ppm (4 h).
Carcinogen Category	Carc. 2

12. ECOLOGICAL INFORMATION

Ecotoxicity	Aquatic toxicity: - LC50, Fish (<i>Oncorhynchus mykiss</i>): 5 mg/l (96 h). - EC50, Crustacea (<i>Daphnia magna</i>): 8.5 mg/l (48 h). - EC50, Algae/aquatic plants (<i>Chlamydomonas reinhardtii</i>): 3.64 mg/l (72 h).
Persistence/Degradability	Not readily biodegradable (0 %, 21 d). Non-significant photolysis (Half-life: 50 d).
Mobility	Very volatile (air). - Henry's Constant: 21 hPa.m ³ /mol @ 25 °C Unlikely to absorb in soil. - KOC: 141 - log Koc: 2.15
Environmental Fate	Toxic to aquatic life with long lasting effects - Avoid release to the environment.
Bioaccumulation Potential	The substance does not bioaccumulate. - Bioconcentration factor (BCF): 49 [<i>Lepomis macrochirus</i> (Bluegill sunfish)].
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	Recover and reclaim or recycle, if practicable, or dispose of in accordance with local/regional/national regulations. Contact a licensed professional waste disposal service to dispose of this material. The organic ingredients can be incinerated in a suitable installation when in accordance with local regulations. Do not release to sewers. Do not dispose together with household waste.
Special Precautions for Land Fill	Drain container thoroughly. After draining, vent in a safe place away from sparks and fire. Do not puncture, cut or weld unclean drums.

14. TRANSPORT INFORMATION**Land Transport (Australia)**

ADG Code

Proper Shipping Name	TETRACHLOROETHYLENE
Class	6.1 Toxic and Infectious Substances - Toxic Substances
Subsidiary Risk(s)	No Data Available
EPG	37 Toxic And/Or Corrosive Substances Non-Combustible
UN Number	1897
Hazchem	2Z
Pack Group	III
Special Provision	No Data Available

Sea Transport

IMDG Code

Proper Shipping Name	TETRACHLOROETHYLENE
Class	6.1 Toxic and Infectious Substances - Toxic Substances
Subsidiary Risk(s)	No Data Available
UN Number	1897
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	TETRACHLOROETHYLENE
Class	6.1 Toxic and Infectious Substances - Toxic Substances
Subsidiary Risk(s)	No Data Available
UN Number	1897
Hazchem	2Z
Pack Group	III
Special Provision	No Data Available

15. REGULATORY INFORMATION

General Information	TETRACHLOROETHYLENE
Poisons Schedule (Aust)	Schedule 6

National/Regional Inventories

Australia (AICS)	Listed
Canada (DSL)	Listed

Canada (NDSL)	Not Determined
China (IECSC)	Listed
Europe (EINECS)	204-825-9
Europe (REACH)	Not Determined
Japan (ENCS/METI)	Listed
Korea (KECI)	Listed
Malaysia (EHS Register)	Listed
New Zealand (NZIoC)	Listed
Philippines (PICCS)	Listed
Switzerland (Giftliste 1)	Not Determined
Switzerland (Inventory of Notified Substances)	Not Determined
Taiwan (NCSR)	Listed
USA (TSCA)	Listed

16. OTHER INFORMATION

Related Product Codes	PECHLO0200, PECHLO0400, PECHLO0500, PECHLO0600, PECHLO0700, PECHLO0800, PECHLO0900, PECHLO0901, PECHLO0902, PECHLO1000, PECHLO1001, PECHLO1002, PECHLO1003, PECHLO1004, PECHLO1005, PECHLO1006, PECHLO1007, PECHLO1008, PECHLO1009, PECHLO1010, PECHLO1011, PECHLO1012, PECHLO1013, PECHLO1014, PECHLO1015, PECHLO1016, PECHLO1017, PECHLO1018, PECHLO1019, PECHLO1020, PECHLO1021, PECHLO1022, PECHLO1023, PECHLO1100, PECHLO1101, PECHLO1102, PECHLO1103, PECHLO1200, PECHLO1300, PECHLO1400, PECHLO1500, PECHLO1600, PECHLO1700, PECHLO1701, PECHLO1705, PECHLO1707, PECHLO1800, PECHLO1801, PECHLO1802, PECHLO1803, PECHLO1804, PECHLO1805, PECHLO1806, PECHLO1807, PECHLO1808, PECHLO1809, PECHLO1810, PECHLO1811, PECHLO1812, PECHLO1813, PECHLO1814, PECHLO1815, PECHLO1816, PECHLO1817, PECHLO1818, PECHLO1819, PECHLO1820, PECHLO1821, PECHLO1822, PECHLO1823, PECHLO1824, PECHLO1825, PECHLO1826, PECHLO1827, PECHLO1828, PECHLO1900, PECHLO2000, PECHLO2001, PECHLO2002, PECHLO2100, PECHLO2200, PECHLO2202, PECHLO2300, PECHLO2700, PECHLO3000, PECHLO3001, PECHLO3010, PECHLO3011, PECHLO3012, PECHLO3020, PECHLO3021, PECHLO3100, PECHLO4000, PECHLO5000, PECHLO5500, PECHLO6000, PECHLO7700, PECHLO8000, PECHLO9000, PECHLO9001, PECHLO9009, PECHLO9010, PECHLO9100, PECHLO9200
Revision	4
Revision Date	20 Nov 2020
Key/Legend	<p>< 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 Farenheit 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 insoluable in each other. inHg Inch of Mercury inH₂O Inch of Water</p>

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