# SAFETY DATA SHEET

## Section 1 - Identification of The Material and Supplier

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Certified System
Quality
ISO 9001
SAI GLOBAL
Licence No. 6248

**Chemical nature:** Chlorinated aliphatic hydrocarbon.
**Trade Name:** **Trichloroethylene**
**Product Use:** Vapour degreasing and industrial solvent.
**Creation Date:** **March, 2006**
**This version issued:** **August, 2020** and is valid for 5 years from this date.
**Poisons Information Centre: Phone 13 1126 from anywhere in Australia**

## SECTION 2 - HAZARDS IDENTIFICATION

**Statement of Hazardous Nature**
This product is classified as: Hazardous according to the criteria of SWA Australia.
Dangerous according to Australian Dangerous Goods (ADG) Code, IATA and IMDG/IMSBC criteria.
**SUSMP Classification:** S6
**ADG Classification:** Class 6.1: Toxic substances.
**UN Number:** 1710, TRICHLOROETHYLENE


### GHS Signal word: DANGER.

**HAZARD STATEMENT:**
H301: Toxic if swallowed.
H315: Causes skin irritation.
H319: Causes serious eye irritation.
H336: May cause drowsiness or dizziness.
H341: Suspected of causing genetic defects.
H350: May cause cancer.
H412: Harmful to aquatic life with long lasting effects.

**PREVENTION**
P102: Keep out of reach of children.
P201: Obtain special instructions before use.
P202: Do not handle until all safety precautions have been read and understood.
P262: Do not get in eyes, on skin, or on clothing.
P264: Wash contacted areas thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P273: Avoid release to the environment.
P280: Wear protective gloves, protective clothing and eye or face protection.

**RESPONSE**
P362: Take off contaminated clothing and wash before reuse.
P301+P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor.
P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P302+P352: IF ON SKIN: Wash with plenty of soap and water.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P308+P313: If exposed or concerned: Get medical advice.
P332+P313: If skin irritation occurs: Get medical advice.
P337+P313: If eye irritation persists: Get medical advice.
P370+P378: In case of fire, note the following. Water fog or fine spray is the preferred medium for large fires. Try to contain spills, minimise spillage entering drains or water courses.

**STORAGE**

P405: Store locked up.
P402+P404: Store in a dry place. Store in a closed container.
P403+P235: Store in a well-ventilated place. Keep cool.

**DISPOSAL**

P501: If product can not be recycled, consider controlled incineration, or contact a specialist waste disposal company (see Section 13 of this SDS).

## Emergency Overview

**Physical Description & colour**: Clear, colourless liquid.
**Odour:** Sweetish odour; irritating at high concentrations.
**Major Health Hazards:** toxic if swallowed, may cause cancer, suspected of causing genetic defects, may cause drowsiness or dizziness, irritating to skin, serious eye irritation.

## SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

| Ingredients | CAS No | Conc,% | TWA (ppm) | STEL (ppm) |
|---|---|---|---|---|
| Trichloroethylene | 79-01-6 | 99.4 | 10 | 40 |
| 1,2-butylene oxide | 106-88-7 | 0.5 | not set | not set |
| Other non hazardous ingredients | secret | to 100 | not set | not set |

This is a commercial product whose exact ratio of components may vary slightly. Minor quantities of other non hazardous ingredients are also possible.

The TWA exposure value is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week. The STEL (Short Term Exposure Limit) is an exposure value that may be equalled (but should not be exceeded) for no longer than 15 minutes and should not be repeated more than 4 times per day. There should be at least 60 minutes between successive exposures at the STEL. The term "peak "is used when the TWA limit, because of the rapid action of the substance, should never be exceeded, even briefly.

## SECTION 4 - FIRST AID MEASURES

### General Information:

You should call The Poisons Information Centre if you feel that you may have been poisoned, burned or irritated by this product. The number is 13 1126 from anywhere in Australia (0800 764 766 in New Zealand) and is available at all times. Have this SDS with you when you call.

**Inhalation:** No first aid measures normally required. However, if inhalation has occurred, and irritation has developed, remove to fresh air and observe until recovered. If irritation becomes painful or persists more than about 30 minutes, seek medical advice.
**Skin Contact:** Wash gently and thoroughly with warm water (use non-abrasive soap if necessary) for 10-20 minutes or until product is removed. Under running water, remove contaminated clothing, shoes and leather goods (e.g. watchbands and belts) and completely decontaminate them before reuse or discard. If irritation persists, repeat flushing and seek medical attention.
**Eye Contact:** Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 20 minutes or until the product is removed, while holding the eyelid(s) open. Take care not to rinse contaminated water into the unaffected eye or onto the face. Obtain medical attention immediately. Take special care if exposed person is wearing contact lenses.
**Ingestion:** If swallowed, do NOT induce vomiting; rinse mouth thoroughly with water and contact a Poisons Information Centre, or call a doctor at once. Give activated charcoal if instructed.

## SECTION 5 - FIRE FIGHTING MEASURES

**Fire and Explosion Hazards**: There is no risk of an explosion from this product under normal circumstances if it is involved in a fire.
Fire decomposition products from this product may be toxic if inhaled. Take appropriate protective measures.
**Extinguishing Media:** Water fog or fine spray is the preferred medium for large fires. Try to contain spills, minimise spillage entering drains or water courses.
**Fire Fighting:** If a significant quantity of this product is involved in a fire, call the fire brigade. There is little danger of a violent reaction or explosion if significant quantities of this product are involved in a fire. Recommended personal protective equipment is full fire kit and breathing apparatus.

| | |
|---|---|
| **Flash point:** | Not flammable. |
| **Upper Flammability Limit:** | 10.5% |
| **Lower Flammability Limit:** | 8.1% |
| **Autoignition temperature:** | No data. |
| **Flammability Class:** | No data. |

## SECTION 6 - ACCIDENTAL RELEASE MEASURES

**Accidental release:** In the event of a major spill, prevent spillage from entering drains or water courses. Evacuate the spill area and deny entry to unnecessary and unprotected personnel. Wear full protective chemically resistant clothing including eye/face protection, gauntlets and self contained breathing apparatus. See below under Personal Protection regarding Australian Standards relating to personal protective equipment. Suitable materials for protective clothing include rubber, PVC, Nitrile. Eye/face protective equipment should comprise as a minimum, protective goggles. If there is a significant chance that vapours or mists are likely to build up in the cleanup area, we recommend that you use a respirator. It should be fitted with a type A cartridge, suitable for organic vapours. Otherwise, not normally necessary.
Stop leak if safe to do so, and contain spill. Absorb onto sand, vermiculite or other suitable absorbent material. If spill is too large or if absorbent material is not available, try to create a dike to stop material spreading or going into drains or waterways. Because of the toxicity of this product, special personal care should be taken in any cleanup operation. Sweep up and shovel or collect recoverable product into labelled containers for recycling or salvage, and dispose of promptly. Recycle containers wherever possible after careful cleaning. After spills, wash area preventing runoff from entering drains. If a significant quantity of material enters drains, advise emergency services. This material may be suitable for approved landfill. Ensure legality of disposal by consulting regulations prior to disposal. Thoroughly launder protective clothing before storage or re-use. Advise laundry of nature of contamination when sending contaminated clothing to laundry.

## SECTION 7 - HANDLING AND STORAGE

**Handling:** Keep exposure to this product to a minimum, and minimise the quantities kept in work areas. Check Section 8 of this SDS for details of personal protective measures, and make sure that those measures are followed. The measures detailed below under "Storage" should be followed during handling in order to minimise risks to persons using the product in the workplace. Also, avoid contact or contamination of product with incompatible materials listed in Section 10.
**Storage:** This product is a Scheduled Poison. Observe all relevant regulations regarding sale, transport and storage of this schedule of poison. Store in a cool, well ventilated area. Check containers periodically for leaks. Containers should be kept closed in order to minimise contamination. Make sure that the product does not come into contact with substances listed under "Incompatibilities" in Section 10. If you keep more than 10000kg or L of Dangerous Goods of Packaging Group III, you may be required to license the premises or notify your Dangerous Goods authority. If you have any doubts, we suggest you contact your Dangerous Goods authority in order to clarify your obligations. Check packaging - there may be further storage instructions on the label.

## SECTION 8 - EXPOSURE CONTROLS AND PERSONAL PROTECTION

The following Australian Standards will provide general advice regarding safety clothing and equipment:

Respiratory equipment: **AS/NZS 1715**, Protective Gloves: **AS 2161**, Occupational Protective Clothing: AS/NZS 4501 set 2008, Industrial Eye Protection: **AS1336** and **AS/NZS 1337**, Occupational Protective Footwear: **AS/NZS2210**.

| SWA Exposure Limits | TWA (ppm) | STEL (ppm) |
|---|---|---|
| Trichloroethylene | 10 | 40 |

No special equipment is usually needed when occasionally handling small quantities. The following instructions are for bulk handling or where regular exposure in an occupational setting occurs without proper containment systems.
**Ventilation:** This product should only be used where there is ventilation that is adequate to keep exposure below the TWA levels. If necessary, use a fan.
**Eye Protection:** Protective glasses or goggles should be worn when this product is being used. Failure to protect your eyes may cause them harm. Emergency eye wash facilities are also recommended in an area close to where this product is being used.
**Skin Protection:** Prevent skin contact by wearing impervious gloves, clothes and, preferably, apron. Make sure that all skin areas are covered. See below for suitable material types.
**Protective Material Types:** We suggest that protective clothing be made from the following materials: rubber, PVC, nitrile.
**Respirator:** Where there is a risk of exposure to this product, we recommend that you use a respirator. It should be fitted with a type A cartridge, suitable for organic vapours. Otherwise, not normally necessary.

Eyebaths or eyewash stations and safety deluge showers should be provided near to where this product is being used.

## SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES:

| | |
|---|---|
| **Physical Description & colour**: | Clear, colourless liquid. |
| **Odour:** | Sweetish odour; irritating at high concentrations. |
| **Boiling Point:** | 87°C at 100kPa |
| **Freezing/Melting Point:** | -73°C |
| **Volatiles:** | Completely volatile at 100°C. |
| **Vapour Pressure:** | 10kPa at 26°C |
| **Vapour Density:** | No data. |
| **Specific Gravity:** | 1.464 at 20°C |
| **Water Solubility:** | 1g/L at 25°C |
| **pH:** | No data. |
| **Volatility:** | No data. |
| **Odour Threshold:** | No data. |
| **Evaporation Rate:** | No data. |
| **Coeff Oil/water distribution**: | No data |
| **Autoignition temp:** | No data. |
| **Refractive index:** | 1.4773 at 20°C |

## SECTION 10 - STABILITY AND REACTIVITY

**Reactivity**: This product is unlikely to react or decompose under normal storage conditions. However, if you have any doubts, contact the supplier for advice on shelf life properties.
**Conditions to Avoid:** Avoid open flames, welding arcs, or other high temperature sources which induce thermal decomposition to irritating and corrosive Hydrogen chloride from solvent vapour. High energy ultra violet light sources such as welding arcs can cause degradation generating chlorine, hydrogen chloride and possibly phosgene, and should be avoided. Avoid strong bases including caustic soda and caustic potash. Also avoid metallic aluminium and zinc powders.
**Incompatibilities:** strong acids, strong bases, strong oxidising agents.
**Fire Decomposition:** Involvement in fire or high temperatures forms hydrogen chloride and very small amounts of phosgene and chlorine. Solvent decomposition occurs when catalysed by metal chlorides which can be produced by reaction of HCl and metals in the system. In the presence of aluminium, the decomposition can proceed rapidly with production of large amounts of heat and HCl fumes. Contamination of solvent with small amounts of 1,1,1-trichloroethane can affect stabilisers and shorten solvent life.
**Polymerisation:** This product will not undergo polymerisation reactions.

## SECTION 11 - TOXICOLOGICAL INFORMATION

**Local Effects:**
**Target Organs:** There is no data to hand indicating any particular target organs.

**SKIN**: The $LD_{50}$ for skin absorption in rabbits is approximately 10,000 mg/kg.
**SWALLOWED:** The oral $LD_{50}$ for rats is 4,920 mg/kg.
**INHALATION:** The $LC_{50}$ for rats is 12,500 ppm for 4 hours.
he substance may have effects on the central nervous system, resulting in loss of memory. The substance may have effects on the liver and kidneys
A risk assessment of trichloroethylene conducted under the Australian National Industrial Chemicals Notification and Assessment Scheme concluded (March 2000) that there was sufficient evidence from animal toxicity and limited epidemiological studies to classify trichloroethylene as a Carcinogen, Category 2 (a substance to be regarded as if it is carcinogenic to humans). Butylene oxide has been shown to produce benign and malignant tumours in rats but not mice. These tumours occurred only following high exposure levels which first produced chronic respiratory tract irritation. Butylene oxide is not believed to pose a carcinogenic risk to man when handled as recommended.
**TERATOLOGY (BIRTH DEFECTS):**
Birth defects are unlikely. Exposures having no effect on the mother should have no effect on the foetus. Did not cause birth defects in animals; other effects were seen in the foetus only at doses which caused toxic effects to the mother.
**REPRODUCTIVE EFFECTS:**
Animal data on butylene oxide and trichloroethylene do not suggest any reproductive hazard from exposure.
Chronic effects may include symptoms of fatigue, headache, irritability, vomiting, flushing of the skin, intolerance to alcohol, and damage to liver kidneys, heart and nervous system.

**MUTAGENICITY** (Effects on genetic material): For the minor component - butylene oxide – in vitro mutagenicity studies were positive. Animal mutagenicity studies were negative.
For epoxide-free trichloroethylene, in vitro mutagenicity studies were negative. Animal mutagenicity studies were predominantly negative. Pure trichloroethylene (without additives) lacks mutagenic potential in most tests. A risk assessment of trichloroethylene conducted under the Australian National Industrial Chemicals Notification and Assessment Scheme concluded (March 2000) that positive results in somatic cells in vivo, and positive results in a number of in vitro studies, were sufficient to recommend a hazardous substance classification of Mutagen - Category 3 (a substance of concern to humans but in respect of which available information does not satisfactorily demonstrate inheritable genetic damage).
Trichloroethylene is a SWA Class 3 Mutagen, possibly mutagenic to humans.

## Classification of Hazardous Ingredients

| Ingredient | Risk Phrases |
|---|---|
| Trichloroethylene | Conc>=20%: T; R45; R68; R36/38 |

- Carcinogenicity – category 1B
- Germ cell mutagenicity – category 2
- Eye irritation – category 2A
- Skin irritation – category 2
- Specific target organ toxicity (single exposure) – category 3

## Potential Health Effects

### Inhalation

**Short term exposure:** In confined or poorly ventilated areas, vapours can readily accumulate and can cause unconsciousness and death. Excessive exposure may cause irritation to upper respiratory tract. Excessive exposure may increase sensitivity to epinephrine and increase myocardial irritability (irregular heartbeats). May cause alcohol intolerance often manifested by temporary reddening of the skin called "degreaser's flush". Minimal anaesthetic or irritant effects may be seen around 200-400 ppm. Levels in the range of 1000-2000 ppm may rapidly cause dizziness or drunkenness. Progressively higher levels or longer exposure may cause unconsciousness and death and may be immediately hazardous to life.
**Long Term exposure:** No data for health effects associated with long term inhalation.

### Skin Contact:

**Short term exposure:** Prolonged or repeated exposure may cause skin irritation. May cause drying or flaking of skin. May cause more severe response if confined to skin. A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts. Trichloroethylene may be absorbed through skin and may cause numbness in the fingers immersed in the liquid.
**Long Term exposure:** No data for health effects associated with long term skin exposure.

### Eye Contact:

**Short term exposure:** This product causes serious eye irritation. Symptoms may include stinging and reddening of eyes and watering which may become copious. Other symptoms may also become evident. If exposure is brief, symptoms should disappear once exposure has ceased. However, lengthy exposure or delayed treatment may cause permanent damage.
**Long Term exposure:** No data for health effects associated with long term eye exposure.

### Ingestion:

**Short term exposure:** Significant oral exposure is considered to be unlikely. Available data shows that this product is toxic, but further symptoms are not available. However, this product is an oral irritant. Symptoms may include burning sensation and reddening of skin in mouth and throat. If aspirated (liquid enters the lung), may be rapidly absorbed through the lungs and result in injury to other body systems.
**Long Term exposure:** No data for health effects associated with long term ingestion.

### Carcinogen Status:

**SWA:** Trichloroethylene is classified by SWA as a Class 2 Carcinogen, likely to be carcinogenic to humans.
1,2-butylene Oxide is classified by SWA as a Class 3 Carcinogen, possibly carcinogenic to humans.
See the SWA website for further details. A web address has not been provided as addresses frequently change.
**NTP:** No significant ingredient is classified as carcinogenic by NTP.
**IARC:** Trichloroethylene is classed 2a by IARC - probably carcinogenic to humans.
1,2-butylene Oxide is classed 2b IARC - possibly carcinogenic to humans.
See the IARC website for further details. A web address has not been provided as addresses frequently change.

## SECTION 12 - ECOLOGICAL INFORMATION

Harmful to aquatic organisms, may cause long-term adverse effects to the aquatic environment. This product is biodegradable. It will not accumulate in the soil or water or cause long term problems.
There is little information on the toxicity of trichloroethylene for fish. The US Registry of Toxic Effects of Chemical Substances (1975) reports, for an unidentified species, that exposure to a concentration range of 100 - 1000 mg/litre produced toxic effects in 96 h. Toxicity tests carried out on salt-water flatfish, *Limanda limanda* (sole), 15 - 20 cm long, in a continuous water flow, established a 96-h $LC_{50}$ of 16 mg/litre (1975). A 96-h $LC_{50}$ of approximately 40 mg/litre (static) or 67 mg/litre (continuous flow) has been reported for the minnow *Pimephales promelas* (1978).
A value was established at LC100 of 600 mg/litre for *Daphnia magna.* The $LC_{50}$ for the balanide salt-water crustacean nauplius (larva) *(Elminius modestus)* was 20 mg/litre after 46 h, and the $LC_{50}$ for the protozoon *Entosiphon sulcatum* was established as 1200 mg/litre.
Various $LC_{50}$ values have been established for algae including 63 mg/litre for *Microcystis aeruginosa,* a concentration of 1000 mg/litre did not have any observable effect on *Scenedesmus quadricauda*. A short-term photosynthesis efficiency test gave an $LC_{50}$ of 8 mg/litre and, finally, in tests carried out on *Thalassiosira pseudonana* and *Dunaliella tertiolecta,* there were observable effects at 50 and 100 µg/litre, in a mixed culture.

## SECTION 13 - DISPOSAL CONSIDERATIONS

**Disposal:** This product may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. If it has been contaminated, it may be possible to reclaim the product by filtration, distillation or some other means. If neither of these options is suitable in-house, consider controlled incineration, or contact a specialist waste disposal company.

## SECTION 14 - TRANSPORT INFORMATION

**UN Number:** 1710, TRICHLOROETHYLENE
**Hazchem Code:** 2Z
**Special Provisions:** None allocated
**Limited quantities:** ADG 7 specifies a Limited Quantity value of 5 L for this class of product.
**Dangerous Goods Class:** Class 6.1, Toxic Substances.
**Packing Group:** III
**Packing Instruction:** P001, IBC03, LP01

Class 6 Toxic Substances shall not be loaded in the same vehicle or packed in the same freight container with Classes 1 (Explosives), 3 (Flammable Liquids where the Flammable Liquid is nitromethane), 5.1 (Oxidising Agents where the Toxic Substances are Fire Risk Substances), 5.2 (Organic Peroxides where the Toxic Substances are Fire Risk Substances), 8 (Corrosive Substances where the Toxic Substances are cyanides and the Corrosives are acids), Foodstuffs and foodstuff empties. They may however be loaded in the same vehicle or packed in the same freight container with Classes, 2.1 (Flammable Gases), 2.2 (Non-Flammable, Non-Toxic Gases), 2.3 (Toxic Gases), 3 (Flammable liquids, except where the flammable liquid is nitromethane), 4.1 (Flammable Solids), 4.2 (Spontaneously Combustible Substances), 4.3 (Dangerous When Wet Substances), 5.1 (Oxidising Agents except where the Toxic Substances are Fire Risk Substances), 5.2 (Organic Peroxides except where the Toxic Substances are Fire Risk Substances), 7 (Radioactive Substances), 8 (Corrosive Substances except where the Toxic Substances are cyanides and the Corrosives are acids), 9 (Miscellaneous Dangerous Goods)

## SECTION 15 - REGULATORY INFORMATION

**AICS:** All of the significant ingredients in this formulation are compliant with NICNAS regulations.
The following ingredients: Trichloroethylene, are mentioned in the SUSMP.

## SECTION 16 - OTHER INFORMATION

**This SDS contains only safety-related information. For other data see product literature.**

This product is not recommend for use in applications where:-

- Soil or ground water contamination is likely (direct applications to the ground, sink drains, sewers, or septic tanks.
- Where over-exposure is likely (small rooms or confined space, or where there would be inadequate ventilation).
- Where skin contact is likely (adhesive tape removal from skin or as hand cleaner to remove oils and greases).
- Where there is direct food contact.
- Where vapour concentrations would be in the flammable range.
- Where disposal of waste would pose an environmental or health risk.
- Where chemical reactivity poses a danger (contact with strong alkali, or in areas where welding is done.

For more storage and handling information refer to bulletin #100-06170 "Specialty Chlorinated Solvents - Product Stewardship Manual, 1991 Edition."

**Acronyms:**

| | |
|---|---|
| **ADG Code** | Australian Code for the Transport of Dangerous Goods by Road and Rail, 7th Edition |
| **AICS** | Australian Inventory of Chemical Substances |
| **CAS number** | Chemical Abstracts Service Registry Number |
| **Hazchem Number** | Emergency action code of numbers and letters that provide information to emergency services especially firefighters |
| **IARC** | International Agency for Research on Cancer |
| **SWA** | Safe Work Australia, formerly ASCC and NOHSC |
| **NOS** | Not otherwise specified |
| **NTP** | National Toxicology Program (USA) |
| **R-Phrase** | Risk Phrase |
| **SUSMP** | Standard for the Uniform Scheduling of Medicines & Poisons |
| **UN Number** | United Nations Number |

THIS SDS SUMMARISES OUR BEST KNOWLEDGE OF THE HEALTH AND SAFETY HAZARD INFORMATION OF THE PRODUCT AND HOW TO SAFELY HANDLE AND USE THE PRODUCT IN THE WORKPLACE. EACH USER MUST REVIEW THIS SDS IN THE CONTEXT OF HOW THE PRODUCT WILL BE HANDLED AND USED IN THE WORKPLACE.

IF CLARIFICATION OR FURTHER INFORMATION IS NEEDED TO ENSURE THAT AN APPROPRIATE RISK ASSESSMENT CAN BE MADE, THE USER SHOULD CONTACT THIS COMPANY SO WE CAN ATTEMPT TO OBTAIN ADDITIONAL INFORMATION FROM OUR SUPPLIERS

OUR RESPONSIBILITY FOR PRODUCTS SOLD IS SUBJECT TO OUR STANDARD TERMS AND CONDITIONS, A COPY OF WHICH IS SENT TO OUR CUSTOMERS AND IS ALSO AVAILABLE ON REQUEST.

Please read all labels carefully before using product.

This SDS is prepared in accord with the SWA document “Preparation of Safety Data Sheets for Hazardous Chemicals - Code of Practice” (Feb 2016)



http://www.kilford.com.au/ Phone (02)8321 8866