# Safety Data Sheet

**Classified as Hazardous according to the criteria of Safe Work Australia**

## 1. SUBSTANCE IDENTIFICATION/ PREPARATION AND COMPANY DETAILS

**Product Name:** PERCLEAN

**Supplier:** Stelco Chemicals International Pty Ltd
**ABN:** 17 151 834 347

**Street Address:** 46 - 48 Henderson Road
Rowville 3178
Australia

**Telephone:** +61 3 9757 3100
**Facsimile:** +61 3 9763 8243

**Emergency Telephone Number:** **0412 318 882**

## 2. HAZARDS INDENTIFICATION

Hazardous according to criteria of Safe Work Australia
GHS classification:

Skin corrosion/irritation, Category 2, **H315**
Carcinogenicity, Category 2, **H351**
Hazardous to the aquatic environment: Chronic hazard, Category 2, **H411**

**Signal word** **Warning**

**Hazard statements**

**H315:** Causes skin irritation.

**H351:** Suspected of causing cancer.

**H411:** Toxic to aquatic life with long lasting effects.

**Precautionary statements**
**P273:** Avoid release to the environment.

**P280:** Wear protective gloves/protective clothing/eye protection/face protection.

**P308 + P313:** IF exposed or concerned: Get medical advice/attention.

**P332 + P313:** If skin irritation occurs: Get medical advice/attention.

| | |
|---|---|
| **P362 + P364:** | Take off contaminated clothing and wash it before reuse. |
| **Hazard Category** | |
| **XN:** | Harmful |
| **N:** | Dangerous for the environment |
| **R-phrase(s)** | |
| **R40:** | Limited evidence of carcinogenic effect |
| **R51/53:** | Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. |
| **S-phrase(s)** | |
| **S23:** | Do not breathe vapour/spray. |
| **S36/37:** | Wear suitable protective clothing and gloves. |
| **S61:** | Avoid release to the environment. Refer to Material Safety Data Sheet. |

Classified as Dangerous Goods for the purpose of transport by road or rail. Refer to relevant regulations for storage and transport requirements.

**Class:** 6.1 Toxic

**Poisons Schedule (Aust)/Toxic Substance (NZ):** S6
This material is a Scheduled Poison S6 and must be stored, maintained and used in accordance with the relevant regulations.

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Recommended Use:** Dry Cleaning fluid, solvent.

**Appearance:** Colourless liquid with ethereal odour.

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|---|---|---|---|
| Tetrachloroethylene (stabilised) | 127-18-4 | > 99 % | R40 N: R51 / 53 Carc. Cat.3 |

All the constituents of this material are listed on the Australian Inventory of Chemical Substances (AICS).

## 4. FIRST AID MEASURES

If poisoning occurs, contact a doctor or Poisons Information Centre (Phone Australia 131 126)

**Ingestion:** Rinse mouth with water. Give water to drink. Do NOT induce vomiting. Seek immediate medical assistance.

**Eye contact:** If in eyes, hold eyelids apart and flush the eye continuously with running water. Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.

**Skin Contact:** If skin or hair contact occurs, remove contaminated clothing and flush skin & hair with running water. Then wash skin, hair and clothes with soap and water. If irritation occurs seek medical assistance.

**Inhalation:** Remove victim from contaminated area – avoid becoming a casualty. Remove contaminated clothing and loosen remaining clothing. Allow patient to assume most comfortable position and keep warm.
Keep at rest until fully recovered. If breathing laboured and patient cyanotic (blue), ensure airways are clear and have qualified person give oxygen through a face mask. If breathing has stopped apply artificial respiration at once. In event of cardiac arrest, apply external massage. Seek medical advice.

**Notes to physician:** Treat symptomatically and as for exposure to chlorinated solvents. Adrenalins and similar sympathomimetic drugs should be avoided following exposure to perchloroethylene. Complications may include cardiac arrhythmia and cardiac arrest. Gastric lavage may be effective and should preferably be undertaken within one hour. Aspiration of this material into the lungs should be avoided. Following ingestion, absorbents such as activated charcoal may be of value (1).

## 5. FIRE-FIGHTING MEASURES

**Specific Hazards:** Non flammable liquid.

**Firefighting further advice:** Non- flammable. Decomposes on contact with hot surfaces emitting toxic fumes. Heating of the containers may cause expansion or decomposition of the product leading to violent rupture of containers. If safe to do so, remove containers from path of fire. Keep containers cool with water spray.

**Special Protective Equipment:** Fire fighters to wear self-contained breathing apparatus if risk of exposure to fumes of phosgene, hydrogen chloride and carbon monoxide. Heating can cause vapour or products of decomposition (refer to section 10).

**Unusual fire Hazards:** Vapours are heavier than air and may travel a long distance and accumulate in low lying areas.

**Hazchem Code:** 2Z

## 6. ACCIDENTAL RELEASE MEASURES

**For all spills:** Clear area of all unprotected personnel. Work up wind. Increase ventilation. Wear full protective equipment to prevent skin and eye contamination and inhalation of vapours.

**Small Spills:** Contain – use absorbent (soil, sand or other inert material). Transfer to a container for disposal or recovery (1).

**Large Spills:** Contain – prevent runoff into drains and waterways. Use absorbent (soil, sand or other inert material). Collect and seal in properly labelled drums for disposal. If contamination of sewers or waterways has occurred advise the local emergency services.

**Environmental Precautions:** Material will sink in water. Prevent form entering soil, ditches, sewers, waterways and/or groundwater.

## 7. HANDLING AND STORAGE

**Storage:** Store in a cool place and out of direct sunlight. Store away from sources of heat or ignition. Store Away from foodstuffs. Keep containers closed at all times – check regularly for leaks. Containers should be of Mild steel, or amber or dark solvent resistant plastic or glass. Do not store in aluminium or aluminium alloy Containers. Bulk storage vessels should be made of steel and require a suitable vent or pressure relief valve. Storage tanks should be bonded to accommodate 110% of the tank volume (1).
Use of galvanised components should be avoided because of the risk of producing highly toxic dichloroacetylene.

**Handling:** Avoid breathing vapour. Avoid contact with skin and clothing. Do not swallow. Use with adequate ventilation. Do not enter confined spaces unless adequately ventilated.
Welding or cutting should not be carried out on any vessel likely to contain solvent as toxic and corrosive decomposition products (hydrogen chloride) can be formed.
This material is a Scheduled Poison S6 and must be stored, maintained and used in accordance with the Relevant regulations.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

National Occupational Exposure Limits: Tetrachloroethylene: 8hr TWA = 340mg/m$^3$ (50ppm), 15 min STEL = 1020 mg/m$^3$ (150ppm), Carcinogen Cat. 3 TWA - is the time-weighted average airborne concentration over an eight-hour working day, for a five-day working week over an entire working life. According to current knowledge this concentration should neither impair the health nor, not cause undue discomfort to, nearly all workers. STEL (Short Term Exposure Limit) – the average airborne concentration over a 15-minute period which should not be exceeded at any time during a normal eight-hour work day.

Carcinogen Category 3 – substances suspected of having carcinogenic potential. The available information is not adequate for making a satisfactory assessment.
These Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

**Engineering Control Measures:** Ensure ventilation is adequate and that air concentrations of components are controlled below quoted Exposure Standards. Use with local exhaust ventilation or while wearing organic vapour respirator or air supplied mask. Vapour heavier than air – prevent concentration in hollows or sumps. DO NOT enter confined spaces where vapour may have collected. Avoid contact with naked flames and hot surfaces as toxic decomposition products can be formed. Do not weld in the presence of vapours as toxic decomposition products may be formed (1).

**Personal protection equipment:** OVERALLS, SAFETY SHOES, SAFETY GLASSES, GLOVES, RESPIRATOR. Avoid skin and eye contact and inhalation of vapour and mist. Wear overalls, safety glasses with side shields and impervious gloves. Available information suggests that gloves made from nitrile rubber (1, 6) should be suitable for intermittent contact. Preferred gloves are Viton, PVA (polyvinyl alcohol) or EVAL (ethyl vinyl alcohol laminate). However, due to variations in glove construction and local conditions, a final assessment should be made by the user. Use with adequate ventilation. If inhalation risk exists wear organic vapour mist respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storing or reusing.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

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|---|---|
| **Physical state:** | Volatile liquid |
| **Colour:** | Clear Colourless |
| **Specific Gravity:** | 1.62 @ 20°C |
| **Vapour Pressure (mm Hg):** | 14.7 at 20° C |
| **Boiling Point/Range (°C):** | 121 |
| **Melting Point (°C):** | -22.4 |
| **Solubility in water:** | marginally soluble (0.015% w/w at 25 °C) |
| **Solubility:** | Soluble in most organic solvents, ether, alcohol and oils |

## 10. STABILITY AND REACTIVITY

Stable under normal conditions of storage and use.

**Conditions to Avoid:** Avoid open flames, welding arcs, direct sunlight or ultraviolet sources.

**Hazardous Reactions:** May react violently with metals such as sodium, potassium and barium, particularly if they are finely divided. May react with freshly galvanised surfaces to produce highly toxic dichloroacetylene.

**Hazardous Polymerisation:** Will not occur

**Thermal Decomposition Product(s):** Contact with red hot surfaces, sparks or naked flames may generate toxic fumes of hydrogen chloride and trace amounts of chlorine, phosgene (1).

## 11. TOXICOLOGICAL INFORMATION

No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms or effects that may arise if the product is mishandled are:

**Ingestion:** Swallowing small splashes is unlikely to cause any adverse effects (1). Swallowing large amounts can result in nausea, vomiting irritation of the mouth, throat and stomach, nausea, vomiting and may lead to drowsiness and loss of consciousness (1).

**Eye contact:** Liquid splashes and high concentrations of vapour may cause irritation (1). Permanent damage is unlikely (1).

**Skin contact:** Contact with the skin will result in mild irritation. Will have a degreasing action on the skin. Repeated or prolonged skin contact may lead to irritant contact dermatitis. Can be absorbed through the skin but not in sufficient amounts to cause adverse effects (1),

**Inhalation:** Inhalation of high atmospheric concentrations of vapour can result in headaches, dizziness and possible nausea, vomiting and headache (1). Inhalation of higher concentrations (1000 ppm for 20 minutes) causes light headedness (1). Very high concentrations can lead to loss of co-ordination, impaired judgement and, if exposure is prolonged, unconsciousness. Very high exposures may cause an abnormal heart rhythm and prove suddenly fatal.

**Long term effects:** Repeated exposure well above the occupational exposure limit may produce adverse effects on the liver and kidneys (1). Evidence from animal studies show this compound is a likely rodent carcinogen. Extensive evaluations of possible mechanisms have led to the conclusion that they are of little, if any, relevance to man even at high exposure levels. Studies in workers have failed to demonstrate a relationship between exposure to perchloroethylene and cancer.

**Acute toxicity / Chronic Toxicity:** Oral LD50 (rat): > 3000 mg/kg (2) Inhalation LC50 (mouse): 5200 ppm/4 hr (2) Inhalation Lowest Toxic Concentration (human): 96 ppm/7 hr (peripheral and central nervous system effects and eye irritation (2). Human Inhalation – 50 ppm odour threshold to unacclimated. (3) 200 ppm: mild narcosis in 5 minutes. (2) 600 ppm: dizziness and incoordination after 10 minutes (2) SKIN (rabbit): Mild irritant (2) EYES (rabbit): Mild irritant (2)

Evidence from animal studies have shown this compound to cause liver and kidney damage at exposure levels well above the occupational exposure limit (2, 3).

**Carcinogenicity:** Perchloroethylene has been shown to increase the incidence of tumors in certain strains of mice and rats. Human data are limited and have not established an association between perchloroethylene exposure and cancer. Perchloroethylene is not believed to pose a measureable carcinogenic risk to man when handled as recommended.

**Developmental Toxicity:** Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects is laboratory animals.

**Reproductive Toxicity:** In animal studies did not interfere with fertility. In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

## 12. ECOTOXICOLOGICAL INFORMATION

Avoid contaminating waterways.
**Environmental Fate and Distribution (1):** The substance is degraded rapidly in the lower atmosphere (troposphere). Atmospheric lifetime is approximately 5 months. Does not deplete ozone. The substance evaporates rapidly from open water systems but persists in groundwater. Potential for mobility in soil is medium.

**Ecotoxicity (1):** Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. This effect is mitigated by its rapid evaporation from open water systems. (LC50/EC50/IC50 between 1 and 10mg/l in the most sensitive species LC50, rainbow trout, flow through, 96h: 4.99mg/l EC50, water flea Daphnis magna, static, 48h, immobilisation: 8.5mg/l IC, bacteria, 24h: 112mg/l

**Effect on Effluent Treatment (1):** The product is anticipated to be substantially removed in biological treatment processes.

## 13. DISPOSAL CONSIDERATIONS

Refer to State Land Waste Management Authority. Transfer solvent residues to a labelled, sealed container for disposal or recovery. Waste disposal must be by an accredited contractor. Large volumes may be suitable for redistillation by solvent recovery contractors. Solvent residues must not be allowed to enter drains, sewers or watercourses or to contaminate the ground (1).

**DISPOSAL OF CONTACT WATER:** Process water in contact with solvent and/or water separators of cleaning or distillation equipment should be treated as a prescribed (hazardous) waste. Do not discharge water from water separators to drain.

## 14. TRANSPORT INFORMATION

**Road and Rail Transport (ADG Code):**
Classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code for the purpose of transport by road or rail.

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|---|---|
| **UN-No:** | 1897 |
| **Class:** | 6.1 Toxic |
| **Hazchem code:** | 2Z |
| **EPG:** | 6B7 |
| **Packing group:** | III |
| **Proper shipping name:** | TETRACHLOROETHYLENE |
| **Segregation Dangerous Goods:** | Not to be loaded with explosives (Class1), nitromethane, foodstuffs and Foodstuff empties, however exemptions may apply. |

**Marine Transport (IMDG Code):**
Classified as Dangerous Goods by the criteria of International Maritime Dangerous Goods Code for transport by sea.

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|---|---|
| **UN No.:** | 1897 |
| **Class-primary:** | 6.1 Toxic |
| **Marine Pollutant:** | Classified as Marine Pollutant (P) |
| **Packing Group Sea:** | III |
| **Proper Shipping Name:** | TETRACHLOROETHYLENE |
| **EMS Number:** | F-A, S-A |

**Air Transport (IATA):**
Classified as Dangerous Goods by the criteria of the International Air Transport Association Dangerous Goods Regulations for transport by air.

| | |
|---|---|
| **UN No.:** | 1897 |
| **Class-primary:** | 6.1 Toxic |
| **Packing Group Air:** | III |
| **Proper Shipping Name:** | TETRACHLOROETHYLENE |
| **Cargo Packing Instruction:** | 612 |
| **Passenger Packing Instruction:** | 605 |

## 15. REGULATORY INFORMATION

Hazardous according to criteria of Safe Work Australia

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|---|---|
| **Hazard Category** | |
| **Xn** | Harmful |
| **N:** | Dangerous for the environment |
| **R-phrase(s)** | |
| **R40:** | Limited evidence of carcinogenic effect |

| | |
|---|---|
| **R51/53T:** | toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. |
| **S-phrase(s)** | |
| **S23:** | Do not breathe vapour/spray. |
| **S36/37:** | Wear suitable protective clothing and gloves. |
| **S61:** | Avoid release to the environment. Refer to Material Safety Data Sheet. |

**Poisons Schedule (Aust)/Toxic Substance (NZ):** S6

All the constituents of this material are listed on the Australian Inventory of Chemical Substances (AICS).

## 16. OTHER INFORMATION

(1) Safety Data Sheet – powder solvent, Dow Chemical. Perklone D, Ineos Chlor
(2) On 'CC Info Disc No. C2' RTECS No. KX3850000, (Canadian Centre for Occupational Health and Safety; Ontario 1996)
(3) 'Various authors', in 'Patty's Industrial Hygiene and Toxicology Vol. IIE 4th Edition' (Ed. Clayton, G.D., Clayton, F.E.), p 4208-4215, (John Wiley and Sons: New York 1994).
(4) Comprehensive Guide to Chemical Resistant Best Gloves for Various Amounts of Exposure, Version 3 1995.

This Material Safety Data sheet has been prepared by Stelco Chemicals Pty Ltd
This MSDS summarises at the date of issue our best knowledge of the health and safety information of the product, and in particular how to safely handle and use the product in the workplace. As each workplace is different each user must, prior to use, review thus MSDS in the context of how the user intends to handle and use the product in the workplace.
If clarification of further information is needed to ensure that an appropriate assessment can be made, the user should contact this company.