



Carolina International Sales Co., Inc

## MATERIAL SAFETY DATA SHEET

2522 Plantation Center Drive  
Matthews, NC 28105  
(704) 845 9440

www.ciscochem.com

1. PRODUCT NAME: Perchloroethylene
2. CHEMICAL NAME: 1,1,2,2-tetrachloroethylene
3. SYNONYMS: PERC
4. CAS NUMBER: 127-18-4
5. COMPOSITION: 1,1,2,2-tetrachloroethylene (127-18-4) - 100%

**IN CASE OF  
TRANSPORT EMERGENCY  
CONTACT CHEMTREC  
USA: 1-800-424-9300  
INTERNATIONAL: 1-703-527-3887**

6. PROPERTIES: ODOR & APPEARANCE: clear, colorless, heavy liquid with mild, pleasant odor  
ODOR THRESHOLD: 50ppm – warning: mild odor does not adequately warn of hazard!  
VAPOUR PRESSURE: 14mmHg/1.9kPa (20 c)  
EVAPORATION RATE (butyl Acetate=1): 2.6 (also given as 1.5)  
VAPOR DENSITY (air=1): 5.8  
BOILING RANGE: 121 c  
FREEZING POINT: -22 c  
SPECIFIC GRAVITY: 1.62 (20/20 c)  
WATER SOLUBILITY: 0.15 grams per litre (20 c)  
IN OTHER SOLVENTS: readily soluble in most organic solvents, including fats & oils  
VISCOSITY: 0.88 centipoise  
PH: none – no hydrogen ions form in solution

7. HAZARDS: HMIS (U.S.A.): Health – 2, Fire – 0, Reactivity - 0  
MATERIAL USE: solvent, cleaner

8. FIRE FIGHTING INFORMATION: FLASH POINT: will not flash  
AUTOIGNITION TEMPERATRE: will not burn  
FLAMMABLE LIMITS: will not burn  
COMBUSTION PRODUCTS: carbon monoxide, chlorine, phosgene, hydrogen chloride & other toxic gases  
FIREFIGHTING PRECAUTIONS: will not burn – as for flammables sustaining fire; firefighters must wear SCBA  
STATIC DISCHARGE: will not accumulate a static charge  
MECHANICAL IMPACT: not sensitive  
CHEMICAL STABILITY: stable; will not polymerize  
REACTIVE WITH: strong oxidizing agents, strong alkalis, may react violently with strong mineralacids, keep away from powered aluminium, barylium, barium, magnesium, or zinc  
DECOMPOSOTION PRODUCTS: none apart from Hazardous Combustion Products

9. PERSONAL PROTECTION MEASURES: HANDS: “Viton”, “Barricade”, “Trellechm”, “responder”, or polyvinyl alcohol gloves  
EYES: safety glasses with side shields or chemical goggles  
VENTILATION: good mechanical ventilation is recommended; use respirator with organic vapor cartridge in emergency only  
CLOTHING: impermeable (hands, above) apron, boots, long sleeves, if splashing is anticipated

10. FIRST AID PROCEDURES: SKIN: Wash with soap and plenty of water. Remove contaminated clothing and do not reuse until thoroughly cleaned or laundered.  
EYES: Wash eyes with plenty of water, holding eyelids open. Seek medical assistance promptly if there is irritation.  
INHALATION: Remove from contaminated area promptly. CAUTION: Rescuer must not endanger



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himself! If breathing stops, administer artificial respiration and seek medical aid promptly.  
INGESTION: Give plenty of water to dilute product. Do not induce vomiting (NOTE below). Keep victim quiet. If vomiting occurs, lower victim's head below hips to prevent inhalation of vomited material. Seek medical help promptly.  
NOTE: Inadvertent inhalation of vomited material may seriously damage the lungs. The risk and danger of this is greater than the risk of poisoning through absorption of this relatively low-toxicity product. The stomach should only be emptied under medical supervision, after the installation of an airway to protect the lungs.

11. EXPOSURE TWAEV ppm/m<sup>3</sup>: 25/185  
LIMITS:

12. TOXICOLOGICAL SKIN CONTACT: drying, may irritate, depending on length of exposure – severe irritation in one study  
INFORMATION: SKIN ABSORPTION: yes, slowly; no toxic effects anticipated by this route  
EYE CONTACT: irritating, may be severely irritating, vapor irritating above 900ppm  
INHALATION: may be irritating; headache (100-200ppm), dizziness & drowsiness (1000-1500ppm), anaesthesia (2000ppm); lack of co-ordination (50-100ppm) eventual death  
INGESTION: headache, dizziness, drowsiness, intoxication, nausea, vomiting, abdominal pain  
EFFECTS OF CHRONIC EXPOSURE  
GENERAL: prolonged exposure may cause skin cracking and dermatitis repeated absorption, may damage liver kidneys, ling damage has been seen in rats after prolonged inhalation; neurological effects may include forgetfulness, mood swings, fatigue; one report of irregular heartbeat following 1/2 year exposure with complete remission SENSITISING: not a sensitizer  
REPRODUCTIVE EFFECT: experimental mutagen and teratogen in rodents at  
300ppm – a dose which also caused maternal toxicity; no other reproductive effects noted in humans or animals  
SYNERGISTIC WITH: smoking  
ESTIMATED LD50: 8100mg/kg (oral, mouse) 2630mg/kg (oral, rat), 4000mg/kg (oral, dog & cat);  
3200mg/kg mg/kg (skin, rabbit)  
ESTIMATED LC50: 4600ppm (inhalation, rat), 5200ppm (inhalation, mouse)

13. ECOLOGICAL ENVIROINFO: this product cannot accumulate in living tissue – although this product is degraded by  
INFORMATION: ultraviolet light (direct sunlight) and by hydroxyl radicals, the half life in air is 96 days, biodegradation is slow with half lives around 1/2 year, this product is an environmental hazard and must be kept out of ground or surface water

14. DISPOSAL WASTE DISPOSAL: DO NOT FLUSH TO SEWER; reclaim by distillation, or incinerate only in approved facility with flue gas scrubbing and monitoring; may be allowed to volatile (recycling on photolysis  
CONSIDERATIONS: for destruction)

15. CARCINOGENIC Experimental tumorigen in rodents: a probable human carcinogen.  
PROPERTIES &  
NOTIFICATIONS:

16. TRANSPORT USA 49 CFR  
INFORMATION: Product identification number: UN – 1897  
Shipping name: tetrachloroethylene  
Classification: Class 6.1; packing group III  
Label: 6.1 – poisonous substance  
Class: D 1B, D 2A



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17. **HANDLING & STORAGE:** Store in a cool dry environment, away from sources of ignition, heat and oxidizing agents. This product should only be used in vapor degreasing equipment or other closed cleaning apparatus. Ensure good ventilation as well. This product is absorbed by an organic vapor respirator cartridge, but workers CANNOT rely on a respirator to protect. The mild, pleasant odor will not adequately warn when cartridge needs replacement. Never smoke near product vapor – the heat of cigarette converts vapor into vary hazardous substances. Do not cut, drill, weld or grind on or near this container. Avoid prolonged contact with skin and wash work clothes frequently. An eye bath and safety shower should be available near the workplace.
18. **ACCIDENTAL LEAK PRECAUTION:** dyke to control spillage and prevent environmental contamination.  
**RELEASE HANDLING SPILL:** ventilate contaminated area; recover free liquid with suitable pumps; absorb residue  
**MEASURES:** on an inert sorbent, pick up using shovels, & store in closed containers for disposal.
19. **REGULATORY INFORMATION:** IMMEDIATELY DANGEROUS TO LIFE OR HEALTH (IDLH)  
NIOSH has recommended that tetrachloroethylene be treated as a potential human carcinogen.  
**ACCEPTABLE DAILY INTAKES**  
Suggested No-Adverse-Response Level (SNARL): Lack of definitive information regarding the quantity of tetrachloroethylene that must be ingested to depress psychophysiological function, makes it appropriate that SNARL calculations be based on quantities required for tissue injury ... the 0.3 ml/kg (0.49g/kg) dose appears a reasonable “minimum toxic dose” from which to calculate a 24-hr SNARL for contamination of drinking water, assuming that the sole source of tetrachloroethylene during this period will be from 21/day of drinking water consumed by a 70 kg human. A safety factor of 100 is applied: 490 mg/kg times 70 kg/100 times 21 = 172 mg/l. These considerations ignore the possibility that tetrachloroethylene may be carcinogenic. A 7-day standard for drinking water contamination, obtained by dividing the 24-hr standard by 7 (172 mg/l/7 days = 24.5mg/l), should protect against adverse effects.  
**OSHA STANDARDS**  
Permissible Exposure Limit: Table Z-1 8-hr Time Weighted Avg: 100ppm. Permissible Exposure Limit: Table Z-2 Acceptable Ceiling Concentration: 200ppm. Permissible Exposure Limit: Table Z-2 Acceptable maximum peak above the acceptable ceiling concentration for an 8-hour shift. Concentration: 300ppm. Maximum Duration: 5 minutes in any 3 hours. Vacated 1989 OSHA PEL Ceiling limit: 25 ppm (170 mg/cu m), is still enforced in some states.  
**NIOSH RECOMMENDATIONS**  
NIOSH recommends that tetrachloroethylene be regulated as a potential human carcinogen. NIOSH usually recommends that occupational exposures to carcinogens be limited to the lowest feasible conc'n. Minimize workplace exposure concentrations; limit number of workers exposed.  
**THRESHOLD LIMIT VALUES**  
8 hr Time Weighted Avg (TWA) 25 ppm; Short Term Exposure Limit (STEL). BEI (Biological Exposure Index) for Perchloroethylene: Perchloroethylene in end-exhaled air prior to the last shift of workweek is 5 ppm. (1997 adoption) BEI (Biological Exposure Index) for Perchloroethylene is blood prior to the last shift of workweek is 0.5 mg/l. (1997 adoption) BEI (Biological Exposure Index) for Perchloroethylene: Trichloroacetic acid in urine at end of shift at end of workweek is 3.5 mg/l. The determinant is nonspecific, since it is observed after exposure to other chemicals. The biological determinant is an indicator of exposure to the chemical, but the quantitative interpretation of the measurement is ambiguous. These determinants should be used as a screening test if a quantitative test is not practical or as a confirmatory test if the quantitative test is not specific and the origin of the determinant is in question. (1997 Adoption) A3: Confirmed animal carcinogen with unknown relevance to humans.  
**ATMOSPHERIC STANDARDS**  
Listed as a hazardous air pollutant (HAP) generally known or suspected to cause serious health problems. The clean Air Act, as amended in 1990, directs EPA to set standards requiring major sources to sharply reduce routine emissions of toxic pollutants. EPA is required to establish and phase in specific performance based standards for all air emission sources that emit one or more of the listed pollutants. Tetrachloroethylene is included on this list.



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### FEDERAL DRINKING WATER STANDARDS

EPA 5ug/l, Florida 3ug/l, New Jersey 1ug/l

### STATE DRINKING WATER GUIDELINES

Arizona 0.67ug/l, Connecticut 5ug/l, Maine 3ug/l, Minnesota 7ug/l, Washington 4ug/l

### CLEAN WATER ACT REQUIREMENTS

Toxic pollutant designated pursuant to section 307 (a) (1) of the Federal Water Pollution control Act and is subject to effluent limitations.

### TSCA REQUIREMENTS

Pursuant to section 8(d) of TSCA, EPA promulgated a model Health and Safety Data Reporting rule. The section 8(d) model rule requires manufactures, importers, and processors of listed chemical substances and mixtures to submit to EPA copies and lists of unpublished health and safety studies. Tetrachloroethylene is included on this list.

### RCRA REQUIREMENTS

D039; A solid waste containing tetrachloroethylene may or may not become characterized as a hazardous waste when subjected to the Toxicity Characteristic Leaching Procedure listed in 40 CFR 261.24, and if so characterized, must be managed as a hazardous waste. F002; When tetrachloroethylene is a spent halogenated solvent, it is classified as a hazardous waste from a nonspecific source (F002), as stated in 40 CFR 261.31, and must be managed according to State and/or Federal hazardous waste regulations.