# Material Safety Data Sheet
## Tetrachloroethylene

ACC# 01602

## Section 1 - Chemical Product and Company Identification

**MSDS Name:** Tetrachloroethylene
**Catalog Numbers:** AC138010000, AC138010010, AC138010025, AC138015000, AC167890000, AC167890010, AC167890025, AC167891000, AC167895000, AC420210000, AC420211000, AC423020000, AC423020040, C182-20, C182-4, O4586-4
**Synonyms:** Ethylene tetrachloride; Perchloroethylene; Tetrachloroethene.
**Company Identification:**

Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410

**For information, call:** 201-796-7100
**Emergency Number:** 201-796-7100
**For CHEMTREC assistance, call:** 800-424-9300
**For International CHEMTREC assistance, call:** 703-527-3887

## Section 2 - Composition, Information on Ingredients

| CAS# | Chemical Name | Percent | EINECS/ELINCS |
|---|---|---|---|
| 127-18-4 | Tetrachloroethylene | 99 | 204-825-9 |

## Section 3 - Hazards Identification

**EMERGENCY OVERVIEW**

Appearance: clear, colorless liquid.
**Warning!** Causes eye, skin, and respiratory tract irritation. Harmful if inhaled. May cause central nervous system depression. May cause cancer based on animal studies. Marine pollutant.
**Target Organs:** Kidneys, central nervous system, liver, respiratory system, eyes, skin.

**Potential Health Effects**
**Eye:** Contact may cause transient eye irritation. Vapors cause eye irritation.
**Skin:** May cause severe irritation and possible burns. Excessive drying of the skin may result from repeated or prolonged contact. Not expected to cause an allergic skin reaction. A single prolonged skin exposure is not likely to result in the material being absorbed in harmful amounts. A short single exposure may cause skin irritation. Prolonged or repeated exposure may cause severe skin irritation, even a burn. Did not cause allergic skin reactions when tested in guinea pigs.
**Ingestion:** May cause central nervous system depression, kidney damage, and liver damage. Symptoms may include: headache, excitement, fatigue, nausea, vomiting, stupor, and coma. Possible aspiration hazard.
**Inhalation:** Causes respiratory tract irritation. May cause central nervous system effects including vertigo, anxiety, depression, muscle incoordination, and emotional instability. A single brief (minutes) inhalation exposure to levels above 6000 ppm perchloroethylene may be immediately fatal. (Dow Chemical)
**Chronic:** Possible cancer hazard based on tests with laboratory animals. Prolonged or repeated skin contact may cause defatting and dermatitis. May cause adverse nervous system effects including muscle tremors and incoordination. May cause liver and kidney damage. May cause reproductive and fetal effects. There is debate on whether or not chronic exposure can cause subtle deficits to vision. Human data are limited and have not established an association between perchloroethylene exposure and cancer. Perchloroethylene is not believed to pose a measurable carcinogenic risk to man when handled as recommended. (Dow Chemical)

## Section 4 - First Aid Measures

**Eyes:** In case of contact, immediately flush eyes with plenty of water for a t least 15 minutes. Get medical aid.
**Skin:** In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical aid. Wash clothing before reuse.
**Ingestion:** Potential for aspiration if swallowed. Get medical aid immediately. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If vomiting occurs naturally, have victim lean forward.
**Inhalation:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
**Notes to Physician:** Treat symptomatically and supportively.

## Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool. Not combustible, but if involved in a fire, decomposes to produce hydrogen chloride.
**Extinguishing Media:** Use extinguishing media most appropriate for the surrounding fire.
**Flash Point:** Not applicable.
**Autoignition Temperature:** Not applicable.
**Explosion Limits, Lower:**Not available.

**Upper:** Not available.
**NFPA Rating:** (estimated) Health: 2; Flammability: 0; Instability: 0

## Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.
**Spills/Leaks:** Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Clean up spills immediately, observing precautions in the Protective Equipment section. Provide ventilation. Control runoff and isolate discharged material for proper disposal.

## Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Do not reuse this container. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid breathing vapor.
**Storage:** Store in a cool, dry place. Keep containers tightly closed. Do not store in aluminum containers.

## Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.
**Exposure Limits**

| Chemical Name | ACGIH | NIOSH | OSHA - Final PELs |
|---|---|---|---|
| Tetrachloroethylene | 25 ppm TWA; 100 ppm STEL | 150 ppm IDLH | 100 ppm TWA; 200 ppm Ceiling |

**OSHA Vacated PELs:** Tetrachloroethylene: 25 ppm TWA; 170 mg/m3 TWA
**Personal Protective Equipment**
**Eyes:** Wear chemical splash goggles.
**Skin:** Wear appropriate protective gloves to prevent skin exposure.
**Clothing:** Wear appropriate protective clothing to prevent skin exposure.
**Respirators:** A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

## Section 9 - Physical and Chemical Properties

**Physical State:** Liquid
**Appearance:** clear, colorless
**Odor:** sweetish odor - ethereal odor
**pH:** Not available.
**Vapor Pressure:** 18.6 mm Hg @ 25 deg C
**Vapor Density:** 5.8
**Evaporation Rate:**9 (ether=100)
**Viscosity:** 0.89 mPa s 20 deg C
**Boiling Point:** 121 deg C
**Freezing/Melting Point:**-22.3 deg C
**Decomposition Temperature:**126 deg C
**Solubility:** Insoluble.
**Specific Gravity/Density:**1.62
**Molecular Formula:**C2Cl4
**Molecular Weight:**165.83

## Section 10 - Stability and Reactivity

**Chemical Stability:** Stable under normal temperatures and pressures.
**Conditions to Avoid:** Excess heat, ultra violet light, open flame, direct sunlight..
**Incompatibilities with Other Materials:** Active metals, powdered aluminum, powdered magnesium, zinc powder, strong oxidizing agents, strong bases, aluminum.
**Hazardous Decomposition Products:** Hydrogen chloride, chlorine, phosgene, carbon monoxide, carbon dioxide.
**Hazardous Polymerization:** Will not occur.

## Section 11 - Toxicological Information

**RTECS#:**
**CAS#** 127-18-4: KX3850000
**LD50/LC50:**
CAS# 127-18-4:
Draize test, rabbit, eye: 162 mg Mild;
Draize test, rabbit, eye: 500 mg/24H Mild;
Draize test, rabbit, skin: 810 mg/24H Severe;
Draize test, rabbit, skin: 500 mg/24H Mild;

Inhalation, mouse: LC50 = 5200 ppm/4H;
Inhalation, mouse: LC50 = 35000 mg/m3/4H;
Inhalation, mouse: LC50 = 20200 mg/m3/6H;
Inhalation, rat: LC50 = 34200 mg/m3/8H;
Inhalation, rat: LC50 = 4100 ppm/6H;
Oral, mouse: LD50 = 8100 mg/kg;
Oral, mouse: LD50 = 6400 mg/kg;
Oral, rat: LD50 = 2629 mg/kg;
.

**Carcinogenicity:**
CAS# 127-18-4:

- **ACGIH:** A3 - Confirmed animal carcinogen with unknown relevance to humans
- **California:** carcinogen, initial date 4/1/88
- **NTP:** Suspect carcinogen
- **IARC:** Group 2A carcinogen

**Epidemiology:** Epidemiologic studies have given inconsistent results. Studies have shown that tetrachloroethylene has not caused cancer in exposed workers. The studies have serious weaknesses such as mixed exposures. In tests with rats and mice, it appeared that tissue destruction or peroxisome proliferation rather than genetic mechanisms were the cause of the observed increases in normally occurring cancers. The oral mouse TDLo that was tumorigenic was 195 gm/kg/50W-I.
**Teratogenicity:** Has caused musculoskeletal abnormalities. Has caused morphological transformation at a dose of 97mol/L in a study using rat embryos.
**Reproductive Effects:** Has caused behavioral, biochemical, and metabolic effects on newborn rats when the mother was exposed to the TCLo of 900 ppm/7H at 7-13 days after conception. A dose of 300 ppm/7H 6-15 days after conception caused post-implantation mortality.
**Mutagenicity:** Not mutagenic in Escherichia coli. No mutagenic effects were seen in rat liver after exposure at 200 ppm for 10 weeks. No chromosome changes were seen in the bone marrow cells of exposed mice.
**Neurotoxicity:** No information available.
**Other Studies:**

## Section 12 - Ecological Information

**Ecotoxicity:** Fish: Rainbow trout: LC50 = 5.28 mg/L; 96 Hr.; Static Condition, 12 degrees CFish: Fathead Minnow: LC50 = 18.4 mg/L; 96 Hr.; Flow-through conditionFish: Bluegill/Sunfish: LC50 = 12.9 mg/L; 96 Hr.; Static ConditionBacteria: Phytobacterium phosphoreum: EC50 = 120.0 mg/L; 30 minutes; Microtox test No data available.
**Environmental:** In soil, substance will rapidly evaporate. In water, it will evaporate. In air, it can be expected to exist in the vapor phase.
**Physical:** No information available.
**Other:** No information available.

## Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
**RCRA P-Series:** None listed.
**RCRA U-Series:**
CAS# 127-18-4: waste number U210.

## Section 14 - Transport Information

| | US DOT | Canada TDG |
|---|---|---|
| **Shipping Name:** | TETRACHLOROETHYLENE | TETRACHLOROETHYLENE |
| **Hazard Class:** | 6.1 | 6.1 |
| **UN Number:** | UN1897 | UN1897 |
| **Packing Group:** | III | III |

## Section 15 - Regulatory Information

### US FEDERAL

**TSCA**
CAS# 127-18-4 is listed on the TSCA inventory.
**Health & Safety Reporting List**
CAS# 127-18-4: Effective 6/1/87, Sunset 6/1/97
**Chemical Test Rules**
None of the chemicals in this product are under a Chemical Test Rule.
**Section 12b**
None of the chemicals are listed under TSCA Section 12b.
**TSCA Significant New Use Rule**
None of the chemicals in this material have a SNUR under TSCA.
**CERCLA Hazardous Substances and corresponding RQs**
CAS# 127-18-4: 100 lb final RQ; 45.4 kg final RQ

**SARA Section 302 Extremely Hazardous Substances**
None of the chemicals in this product have a TPQ.
**SARA Codes**
CAS # 127-18-4: immediate, delayed.
**Section 313**
This material contains Tetrachloroethylene (CAS# 127-18-4, 99%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR
**Clean Air Act:**
CAS# 127-18-4 is listed as a hazardous air pollutant (HAP).
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
**Clean Water Act:**
None of the chemicals in this product are listed as Hazardous Substances under the CWA. CAS# 127-18-4 is listed as a Priority Pollutant under the Clean Water Act. CAS# 127-18-4 is listed as a Toxic Pollutant under the Clean Water Act.
**OSHA:**
None of the chemicals in this product are considered highly hazardous by OSHA.
**STATE**
CAS# 127-18-4 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

**California Prop 65**
**The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act:**
WARNING: This product contains Tetrachloroethylene, a chemical known to the state of California to cause cancer.
California No Significant Risk Level: CAS# 127-18-4: 14 æg/day NSRL

### European/International Regulations
**European Labeling in Accordance with EC Directives**
**Hazard Symbols:**
XN N
**Risk Phrases:**
R 40 Limited evidence of a carcinogenic effect.
R 51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**Safety Phrases:**
S 23 Do not inhale gas/fumes/vapour/spray.
S 36/37 Wear suitable protective clothing and gloves.
S 61 Avoid release to the environment. Refer to special instructions /safety data sheets.

**WGK (Water Danger/Protection)**
CAS# 127-18-4: 3
**Canada - DSL/NDSL**
CAS# 127-18-4 is listed on Canada's DSL List.
**Canada - WHMIS**
This product has a WHMIS classification of D1B, D2A, D2B.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.
**Canadian Ingredient Disclosure List**
CAS# 127-18-4 is listed on the Canadian Ingredient Disclosure List.

## Section 16 - Additional Information

**MSDS Creation Date:** 6/17/1999
**Revision #5 Date:** 2/03/2004

*The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.*