

# Material Safety Data Sheet

## Trichloroethylene

ACC# 23850

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** Trichloroethylene

**Catalog Numbers:** S80327ACS-1, S80327ACS-2, NC932384B, NC9494003, NC9494591, S80232, S80237ACS-1, S80237ACS-2, T340 4, T340-4, T3404, T341 20, T341 4, T341 500, T341-20, T341-4, T341-500, T34120, T3414, T341500, T341J4, T403 4, T403-4, T4034

**Synonyms:** Ethylene trichloride, triclene, trichloroethene, benzinol cecolene

**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 |
|---------|-------------------|---------|---------------|
| 79-01-6 | Trichloroethylene | 100     | 201-167-4     |

**Hazard Symbols:** XN

**Risk Phrases:** 40 52/53

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

**Appearance:** clear, colorless. **Warning!** May cause central nervous system depression. Aspiration hazard. May cause liver damage. May cause reproductive effects based upon animal studies. Causes eye and skin irritation. May cause respiratory and digestive tract irritation. May cause cancer based on animal studies. Potential cancer hazard.

**Target Organs:** Central nervous system, liver.

#### Potential Health Effects

**Eye:** Causes moderate eye irritation. May result in corneal injury. Contact produces irritation, tearing, and burning pain.

**Skin:** Causes mild skin irritation. Prolonged and/or repeated contact may cause defatting of the skin and dermatitis. May cause peripheral nervous system function impairment including persistent neuritis, and temporary loss of touch. Damage to the liver and other organs has been observed in workers who have been overexposed.

**Ingestion:** Aspiration hazard. May cause irritation of the digestive tract. Aspiration of material into the lungs may cause chemical pneumonitis, which may be fatal.

**Inhalation:** Inhalation of high concentrations may cause central nervous system effects characterized by headache, dizziness, unconsciousness and coma. May cause respiratory tract irritation. May cause liver abnormalities. May cause peripheral nervous system effects.

**Chronic:** Possible cancer hazard based on tests with laboratory animals. Chronic inhalation may cause effects similar to those of acute inhalation. Prolonged or repeated skin contact may cause defatting and dermatitis. May cause peripheral nervous system function impairment including persistent neuritis, and temporary loss of touch. Damage to the liver and other organs has been observed in workers who have been overexposed.

### Section 4 - First Aid Measures

**Eyes:** Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.

**Skin:** Get medical aid if irritation develops or persists. Flush skin with plenty of soap and water.

**Ingestion:** If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Possible aspiration hazard. Get medical aid immediately.

**Inhalation:** Get medical aid immediately. Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. DO NOT use mouth-to-mouth respiration.

**Notes to Physician:** Treat symptomatically and supportively.

### Section 5 - Firefighting 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. Vapors can travel to a source of ignition and flash back. Combustion generates toxic fumes. Containers may explode in the heat of a fire.

**Extinguishing Media:** Use water spray to cool fire-exposed containers. Use water spray, dry chemical, carbon dioxide, or chemical foam.

### 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., dry sand or earth), then place into a chemical waste container. Remove all sources of ignition. Provide ventilation.

### Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Use only in a well-ventilated area. Ground and bond containers when transferring material. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Avoid ingestion and inhalation. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

**Storage:** Keep away from sources of ignition. Store in a tightly closed container. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances.

## Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** 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 |
|-------------------|----------------------|--|-------------------|
| Trichloroethylene | 50 ppm; 100 ppm STEL | NIOSH Potential Occupational Carcinogen - see Appendix A; see Appendix C for supplementary exposure limits Potential NIOSH carcinogen. | 100 ppm TWA; C 20 |

**OSHA Vacated PELs:** Trichloroethylene: 50 ppm TWA; 270 mg/m<sup>3</sup> TWA

### Personal Protective Equipment

**Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** Follow the OSHA respirator regulations found in 29CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

## Section 9 - Physical and Chemical Properties

**Physical State:** Liquid

**Appearance:** clear, colorless

**Odor:** sweetish odor - chloroform-like

**pH:** Not available.

**Vapor Pressure:** 58 mm Hg @20C

**Vapor Density:** 4.53

**Evaporation Rate:**0.69 (CCl<sub>4</sub>=1)

**Viscosity:** 0.0055 poise

**Boiling Point:** 189 deg F

**Freezing/Melting Point:**-121 deg F

**Decomposition Temperature:**Not available.

**Autoignition Temperature:** 778 deg F ( 414.44 deg C)

**Flash Point:** Not applicable.

**NFPA Rating:** (estimated) Health: 2; Flammability: 1; Reactivity: 0

**Explosion Limits, Lower:**12.5

**Upper:** 90.0

**Solubility:** Insoluble in water.

**Specific Gravity/Density:**1.47 (water=1)

**Molecular Formula:**C<sub>2</sub>HCl<sub>3</sub>

**Molecular Weight:**131.366

## Section 10 - Stability and Reactivity

**Chemical Stability:** Stable under normal temperatures and pressures.

**Conditions to Avoid:** Incompatible materials, ignition sources, oxidizers.

**Incompatibilities with Other Materials:** Alkalis (sodium hydroxide), chemically active metals (aluminum, beryllium, lithium, magnesium), epoxies and oxidants. Can react violently with aluminum, barium, lithium, magnesium, liquid oxygen, ozone, potassium hydroxide, potassium nitrate, sodium, sodium hydroxide, titanium, and nitrogen dioxide. Reacts with water under heat and pressure to form hydrogen chloride gas.

**Hazardous Decomposition Products:** Hydrogen chloride, carbon dioxide, chloride fumes.

**Hazardous Polymerization:** Has not been reported.

## Section 11 - Toxicological Information

**RTECS#:**

**CAS# 79-01-6:** KX4550000

**LD50/LC50:**

**CAS# 79-01-6:**

Inhalation, mouse: LC50 =8450 ppm/4H;

Oral, mouse: LD50 = 2402 mg/kg;

Oral, rat: LD50 = 5650 mg/kg;  
Skin, rabbit: LD50 = >20 gm/kg;

**Carcinogenicity:**

CAS# 79-01-6:

**ACGIH:** A5 - not suspected as a human carcinogen

**California:** carcinogen; initial date 4/1/88

**NIOSH:** occupational carcinogen

**OSHA:** Possible Select carcinogen

**IARC:** Group 2A carcinogen

**Epidemiology:** Suspected carcinogen with experimental carcinogenic, tumorigenic, and teratogenic data.

**Teratogenicity:** No information available.

**Reproductive Effects:** Experimental reproductive effects have been observed.

**Neurotoxicity:** No information available.

**Mutagenicity:** Human mutation data has been reported. IARC and the National Toxicology Program (NTP) stated that variability in the mutagenicity test results with trichloroethylene may be due to the presence of various stabilizers used in TCE which are mutagens (e.g. epoxybutane, epichlorohydrin).

**Other Studies:** None.

Section 12 - Ecological Information

**Ecotoxicity:** Bluegill sunfish, LD50= 44,700 ug/L/96Hr. Fathead minnow, LC50=40.7 mg/L/96Hr.

**Environmental Fate:** In air, substance is photooxidized and is reported to form phosgene, dichloroacetyl chloride, and formyl chloride. In water, it evaporates rapidly.

**Physical/Chemical:** No information available.

**Other:** None.

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# 79-01-6: waste number U228.

Section 14 - Transport Information

|                | US DOT            | IATA | RID/ADR | IMO | Canada TDG        |
|----------------|-------------------|------|---------|-----|-------------------|
| Shipping Name: | TRICHLOROETHYLENE |      |         |     | TRICHLOROETHYLENE |
| Hazard Class:  | 6.1               |      |         |     | 6.1(9.2)          |
| UN Number:     | UN1710            |      |         |     | UN1710            |
| Packing Group: | III               |      |         |     | III               |

Section 15 - Regulatory Information

**US FEDERAL**

**TSCA**

CAS# 79-01-6 is listed on the TSCA inventory.

**Health & Safety Reporting List**

None of the chemicals are on the Health & Safety Reporting List.

**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.

**SARA**

**Section 302 (RQ)**

CAS# 79-01-6: final RQ = 100 pounds (45.4 kg)

**Section 302 (TPQ)**

None of the chemicals in this product have a TPQ.

**SARA Codes**

CAS # 79-01-6: acute, chronic, reactive.

**Section 313**

This material contains Trichloroethylene (CAS# 79-01-6, 100%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

**Clean Air Act:**

CAS# 79-01-6 is listed as a hazardous air pollutant (HAP). This material does not contain any Class 1 Ozone depleters. This material does not contain any Class 2 Ozone depleters.

**Clean Water Act:**

CAS# 79-01-6 is listed as a Hazardous Substance under the CWA. CAS# 79-01-6 is listed as a Priority Pollutant under the Clean Water Act. CAS# 79-01-6 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# 79-01-6 can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.

**The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act:** WARNING: This product contains Trichloroethylene, a chemical known to the state of California to cause cancer. California No Significant Risk Level: CAS# 79-01-6: ingestion: no significant risk level = 50 ug/day; inhalation: no significant risk level = 80 ug/day

**European/International Regulations**

**European Labeling in Accordance with EC Directives**

**Hazard Symbols:**

XN

**Risk Phrases:**

R 40 Possible risks of irreversible effects. R 52/53 Harmful 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# 79-01-6: 3

**Canada**

CAS# 79-01-6 is listed on Canada's DSL/NDSL List.

This product has a WHMIS classification of D1B, D2B.

CAS# 79-01-6 is not listed on Canada's Ingredient Disclosure List.

**Exposure Limits**

CAS# 79-01-6: OEL-AUSTRALIA:TWA 50 ppm (270 mg/m<sup>3</sup>);STEL 200 ppm (1080 mg/m<sup>3</sup>) OEL-BELGIUM:TWA 50 ppm (269 mg/m<sup>3</sup>);STEL 200 ppm (1070 mg/m<sup>3</sup>) OEL-CZECHOSLOVAKIA:TWA 250 mg/m<sup>3</sup>;STEL 1250 mg/m<sup>3</sup> OEL-DENMARK:TWA 30 ppm (160 mg/m<sup>3</sup>) OEL-FINLAND:TWA 30 ppm (160 mg/m<sup>3</sup>);STEL 45 ppm (240 mg/m<sup>3</sup>);Skin OEL-FRANCE:TWA 75 ppm (405 mg/m<sup>3</sup>);STEL 200 ppm (1080 mg/m<sup>3</sup>) OEL-GERMANY:TWA 50 ppm (270 mg/m<sup>3</sup>);Carcinogen OEL-HUNGARY:TWA 10 mg/m<sup>3</sup>;STEL 40 mg/m<sup>3</sup> OEL-JAPAN:TWA 50 ppm (270 mg/m<sup>3</sup>) OEL-THE NETHERLANDS:TWA 35 ppm (190 mg/m<sup>3</sup>);STEL 100 ppm OEL-THE PHILIPPINES:TWA 100 ppm (535 mg/m<sup>3</sup>) OEL-POLAND:TWA 50 mg/m<sup>3</sup> OEL-RUSSIA:TWA 50 ppm;STEL 10 mg/m<sup>3</sup> OEL-SWEDEN:TWA 10 ppm (50 mg/m<sup>3</sup>);STEL 25 ppm (140 mg/m<sup>3</sup>) OEL-THAILAND:TWA 100 ppm;STEL 200 ppm OEL-TURKEY:TWA 100 ppm (535 mg/m<sup>3</sup>) OEL-UNITED KINGDOM:TWA 100 ppm (535 mg/m<sup>3</sup>);STEL 150 ppm;Skin OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGI TLV

Section 16 - Additional Information

**MSDS Creation Date:** 2/01/1999

**Revision #2 Date:** 8/02/2000

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