



Material Safety Data Sheet

NFPA	HMIS	Personal Protective Equipment						
	<table border="1" style="margin: auto;"> <tr> <td style="background-color: #00FFFF;">Health Hazard</td> <td style="text-align: center; border: 1px solid black;">2</td> </tr> <tr> <td style="background-color: #FFC0CB;">Fire Hazard</td> <td style="text-align: center; border: 1px solid black;">1</td> </tr> <tr> <td style="background-color: #FFFF00;">Reactivity</td> <td style="text-align: center; border: 1px solid black;">0</td> </tr> </table>	Health Hazard	2	Fire Hazard	1	Reactivity	0	
Health Hazard	2							
Fire Hazard	1							
Reactivity	0							
		See Section 15.						

Section 1. Chemical Product and Company Identification		Page Number: 1
Common Name/Trade Name	Trichloroethylene	
Manufacturer	SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248	
Commercial Name(s)	TCE, Algylen; Benzinol; Blacosolv; Blancosolv; Cecolene; Chlorilen; Chlorilen; Circosolv; Crawhasprol; Densinfluat; Dow-tri; Dukeron; Fluate; Germalgene; Lanadin; Lethurin; Narcogen; Petzinol; Philex; Tri-clene; Tri-plus; Triad; Triasol; Trielene; Trieliln; Trieline; Triline; Trimar; Triol Vestrol; Vitran	
Synonym	Trichloroethene; 1,1,2-Trichloroethylene; 1,1-Dichloro-2-chloroethylene; 1,2,2-Trichloroethylene; 1-Chloro-2,2-dichloroethylene; Ethinyl trichloride; Ethylene trichloride; Threthylene; Trethylene	
Chemical Name	Ethene, trichloro-	
Chemical Family	Not available.	
Chemical Formula	C ₂ HCl ₃	
Supplier	SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248	
	Catalog Number(s).	SP873, T1115, T1116
	CAS#	79-01-6
	RTECS	KX4560000
	TSCA	TSCA 8(b) inventory: Trichloroethylene
	CI#	Not available.
<u>IN CASE OF EMERGENCY</u> <u>CHEMTREC (24hr) 800-424-9300</u> CALL (310) 516-8000		

Section 2. Composition and Information on Ingredients					
Name	CAS #	Exposure Limits			% by Weight
		TWA (mg/m ³)	STEL (mg/m ³)	CEIL (mg/m ³)	
1) Trichloroethylene	79-01-6	535		200	100
Toxicological Data on Ingredients					
Trichloroethylene: ORAL (LD50): Acute: 4920 mg/kg [Rat]. 2402 mg/kg [Mouse]. DERMAL (LD50): Acute: >20000 mg/kg [Rabbit]. VAPOR (LC50): Acute: 8450 ppm 4 hours [Mouse].					

Section 3. Hazards Identification

Potential Acute Health Effects	Hazardous in case of skin contact (irritant), of eye contact (irritant). Slightly hazardous in case of skin contact (permeator), of ingestion, of inhalation.
Potential Chronic Health Effects	CARCINOGENIC EFFECTS: Classified 2A (Probable for human.) by IARC, 2 (Some evidence.) by NTP. Classified A5 (Not suspected for human.) by ACGIH. MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to kidneys, liver, peripheral nervous system, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4. First Aid Measures

Eye Contact	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. WARM water MUST be used. Get medical attention.
Skin Contact	In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
Serious Skin Contact	Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.
Inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.
Serious Inhalation	Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.
Ingestion	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.
Serious Ingestion	Not available.

Section 5. Fire and Explosion Data

Flammability of the Product	May be combustible at high temperature.
Auto-Ignition Temperature	420°C (788°F)
Flash Points	Not available.
Flammable Limits	LOWER: 8% UPPER: 10.5% at 25 deg. C LOWER: 7.8% UPPER: 52% at 100 deg. C
Products of Combustion	These products are carbon oxides (CO, CO ₂), halogenated compounds.
Fire Hazards in Presence of Various Substances	Slightly flammable to flammable in presence of open flames and sparks, of heat, of metals.
Explosion Hazards in Presence of Various Substances	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. Slightly explosive in presence of metals.
Fire Fighting Media and Instructions	SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.
Special Remarks on Fire Hazards	Mixtures of powdered beryllium with trichloroethylene will flash on heavy impact. Mixtures of powdered magnesium with trichloroethylene will flash on heavy impact. Mixtures of powdered titanium with trichloroethylene will flash on heavy impact.

Special Remarks on Explosion Hazards

Granular Barium in contact with Trichloroethylene is susceptible to detonation. Mixtures of lithium shavings and trichloroethylene are impact-sensitive and will explode, sometimes violently.

Mixture of liquid oxygen with dichloromethane, 1,1,1-trichloroethane, trichloroethylene, and chlorinated dye penetrants 1 and 2 exploded violently when initiated with a blasting cap.

Mixtures of dinitrogen tetroxide with trichloroethylene are explosive when subjected to shock of 25 g TNT equivalent or less.

Section 6. Accidental Release Measures**Small Spill**

Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill

Absorb with an inert material and put the spilled material in an appropriate waste disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7. Handling and Storage**Precautions**

Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/vapor/spray. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as metals, acids, alkalis.

Storage

Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8. Exposure Controls/Personal Protection**Engineering Controls**

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection

Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits

TWA: 50 STEL: 100 (ppm) from ACGIH (TLV) [United States]
 TWA: 100 CEIL: 200 (ppm) from OSHA (PEL) [United States]
 TWA: 535 ($\mu\text{g}/\text{m}^3$) from OSHA (PEL) [United States]
 TWA: 25 (ppm) from NIOSH [United States]
 TWA: 100 STEL: 150 (ppm) [United Kingdom (UK)]
 TWA: 550 STEL: 820 (mg/m^3) [United Kingdom (UK)]
 TWA: 50 STEL: 100 (ppm) [Canada]
 TWA: 269 (mg/m^3) [Canada]

Consult local authorities for acceptable exposure limits.

Section 9. Physical and Chemical Properties**Physical state and appearance**

Liquid.

Odor

Ethereal. Sweetish.

Molecular Weight

131.39 g/mole

Taste

Not available.

pH (1% soln/water)

Not available.

Color

Clear Colorless

Boiling Point

86°C (186.8°F) - 87 C.

Melting Point

-87°C (-124.6°F)

Critical Temperature

300.2°C (572.4°F)

Specific Gravity

1.46 - 1.5 (Water = 1)

Vapor Pressure

7.7 kPa (@ 20°C)

Vapor Density	4.53 (Air = 1)
Volatility	Not available.
Odor Threshold	21 - 50 ppm
Water/Oil Dist. Coeff.	The product is more soluble in oil; log(oil/water) = 2.6
Ionicity (in Water)	Not available.
Dispersion Properties	See solubility in water, diethyl ether, acetone.
Solubility	Soluble in diethyl ether, acetone. Very slightly soluble in cold water. Soluble in Ethanol, Chloroform. Solubility in Water: 1280 mg/l @ 25 deg. C. Miscible in oil

Section 10. Stability and Reactivity Data

Stability	The product is stable.
Instability Temperature	Not available.
Conditions of Instability	Not available.
Incompatibility with various substances	Reactive with metals, acids, alkalis
Corrosivity	Non-corrosive in presence of glass.

Special Remarks on Reactivity

Trichloroethylene reacts violently with the anhydrous perchloric acid.
Mixtures of dinitrogen tetroxide with trichloroethylene react violently on heating to 150 deg C.
In the presence of strong alkali (eg, sodium hydroxide), trichloroethylene can decompose into dichloroacetylene, an explosive, flammable, and highly toxic compound.
Formation of phosgene, a highly toxic gas, was observed when trichloroethylene came into contact with iron, copper, zinc, or aluminum over the temperature range 250 deg C to 600 deg C.
Incompatible with metal powders, active metals (alkali metals and alkaline earth metals) such as barium, lithium, sodium, magnesium, titanium.
Trichloroethylene can react violently with the following: Aluminum (Al), Barium (Ba), Lithium (Li), Liquid oxygen (O₂), Ozone (O₃), Magnesium (Mg), Nitrogen tetroxide (N₂O₄), Potassium nitrate (KNO₃), Potassium hydroxide (KOH), Sodium (Na), Sodium hydroxide (NaOH).
Slowly decomposed with formation of Hydrochloric Acid by light and in the presence of moisture.
Trichloroethylene is incompatible with organic anhydrides, isocyanates, alkylene oxides, aldehydes, alcohols, glycols, phenols, cresols, caprolactam solution, epichlorohydrin, nitrogen tetroxide.

Special Remarks on Corrosivity

Not available.

Polymerization

Will not occur.

Section 11. Toxicological Information

Routes of Entry	Absorbed through skin. Eye contact. Inhalation.
Toxicity to Animals	WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 2402 mg/kg [Mouse]. Acute dermal toxicity (LD50): >20000 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 8450 ppm 4 hours [Mouse].
Chronic Effects on Humans	CARCINOGENIC EFFECTS: Classified 2A (Probable for human.) by IARC, 2 (Some evidence.) by NTP. Classified A5 (Not suspected for human.) by ACGIH. MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast. May cause damage to the following organs: kidneys, liver, peripheral nervous system, central nervous system (CNS).
Other Toxic Effects on Humans	Hazardous in case of skin contact (irritant). Slightly hazardous in case of skin contact (permeator), of ingestion, of inhalation.
Special Remarks on Toxicity to Animals	Not available.
Special Remarks on Chronic Effects on Humans	May cause cancer. May affect genetic material (mutagenic). May cause adverse reproductive effects and birth defects (teratogenic).
Special Remarks on other Toxic Effects on Humans	Acute Potential Health Effects: Skin: Causes moderate to severe skin irritation with blistering, roughening, and cracking of skin. Eyes: Causes moderate eye irritation. May cause corneal injury, double vision, blurred vision. Optic neuritis and blindness may occur. Inhalation: Can cause bronchial irritation, respiratory depression, difficulty breathing, pulmonary edema. Exposure to concentrations of 100 ppm to 1000 ppm can cause nausea, vomiting, visual disturbances, and can affect behavior/central nervous system/peripheral nervous system (general anesthetic, change in motor activity, headache, confusion, hallucinations, restlessness, somnolence, incoordination, memory loss, tremor, depression, lightheadedness, sleepiness, fatigue, lethargy, excited feeling/euphoria, irritability, dizziness, convulsions, spastic paralysis with or without sensory change, tingling, muscular discomfort, weakness in arms and legs). Inhalation of extremely high concentrations (over 1000 ppm) may cause lung irritation, unconsciousness, convulsions, coma, and death due to respiratory or cardiac failure. It may also affect the liver and kidneys. Ingestion: Can cause digestive/gastrointestinal tract irritation, burning sensation in the throat, dysphagia, abdominal pain, nausea, vomiting, diarrhea. It can result in symptoms of intoxication and other central nervous system/peripheral nervous system symptoms similar to that of inhalation. It may cause liver and kidney damage (hepatitis, jaundice, increase in liver enzymes, acute tubular necrosis in kidneys, kidney failure). It may cause heart dysrhythmias and circulatory collapse. Chronic Potential Health Effects: Inhalation/Ingestion. It can affect the central and peripheral nervous system (see acute inhalation and ingestion) and may cause liver and/or kidney damage. Skin: Prolonged or repeated skin contact may cause contact dermatitis, a skin allergy.

Section 12. Ecological Information

Ecotoxicity	Not available.
BOD5 and COD	Not available.
Products of Biodegradation	Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.
Toxicity of the Products of Biodegradation	The products of degradation are more toxic than the product itself.
Special Remarks on the Products of Biodegradation	Not available.

Section 13. Disposal Considerations

Waste Disposal Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14. Transport Information

DOT Classification CLASS 6.1: Poisonous material.

Identification UNNA: 1710 : Trichloroethylene PG: III

Special Provisions for Transport Not available.

DOT (Pictograms)

**Section 15. Other Regulatory Information and Pictograms**

Federal and State Regulations

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Trichloroethylene
 California prop. 65 (no significant risk level): Trichloroethylene: 0.08 mg/day (inhalation)
 California prop. 65 (acceptable daily intake level): Trichloroethylene: 0.05 mg/day (value)
 California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Trichloroethylene
 Connecticut hazardous material survey.: Trichloroethylene
 Illinois toxic substances disclosure to employee act: Trichloroethylene
 Illinois chemical safety act: Trichloroethylene
 New York release reporting list: Trichloroethylene
 Rhode Island RTK hazardous substances: Trichloroethylene
 Pennsylvania RTK: Trichloroethylene
 Minnesota: Trichloroethylene
 Michigan critical material: Trichloroethylene
 Massachusetts RTK: Trichloroethylene
 Massachusetts spill list: Trichloroethylene
 New Jersey: Trichloroethylene
 New Jersey spill list: Trichloroethylene
 Louisiana spill reporting: Trichloroethylene
 California Director's List of Hazardous Substances: Trichloroethylene
 TSCA 8(b) inventory: Trichloroethylene
 SARA 313 toxic chemical notification and release reporting: Trichloroethylene
 CERCLA: Hazardous substances: Trichloroethylene: 100 lbs. (45.36 kg)

California Proposition 65 Warnings

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Trichloroethylene
 California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found.

Other Regulations

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).
 EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances (EINECS No. 201-167-4).
 Canada: Listed on Canadian Domestic Substance List (DSL).
 China: Listed on National Inventory.
 Japan: Listed on National Inventory (ENCS).
 Korea: Listed on National Inventory (KECI).
 Philippines: Listed on National Inventory (PICCS).
 Australia: Listed on AICS.

Other Classifications

WHMIS (Canada) CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC).
 CLASS D-2A: Material causing other toxic effects (VERY TOXIC).
 Class D-2B: Material causing other toxic effects (TOXIC).

DSCL (EEC)


R36/38- Irritating to eyes and skin.
 R45- May cause cancer.
 R52/53- Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
 S53- Avoid exposure - obtain special instructions before use.
 S61- Avoid release to the environment. Refer to special instructions/Safety data sheets.

HMS (U.S.A.)

Health Hazard	2
Fire Hazard	1
Reactivity	0
Personal Protection	h

National Fire Protection Association (U.S.A.)

Health  Flammability
 Reactivity
 Specific hazard

WHMIS (Canada) (Pictograms)



DSCL (Europe) (Pictograms)



TDG (Canada) (Pictograms)



ADR (Europe) (Pictograms)



Protective Equipment



Gloves



Lab coat.



Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.



Splash goggles.

Section 16. Other Information**MSDS Code** T3830**References** Not available.**Other Special Considerations** Major Uses: Solvent; chemical intermediate; in preparation of insecticidal fumigants; in metal cleaning or degreasing; in the textile industry, it is used as a carrier solvent for spotting fluids and as a solvent in dyeing and finishing; used as a solvent for printing inks, paint, lacquers, varnishes, adhesives and paint strippers

Validated by Sonia Owen on 3/27/2009.

Verified by Sonia Owen.

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CALL (310) 516-8000

Notice to Reader

All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum Quality Products, Inc. assumes no responsibility for the completeness or accuracy of the information contained herein.