

# SAFETY DATA SHEET

## 1. Identification

**Product identifier:** Trichloroethylene

**Other means of identification**

**Product No.:** 9464, 8600, 9458, 9454

**Recommended use and restriction on use**

**Recommended use:** Not available.

**Restrictions on use:** Not known.

**Manufacturer/Importer/Supplier/Distributor Information**

**Manufacturer**

**Company Name:** Avantor Performance Materials, Inc.  
**Address:** 3477 Corporate Parkway, Suite 200  
Center Valley, PA 18034

**Telephone:** Customer Service: 855-282-6867

**Fax:**  
**Contact Person:** Environmental Health & Safety  
**e-mail:** info@avantormaterials.com

**Emergency telephone number:**

24 Hour Emergency: 908-859-2151

Chemtrec: 800-424-9300

## 2. Hazard(s) identification

**Hazard Classification**

**Health Hazards**

Skin Corrosion/Irritation	Category 2
Serious Eye Damage/Eye Irritation	Category 2A
Germ Cell Mutagenicity	Category 2
Carcinogenicity	Category 1B
Specific Target Organ Toxicity - Single Exposure	Category 3

**Environmental Hazards**

Chronic hazards to the aquatic environment	Category 3
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**Label Elements**

**Hazard Symbol:**



**Signal Word:**

Danger

<b>Hazard Statement:</b>	May cause cancer. Suspected of causing genetic defects. Causes serious eye irritation. Causes skin irritation. Harmful to aquatic life with long lasting effects.
<b>Precautionary Statement</b>	
<b>Prevention:</b>	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection. Wash hands thoroughly after handling. Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid release to the environment.
<b>Response:</b>	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash before reuse. Call a POISON CENTER or doctor/physician if you feel unwell. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
<b>Storage:</b>	Store locked up. Store in a well-ventilated place. Keep container tightly closed.
<b>Disposal:</b>	Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.
<b>Other hazards which do not result in GHS classification:</b>	None.

<b>3. Composition/information on ingredients</b>
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**Substances**

Chemical Identity	Common name and synonyms	CAS number	Content in percent (%)*
TRICHLOROETHYLENE		79-01-6	99 - 100%

\* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

<b>4. First-aid measures</b>
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<b>General information:</b>	Get medical advice/attention if you feel unwell. Show this safety data sheet to the doctor in attendance.
<b>Ingestion:</b>	Rinse mouth. Get medical attention if symptoms occur. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
<b>Inhalation:</b>	Move to fresh air. Get medical attention if symptoms persist. If breathing stops, provide artificial respiration.
<b>Skin Contact:</b>	Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention if irritation persists after washing. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

**Eye contact:** Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention if irritation persists after washing.

**Most important symptoms/effects, acute and delayed**

**Symptoms:** Irritating to eyes, respiratory system and skin.

**Indication of immediate medical attention and special treatment needed**

**Treatment:** Treat symptomatically. Symptoms may be delayed.

**5. Fire-fighting measures**

**General Fire Hazards:** In case of fire and/or explosion do not breathe fumes.

**Suitable (and unsuitable) extinguishing media**

**Suitable extinguishing media:** Use fire-extinguishing media appropriate for surrounding materials.

**Unsuitable extinguishing media:** Do not use water jet as an extinguisher, as this will spread the fire.

**Specific hazards arising from the chemical:** Contact with metals may evolve flammable hydrogen gas. Fire may produce irritating, corrosive and/or toxic gases.

**Special protective equipment and precautions for firefighters**

**Special fire fighting procedures:** Move containers from fire area if you can do so without risk. Use water spray to keep fire-exposed containers cool. Cool containers exposed to flames with water until well after the fire is out.

**Special protective equipment for fire-fighters:** Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

**6. Accidental release measures**

**Personal precautions, protective equipment and emergency procedures:** Keep unauthorized personnel away. Use personal protective equipment. See Section 8 of the MSDS for Personal Protective Equipment. Ventilate closed spaces before entering them. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

**Methods and material for containment and cleaning up:** Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination. Dike far ahead of larger spill for later recovery and disposal.

**Notification Procedures:** Dike for later disposal. Prevent entry into waterways, sewer, basements or confined areas. Stop the flow of material, if this is without risk. Inform authorities if large amounts are involved.

**Environmental Precautions:** Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

## 7. Handling and storage

**Precautions for safe handling:** Use personal protective equipment as required. Do not breathe mist or vapor. Do not taste or swallow. Do not eat, drink or smoke when using the product. Use only with adequate ventilation. Wash hands thoroughly after handling. See Section 8 of the MSDS for Personal Protective Equipment. Avoid contact with eyes. Avoid contact with skin. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection. Avoid breathing dust/fume/gas/mist/vapors/spray. Wash contaminated clothing before reuse.

**Conditions for safe storage, including any incompatibilities:** Store locked up. Keep in a cool, well-ventilated place. Store in a dry place.

## 8. Exposure controls/personal protection

### Control Parameters

#### Occupational Exposure Limits

Chemical Identity	Type	Exposure Limit Values	Source
TRICHLOROETHYLENE	TWA	10 ppm	US. ACGIH Threshold Limit Values (2011)
	STEL	25 ppm	US. ACGIH Threshold Limit Values (2011)
	REL	25 ppm	US. NIOSH: Pocket Guide to Chemical Hazards (2010)
	TWA	50 ppm 270 mg/m <sup>3</sup>	US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)
	STEL	200 ppm 1,080 mg/m <sup>3</sup>	US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)
	TWA	100 ppm	US. OSHA Table Z-2 (29 CFR 1910.1000) (02 2006)
	Ceiling	200 ppm	US. OSHA Table Z-2 (29 CFR 1910.1000) (02 2006)
	MAX. CONC	300 ppm	US. OSHA Table Z-2 (29 CFR 1910.1000) (02 2006)
	AN ESL	54 µg/m <sup>3</sup>	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (12 2010)

#### Biological Limit Values

Chemical Identity	Exposure Limit Values	Source
TRICHLOROETHYLENE (Trichloroacetic acid: Sampling time: End of shift at end of work week.)	15 mg/l (Urine)	ACGIH BEL (03 2013)
TRICHLOROETHYLENE (Trichloroethanol, without hydrolysis: Sampling time: End of shift at end of work week.)	0.5 mg/l (Blood)	ACGIH BEL (03 2013)

**Appropriate Engineering Controls** No data available.

### Individual protection measures, such as personal protective equipment

**General information:** Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. An eye wash and safety shower must be available in the immediate work area.

<b>Eye/face protection:</b>	Wear safety glasses with side shields (or goggles) and a face shield.
<b>Skin Protection</b>	
<b>Hand Protection:</b>	Chemical resistant gloves
<b>Other:</b>	Wear suitable protective clothing.
<b>Respiratory Protection:</b>	In case of inadequate ventilation use suitable respirator.
<b>Hygiene measures:</b>	Provide eyewash station and safety shower. Observe good industrial hygiene practices. Wash hands before breaks and immediately after handling the product. Do not eat, drink or smoke when using the product. Wash contaminated clothing before reuse.

## 9. Physical and chemical properties

### Appearance

<b>Physical state:</b>	Liquid
<b>Form:</b>	Liquid
<b>Color:</b>	Colorless
<b>Odor:</b>	Ether-like odor
<b>Odor threshold:</b>	No data available.
<b>pH:</b>	No data available.
<b>Melting point/freezing point:</b>	-84.7 °C
<b>Initial boiling point and boiling range:</b>	87.2 °C
<b>Flash Point:</b>	Not applicable
<b>Evaporation rate:</b>	No data available.
<b>Flammability (solid, gas):</b>	No data available.
<b>Upper/lower limit on flammability or explosive limits</b>	
<b>Flammability limit - upper (%):</b>	10.5 %(V) 90 %(V)
<b>Flammability limit - lower (%):</b>	8 %(V) 12.5 %(V)
<b>Explosive limit - upper (%):</b>	No data available.
<b>Explosive limit - lower (%):</b>	No data available.
<b>Vapor pressure:</b>	9.2 kPa (25 °C)
<b>Vapor density:</b>	4.53 AIR=1
<b>Relative density:</b>	1.47 (20 °C)
<b>Solubility(ies)</b>	
<b>Solubility in water:</b>	1 g/l (20 °C)
<b>Solubility (other):</b>	acetone: Soluble ethanol: Soluble
<b>Partition coefficient (n-octanol/water):</b>	2.61
<b>Auto-ignition temperature:</b>	420 °C
<b>Decomposition temperature:</b>	No data available.
<b>Viscosity:</b>	No data available.

### Other information

<b>Molecular weight:</b>	131.39 g/mol (C <sub>2</sub> HCl <sub>3</sub> )
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## 10. Stability and reactivity

<b>Reactivity:</b>	No dangerous reaction known under conditions of normal use.
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<b>Chemical Stability:</b>	Material is stable under normal conditions.
<b>Possibility of Hazardous Reactions:</b>	Hazardous polymerization does not occur.
<b>Conditions to Avoid:</b>	Heat, sparks, flames. Light. Moisture. Contact with incompatible materials.
<b>Incompatible Materials:</b>	Strong oxidizing agents. Alkalies. Caustics. Chemically active metals.
<b>Hazardous Decomposition Products:</b>	By heating and fire, toxic vapors/gases may be formed. Oxides of Carbon. Phosgene.

## 11. Toxicological information

### Information on likely routes of exposure

<b>Ingestion:</b>	May be harmful if swallowed.
<b>Inhalation:</b>	May be harmful if inhaled.
<b>Skin Contact:</b>	Causes skin irritation.
<b>Eye contact:</b>	Causes serious eye irritation.

### Information on toxicological effects

#### Acute toxicity (list all possible routes of exposure)

<b>Oral Product:</b>	LD 50 (Rat): 4,920 mg/kg
<b>Dermal Product:</b>	No data available.
<b>Inhalation Product:</b>	LC 50 (Rat, 4 h): 12000 ppm
<b>Repeated Dose Toxicity Product:</b>	No data available.

#### Skin Corrosion/Irritation

<b>Product:</b>	Causes skin irritation.
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#### Serious Eye Damage/Eye Irritation

<b>Product:</b>	Causes serious eye irritation.
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#### Respiratory or Skin Sensitization

<b>Product:</b>	Not a skin sensitizer.
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#### Carcinogenicity

<b>Product:</b>	May cause cancer.
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#### IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

TRICHLOROETHY LENE	Overall evaluation: 1. Carcinogenic to humans.
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#### US. National Toxicology Program (NTP) Report on Carcinogens:

TRICHLOROETHY LENE	Reasonably Anticipated to be a Human Carcinogen.
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**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):**

No carcinogenic components identified

**Germ Cell Mutagenicity**

**In vitro**

**Product:** Suspected of causing genetic defects.

**In vivo**

**Product:** Suspected of causing genetic defects.

**Reproductive Toxicity**

**Product:** No components toxic to reproduction

**Specific Target Organ Toxicity - Single Exposure**

**Product:** May cause respiratory irritation. May cause drowsiness or dizziness.

**Specific Target Organ Toxicity - Repeated Exposure**

**Product:** No data available.

**Aspiration Hazard**

**Product:** Not classified

**Other Effects:** None known.

**12. Ecological information**

**Ecotoxicity:**

**Acute hazards to the aquatic environment:**

**Fish**

**Product:** No data available.

**Specified substance(s):**

TRICHLOROETHYLENE LC 50 (Fathead minnow (Pimephales promelas), 96 h): 31.4 - 71.8 mg/l Mortality  
LC 50 (Bluegill (Lepomis macrochirus), 96 h): 39 - 54 mg/l Mortality  
EC 50 (Fathead minnow (Pimephales promelas), 96 h): 18.4 - 28.5 mg/l Intoxication

**Aquatic Invertebrates**

**Product:** No data available.

**Specified substance(s):**

TRICHLOROETHYLENE LC 50 (Water flea (Daphnia magna), 48 h): 12 - 26 mg/l Mortality

**Chronic hazards to the aquatic environment:**

**Fish**

**Product:** No data available.

**Aquatic Invertebrates**

**Product:** No data available.

**Toxicity to Aquatic Plants**

**Product:** No data available.

**Persistence and Degradability**

**Biodegradation**

**Product:** There are no data on the degradability of this product.

**BOD/COD Ratio**

**Product:** No data available.

**Bioaccumulative Potential**

**Bioconcentration Factor (BCF)**

**Product:** No data available on bioaccumulation.

**Partition Coefficient n-octanol / water (log Kow)**

**Product:** Log Kow: 2.61

**Mobility in Soil:** The product is water soluble and may spread in water systems.

**Other Adverse Effects:** Harmful to aquatic life with long lasting effects.

**13. Disposal considerations**

**Disposal instructions:** Discharge, treatment, or disposal may be subject to national, state, or local laws.

**Contaminated Packaging:** Since emptied containers retain product residue, follow label warnings even after container is emptied.

**14. Transport information**

**DOT**

UN Number:	UN 1710
UN Proper Shipping Name:	Trichloroethylene
Transport Hazard Class(es)	
Class(es):	6.1
Label(s):	6.1
Packing Group:	III
Marine Pollutant:	No

**IMDG**

UN Number:	UN 1710
UN Proper Shipping Name:	TRICHLOROETHYLENE
Transport Hazard Class(es)	
Class(es):	6.1
Label(s):	6.1
EmS No.:	F-A, S-A
Packing Group:	III
Marine Pollutant:	No

**IATA**

UN Number:	UN 1710
Proper Shipping Name:	Trichloroethylene
Transport Hazard Class(es):	
Class(es):	6.1
Label(s):	6.1
Marine Pollutant:	No
Packing Group:	III

**15. Regulatory information**

**US Federal Regulations**

**TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**

**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)**

None present or none present in regulated quantities.

**CERCLA Hazardous Substance List (40 CFR 302.4):**

TRICHLOROETHYLENE Reportable quantity: 100 lbs.

**Superfund Amendments and Reauthorization Act of 1986 (SARA)**

**Hazard categories**

Acute (Immediate)  Chronic (Delayed)  Fire  Reactive  Pressure Generating

**SARA 302 Extremely Hazardous Substance**

None present or none present in regulated quantities.

**SARA 304 Emergency Release Notification**

Chemical Identity	RQ
TRICHLOROETHYLENE	100 lbs.

**SARA 311/312 Hazardous Chemical**

Chemical Identity	Threshold Planning Quantity
TRICHLOROETHYLENE	500 lbs

**SARA 313 (TRI Reporting)**

Chemical Identity	Reporting threshold for other users	Reporting threshold for manufacturing and processing
TRICHLOROETHYLENE	10000 lbs	25000 lbs.

**Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)**

TRICHLOROETHYLENE Reportable quantity: 100 lbs.

**Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):**

None present or none present in regulated quantities.

**US State Regulations**

**US. California Proposition 65**

TRICHLOROETHYLENE Carcinogenic.  
TRICHLOROETHYLENE Male reproductive toxin.  
TRICHLOROETHYLENE Developmental toxin.

**US. New Jersey Worker and Community Right-to-Know Act**

TRICHLOROETHYLENE Listed

**US. Massachusetts RTK - Substance List**

TRICHLOROETHYLENE Listed

**US. Pennsylvania RTK - Hazardous Substances**

TRICHLOROETHYLENE Listed

**US. Rhode Island RTK**

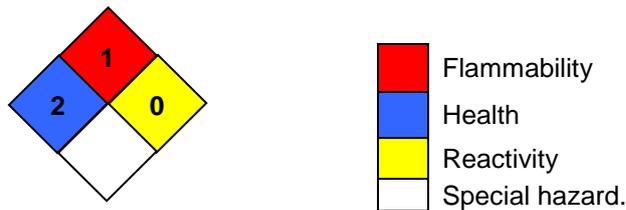
TRICHLOROETHYLENE Listed

**Inventory Status:**

Australia AICS:	On or in compliance with the inventory
Canada DSL Inventory List:	On or in compliance with the inventory
EINECS, ELINCS or NLP:	On or in compliance with the inventory
Japan (ENCS) List:	On or in compliance with the inventory
China Inv. Existing Chemical Substances:	Not in compliance with the inventory.
Korea Existing Chemicals Inv. (KECI):	On or in compliance with the inventory
Canada NDSL Inventory:	Not in compliance with the inventory.
Philippines PICCS:	On or in compliance with the inventory
US TSCA Inventory:	On or in compliance with the inventory
New Zealand Inventory of Chemicals:	On or in compliance with the inventory
Japan ISHL Listing:	On or in compliance with the inventory
Japan Pharmacopoeia Listing:	Not in compliance with the inventory.

**16. Other information, including date of preparation or last revision**

**NFPA Hazard ID**



Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe

<b>Issue Date:</b>	01-08-2015
<b>Revision Date:</b>	No data available.
<b>Version #:</b>	1.1
<b>Further Information:</b>	No data available.

**Disclaimer:**

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