

SAFETY DATA SHEET

1. Identification

Product identifier: Tetrachloroethylene

Other means of identification

Product No.: 1933, 9360, 9453, 9465, RMB9469

Recommended use and restriction on use

Recommended use: For Laboratory, Research or Manufacturing Use.

Restrictions on use: Not determined.

Details of the supplier of the safety data sheet

	Avantor Performance Materials, LLC 100 Matsonford Rd, Suite 200 Radnor, PA 19087
Telephone:	Customer Service: 855-282-6867
Fax:	
Contact Person:	Product Information Compliance
E-mail:	info@avantormaterials.com

Emergency telephone number:

CHEMTREC: 1-800-424-9300 within US and Canada (24 hrs/day, 7 days/week)

2. Hazard identification

Hazard Classification

Health Hazards

Carcinogenicity	Category 2
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Unknown toxicity - Health

Acute toxicity, dermal	100 %
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Environmental Hazards

Acute hazards to the aquatic environment	Category 2
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Chronic hazards to the aquatic environment	Category 2
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Unknown toxicity - Environment

Acute hazards to the aquatic environment	0 %
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Chronic hazards to the aquatic environment	100 %
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Label Elements

Hazard Symbol:



Signal Word: Warning

Hazard Statement: Suspected of causing cancer.
Toxic to aquatic life with long lasting effects.

Precautionary Statements

Prevention: 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 release to the environment.

Response: IF exposed or concerned: Get medical advice/attention. Collect spillage.

Storage: Store locked up.

Disposal: 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.

Other hazards which do not result in GHS classification: None.

3. Composition/information on ingredients

Substances

Chemical name	Common name and synonyms	CAS number	Content in percent (%)*
Tetrachloroethylene		127-18-4	98,0 - 100,0%

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

4. First-aid measures

General information: Get medical advice/attention if you feel unwell. Show this safety data sheet to the doctor in attendance.

Ingestion: Rinse mouth thoroughly. Call a physician or poison control center immediately.

Inhalation: Move to fresh air. Get medical attention if symptoms occur.

Skin Contact: Wash skin thoroughly with soap and water. Get medical attention if irritation persists after washing. Wash contaminated clothing before reuse.

Eye contact: Flush thoroughly with water. If irritation occurs, get medical assistance.

Most important symptoms/effects, acute and delayed

Symptoms: Irritating to eyes, respiratory system and skin.

Hazards: None known.

Indication of immediate medical attention and special treatment needed

Treatment: Treat symptomatically. Symptoms may be delayed.

5. Fire-fighting measures

General Fire Hazards: Fire may produce irritating, corrosive and/or toxic gases.

Suitable (and unsuitable) extinguishing media

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

Unsuitable extinguishing media: None known.

Specific hazards arising from the chemical: During fire, gases hazardous to health may be formed.

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. Ventilate closed spaces before entering them. Use personal protective equipment. See Section 8 of the SDS for Personal Protective Equipment. 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.

Notification Procedures: 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: Prevent further leakage or spillage if safe to do so. Avoid release to the environment.

7. Handling and storage

Precautions for safe handling: Use personal protective equipment as required. Do not handle until all safety precautions have been read and understood. Obtain special instructions before use. Do not get in eyes, on skin, on clothing. Do not eat, drink or smoke when using the product. Wash hands thoroughly after handling.

Conditions for safe storage, including any incompatibilities:

Keep container tightly closed. Store in a cool, dry place with adequate ventilation. Keep away from incompatible materials, open flames, and high temperatures. Should be stored separately from oxidizers, bases, and food chemical substances

8. Exposure controls/personal protection
Control Parameters
Occupational Exposure Limits

Chemical Identity	Type	Exposure Limit Values	Source
Tetrachloroethylene	STEL	100 ppm 678 mg/m ³	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	25 ppm 170 mg/m ³	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
Tetrachloroethylene	TWA	25 ppm	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	STEL	100 ppm	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Tetrachloroethylene	TWA	25 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	STEL	100 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
Tetrachloroethylene	TWA	25 ppm	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	STEL	100 ppm	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Tetrachloroethylene	8 HR ACL	25 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	100 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Tetrachloroethylene	TWA	25 ppm 170 mg/m ³	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (09 2017)
	STEL	100 ppm 685 mg/m ³	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (09 2017)
Tetrachloroethylene	TWA	25 ppm	US. ACGIH Threshold Limit Values (2011)
	STEL	100 ppm	US. ACGIH Threshold Limit Values (2011)

Biological Limit Values

Chemical Identity	Exposure Limit Values	Source
Tetrachloroethylene (tetrachloroethylene: Sampling time: Prior to shift.)	0,5 mg/l (Blood)	ACGIH BEI (03 2013)
	(End-exhaled air)	ACGIH BEI (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.

Eye/face protection:	Wear safety glasses with side shields (or goggles) and a face shield.
Skin Protection	
Hand Protection:	Chemical resistant gloves
Other:	Wear suitable protective clothing.
Respiratory Protection:	In case of inadequate ventilation use suitable respirator.
Hygiene measures:	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing to remove contaminants. Discard contaminated footwear that cannot be cleaned. Provide eyewash station and safety shower. Do not handle until all safety precautions have been read and understood. Obtain special instructions before use.

9. Physical and chemical properties

Appearance

Physical state:	Liquid
Form:	Liquid
Color:	Colorless
Odor:	Ether-like odor
Odor threshold:	No data available.
pH:	Not applicable
Melting point/freezing point:	-22 - -19 °C
Initial boiling point and boiling range:	121 - 121,4 °C
Flash Point:	Not applicable
Evaporation rate:	No data available.
Flammability (solid, gas):	No data available.
Upper/lower limit on flammability or explosive limits	
Flammability limit - upper (%):	No data available.
Flammability limit - lower (%):	No data available.
Explosive limit - upper (%):	No data available.
Explosive limit - lower (%):	No data available.
Vapor pressure:	1,9 kPa (20 °C) 2,47 - 2,5 kPa (25 °C) 58,5 kPa (100 °C)
Vapor density:	5,7 (Air=1)
Density:	1,62 g/ml (20 °C)
Relative density:	1,62 (20 °C)
Solubility(ies)	
Solubility in water:	0,15 g/l (25 °C)
Solubility (other):	chloroform: Miscible ether: Miscible hexane: Miscible alcohol: Miscible
Partition coefficient (n-octanol/water):	3,40
Auto-ignition temperature:	No data available.
Decomposition temperature:	No data available.
Viscosity:	No data available.
Other information	
Molecular weight:	165,83 g/mol (C ₂ Cl ₄)

10. Stability and reactivity

Reactivity:	No dangerous reaction known under conditions of normal use.
Chemical Stability:	Material is stable under normal conditions.
Possibility of hazardous reactions:	Hazardous polymerization does not occur.
Conditions to avoid:	Heat. Light. Moisture. Contact with incompatible materials.
Incompatible Materials:	Strong oxidizing agents. Strong acids. Strong alkalis.
Hazardous Decomposition Products:	Thermal decomposition may release oxides of carbon. Hydrogen chloride. Phosgene.

11. Toxicological information

Information on likely routes of exposure

Inhalation:	None known or expected under normal use.
Skin Contact:	Prolonged skin contact may cause temporary irritation.
Eye contact:	May cause temporary eye irritation.
Ingestion:	None known or expected under normal use.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral	
Product:	LD 50 (Rat): 3.005 - 3.835 mg/kg
Dermal	
Product:	No data available.
Inhalation	
Product:	LC 50 (Rat): 5000 ppm

Repeated dose toxicity

Product:	No data available.
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Skin Corrosion/Irritation

Product:	Prolonged skin contact may cause temporary irritation.
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Serious Eye Damage/Eye Irritation

Product:	May cause temporary eye irritation.
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Respiratory or Skin Sensitization

Product:	Not a skin nor a respiratory sensitizer.
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Carcinogenicity

Product:	May cause cancer.
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IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

Tetrachloroethylene Overall evaluation: 2A. Probably carcinogenic to humans.

US. National Toxicology Program (NTP) Report on Carcinogens:

Tetrachloroethylene Hazard Designation: Reasonably Anticipated to be a Human Carcinogen.

ACGIH Carcinogen List:

No carcinogenic components identified

Germ Cell Mutagenicity

In vitro

Product: No mutagenic components identified

In vivo

Product: No mutagenic components identified

Reproductive toxicity

Product: No data available.

Specific Target Organ Toxicity - Single Exposure

Product: None known.

Specific Target Organ Toxicity - Repeated Exposure

Product: None known.

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):

Tetrachloroethylene
 LC 50 (Bluegill Sunfish, 96 h): 11 - 15 mg/l
 LC 50 (Inland silverside (Menidia beryllina), 96 h): 27,3 - 28,9 mg/l
 EC 50 (Rainbow Trout, 96 h): 4,68 - 5 mg/l
 LC 50 (Fathead Minnow, 96 h): 13,4 - 23,8 mg/l
 LC 50 (Flagfish (Jordanella floridae), 96 h): 8,4 mg/l

Aquatic Invertebrates

Product: No data available.

Specified substance(s):

Tetrachloroethylene
 EC 50 (Water flea (Daphnia magna), 48 h): 6,1 - 22 mg/l
 LC 50 (Water flea (Daphnia magna), 48 h): 7,7 - 18 mg/l

EC 50 (Paratanytarsus dissimilis, 48 h): 28,7 - 33 mg/l
EC 50 (Elminius modestus, 48 h): 3,5 mg/l

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: Not readily degradable.

BOD/COD Ratio

Product: No data available.

Bioaccumulative potential

Bioconcentration Factor (BCF)

Product: The product is not bioaccumulating.

Partition Coefficient n-octanol / water (log Kow)

Product: Log Kow: 3,40

Mobility in soil: No data available.

Other adverse effects: Toxic 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

TDG

UN Number:	UN 1897
UN Proper Shipping Name:	TETRACHLOROETHYLENE
Transport Hazard Class(es)	
Class:	6.1
Label(s):	6.1
Packing Group:	III
Marine Pollutant:	Yes

Special precautions for user: Not determined.

IMDG

UN Number: UN 1897
 UN Proper Shipping Name: TETRACHLOROETHYLENE
 Transport Hazard Class(es)
 Class: 6.1
 Label(s): 6.1
 EmS No.: F-A, S-A
 Packing Group: III
 Marine Pollutant: Yes
 Special precautions for user: Marine pollutants packaged in single or combination packagings containing a net quantity per single or inner packaging of 5 L or less for liquids are not subject to any other provisions of the IMDG Code relevant to marine pollutants provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8. In case of marine pollutants also meeting criteria for inclusion in another hazard class, all provisions of this Code relevant to any additional hazards continue to apply.

IATA

UN Number: UN 1897
 UN Proper Shipping Name: Tetrachloroethylene
 Transport Hazard Class(es):
 Class: 6.1
 Label(s): 6.1
 Packing Group: III
 Marine Pollutant: Yes
 Special precautions for user: Marine pollutants when transported in single or combination packagings containing a net quantity per single or inner packaging of 5 L or less for liquids are not subject to any other provisions of the IATA regulations relevant to marine pollutants provided the packagings meet the general provisions of 5.0.2.4.1, 5.0.2.6.1.1 and 5.0.2.8.
 Cargo aircraft only: Allowed.

Transport in bulk according to Annex II of MARPOL and the IBC Code: Not applicable

15. Regulatory information

Canada Federal Regulations

List of Toxic Substances (CEPA, Schedule 1)

Not Regulated

Chemical Identity

Tetrachloroethylene

Export Control List (CEPA 1999, Schedule 3)

Not Regulated

Not Regulated

National Pollutant Release Inventory (NPRI)

Canada. National Pollutant Release Inventory (NPRI) (Schedule 1, Parts 1-4)

Not Regulated

Canada. National Pollutant Release Inventory (NPRI) Substances, Part 5, VOCs with Additional Reporting Requirements

NPRI PT5 Not Regulated

Canada. National Pollutant Release Inventory (NPRI) (Schedule 1, Parts 1-4)

NPRI Tetrachloroethylene

Greenhouse Gases

Not Regulated
Not Regulated

Controlled Drugs and Substances Act

	Not Regulated
CA CDSI	Not Regulated
CA CDSII	Not Regulated
CA CDSIII	Not Regulated
CA CDSIV	Not Regulated
CA CDSV	Not Regulated
CA CDSVII	Not Regulated
CA CDSVIII	Not Regulated

Precursor Control Regulations

Not Regulated
Not Regulated

International regulations

Montreal protocol

Not applicable

Stockholm convention

Not applicable

Rotterdam convention

Not applicable

Kyoto protocol

Not applicable

Inventory Status:

Australia AICS:	On or in compliance with the inventory
Canada DSL Inventory List:	On or in compliance with the inventory
China Inv. Existing Chemical Substances:	On or in compliance with the inventory
Japan (ENCS) List:	On or in compliance with the inventory
Japan ISHL Listing:	On or in compliance with the inventory
Korea Existing Chemicals Inv. (KECI):	On or in compliance with the inventory
Mexico INSQ:	On or in compliance with the inventory
New Zealand Inventory of Chemicals:	On or in compliance with the inventory
Philippines PICCS:	On or in compliance with the inventory
Taiwan Chemical Substance Inventory:	On or in compliance with the inventory
US TSCA Inventory:	On or in compliance with the inventory
EINECS, ELINCS or NLP:	On or in compliance with the inventory

16. Other information

Revision Date: 11.05.2021

Version #: 1.3

Source of information:	Sources of information used in preparing this SDS included one or more of the following: results from in house or supplier toxicology studies, information from the Toxicology Data Network (TOXNET), European Chemical Agency (ECHA) substance dossiers, IARC Monographs, US National Toxicology Program data, the Agency for Toxic Substances and Disease Registry, other manufacturer's SDSs and other sources, as appropriate.
Further Information:	No data available.
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