

MATERIAL SAFETY DATA SHEET

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Version 1.4

Section 1 - Product and Company Information

Product Name 1,1,2,2-TETRACHLOROETHANE, 98%
Product Number 185434
Brand ALDRICH

Company Sigma-Aldrich
Street Address 3050 Spruce Street
City, State, Zip, Country SAINT LOUIS MO 63103 US
Technical Phone: 314 771 5765
Emergency Phone: 414 273 3850 Ext. 5996
Fax: 800 325 5052

Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313
1,1,2,2-TETRACHLOROETHANE	79-34-5	Yes

Formula C2H2Cl4
Synonyms Acetylene tetrachloride * Bonoform * Cellon *
1,1,2,2-Czterochloroetan (Polish) *
1,1-Dichloro-2,2-dichloroethane * NCI-C03554 *
RCRA waste number U209 * TCE *
1,1,2,2-Tetrachloorethaan (Dutch) *
1,1,2,2-Tetrachloraethan (German) *
Tetrachlorethane * 1,1,2,2-Tetrachloroethane *
1,1,2,2-Tetrachlorethane (French) *
Tetrachloroethane * s-Tetrachloroethane *
sym-Tetrachloroethane * 1,1,2,2-Tetrachloroethane
(ACGIH:OSHA) * 1,1,2,2-Tetracloroetano (Italian)
* Tetrachlorure d'acetylene (French) * Westron

RTECS Number: KI8575000

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Highly Toxic (USA) Very Toxic (EU).

Very toxic by inhalation and in contact with skin Harmful if swallowed. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Possible Carcinogen (US). Readily absorbed through skin. Target organ(s): Nerves. Liver. Blood.

HMIS RATING

HEALTH: 3*

FLAMMABILITY: 0

REACTIVITY: 0

NFPA RATING

HEALTH: 3

FLAMMABILITY: 0

REACTIVITY: 0

*additional chronic hazards present.

For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

ORAL EXPOSURE

If swallowed, wash out mouth with water provided person is conscious. Call a physician immediately.

INHALATION EXPOSURE

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

DERMAL EXPOSURE

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

EYE EXPOSURE

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Section 5 - Fire Fighting Measures

FLASH POINT

N/A

AUTOIGNITION TEMP

N/A

FLAMMABILITY

N/A

EXTINGUISHING MEDIA

Suitable: Carbon dioxide, dry chemical powder, or appropriate foam.

FIREFIGHTING

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
Specific Hazard(s): Emits toxic fumes under fire conditions.

Section 6 - Accidental Release Measures

PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area.

PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

METHODS FOR CLEANING UP

Absorb on sand or vermiculite and place in closed containers for disposal. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

HANDLING

User Exposure: Do not breathe vapor. Avoid prolonged or repeated

exposure. Do not get in eyes, on skin, on clothing.

STORAGE

Suitable: Keep tightly closed.

Section 8 - Exposure Controls / PPE

ENGINEERING CONTROLS

Use only in a chemical fume hood. Safety shower and eye bath.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory: Government approved respirator.

Hand: Compatible chemical-resistant gloves.

Eye: Chemical safety goggles.

GENERAL HYGIENE MEASURES

Wash contaminated clothing before reuse. Wash thoroughly after handling.

EXPOSURE LIMITS, RTECS

Country	Source	Type	Value
USA	ACGIH	TWA	1 PPM
Remarks: Skin			
USA	MSHA Standard-air	TWA	5 PPM (35 MG/M3) (SKIN)
USA	OSHA.	PEL	8H TWA 5 PPM (35 MG/M3) (SKIN)
New Zealand OEL			
Remarks: check ACGIH TLV			
USA	NIOSH	TWA	1 PPM

EXPOSURE LIMITS

Country	Source	Type	Value
Poland		NDS	5 MG/M3
Poland		NDSch	35 MG/M3
Poland		NDSP	-

Section 9 - Physical/Chemical Properties

Appearance Color: Colorless
 Form: Clear liquid

Property	Value	At Temperature or Pressure
Molecular Weight	167.85 AMU	
pH	N/A	
BP/BP Range	144 - 146 °C	
MP/MP Range	-43 °C	
Freezing Point	N/A	
Vapor Pressure	8 mmHg	20 °C
Vapor Density	5.8 g/l	
Saturated Vapor Conc.	N/A	
SG/Density	1.597 g/cm3	
Bulk Density	N/A	
Odor Threshold	N/A	
Volatile%	N/A	
VOC Content	N/A	
Water Content	N/A	
Solvent Content	N/A	
Evaporation Rate	N/A	
Viscosity	N/A	
Surface Tension	N/A	
Partition Coefficient	N/A	
Decomposition Temp.	N/A	

Flash Point	N/A
Explosion Limits	N/A
Flammability	N/A
Autoignition Temp	N/A
Refractive Index	1.494
Optical Rotation	N/A
Miscellaneous Data	N/A
Solubility	N/A

N/A = not available

Section 10 - Stability and Reactivity

STABILITY

Stable: Stable.

Materials to Avoid: Strong oxidizing agents, Sodium, Strong bases, Potassium Reacts violently with nitrates and 2,4-dinitrophenyl disulfide.

HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide, Hydrogen chloride gas.

HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

Section 11 - Toxicological Information

ROUTE OF EXPOSURE

Skin Contact: May cause skin irritation.

Skin Absorption: May be fatal if absorbed through skin. Readily absorbed through skin.

Eye Contact: May cause eye irritation.

Inhalation: May be fatal if inhaled. Material may be irritating to mucous membranes and upper respiratory tract.

Ingestion: Harmful if swallowed.

TARGET ORGAN(S) OR SYSTEM(S)

Nerves. Liver. Blood.

SIGNS AND SYMPTOMS OF EXPOSURE

Exposure can cause: Headache. Nausea. Vomiting. Tremors. Incoordination. Fatigue. Dizziness. Anorexia.

TOXICITY DATA

Oral

Rat

200 mg/kg

LD50

Inhalation

Mouse

4,500 mg/m³

LC50

Intraperitoneal

Mouse

821 MG/KG

LD50

Subcutaneous

Mouse
1108 MG/KG
LD50
Remarks: Behavioral:Sleep. Behavioral:Ataxia.

CHRONIC EXPOSURE - CARCINOGEN

Result: This product is or contains a component that has been reported to be possibly carcinogenic based on its IARC, ACGIH, NTP, or EPA classification.

Species: Rat
Route of Application: Oral
Dose: 42 GM/KG
Exposure Time: 78W
Frequency: I
Result: Tumorigenic:Equivocal tumorigenic agent by RTECS criteria. Liver:Tumors.

Species: Mouse
Route of Application: Oral
Dose: 55 GM/KG
Exposure Time: 78W
Frequency: I
Result: Tumorigenic:Carcinogenic by RTECS criteria. Liver:Tumors.

Species: Mouse
Route of Application: Oral
Dose: 110 GM/KG
Exposure Time: 78W
Frequency: I
Result: Tumorigenic:Carcinogenic by RTECS criteria. Liver:Tumors.

IARC CARCINOGEN LIST

Rating: Group 3

NTP CARCINOGEN LIST

Rating: Clear evidence.
Species: Mouse
Route: Gavage

ACGIH CARCINOGEN LIST

Rating: A4

IRIS/EPA CARCINOGEN LIST

Rating: Group C

CHRONIC EXPOSURE - MUTAGEN

Species: Human
Dose: 6 MMOL/L
Cell Type: HeLa cell
Mutation test: DNA inhibition

Species: Mouse
Route: Oral
Dose: 200 MG/KG
Mutation test: Other mutation test systems

Species: Hamster
Dose: 56 MG/L

Cell Type: ovary
Mutation test: Sister chromatid exchange

Section 12 - Ecological Information

ACUTE ECOTOXICITY TESTS

Test Type: LC50 Fish
Species: Pimephales promelas (Fathead minnow)
Time: 96 h
Value: 20 mg/l

Section 13 - Disposal Considerations

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT

Proper Shipping Name: Tetrachloroethane
UN#: 1702
Class: 6.1
Packing Group: Packing Group II
Hazard Label: Toxic substances.
PIH: Not PIH

IATA

Proper Shipping Name: 1,1,2,2-Tetrachloroethane
IATA UN Number: 1702
Hazard Class: 6.1
Packing Group: II

Section 15 - Regulatory Information

EU DIRECTIVES CLASSIFICATION

Symbol of Danger: T+ N
Indication of Danger: Very toxic. Dangerous for the environment.
R: 26/27 51/53
Risk Statements: Very toxic by inhalation and in contact with skin Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
S: 38 45 61
Safety Statements: In case of insufficient ventilation, wear suitable respiratory equipment. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Avoid release to the environment. Refer to special instructions/safety data sheets.

US CLASSIFICATION AND LABEL TEXT

Indication of Danger: Highly Toxic (USA) Very Toxic (EU).
Risk Statements: Very toxic by inhalation and in contact with skin Harmful if swallowed. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Safety Statements: In case of insufficient ventilation, wear suitable respiratory equipment. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Avoid release to the environment. Refer to

special instructions/safety data sheets.
US Statements: Possible Carcinogen (US). Readily absorbed
through skin. Target organ(s): Nerves. Liver. Blood.

UNITED STATES REGULATORY INFORMATION

SARA LISTED: Yes

DEMINIMIS: 0.1 %

NOTES: This product is subject to SARA section 313 reporting
requirements.

TSCA INVENTORY ITEM: Yes

UNITED STATES - STATE REGULATORY INFORMATION

CALIFORNIA PROP - 65

California Prop - 65: This product is or contains chemical(s)
known to the state of California to cause cancer.

CANADA REGULATORY INFORMATION

WHMIS Classification: This product has been classified in
accordance with the hazard criteria of the CPR, and the MSDS
contains all the information required by the CPR.

DSL: Yes

NDSL: No

Section 16 - Other Information

DISCLAIMER

For R&D use only. Not for drug, household or other uses.

WARRANTY

The above information is believed to be correct but does not
purport to be all inclusive and shall be used only as a guide. The
information in this document is based on the present state of our
knowledge and is applicable to the product with regard to
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