

CARBON TETRACHLORIDE

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1. Product Identification

Synonyms: Tetrachloromethane, carbon tet, carbona, carbon chloride

CAS No.: 56-23-5

Molecular Weight: 153.84

Chemical Formula: CCl₄

Product Codes: CHEM-515

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Carbon Tetrachloride	56-23-5	99 - 100%	Yes

3. Hazards Identification

Emergency Overview

This material is a probable carcinogen. Risk of cancer depends upon level and duration of exposure. Its use must be carefully assessed before work begins in the laboratory. Inhalation and ingestion are harmful, and may be fatal. Irritant. Skin contact may lead to dermatitis. Long-term exposure may lead to kidney or liver damage, CNS disturbance, cancer and damage to eyes, skin and lungs.

SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 3 - Severe (Cancer Causing)

Flammability Rating: 0 - None

Reactivity Rating: 1 - Slight

Contact Rating: 3 - Severe (Life)

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES

Storage Color Code: Blue (Health)

Potential Health Effects

Inhalation:

Inhalation has a narcotic effect. Symptoms include headache, dizziness, nausea and dullness. Following exposures of high concentrations, victim may become unconscious, and if exposure is not terminated, death can result from respiratory failure.

Ingestion:

Abdominal pain, vomiting, diarrhea, visual disturbances, dizziness and unconsciousness can occur. Severe gastrointestinal upset progressing to serious kidney and liver damage can occur. Death can occur immediately or be delayed for as much as a week.

Skin Contact:

Can be absorbed through the skin, with symptoms paralleling ingestion exposure. A dermatitis may be produced following long or repeated contact. Skin oils are removed upon contact, and the skin can become red, cracked, and dry.

Eye Contact:

Severe irritant as vapor or liquid. Symptoms of burning and intense irritation occur.

Chronic Exposure:

Affects nervous system. Delayed effects from exposure include damage to the heart, liver and kidneys. Repeated or prolonged exposures may cause skin irritation, optic nerve damage with possible blindness, and hearing loss. Symptoms of darkened urine and liver cirrhosis have been reported.

Aggravation of Preexisting Conditions:

Persons with preexisting skin disorders or eye problems, or impaired liver, kidney or respiratory function may be more susceptible to the effects of the substance.

4. First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Ingestion:

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin Contact:

Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention immediately.

Note to Physician:

To minimize hepatorenal damage, consider intravenous acetylcysteine. Hyperbaric oxygen is also utilized for significant exposures. Dialysis has also been suggested in severe cases. Give cardiorespiratory support as indicated and carefully monitor fluid and electrolytes. Closely monitor hepatic and renal functions. Avoid epinephrine because of myocardial sensitization and potential for inducing ventricular arrhythmias.

5. Fire Fighting Measures

Fire:

Not considered to be a fire hazard.

Under fire conditions produces hydrochloric acid and phosgene.

Explosion:

Not considered to be an explosion hazard.

Fire Extinguishing Media:

Use any means suitable for extinguishing surrounding fire. Water spray may be used to keep fire exposed containers cool.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

7. Handling and Storage

Keep in a tightly closed container. Protect from physical damage. Store in a cool, dry, ventilated area away from sources of heat, moisture and incompatibilities. Containers of this material may be hazardous when empty since they retain product residues (vapor, liquid); observe all warnings and precautions listed for the product. Wear special protective equipment (See Section 8) when needed. Wash hands before eating.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

- OSHA Permissible Exposure Limit (PEL): 10 ppm (TWA); ceiling = 25 ppm, maximum 200 ppm (5-minute maximum peak in any 4 hours); ACGIH Threshold Limit Value (TLV): 5 ppm (TWA); 10 ppm (STEL), skin; A2 suspected human carcinogen - NIOSH Recommended Exposure Limits (RELs): 2 ppm, 60-minute (STEL).

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded wear a supplied air, full-facepiece respirator, airlined hood, or full-facepiece self-contained breathing apparatus.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:

Use chemical safety goggles and/or full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

Clear, colorless liquid.

Odor:

Ether odor.

Solubility:

Negligible in water.

Specific Gravity:

1.59 @ 20°C (68°F)

pH:

No information found.

% Volatiles by volume @ 21C (70F):

100

Boiling Point:

76.8°C (171°F)

Melting Point:

-23°C (-9°F)

Vapor Density (Air=1):

5.3

Vapor Pressure (mm Hg):

91 @ 20°C (68°F)

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

May produce carbon monoxide, carbon dioxide, hydrogen chloride and phosgene when heated to decomposition.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Reacts violently with fluorine gas, alkali metals, and aluminum. Incompatible with chemically active metals such as sodium, potassium and magnesium. Will attack some forms of plastics, rubber and coatings.

Conditions to Avoid:

Heat, flames, ignition sources and incompatibles.

11. Toxicological Information

Dermal, guinea pig: LD50 = >9400 uL/kg; Draize test, rabbit, eye: 2200 ug/30S Mild; Draize test, rabbit, eye: 500 mg/24H Mild; Draize test, rabbit, skin: 4 mg Mild; Draize test, rabbit, skin: 500 mg/24H Mild; Inhalation, mouse: LC50 = 9526 ppm/8H; Inhalation, mouse: LC50 = 34500 mg/m³/2H; Inhalation, rat: LC50 = 8000 ppm/4H; Inhalation, rat: LC50 = 46000 mg/m³/6H; Oral, mouse: LD50 = 7749 mg/kg; Oral, rabbit: LD50 = 5760 mg/kg; Oral, rat: LD50 = 2350 mg/kg; Skin, rabbit: LD50 = >20 Carbon tetrachloride is harmful to the liver and a CNS depressant following short-term inhalation, skin contact or ingestion. The liver effects have been observed at concentrations lower than those required to produce CNS effects. Two reviews indicate that ingestion of 14-20 ml or 50-150 ml could be fatal. Although, 1.5 ml (34 mg/kg) has caused death in a few cases.

----- \Cancer Lists\ -----

-----NTP Carcinogen-----

Ingredient	Known	Anticipated	IARC Category
Carbon Tetrachloride (56-23-5)	No	No	2B

12. Ecological Information

Ecotoxicity:

Fish: Fathead Minnow: LC50 = 20.8-41.4 mg/L; 96 Hr.; Flow-through; 21.7 degrees C Fish:

Bluegill/Sunfish: LC50 = 27-125 mg/L; 96 Hr.; Static Conditions; 23 degrees C Bacteria:

Phytobacterium phosphoreum: EC50 = 6.0 mg/L; Not available; Microtox test Bacteria:

Phytobacterium phosphoreum: EC50 = 33.0 mg/L; 30 minutes; Microtox test No data available.

Environmental:

Terrestrial: Evaporates rapidly and migrates into groundwater. Aquatic: Rapidly evaporates, biodegradation an important fate process.

Physical:

Atmospheric: Very stable in troposphere with a residence time of 30-50 years.

Other:

Carbon tetrachloride has a low potential to bioconcentrate. Log of the bioconcentration factor in trout is 1.24, in bluegill sunfish - 1.48. Bioconcentration factor predicted from water solubility = 14.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

----- \Chemical Inventory Status - Part 1\ -----

Ingredient	TSCA	EC	Japan	Australia
Carbon Tetrachloride (56-23-5)	Yes	NE*	Yes	Yes

----- \Chemical Inventory Status - Part 2\ -----

----- Canada -----

Ingredient	Korea	DSL	NDSL	Phil.
Carbon Tetrachloride (56-23-5)	Yes	Yes	No	Yes

----- \Federal, State & International Regulations - Part 1\ -----

----- -SARA 302- ----- -SARA 313-----

Ingredient	RQ	TPQ	List	Chemical Catg.
Carbon Tetrachloride (56-23-5)	No	No	No	No

----- \Federal, State & International Regulations - Part 2\ -----

----- -RCRA- -TSCA-

Ingredient	CERCLA	261.33	8(d)
Carbon Tetrachloride (56-23-5)	1C	C2111	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No
Reactivity: No (Pure / Liquid)

California Prop 65

The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act:

WARNING: This product contains Carbon tetrachloride, a chemical known to the state of California to cause cancer.

California No Significant Risk Level: CAS# 56-23-5: 5 æg/day NSRL

Australian Hazchem Code: 2Z.

Poison Schedule: S7.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 3 Flammability: 0 Reactivity: 0

Label Hazard Warning:

DANGER! MAY BE FATAL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. SUSPECT CANCER HAZARD. MAY CAUSE CANCER. RISK OF CANCER DEPENDS ON LEVEL AND DURATION OF EXPOSURE. AFFECTS CENTRAL NERVOUS SYSTEM. LUNGS AND KIDNEYS.

Label Precautions:

Do not breathe vapor or mist. Do not get in eyes, on skin or on clothing. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.

Label First Aid:

If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Get medical attention immediately.

Product Use:

Laboratory Reagent and Consumer Hobby

Revision Information:

No Changes.

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