

CARBON TETRA CHLORIDE

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SECTION 1: IDENTIFICATION

1.1 GHS Product identifier:

CARBON TETRACHLORIDE
Tetrachloromethane; Perchloromethane
CAS: 56-23-5

Other means of identification:

Not relevant

1.2 Recommended use of the chemical and restrictions on use:

Relevant uses: Industrial solvent, chemical intermediate/feedstock for fluorocarbon manufacture, laboratory reagent. For industrial user only. Note: use as a general solvent/cleaning agent is restricted or prohibited in many jurisdictions (ozone-depleting substance under the Montreal Protocol) – confirm permitted end-use before purchase.
Uses advised against: All uses not specified in this section or in section 7.3.

1.3 Supplier's details:

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1.4 Emergency phone number:

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SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture:

GHS:
Classification of this product has been carried out in accordance with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Carc. 2	Carcinogenicity, Category 2, H351
Acute Tox. 3	Acute oral toxicity, Category 3, H301
Acute Tox. 3	Acute dermal toxicity, Category 3, H311
Acute Tox. 3	Acute inhalation toxicity, Category 3, H331
STOT RE 1	Specific target organ toxicity, repeated exposure, Category 1, H372 (liver, kidneys)
Eye Irrit. 2	Eye irritation, Category 2, H319
Aquatic Chronic 2	Hazardous to the aquatic environment, chronic hazard, Category 2, H411

2.2 GHS label elements, including precautionary statements:

GHS: Danger

Hazard statements:

H351 – Suspected of causing cancer.
H301 – Toxic if swallowed.
H311 – Toxic in contact with skin.
H331 – Toxic if inhaled.
H372 – Causes damage to organs (liver, kidneys, central nervous system) through prolonged or repeated exposure.
H319 – Causes serious eye irritation.
H411 – Toxic to aquatic life with long lasting effects.

Precautionary statements:

P201: Obtain special instructions before use.
P260: Do not breathe vapours/mist.
P264: Wash exposed skin thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P271: Use only outdoors or in a well-ventilated area.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P301+P310: IF SWALLOWED: Immediately call a POISON CENTER/doctor.
P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P308+P313: IF exposed or concerned: Get medical advice/attention.
P403+P233: Store in a well-ventilated place. Keep container tightly closed.
P405: Store locked up.
P501: Dispose of contents/container in accordance with hazardous-waste regulations.

2.3 Other hazards which do not result in classification:

Non-flammable under normal conditions; however, decomposes on contact with flame/hot surfaces to form toxic and corrosive fumes (hydrogen chloride, phosgene). Ozone-depleting substance controlled under the Montreal Protocol – restricted uses apply.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances:

Chemical description: Carbon Tetrachloride
In accordance with Annex 4.3.3 of the GHS, the product contains:

Identification	Chemical Name / Classification	Concentration
CAS: 56-23-5	Carbon Tetrachloride — Carc. 2: H351; Acute Tox. 3: H301, H311, H331; STOT RE 1: H372; Eye Irrit. 2: H319; Aquatic Chronic 2: H411 – Danger	≥99%

To obtain more information on the hazards of the substances, consult sections 11, 12 and 16.

3.2 Mixtures:

Non-applicable

SECTION 4: FIRST AID MEASURES

- 4.1 Description of necessary first-aid measures:**
Request medical assistance immediately, showing the SDS of this product.
- By inhalation:**
Remove the affected person from the area of exposure to fresh air immediately and keep at rest. Loosen tight clothing. If breathing is difficult, give oxygen. If breathing has stopped, administer artificial respiration. Obtain immediate medical attention.
- By skin contact:**
Remove contaminated clothing and footwear immediately and wash affected skin with plenty of soap and water. Seek medical attention if irritation persists.
- By eye contact:**
Rinse eyes thoroughly with lukewarm water for at least 15 minutes, holding eyelids open. Remove contact lenses if present and easy to do. Seek immediate medical attention.
- By ingestion/aspiration:**
Do not induce vomiting. If conscious, rinse mouth with water. Never give anything by mouth to an unconscious person. Obtain immediate medical attention – specific liver/kidney monitoring may be required.
- 4.2 Most important symptoms/effects, acute and delayed:**
Acute and delayed effects are indicated in sections 2 and 11.
- 4.3 Indication of immediate medical attention and special treatment needed, if necessary:**
Exposure may cause cardiac sensitisation to adrenaline (epinephrine) – medical personnel should avoid administering sympathomimetic drugs unless essential. Liver and kidney function should be monitored following significant exposure.

SECTION 5: FIRE-FIGHTING MEASURES

- 5.1 Suitable extinguishing media:**
Suitable: Dry chemical powder, carbon dioxide (CO2), foam, or water spray/fog for surrounding fire; product itself does not burn.
Unsuitable: Do not use a high-pressure water jet as this may spread the product.
- 5.2 Specific hazards arising from the chemical:**
Non-flammable. On exposure to fire or hot surfaces (>300°C) decomposes to form toxic and corrosive gases including hydrogen chloride, phosgene (carbonyl chloride) and chlorine. Containers may rupture on heating due to pressure build-up.
- 5.3 Special protective actions for fire-fighters:**
Evacuate all non-essential personnel. Intervention only by capable personnel who are trained and aware of the hazards of the product. In all cases wear self-contained breathing apparatus and full protective clothing.
- Additional provisions:**
If safe to do so, remove the exposed containers, or cool with large quantities of water spray from a safe/protected position. Approach from upwind. Contain fire-fighting water for later disposal; it must not enter drains or watercourses.

SECTION 6: ACCIDENTAL RELEASE MEASURES

- 6.1 Personal precautions, protective equipment and emergency procedures:**
For non-emergency personnel:
Eliminate all sources of ignition. Ensure adequate ventilation. Personal protection equipment must be used against potential contact with the spilt product (see section 8). Evacuate the area and keep out those who do not have protection.
- For emergency responders:**
Wear protective equipment as per section 8. Keep unprotected persons away.
- 6.2 Environmental precautions:**
Avoid at all cost any type of spillage into an aqueous medium, drains or soil. Contain the product absorbed appropriately in hermetically sealed containers. Notify the relevant authority in case of exposure to the general public or the environment.
- 6.3 Methods and materials for containment and cleaning up:**
Contain spillage with inert absorbent material (sand, earth, vermiculite). Collect into suitable closed, labelled containers for disposal. Ventilate the area. Do not allow to enter drains, watercourses or soil.
- 6.4 Reference to other sections:**
See sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

- 7.1 Precautions for safe handling:**
A. General precautions for safe use:
Handle only in well-ventilated areas with local exhaust ventilation. Avoid breathing vapours. Avoid skin and eye contact. Keep away from heat, sparks, open flames and hot surfaces – not because the product is flammable but to prevent thermal decomposition to toxic gases.
- B. Technical recommendations for the prevention of fires and explosions:**
Not flammable; however keep containers away from strong heat sources and open flame to avoid decomposition. Ensure adequate ventilation to prevent vapour accumulation.
- C. Technical recommendations on general occupational hygiene:**
Do not eat, drink or smoke during the process; wash hands and exposed skin afterwards with suitable cleaning products.
- D. Technical recommendations to prevent environmental risks:**
Provide banded/contained storage. Avoid atmospheric emissions and discharge to drains. Follow the protective measures given in the exposure controls/personal protection section.
- 7.2 Conditions for safe storage, including any incompatibilities:**
A. Specific storage requirements:
- | | |
|---------------|--|
| Minimum Temp. | 5°C |
| Maximum Temp. | 30°C |
| Maximum time | 24 Months (unopened, original container) |
- B. General conditions for storage:**
Store in a cool, dry, well-ventilated area away from heat, sunlight, oxidising agents and reactive metals (aluminium, magnesium, zinc powders). Keep containers tightly closed. Store away from foodstuffs.
- 7.3 Specific end use(s):**
Except for the instructions already specified, it is not necessary to provide any special recommendation regarding the uses of this product.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

- 8.1 Control parameters:**
Substances whose occupational exposure limits have to be assessed in the workplace, per the Factories Act, 1948 (Act No. 63 of 1948), as amended by the Factories (Amendment) Act, 1987 (Act 20 of 1987):
- | Identification | Occupational Exposure Limit Type | Value |
|--------------------------------------|--|------------------|
| Carbon Tetrachloride
CAS: 56-23-5 | Time Weighted average concentration (8 hrs) – ACGIH TLV (skin) | 5 ppm / 31 mg/m³ |
- 8.2 Appropriate engineering controls:**
It is recommended to use localized extraction/general ventilation in the work area as a collective protection measure to avoid exceeding occupational exposure limits, in addition to individual protective equipment (PPE) as needed. Consult the manufacturer's information leaflet for storage, use, cleaning and maintenance of PPE.

- B. Respiratory protection:**
Where ventilation is inadequate, use a full-face respirator fitted with an organic vapour (Type A/AX) cartridge; for high concentrations or unknown exposure levels use self-contained breathing apparatus (SCBA).
- C. Specific protection for the hands:**
Chemical-resistant gloves (e.g. Viton®); note standard nitrile/PVC gloves offer only limited protection against chlorinated solvents – consult glove permeation data before selection.
- D. Eye and face protection:**
Chemical safety goggles/panoramic glasses against splash/projections. Use if there is a risk of splashing.
- E. Bodily protection:**
Chemical-resistant apron/coveralls. Safety footwear. Remove and launder contaminated clothing before re-use.
- F. Additional emergency measures:**
Emergency shower (ANSI Z358-1, ISO 3864-1:2011, ISO 3864-4:2011) and eyewash stations (DIN 12 899, ISO 3864-1:2011, ISO 3864-4:2011) should be available.
- Environmental exposure controls:**
Avoid environmental spillage of both the product and its container. See subsection 7.1.D.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties:

Appearance	
Physical state at 20°C	Liquid
Appearance	Clear, colourless liquid
Color	Colourless
Odor	Sweetish, chloroform-like
Odour threshold	≈10 ppm (varies by individual)
Volatility	
Boiling point at atmospheric pressure	76.7°C
Vapour pressure at 20°C	12.2 kPa
Evaporation rate at 20°C	Faster than n-butyl acetate
Product Description	
Density / Relative density at 20°C	1.594 g/cm³
Dynamic viscosity at 20°C	0.97 mPa·s
Concentration	≥99% (technical grade)
pH	Not relevant *
Vapour density (air = 1)	5.3
Partition coefficient n-octanol/water (log Pow)	2.64
Solubility in water at 20°C	0.08 g/100 mL (slightly soluble)
Decomposition temperature	>300°C (thermal decomposition to HCl, phosgene)
Melting point/freezing point	-23°C
Flammability	
Flash Point	Non-applicable (does not flash)
Flammability (solid, gas)	Non-flammable liquid
Autoignition temperature	Not applicable (non-flammable)
Lower / Upper flammability limit	Not applicable
Particle Characteristics	
Median equivalent diameter	Non-applicable (liquid)

* Not relevant/not established due to the nature of the product or grade.

9.2 Other information:

Explosive properties	Not classified as explosive
Oxidising properties	Not classified as oxidising
Corrosive to metals	May attack aluminium and some light metals under certain conditions
Heat of combustion	Not relevant (non-combustible)
Surface tension at 20°C	26.8 mN/m
Refraction index	1.4607

SECTION 10: STABILITY AND REACTIVITY

- 10.1 Reactivity:**
Reacts with chemically active metals (aluminium, magnesium, zinc, sodium/potassium powders) – may react violently/pyrophorically with finely divided aluminium or magnesium. Decomposes slowly in the presence of water/moisture and light to give hydrochloric acid, which is corrosive to many metals.
- 10.2 Chemical stability:**
Chemically stable under the indicated conditions of storage, handling and use.
- 10.3 Possibility of hazardous reactions:**
Under the specified conditions, hazardous reactions that lead to excessive temperatures or pressure are not expected.
- 10.4 Conditions to avoid:**
- | Shock/Friction | Contact with Air | Increase in Temperature | Sunlight | Humidity |
|----------------|------------------|---|-----------------------------|---------------------------------------|
| Not applicable | Stable | Avoid contact with open flame/hot surfaces – decomposition risk | Avoid prolonged UV exposure | Avoid prolonged contact with moisture |
- 10.5 Incompatible materials:**
Strong oxidisers, reactive/finely divided metals (aluminium, magnesium, zinc, sodium, potassium), strong bases. Keep away from heat sources due to thermal decomposition hazard.
- 10.6 Hazardous decomposition products:**
Thermal decomposition (fire, hot surfaces >300°C) produces hydrogen chloride, phosgene (carbonyl chloride) and chlorine – all highly toxic/corrosive gases.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects:

In case of exposure that is repetitive, prolonged, or at concentrations higher than the recommended occupational exposure limits, adverse health effects may result depending on the means of exposure:

A. Ingestion (acute effect):

Toxic if swallowed (Acute Tox. 3, H301). May cause nausea, vomiting, abdominal pain, and is a known hepatotoxin/nephrotoxin – delayed liver and kidney damage can occur.

B. Inhalation (acute effect):

Toxic if inhaled (Acute Tox. 3, H331). Vapours cause CNS depression (headache, dizziness, drowsiness, narcosis), and can cause serious, potentially fatal, liver and kidney injury with a latency of 1–several days after exposure.

C. Contact with skin and eyes (acute effect):

Toxic in contact with skin (Acute Tox. 3, H311) – can be absorbed through intact skin in toxic amounts. Causes serious eye irritation (H319). Defatting of skin with repeated contact.

D. CMR effects (carcinogenicity, mutagenicity, reproductive toxicity):

Suspected of causing cancer (Carc. 2, H351) – IARC Group 2B (possibly carcinogenic to humans), based on animal liver tumour data. No conclusive evidence of mutagenicity. Not classified for reproductive toxicity based on available data.

E. Sensitizing effects:

Classification criteria for respiratory or skin sensitisation are not met based on available data.

F. Specific target organ toxicity (STOT) – single exposure:

Causes damage to organs (liver, kidneys, CNS) through single high exposure; classified STOT RE 1 primarily reflecting repeated-exposure organ damage (see below).

G. Specific target organ toxicity (STOT) – repeated exposure:

H372 – Causes damage to organs (liver and kidneys) through prolonged or repeated exposure, by inhalation and other routes.

H. Aspiration hazard:

Not classified for aspiration hazard based on available data; low viscosity liquid – avoid deliberate ingestion/aspiration.

Product-specific toxicological information:

Identification	Acute Toxicity	Genus
Carbon Tetrachloride CAS: 56-23-5	LD50 oral: 2350 mg/kg	Rat
	LD50 dermal: >5000 mg/kg	Rabbit
	LC50 inhalation (4h): 8000 ppm	Rat

SECTION 12: ECOLOGICAL INFORMATION

Toxic to aquatic life with long lasting effects.

12.1 Toxicity:

Identification	Acute Toxicity	Species	Genus
Carbon Tetrachloride CAS: 56-23-5	LC50: 35 mg/L (96h)	Pimephales promelas	Fish
	EC50: 35 mg/L (48h)	Daphnia magna	Crustacean

12.2 Persistence and degradability:

Not readily biodegradable. Persistent in the atmosphere (also an ozone-depleting substance and greenhouse gas, controlled under the Montreal Protocol).

12.3 Bioaccumulative potential:

Low-to-moderate potential for bioaccumulation (log Pow 2.64); BCF values reported in the low tens in aquatic organisms.

12.4 Mobility in soil:

Koc	Henry	Dry Soil	Moist Soil
~120 (moderate soil mobility)	High (volatilises readily from water/soil)	Volatilises	Volatilises

12.5 Results of PBT and vPvB assessment:

Not classified as PBT/vPvB under REACH criteria based on available data; is an ozone-depleting substance under separate Montreal Protocol controls.

12.6 Other adverse effects:

Not described

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Disposal methods:

Do not discharge to drains or watercourses. Recover/recycle where possible via licensed solvent recovery/incineration facility with flue-gas scrubbing for acid gases. Dispose of as hazardous waste through an authorised hazardous-waste contractor in accordance with local regulations.

Refer to national and local regulations on hazardous waste management (Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, as amended).

SECTION 14: TRANSPORT INFORMATION

Transport of dangerous goods by land (ADR 2023 / RID 2023, India: Motor Vehicles Act / CMVR):

14.1 UN number	UN1846
14.2 UN proper shipping name	CARBON TETRACHLORIDE
14.3 Transport hazard class(es)	6.1
14.4 Packing group	III
14.5 Environmental hazard	Yes
14.6 Special precautions for user	Physico-chemical properties: see section 9
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

Transport of dangerous goods by sea (IMDG 41-22):

14.1 UN number	UN1846
14.2 UN proper shipping name	CARBON TETRACHLORIDE
14.3 Transport hazard class(es)	6.1
14.4 Packing group	III
14.5 Marine pollutant	Yes
14.6 Special precautions for user	EmS Codes: F-E, S-D Segregation group: Not relevant
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

Transport of dangerous goods by air (IATA/ICAO 2024):

14.1 UN number	UN1846
14.2 UN proper shipping name	CARBON TETRACHLORIDE
14.3 Transport hazard class(es)	6.1
14.4 Packing group	III
14.5 Environmental hazard	Yes
14.6 Special precautions for user	Physico-chemical properties: see section 9
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations specific for the product in question:

It is recommended to use the information included in this safety data sheet as data used in a risk evaluation of local circumstances, in order to establish the necessary risk prevention measures for the manipulation, use, storage and disposal of this product.

Other legislation:

- Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989
- The Factories Act, 1948 (Act No. 63 of 1948), as amended by the Factories (Amendment) Act, 1987 (Act 20 of 1987)
- The Petroleum Act, 1934 and Petroleum Rules, 2002 (where applicable to flammable liquids)
- The Chemical Accidents (Emergency Planning, Preparedness, and Response) Rules, 1996
- Public Liability Insurance Act, 1991

SECTION 16: OTHER INFORMATION

Legislation related to safety data sheets:

This safety data sheet has been designed in accordance with Annex 4 – Guidance on the preparation of Safety Data Sheets of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Texts of the legislative phrases mentioned in sections 2 and 3:

- H301: Toxic if swallowed.
- H311: Toxic in contact with skin.
- H319: Causes serious eye irritation.
- H331: Toxic if inhaled.
- H351: Suspected of causing cancer.
- H372: Causes damage to organs through prolonged or repeated exposure.
- H411: Toxic to aquatic life with long lasting effects.

The phrases indicated do not refer to the product itself; they are present merely for informative purposes and refer to the individual components which appear in section 3.

Advice related to training:

Minimal training is recommended to prevent industrial risks for staff using this product, in order to facilitate their comprehension and interpretation of this safety data sheet, as well as the label on the product.

Principal bibliographical sources:

The United Nations Economic Commission for Europe (UNECE); ECHA classification and labelling inventory; publicly available substance-specific safety data references.

Abbreviations and acronyms:

ADR: European agreement concerning the international carriage of dangerous goods by road | IMDG: International maritime dangerous goods code | IATA: International Air Transport Association | ICAO: International Civil Aviation Organisation | COD: Chemical Oxygen Demand | BOD5: 5-day biochemical oxygen demand | BCF: Bioconcentration factor | LD50: Lethal Dose 50 | LC50: Lethal Concentration 50 | EC50: Effective Concentration 50 | Log-POW: Octanol-water partition coefficient | Koc: Partition coefficient of organic carbon | IARC: International Agency for Research on Cancer | TWA: Time-weighted average | STEL: Short-term exposure limit

The information contained in this safety data sheet is based on sources, technical knowledge and current legislation, without being able to guarantee its accuracy. This information cannot be considered a guarantee of the properties of the product; it is simply a description of the security requirements. The occupational methodology and conditions for users of this product are not within Suraj Chemicals' awareness or control, and it is ultimately the responsibility of the user to take the necessary measures to obtain the legal requirements concerning the manipulation, storage, use and disposal of chemical products. The information on this safety data sheet only refers to this product, which should not be used for needs other than those specified.

END OF SAFETY DATA SHEET