

TETRA CHLOROETHYLENE

GHS Safety Data Sheet

Version No:4.1.1.1

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Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

TETRA CHLOROETHYLENE

OTHER NAMES

C₂-Cl₄, Cl₂-C=C-Cl₂, "carbon bichloride", "carbon dichloride", tetrachloroethene, "ethylene tetrachloride", perchlorethylene, perchloroethylene, perclene, tetrachlorethene, tetrachlorethylene, Ankilostin, "Antisol 1", Didakene, Dow-Per, Perc, Perk, Nema, Perawin, "Perchlor Percosolve", Perklone, Persec, Tetlen, Tetracap, Tetroguer, Tetropil, Tetraleno, Tetralex, Tetravec

PROPER SHIPPING NAME

TETRA CHLOROETHYLENE

PRODUCT USE

■ The use of a quantity of material in an unventilated or confined space may result in increased exposure and an irritating atmosphere developing. Before starting consider control of exposure by mechanical ventilation.
Used as a drycleaning solvent, a vapour-degreasing solvent; a drying agent for metals and certain other solids. Used also as a heat transfer medium and in the manufacture of fluorocarbons.

SUPPLIER

Company: S D FINE- CHEM LIMITED

Address:

315- 317, T.V.Ind.Estate,

248, Worli Road,

Mumbai- 400030, India

www.sdfine.com

Telephone: 91- 22 24959898/99

Fax: 91- 22 2493 7232

Email: technical@sdfine.com

Section 2 - HAZARDS IDENTIFICATION

GHS Classification

Carcinogen Category 2

Chronic Aquatic Hazard Category 2

Skin Corrosion/Irritation Category 2



EMERGENCY OVERVIEW

HAZARD

WARNING

Determined by using GHS criteria

H315

Causes skin irritation.

H351

Suspected of causing cancer.

H411

Toxic to aquatic life with long lasting effects.

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Section 2 - HAZARDS IDENTIFICATION

PRECAUTIONARY STATEMENTS

Prevention

Code	Phrase
P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P264	Wash ... thoroughly after handling.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P281	Use personal protective equipment as required.

Response

Code	Phrase
P302+P352	IF ON SKIN: Wash with plenty of soap and water.
P308+P313	IF exposed or concerned: Get medical advice/attention.
P332+P313	If skin irritation occurs: Get medical advice/attention.
P362	Take off contaminated clothing and wash before re- use.
P391	Collect spillage.

Storage

Code	Phrase
P405	Store locked up.

Disposal

Code	Phrase
P501	Dispose of contents/container to ...

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
tetrachloroethylene	127-18-4	99

Section 4 - FIRST AID MEASURES

SWALLOWED

- If swallowed do NOT induce vomiting.
 - If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
 - Observe the patient carefully.
 - Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.
- If poisoning occurs, contact a doctor or Poisons Information Centre.
- Avoid giving milk or oils.
 - Avoid giving alcohol.

EYE

- If this product comes in contact with the eyes:
- Wash out immediately with fresh running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
- Seek medical attention without delay; if pain persists or recurs seek medical attention.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

- If skin contact occurs:
- Immediately remove all contaminated clothing, including footwear.
- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

INHALED

- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket

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Section 4 - FIRST AID MEASURES

mask as trained. Perform CPR if necessary.

NOTES TO PHYSICIAN

- for intoxication due to Freons/ Halons;
A: Emergency and Supportive Measures
 - Maintain an open airway and assist ventilation if necessary
 - Treat coma and arrhythmias if they occur. Avoid (adrenaline) epinephrine or other sympathomimetic amines that may precipitate ventricular arrhythmias. Tachyarrhythmias caused by increased myocardial sensitisation may be treated with propranolol, 1-2 mg IV or esmolol 25-100 microgm/kg/min IV.
 - Monitor the ECG for 4-6 hours
 - B: Specific drugs and antidotes:
 - There is no specific antidote.
 - DO NOT administer sympathomimetic drugs as they may cause ventricular arrhythmias.
 - For acute or short term repeated exposures to perchloroethylene:
 - Tetrachloroethylene / perchloroethylene is well absorbed through the lungs with peak levels more important than duration in determining blood concentration. Lungs excrete most of the absorbed tetrachloroethylene in an unchanged state; about 3% is converted by the liver to form trichloroacetic acid and subsequently excreted by the kidney. Exhaled material has a biological half-life of 65 hours.
- INHALATION:
- The treatment of acute inhalation exposures is supportive with initial attention directed to evaluation / support of ventilation and circulation. As with all hydrocarbons care must be taken to reduce the risk of aspiration by proper positioning and medical observation.

INGESTION:

 - The ingestion level at which emesis should be induced is difficult to predict in the absence of extensive human studies.
 - The role of charcoal and cathartics remains uncertain.

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

- Foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.

FIRE FIGHTING

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves in the event of a fire.
- Prevent, by any means available, spillage from entering drains or water courses.
- Use fire fighting procedures suitable for surrounding area.

FIRE/EXPLOSION HAZARD

- Combustion products include: carbon dioxide (CO₂), hydrogen chloride, phosgene, other pyrolysis products typical of burning organic material.
- Contains low boiling substance: Closed containers may rupture due to pressure buildup under fire conditions.
- May emit poisonous fumes.
- Non flammable liquid.
- However vapour will burn when in contact with high temperature flame.
- Ignition ceases on removal of flame.
- May form a flammable / explosive mixture in an oxygen enriched atmosphere.

FIRE INCOMPATIBILITY

- Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result.

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS

- Remove all ignition sources.
- Clean up all spills immediately.
- Avoid breathing vapours and contact with skin and eyes.
- Control personal contact with the substance, by using protective equipment.

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Section 6 - ACCIDENTAL RELEASE MEASURES

MAJOR SPILLS

- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water courses.

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

- Contains low boiling substance:

Storage in sealed containers may result in pressure buildup causing violent rupture of containers not rated appropriately.

- Check for bulging containers.
- Vent periodically
- Always release caps or seals slowly to ensure slow dissipation of vapours.
- DO NOT allow clothing wet with material to stay in contact with skin.
- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.

PACKAGING MATERIAL INCOMPATIBILITIES

Chemical Name	Container Type
	" ABS plastic" , " Acetal (Delrin)" , " Buna N (Nitrile)" , " Carpenter 20" , " Cast iron" , CPVC, EPDM, Epoxy, Hypalon, LDPE, " Natural rubber" , Neoprene, NORYLr, Polycarbonate, Polypropylene, " Polyurethane, PVC, Silicone

SUITABLE CONTAINER

- DO NOT use aluminium or galvanised containers.
- Glass container is suitable for laboratory quantities.
- Heavy gauge metal packages / Heavy gauge metal drums.
- Lined metal can, lined metal pail/ can.
- Plastic pail.
- Polyliner drum.
- Packing as recommended by manufacturer.

For low viscosity materials

- Drums and jerricans must be of the non-removable head type.
- Where a can is to be used as an inner package, the can must have a screwed enclosure. <</>.

STORAGE INCOMPATIBILITY

- Haloalkenes are highly reactive.
- Some of the more lightly substituted lower members are highly flammable; many members of the group are peroxidisable and polymerisable.
- Avoid reaction or contact with potassium or its alloys - although apparently stable on contact with a wide range of halocarbons, reaction products may be shock-sensitive and may explode with great violence on light impact. Severity generally increases with the degree of halocarbon substitution and potassium-sodium alloys give extremely sensitive mixtures.

BRETHERRICK L.: Handbook of Reactive Chemical Hazards

- Avoid reaction with metal halides and active metals, eg. sodium (Na), potassium (K), calcium (Ca), zinc (Zn), powdered aluminium (Al), magnesium (Mg) and magnesium alloys.

Tetrachloroethylene:

- decomposes slowly in contact with water or moisture forming trichloroacetic acid and hydrochloric acid
- reacts violently with concentrated nitric acid (producing carbon dioxide), strong oxidisers, strong alkalis, powdered chemically active metals such as aluminium, barium, beryllium, lithium, zinc
- is incompatible with nitrogen tetroxide, finely divided metals
- decomposes in UV light, on contact with red-hot metals, and at temperatures above 150 C, releasing hydrogen chloride, carbon monoxide and phosgene.

STORAGE REQUIREMENTS

- Store below 38 deg. C.
- Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry, well-ventilated area.

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TETRA CHLOROETHYLENE

- Store away from incompatible materials and foodstuff containers.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

The following materials had no OELs on our records

- tetrachloroethylene:

CAS:127- 18- 4

MATERIAL DATA

TETRACHLOROETHYLENE:

■ Odour Threshold Value for tetrachloroethylene (perchloroethylene): 47 ppm (detection), 71 ppm (recognition)

NOTE: Detector tubes for perchloroethylene, measuring in excess of 10 ppm, are commercially available.

Exposure at or below the TLV-TWA is thought to prevent discomfort and subjective complaints arising during controlled human studies and prolonged industrial exposure to perchloroethylene at 100 ppm and 200 ppm.

The STEL is recommended to minimise the potential of anaesthetic effects.

Possible liver injury is unlikely as these values are thought to provide a wide margin of safety.

Established occupational exposure limits frequently do not take into consideration reproductive end points that are clearly below the thresholds for other toxic effects. Occupational reproductive guidelines (ORGs) have been suggested as an additional standard.

PERSONAL PROTECTION



EYE

- Safety glasses with side shields.
- Chemical goggles.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent].

HANDS/FEET

- Wear chemical protective gloves, e.g. PVC.
- Wear safety footwear or safety gumboots, e.g. Rubber.

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice.

Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include:.

- Neoprene gloves.

Avoid contact with moisture.

OTHER

- Overalls.
- Eyewash unit.
- Barrier cream.
- Skin cleansing cream.

ENGINEERING CONTROLS

■ Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.

The basic types of engineering controls are:

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Process controls which involve changing the way a job activity or process is done to reduce the risk.
Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment.

CARE: Use of a quantity of this material in confined space or poorly ventilated area, where rapid build up of concentrated atmosphere may occur, could require increased ventilation and/or protective gear.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Colourless liquid, with a characteritic odour.

PHYSICAL PROPERTIES

Liquid.
Does not mix with water.
Sinks in water.

State	Liquid	Molecular Weight	165.82
Melting Range (°C)	- 23.35	Viscosity	Not Available
Boiling Range (°C)	121.2	Solubility in water (g/L)	Immiscible
Flash Point (°C)	Not Available	pH (1% solution)	Not applicable.
Decomposition Temp (°C)	Not Available	pH (as supplied)	Not applicable
Autoignition Temp (°C)	Not Available	Vapour Pressure (kPa)	2.11 @ 22 C
Upper Explosive Limit (%)	Not Available	Specific Gravity (water=1)	1.63 @ 15 C
Lower Explosive Limit (%)	Not Available	Relative Vapour Density (air=1)	5.83
Volatile Component (%vol)	100	Evaporation Rate	Not available

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of heat source and direct sunlight.
- Presence of an electric arc.
- Presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

For incompatible materials - refer to Section 7 - Handling and Storage.

Section 11 - TOXICOLOGICAL INFORMATION

Health hazard summary table:

Acute toxicity	Not applicable
Skin corrosion/irritation	Skin Irrit. 2
Serious eye damage/irritation	Not applicable
Respiratory or skin sensitization	Not applicable
Germ cell mutagenicity	Not applicable
Carcinogenicity	Carc. 2
Reproductive toxicity	Not applicable
STOT- single exposure	Not applicable
STOT- repeated exposure	Not applicable
Aspiration hazard	Not applicable

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

- Accidental ingestion of the material may be damaging to the health of the individual.
- When tetrachloroethylene is used in the treatment of hookworm (4).

continued...

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5 to 6.

EYE

■ Limited evidence or practical experience suggests, that the material may cause eye irritation in a substantial number of individuals.

Prolonged eye contact may cause inflammation characterised by a temporary redness of the conjunctiva (similar to windburn).

■ Irritation of the eyes may produce a heavy secretion of tears (lachrymation).

■ Exposure to high concentrations of tetrachloroethylene vapour causes mild to severe eye irritation, burning or stinging sensations depending on the dose and duration of exposure.

Colour vision has equally being reported which is attributed to neurological rather than a direct effect on the eyes.

SKIN

■ The material may cause severe inflammation of the skin either following direct contact or after a delay of some time.

Repeated exposure can cause contact dermatitis which is characterised by redness, swelling and blistering.

■ Repeated exposure may cause skin cracking, flaking or drying following normal handling and use.

■ Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.

■ Open cuts, abraded or irritated skin should not be exposed to this material.

■ Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects.

Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

■ Industrial experience shows that exposure to tetrachloroethylene produces localised skin irritation while prolonged skin contact can cause chemical burns and blistering.

■ Absorption by skin may readily exceed vapour inhalation exposure.

Symptoms for skin absorption are the same as for inhalation.

INHALED

■ Inhalation of vapours may cause drowsiness and dizziness.

This may be accompanied by sleepiness, reduced alertness, loss of reflexes, lack of co-ordination, and vertigo.

■ Inhalation of vapours or aerosols (mists, fumes), generated by the material during the course of normal handling, may be damaging to the health of the individual.

■ There is some evidence to suggest that the material can cause respiratory irritation in some persons.

The body's response to such irritation can cause further lung damage.

■ Inhalation hazard is increased at higher temperatures.

■ Acute intoxication by halogenated aliphatic hydrocarbons appears to take place over two stages.

Signs of a reversible narcosis are evident in the first stage and in the second stage signs of injury to organs may become evident, a single organ alone is (almost) never involved.

■ Depression of the central nervous system is the most outstanding effect of most halogenated aliphatic hydrocarbons.

Inebriation and excitation, passing into narcosis, is a typical reaction.

■ Exposure to high levels of tetrachloroethylene by oral or inhalation may cause dose dependent light-headedness, mood and behavioural changes, seizure, unconsciousness, abnormal bilirubin level, liver and kidney damage in workers.

Sudden death may result from anaesthetic doses probably due to depression of the respiratory centre or heart dysfunction.

CHRONIC HEALTH EFFECTS

■ On the basis, primarily, of animal experiments, concern has been expressed that the material may produce carcinogenic or mutagenic effects; in respect of the available information, however, there presently exists inadequate data for making a satisfactory assessment.

■ Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.

There is some evidence from animal testing that exposure to this material may result in reduced fertility.

The reactivity of an epoxide intermediate may be the reason for the cancer-causing properties of halogenated oxiranes. It is reported that 1,1-dichloroethyne, vinyl chloride, trichloroethylene, tetrachloroethylene and chloroprene all cause cancer.

Chloroprene has been reported to cause chromosomal abnormalities, and an increased incidence of skin and lung cancer in animal testing.

Generally speaking, substances with one halogen substitution show higher potential to cause cancer compared to substances with two.

Exposure to tetrachloroethylene noted in dry cleaners causes menstrual disorder and miscarriage, liver dysfunction, headache and dizziness. Studies done showed high mortality rate resulting from cancers of the lung, cervix, gullet, kidney, skin, lymph/blood system, and colon in dry cleaners and laundry workers. Liver cancer was detected in females but none in male laundry and dry cleaners. However, there is not sufficient statistical data to make an absolute conclusion.

TOXICITY AND IRRITATION

■ The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

The material may cause severe skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin. Repeated exposures may produce severe ulceration.

WARNING: This substance has been classified by the IARC as Group 2A: Probably Carcinogenic to Humans.

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Section 11 - TOXICOLOGICAL INFORMATION

CARCINOGEN

tetrachloroethylene	International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs	Group	2A	Probably carcinogenic to humans
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SKIN

tetrachloroethylene	GESAMP/EHS Composite List - GESAMP Hazard Profiles	D1: skin irritation/corrosion	2
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Section 12 - ECOLOGICAL INFORMATION

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
This material and its container must be disposed of as hazardous waste.
Avoid release to the environment.
Refer to special instructions/ safety data sheets.

Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
tetrachloroethylene	HIGH	HIGH	LOW	MED

GESAMP/EHS COMPOSITE LIST - GESAMP Hazard Profiles

Name / Cas No / RTECS No	EHS	TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
/ CAS:127- 18- 4 /	129	564	3	—	2	NR	(3)	2	0	0	0	—	1	C	—	S	3

Legend:

EHS=EHS Number (EHS=GESAMP Working Group on the Evaluation of the Hazards of Harmful Substances Carried by Ships) NRT=Net Register Tonnage, A1a=Bioaccumulation log Pow, A1b=Bioaccumulation BCF, A1=Bioaccumulation, A2=Biodegradation, B1=Acuteaquatic toxicity LC/ECIC50 (mg/l), B2=Chronic aquatic toxicity NOEC (mg/l), C1=Acute mammalian oral toxicity LD50 (mg/kg), C2=Acute mammalian dermal toxicity LD50 (mg/kg), C3=Acute mammalian inhalation toxicity LC50 (mg/kg), D1=Skin irritation & corrosion, D2=Eye irritation & corrosion, D3=Long-term health effects, E1=Tainting, E2=Physical effects on wildlife & benthic habitats, E3=Interference with coastal amenities,
For column A2: R=Readily biodegradable, NR=Not readily biodegradable.

For column D3: C=Carcinogen, M=Mutagenic, R=Reprotoxic, S=Sensitising, A=Aspiration hazard, T=Target organ systemic toxicity, L=Lunginjury, N=Neurotoxic, I=Immunotoxic.

For column E1: NT=Not tainting (tested), T=Tainting test positive.

For column E2: Fp=Persistent floater, F=Floater, S=Sinking substances.

The numerical scales start from 0 (no hazard), while higher numbers reflect increasing hazard.

(GESAMP/EHS Composite List of Hazard Profiles - Hazard evaluation of substances transported by ships)

Section 13 - DISPOSAL CONSIDERATIONS

■ Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area.

A Hierarchy of Controls seems to be common - the user should investigate:

- Reduction.
- DO NOT allow wash water from cleaning or process equipment to enter drains.
- It may be necessary to collect all wash water for treatment before disposal.
- In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.
- Where in doubt contact the responsible authority.
- Recycle wherever possible or consult manufacturer for recycling options.
- Consult State Land Waste Authority for disposal.

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Section 13 - DISPOSAL CONSIDERATIONS

- Bury or incinerate residue at an approved site.
- Recycle containers if possible, or dispose of in an authorised landfill.

Section 14 - TRANSPORTATION INFORMATION



Labels Required: TOXIC

HAZCHEM:

2Z

Land Transport UNDG:

Class or division: 6.1
UN No.: 1897
Shipping Name: TETRACHLOROETHYLENE

Subsidiary risk: None
UN packing group: III

Air Transport IATA:

ICAO/IATA Class: 6.1
UN/ID Number: 1897
Special provisions: None

ICAO/IATA Subrisk: None
Packing Group: III

Shipping name: TETRACHLOROETHYLENE

Maritime Transport IMDG:

IMDG Class: 6.1
UN Number: 1897
EMS Number: F- A, S- A
Limited Quantities: 5 L
Shipping name: TETRACHLOROETHYLENE

IMDG Subrisk: P
Packing Group: III
Special provisions: None
Marine Pollutant: Yes

GESAMP hazard profiles for this material can be found in section 12 of the MSDS.

Section 15 - REGULATORY INFORMATION

REGULATIONS

tetrachloroethylene (CAS: 127-18-4) is found on the following regulatory lists;

"FisherTransport Information", "GESAMP/EHS Composite List - GESAMP Hazard Profiles", "IMO IBC Code Chapter 17: Summary of minimum requirements", "IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk", "India Chemical Accidents Rules - Schedule 1: List of Hazardous Chemicals", "India Manufacture, Storage and Import of Hazardous Chemical Rules - Schedule 1: List of Hazardous and Toxic Chemicals", "International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs", "International Chemical Secretariat (ChemSec) SIN List (*Substitute It Now!)", "OECD List of High Production Volume (HPV) Chemicals", "Sigma-Aldrich Transport Information", "United Nations Consolidated List of Products Whose Consumption and/or Sale Have Been Banned, Withdrawn, Severely Restricted or Not Approved by Governments", "WHO Guidelines for Drinking-water Quality - Guideline values for chemicals that are of health significance in drinking-water"

Section 16 - OTHER INFORMATION

- Classification of the preparation and its individual components has drawn on official and authoritative sources using available literature references.

- The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether

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Section 16 - OTHER INFORMATION

the reported Hazards are Risks in the workplace or other settings.

The above information is believed to be accurate and represent the best information currently available to us, but does not represent any warranty expressed or implied of the properties of the product. User should make their own investigation to determine the suitability of the information for their particular purpose

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