

Perchloroethylene

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SECTION 1. IDENTIFICATION

Product identifier used on the label

: **Perchloroethylene**

Product Code(s) : Not reported

Recommended use of the chemical and restrictions on use

: Chemical intermediate. .
Use pattern: Professional use only
Restriction on use: None known

Chemical family : Pure substance

Name, address, and telephone number
of the supplier:

Comet Chemical Company Ltd.

3463 Thomas Street

Innisfill, ON, Canada
L9S 3W4

Supplier's Telephone # : 705-436-5580

24 Hr. Emergency Tel # : TERRRAPURE ENVIRONMENTAL : 800-567-7455

Name, address, and telephone number of
the manufacturer:

Refer to supplier

SECTION 2. HAZARDS IDENTIFICATION

Classification of the chemical

Clear colourless liquid. Mild aromatic odour.

This material is classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015).

Hazard classification

Acute Toxicity, inhalation - Category 3

Skin Irritation - Category 2

Carcinogenicity - Category 1

Specific Target Organ Toxicity, Single Exposure - Category 3 narcotic effects

Specific target organ toxicity, single exposure - Category 3 respiratory tract irritation Specific Target Organ Toxicity,

Repeated Exposure - Category 2

Label elements

Hazard pictogram(s)



Signal Word

DANGER!



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Hazard statement(s)

Toxic if inhaled.
Causes skin irritation.
May cause respiratory irritation.
May cause drowsiness or dizziness.
May cause cancer.
May cause damage to organs through prolonged or repeated exposure.

Precautionary statement(s)

Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Do not breathe mist or vapor.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/clothing and eye/face protection.

If exposed or concerned: Call a POISON CENTER or doctor/physician.
IF SWALLOWED: Call a POISON CENTRE or doctor/physician if you feel unwell.
Rinse mouth.
IF ON SKIN: Wash with plenty of soap and water.
If skin irritation occurs, get medical advice/attention.
Take off contaminated clothing and wash it before reuse.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: get medical advice/attention.
If inhaled: Remove person to fresh air and keep comfortable for breathing.
Call a POISON CENTER or doctor/physician if you feel unwell.

Store locked up.
Store in a well-ventilated place. Keep container tightly closed.

Dispose of contents/container in accordance with local regulation.

Other hazards

Other hazards which do not result in classification:

Burning produces obnoxious and toxic fumes. Ingestion may cause severe irritation to the mouth, throat and stomach.
Direct eye contact may cause slight or mild, transient irritation. May be an aspiration hazard. Aspiration into the lungs during swallowing or subsequent vomiting may cause chemical pneumonitis, which can be fatal.

Environmental precautions :
Toxic to aquatic life with long lasting effects.
Avoid release to the environment. See ECOLOGICAL INFORMATION, Section 12.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance

Chemical name	Common name and synonyms	CAS #	Concentration (% by weight)
Tetrachloroethylene	Perchloroethylene Ethylene tetrachloride	127-18-4	100.00

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SECTION 4. FIRST-AID MEASURES

Description of first aid measures

- Ingestion* : Do not induce vomiting. Rinse mouth thoroughly. Never give anything by mouth to an unconscious person. Get medical advice/attention.
- Inhalation* : Immediately remove person to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen by qualified medical personnel only. Get medical advice/attention.
- Skin contact* : Remove/Take off immediately all contaminated clothing. Wash exposed area thoroughly with soap and water for at least 15 minutes. If skin irritation occurs, get medical advice/attention.
- Eye contact* : Immediately flush eyes with plenty of water for at least 15 minutes. If eye irritation persists: get medical advice/attention.

Most important symptoms and effects, both acute and delayed

- : Toxic if inhaled. Causes skin irritation. Symptoms may include redness, blistering, pain and swelling. May cause respiratory irritation. Symptoms may include coughing, choking and wheezing. Could result in pulmonary edema (fluid accumulation). Symptoms of pulmonary edema (chest pain, shortness of breath) may be delayed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. May cause drowsiness and dizziness. Symptoms may include pain, headache, nausea, vomiting, dizziness, drowsiness and other central nervous system effects. May cause cancer. May cause damage to organs through prolonged or repeated exposure if inhaled. Direct eye contact may cause slight or mild, transient irritation. May be an aspiration hazard. Aspiration into the lungs during swallowing or subsequent vomiting may cause chemical pneumonitis, which can be fatal.

Indication of any immediate medical attention and special treatment needed

- : Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable extinguishing media

- : Dry chemical, foam, carbon dioxide and water fog.

Unsuitable extinguishing media

- : Do not use water jet, as this may spread burning material.

Special hazards arising from the substance or mixture / Conditions of flammability

- : Not flammable under normal conditions of use. Vapours are heavier than air and collect in confined and low-lying areas. Closed containers may rupture if exposed to excess heat or flame due to a build-up of internal pressure.

Flammability classification (OSHA 29 CFR 1910.106)

- : Non-flammable.

Hazardous combustion products

- : Carbon oxides;
Chlorine;
Phosgene ;
Hydrogen chloride gas

Special protective equipment and precautions for firefighters

Protective equipment for fire-fighters

- : Firefighters should wear proper protective equipment and self-contained breathing apparatus with full face piece operated in positive pressure mode.

Special fire-fighting procedures

- : Move containers from fire area if safe to do so. Water spray may be useful in cooling equipment exposed to heat and flame.



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SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

- : All persons dealing with clean-up should wear the appropriate protective equipment including self-contained breathing apparatus. Keep all other personnel upwind and away from the spill/release. Restrict access to area until completion of clean-up.

Environmental precautions : Ensure spilled product does not enter drains, sewers, waterways, or confined spaces. If necessary, dike well ahead of the spill to prevent runoff into drains, sewers, or any natural waterway or drinking supply.

Methods and material for containment and cleaning up

- : Ventilate area of release. Remove all sources of ignition. Contain and absorb spilled liquid with non-combustible, inert absorbent material (e.g. sand), then place absorbent material into a container for later disposal (see Section 13). Notify the appropriate authorities as required.

Special spill response procedures

- : In case of transportation accident, contact TERRAPURE ENVIRONMENTAL at 1-800-567-7455.
US CERCLA Reportable quantity (RQ): Tetrachloroethylene (100 lbs / 45.4 kg)

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling

- : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use in a well-ventilated area. Wear suitable protective equipment during handling. Do not breathe vapours or spray mist. Do not eat, drink or smoke when using this product. Keep away from incompatibles. Wash thoroughly after handling. Keep away from direct sunlight. Keep containers closed when not in use. Empty containers retain residue (liquid and/or vapour) and can be dangerous.

Conditions for safe storage : Store in a cool, dry, well ventilated area, away from incompatibles. Store locked up. Inspect periodically for damage or leaks. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. No smoking in the area.

Incompatible materials : Strong oxidizing agents; Strong acids; Strong bases Metals (e.g. tin, aluminum, zinc and alloys containing these metals)

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits:

<u>Chemical Name</u>	<u>ACGIH TLV</u>		<u>OSHA PEL</u>	
	<u>TWA</u>	<u>STEL</u>	<u>PEL</u>	<u>STEL</u>
Tetrachloroethylene	25 ppm	100 ppm	100 ppm	200 ppm (Ceiling)

Exposure controls

Ventilation and engineering measures

- : Use general or local exhaust ventilation to maintain air concentrations below recommended exposure limits. Use explosion-proof electrical and ventilating equipment.

Respiratory protection

- : If the TLV is exceeded, a NIOSH/MSHA-approved respirator is advised. A self contained breathing apparatus should be used in emergency situations or instances where exposure levels are not known. Advice should be sought from respiratory protection specialists. Respirators should be selected based on the form and concentration of contaminants in air, and in accordance with OSHA (29 CFR 1910.134) or CSA Z94.4-02.

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- Skin protection** : Wear protective gloves/clothing. Advice should be sought from glove suppliers.
- Eye / face protection** : Wear eye/face protection. Chemical splash goggles must be worn when handling this material.
- Other protective equipment** : Depending on conditions of use, an impervious apron should be worn. Where extensive exposure to product is possible, use resistant coveralls, apron and boots to prevent contact. An eyewash station and safety shower should be made available in the immediate working area.
- General hygiene considerations** : Do not breathe vapours or spray mist. Avoid contact with eyes, skin and clothing. Wash hands thoroughly after using this product, and before eating, drinking or smoking. Remove and wash contaminated clothing before re-use.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance** : Clear colourless liquid.
- Odour** : Mild aromatic odour.
- Odour threshold** : 50 ppm
- pH** : Not available.
- Melting/Freezing point** : -22°C (-7.6°F)
- Initial boiling point and boiling range** : 121°C (249.8°F)
- Flash point** : Not applicable.
- Flashpoint (Method)** : Not applicable.
- Evaporation rate (BuAe = 1)** : Not available.
- Flammability (solid, gas)** : Not applicable.
- Lower flammable limit (% by vol.)** : Not applicable.
- Upper flammable limit (% by vol.)** : Not applicable.
- Oxidizing properties** : None known.
- Explosive properties** : Not explosive
- Vapour pressure** : 14 mmHg
- Vapour density** : 5.8
- Relative density / Specific gravity** : 1.62
- Solubility in water** : Insoluble in water. (0.015)
- Other solubility(ies)** : No information available.
- Partition coefficient: n-octanol/water or Coefficient of water/oil distribution** : No information available.
- Auto-ignition temperature** : Not applicable.
- Decomposition temperature** : No information available.
- Viscosity** : No information available.
- Volatiles (% by weight)** : Not available.
- Volatile organic Compounds (VOC's)** : Not available.
- Absolute pressure of container** : Not applicable.
- Flame projection length** : Not applicable.
- Other physical/chemical comments** : None reported by the manufacturer.

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SECTION 10. STABILITY AND REACTIVITY

- Reactivity** : Not normally reactive.
- Chemical stability** : Unstable in the absence of inhibitors at normal temperatures. Unstabilized tetrachloroethylene also hydrolyzes very slowly in the presence of water to form corrosive trichloroacetic acid and hydrochloric acid.
- Possibility of hazardous reactions** : Hazardous polymerization will not occur.
- Conditions to avoid** : Avoid heat and open flame. Avoid contact with incompatible materials. Do not use in areas without adequate ventilation. Ultraviolet light. Exposure to sunlight.
- Incompatible materials** : See Section 7 (Handling and Storage) for further details.
- Hazardous decomposition products** : See Section 5 (Fire Fighting Measures).

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure:

- Routes of entry inhalation** : YES
- Routes of entry skin & eye** : YES
- Routes of entry Ingestion** : YES
- Routes of exposure skin absorption** : YES

Potential Health Effects:

Signs and symptoms of short-term (acute) exposure

Sign and symptoms Inhalation

- : Toxic if inhaled. May cause respiratory irritation. Symptoms may include pain, headache, nausea, vomiting, dizziness, drowsiness and other central nervous system effects. Could result in pulmonary edema (fluid accumulation). Symptoms of pulmonary edema (chest pain, shortness of breath) may be delayed. May result in unconsciousness and possibly death.

Sign and symptoms ingestion

- : Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. May be an aspiration hazard. Aspiration into the lungs during swallowing or subsequent vomiting may cause chemical pneumonitis, which can be fatal.

Sign and symptoms skin

- : Causes severe skin irritation. Symptoms may include redness and possibly blistering, if product is left on the skin. May be absorbed and cause symptoms similar to those for inhalation.

Sign and symptoms eyes

- : Direct eye contact may cause slight or mild, transient irritation.

Potential Chronic Health Effects

- : Prolonged skin contact may cause dermatitis (rash), characterized by red, dry, itching skin.

Mutagenicity

- : Not expected to be mutagenic in humans.

Carcinogenicity

- : This material is classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015).
Classification: Carcinogen - Category 1 May cause cancer.
Contains This product contains Tetrachloroethylene, which is classified as carcinogenic by IARC (Group 2A) and ACGIH (Category A3).

Reproductive effects & Teratogenicity

- : Not expected to cause reproductive effects.

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- Sensitization to material** : Not expected to be a skin or respiratory sensitizer.
- Specific target organ effects** : This material is classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015).
Classification: Specific target organ toxicity, single exposure - Category 3
May cause respiratory irritation. May cause drowsiness or dizziness.
- Specific target organ toxicity, repeated exposure - Category 2
May cause damage to the kidneys through prolonged or repeated exposure.
- Medical conditions aggravated by overexposure** : Pre-existing skin, eye, respiratory and central nervous system disorders.
- Synergistic materials** : None known or reported by the manufacturer.
- Toxicological data** : See below for toxicological data on the substance.

<u>Chemical name</u>	LC₅₀(4hr) <u>inh, rat</u>	LD₅₀	
		<u>(Oral, rat)</u>	<u>(Rabbit, dermal)</u>
Tetrachloroethylene	3786 ppm (25.7 mg/L) (vapour) (rat) 2613 ppm (17.7 mg/L) (vapour) (mouse)	2600 mg/kg	> 3245 mg/kg

Other important toxicological hazards
:

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity : Toxic to aquatic life with long lasting effects. Do not allow material to contaminate ground water system. See the following tables for individual ingredient ecotoxicity data.

Ecotoxicity data:

<u>Ingredients</u>	CAS No	Toxicity to Fish		
		LC50 / 96h	NOEC / 21 day	M Factor
Tetrachloroethylene	127-18-4	5 mg/L (Rainbow trout)	N/Av	None.

<u>Ingredients</u>	CAS No	Toxicity to Daphnia		
		EC50 / 48h	NOEC / 21 day	M Factor
Tetrachloroethylene	127-18-4	8.5 mg/L (Daphnia magna)	0.51 mg/L/28-day	None.

<u>Ingredients</u>	CAS No	Toxicity to Algae		
		EC50 / 96h or 72h	NOEC / 96h or 72h	M Factor
Tetrachloroethylene	127-18-4	3.64 mg/L/72hr (Green algae)	N/Av	None.

Persistence and degradability : Not readily biodegradable.

Bioaccumulation potential : No data is available on the product itself.

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<u>Components</u>	<u>Partition coefficient n-octanol/water (log Kow)</u>	<u>Bioconcentration factor (BCF)</u>
Tetrachloroethylene (CAS 127-18-4)	3.4	25.8 - 77.1 BCF method: OECD 305C

Mobility in soil : No data is available on the product itself.

Other Adverse Environmental effects

: No data is available on the product itself.









SECTION 13. DISPOSAL CONSIDERATIONS

Handling for Disposal : Handle waste according to recommendations in Section 7. Empty containers retain residue (liquid and/or vapour) and can be dangerous. Do not cut, weld, drill or grind on or near this container.

Methods of Disposal : Dispose in accordance with all applicable federal, state, provincial and local regulations.

RCRA : If this product, as supplied, becomes a waste in the United States, it may meet the criteria of a hazardous waste as defined under RCRA, Title 40 CFR 261. It is the responsibility of the waste generator to determine the proper waste identification and disposal method. For disposal of unused or waste material, check with local, state and federal environmental agencies.

SECTION 14. TRANSPORTATION INFORMATION

Regulatory Information	UN Number	UN proper shipping name	Transport hazard class(es)	Packing Group	Label
TDG	UN1897	TETRACHLOROETHYLENE	6.1	III	 
TDG Additional information	May be shipped as LIMITED QUANTITY when transported in units less than 5 kg, in packages not exceeding 30 kg gross mass.				
49CFR/DOT	UN1897	TETRACHLOROETHYLENE	6.1	III	 
49CFR/DOT Additional information	Must be a consumer-type product, in Limited Quantity size, no larger than 5.0 L per container. Package weight must not exceed 30 kg gross. US CERCLA Reportable quantity (RQ): (100 lbs / 45.4 kg)				
ICAO/IATA	UN1897	Tetrachloroethylene	6.1	III	 
ICAO/IATA Additional information	Refer to ICAO/IATA Packing Instruction				
IMDG	UN1897	TETRACHLOROETHYLENE	6.1	III	 
IMDG Additional information	Consult the IMDG regulations for exceptions.				

Special precautions for user : Appropriate advice on safety must accompany the package.

Environmental hazards : This substance meets the criteria for an environmentally hazardous substance according to the IMDG Code. See ECOLOGICAL INFORMATION, Section 12.



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Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

: This information is not available.

SECTION 15 - REGULATORY INFORMATION

US Federal Information:

Components listed below are present on the following U.S. Federal chemical lists:

<u>Ingredients</u>	CAS #	TSCA Inventory	CERCLA Reportable Quantity(RQ) (40 CFR 117.302):	SARA TITLE III: Sec. 302, Extremely Hazardous Substance, 40 CFR 355:	SARA TITLE III: Sec. 313, 40 CFR 372, Specific Toxic Chemical	
					Toxic Chemical	de minimus Concentration
Tetrachloroethylene	127-18-4	Yes	100 lb/ 45.4 kg	None.	Yes	Yes

SARA TITLE III: Sec. 311 and 312, SDS Requirements, 40 CFR 370 Hazard Classes: Immediate (Acute) health hazard; Chronic Health Hazard. Under SARA Sections 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are 500 pounds for the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

US State Right to Know Laws:

The following chemicals are specifically listed by individual States:

<u>Ingredients</u>	CAS #	California Proposition 65		State "Right to Know" Lists					
		Listed	Type of Toxicity	CA	MA	MN	NJ	PA	RI
Tetrachloroethylene	127-18-4	Yes	Cancer	Yes	Yes	Yes	Yes	Yes	Yes

Canadian Information:

Canadian Environmental Protection Act (CEPA) information: All ingredients listed appear on the Domestic Substances List (DSL).

WHMIS information: Refer to Section 2 for a WHMIS Classification for this product.

International Information:

Components listed below are present on the following International Inventory list:

<u>Ingredients</u>	CAS #	European EINECS	Australia AICS	Philippines PICCS	Japan ENCS	Korea KECI/KECL	China IECSC	NewZealand IOC
Tetrachloroethylene	127-18-4	204-825-9	Present	Present	(2)-114	KE-33294	Present	HSR001551

SECTION 16. OTHER INFORMATION

Legend

: ACGIH: American Conference of Governmental Industrial Hygienists
AIHA: American Industrial Hygiene Association
ATE: Acute Toxicity Estimate
CA: California
CAS: Chemical Abstract Services
CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act of 1980

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CFR: Code of Federal Regulations
DOT: Department of Transportation
EPA: Environmental Protection Agency
HMIS: Hazardous Materials Identification System
HSDB: Hazardous Substances Data Bank
IARC: International Agency for Research on Cancer
Inh: Inhalation
IUCID: International Uniform Chemical Information Database
LC: Lethal Concentration
LD: Lethal Dose
MA: Massachusetts
MN: Minnesota
MSHA: Mine Safety and Health Administration
N/Ap: Not Applicable
N/Av: Not Available
NFPA: National Fire Protection Association
NIOSH: National Institute of Occupational Safety and Health
NJ: New Jersey
NOEC: No observable effect concentration
NTP: National Toxicology Program
OSHA: Occupational Safety and Health Administration
PA: Pennsylvania
PEL: Permissible exposure limit
RCRA: Resource Conservation and Recovery Act
RI: Rhode Island
RTECS: Registry of Toxic Effects of Chemical Substances
SARA: Superfund Amendments and Reauthorization Act
STEL: Short Term Exposure Limit
TDG: Canadian Transportation of Dangerous Goods Act & Regulations
TLV: Threshold Limit Values
TWA: Time Weighted Average
WEEL: Workplace Environmental Exposure Level
WHMIS: Workplace Hazardous Materials Identification System

References

- : 1. ACGIH, Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices for 2016
- 2. International Agency for Research on Cancer Monographs, searched 2016
- 3. Canadian Centre for Occupational Health and Safety, CCInfoWeb databases, 2016(Chempendium, HSDB and RTECs).
- 4. Material Safety Data Sheets from manufacturer.
- 5. US EPA Title III List of Lists - 2016 version.
- 6. California Proposition 65 List - 2016 version.
- 7. OECD - The Global Portal to Information on Chemical Substances - eChemPortal, 2016.

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Other special considerations for handling

: Provide adequate information, instruction and training for operators.



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<u>Prepared for:</u> Comet Chemical Company Ltd. 3463 Thomas Street Innisfill, ON L9S 3W4 Information (M-F 8:00-5:00): 705-436-5580 www.cometchemical.com	The logo for Comet Chemical Company Ltd. features a red circle with a white horizontal line through the center. To the right of the circle, the word "COMET" is written in large, bold, black capital letters, and "COMET CHEMICAL COMPANY LTD." is written in smaller, bold, black capital letters below it.
<u>Prepared by:</u> ICC The Compliance Center Inc. Telephone: (888) 442-9628 (U.S.): (888) 977-4834 (Canada) http://www.thecompliancecenter.com	The logo for ICC The Compliance Center Inc. features a blue circle with a white horizontal line through the center. To the right of the circle, the word "icc" is written in white lowercase letters, and "ComplianceCenter" is written in blue capital letters.

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