Perchloroethylene/Tetrachloroethylene

SECTION 1. IDENTIFICATION

Product Identifier	Perchloroethylene/Tetrachloroethylene
Other Means of Identification	1,1,2,2-Tetrachloroethylene, Ethylene tetrachloride
Product Code(s)	PE2610
Product Family	Organic solution
Recommended Use	Laboratory and industrial use.
Restrictions on Use	None known.
Supplier Identifier	Alphachem Limited, 2485 Milltower Court, Mississauga, Ontario, L5N 5Z6, (905) 821-2995
Emergency Phone No.	CANUTEC CANADA, 613-996-6666, 24 Hours
SDS No.	1086

SECTION 2. HAZARD IDENTIFICATION

Classified according to Canada's Hazardous Products Regulations (WHMIS 2015) and the US Hazard Communication Standard (HCS 2012).

Classification

Acute toxicity (Inhalation) - Category 4; Skin irritation - Category 2; Eye irritation - Category 2B; Carcinogenicity - Category 1B; Specific target organ toxicity (single exposure) - Category 1; Specific target organ toxicity (repeated exposure) - Category 2; Aspiration hazard - Category 2

Label Elements

Signal Word:
Danger

Hazard Statement(s):
May be harmful if swallowed and enters airways.
Harmful if inhaled.
Causes damage to organs (nervous system, respiratory system).
May cause damage to organs (nervous system, liver, kidneys, respiratory system) through prolonged or repeated exposure.
May cause cancer.

Precautionary Statement(s):
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe dust/fume/gas/mist/vapours/spray.

Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection.
Wash hands and skin thoroughly after handling.
Avoid release to the environment.
Response:
IF INHALED: If breathing is difficult, remove person to fresh air and keep comfortable for breathing.
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 or attention.
IF ON SKIN: Wash with plenty of water.
If skin irritation occurs: Get medical advice/attention.
Storage:
Store in a well-ventilated place. Keep container tightly closed.
Store locked up.
Disposal:
Dispose of contents and container in accordance with local, regional, national and international regulations.

Other Hazards

Toxic to aquatic life.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance:

Chemical Name	CAS No.	%	Other Identifiers	Other Names
Tetrachloroethylene	127-18-4	> 99	1,1,2,2-Tetrachloroethylene, Ethylene tetrachloride	

SECTION 4. FIRST-AID MEASURES

First-aid Measures

Inhalation

Remove source of exposure or move to fresh air. Immediately call a Poison Centre or doctor. If breathing has stopped, trained personnel should begin rescue breathing.

Skin Contact

Immediately rinse with lukewarm, gently flowing water for 15-20 minutes. If skin irritation occurs, get medical advice or attention.

Eye Contact

Immediately rinse the contaminated eye(s) with lukewarm, gently flowing water for 15-20 minutes, while holding the eyelid(s) open. If eye irritation persists, get medical advice or attention.

Ingestion

Rinse mouth with water. Get medical advice or attention if you feel unwell.

First-aid Comments

All first aid procedures should be periodically reviewed by a doctor familiar with the material and its condition of use in the workplace.

Most Important Symptoms and Effects, Acute and Delayed

If inhaled: can harm the nervous system. Symptoms may include headache, nausea, dizziness, drowsiness and confusion.
If swallowed: can irritate the mouth, throat and stomach. Symptoms may include nausea, vomiting, stomach cramps and diarrhea.
Aspiration hazard. May be drawn into the lungs if swallowed or vomited, causing severe lung damage. Death can result. Can harm the kidneys. Can harm the liver.

Immediate Medical Attention and Special Treatment

Special Instructions

General advice, consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media

Not combustible. Use extinguishing agent suitable for surrounding fire. Use water to keep non-leaking, fire-exposed containers cool.

Unsuitable Extinguishing Media

None known.

Specific Hazards Arising from the Product

Does not burn. Heating increases the release of toxic vapour. Closed containers may rupture violently when heated releasing contents.
In a fire, the following hazardous materials may be generated: very toxic carbon monoxide, carbon dioxide; corrosive chlorine; corrosive hydrogen chloride; phosgene.

Special Protective Equipment and Precautions for Fire-fighters

Evacuate area. Fight fire from a safe distance or a protected location. Approach fire from upwind to avoid hazardous vapours or gases. Move containers from fire area if it can be done without risk. Otherwise, use water in flooding quantities as a spray or fog to keep fire-exposed containers cool and absorb heat. Knock down vapours or gases with water fog or fine water spray. For a massive fire, immediately evacuate the area and use unmanned hose holder or monitor nozzles. Dike and recover contaminated water for appropriate disposal. Before entry, especially into confined areas, use an appropriate monitor to check for: toxic gases or vapours.
A full-body encapsulating chemical protective suit with positive pressure SCBA may be necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures

Use the personal protective equipment recommended in Section 8 of this safety data sheet. Evacuate the area immediately. Isolate the hazard area. Keep out unnecessary and unprotected personnel. Increase ventilation to area or move leaking container to a well-ventilated and secure area. Remove or isolate incompatible materials as well as other hazardous materials. Notify government occupational health and safety and environmental authorities.

Environmental Precautions

Do not allow into any sewer, on the ground or into any waterway.

Methods and Materials for Containment and Cleaning Up

Stop or reduce leak if safe to do so.
Small spills or leaks: contain and soak up spill with absorbent that does not react with spilled product. Place used absorbent into suitable, covered, labelled containers for disposal. Flush spill area.
Large spills or leaks: contain spill with earth, sand, or absorbent material which does not react with spilled material. Remove or recover liquid using pumps or vacuum equipment. Place in suitable, covered, labelled containers. Flush spill area.

SECTION 7. HANDLING AND STORAGE

Precautions for Safe Handling

Wear personal protective equipment to avoid direct contact with this chemical. Avoid breathing in this product. Only use where there is adequate ventilation. Avoid release to the environment. Prevent accidental contact with incompatible chemicals. Never return unused or contaminated product to its original container. Keep containers tightly closed when not in use or empty. It is good practice to: avoid breathing product; avoid skin and eye contact and wash hands after handling.

Conditions for Safe Storage

Store in an area that is: cool, dry, well-ventilated, out of direct sunlight and away from heat and ignition sources, separate from incompatible materials (see Section 10: Stability and Reactivity). Protect from conditions listed in Conditions to Avoid in Section 10 (Stability and Reactivity). Keep amount in storage to a minimum. Store in the original, labelled, shipping container.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

	ACGIH TLV®		OSHA PEL		AIHA WEEL	
Chemical Name	**TWA**	**STEL**	**TWA**	**Ceiling**	**8-hr TWA**	**TWA**
Tetrachloroethylene	25 ppm A3	100 ppm A3	100 ppm	200 ppm		

A3 = Animal carcinogen.

Appropriate Engineering Controls

Use local exhaust ventilation and enclosure, if necessary, to control amount in the air. Use stringent control measures such as process enclosure to prevent product release into the workplace. Use backup controls (e.g. double mechanical pump seals) to prevent the release of this material due to equipment failure. Exhaust directly to the outside, taking any necessary precautions for environmental protection. Provide eyewash and safety shower if contact or splash hazard exists.

Individual Protection Measures

Eye/Face Protection

Wear chemical safety goggles and face shield when contact is possible.

Skin Protection

Wear chemical protective clothing e.g. gloves, aprons, boots.
Suitable materials are: polyvinyl alcohol, Viton®, Viton®/butyl rubber, Barrier® (PE/PA/PE), Silver Shield®, ChemMAX® 3, ChemMAX® 4, Frontline® 500, Interceptor®, Microchem® 4000, Trellchem® HPS, Trellchem® VPS, Tychem® CPR 3, Tychem® F, Tychem® ThermoPro, Tychem® BR/LV, Tychem® Responder® CSM, Tychem® TK, Tychem® Reflector, Zytron® 300, Zytron® 500.
The following materials should NOT be used: butyl rubber, natural rubber, neoprene rubber, polyvinyl chloride, Saranex®.

Respiratory Protection

Wear a NIOSH approved powered air-purifying respirator with an appropriate cartridge.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Basic Physical and Chemical Properties

Appearance	Colourless liquid.
Odour	Sweet
Odour Threshold	47 ppm (detection)
pH	Not available
Melting Point/Freezing Point	-22.7 - -22.4 ºC (-8.9 - -8.3 ºF) (melting); -22.7 - -22.4 ºC (-8.9 - -8.3 ºF) (freezing)
Initial Boiling Point/Range	121.0 - 121.3 ºC (249.8 - 250.3 ºF)
Flash Point	Not applicable
Evaporation Rate	2.10 (n-butyl acetate = 1)
Flammability (solid, gas)	Will not burn.
Upper/Lower Flammability or Explosive Limit	Not applicable (upper); Not applicable (lower)
Vapour Pressure	1.9 kPa (14.3 mm Hg)
Vapour Density (air = 1)	5.72
Relative Density (water = 1)	1.62 at 20 ºC
Solubility	Practically insoluble in water; Soluble in all proportions in alcohols (e.g. ethanol).

Partition Coefficient, n-Octanol/Water (Log Kow)	3.40
Auto-ignition Temperature	Not applicable
Decomposition Temperature	> 500 ºC (932 ºF)
Viscosity	0.54 mm2/s at 20 ºC (kinematic); 0.88 mPa.s at 20 ºC (dynamic)

Other Information

Physical State	Liquid
Molecular Weight	165.83

SECTION 10. STABILITY AND REACTIVITY

Reactivity

Not reactive under normal conditions of use.

Chemical Stability

Stable if inhibited.

Possibility of Hazardous Reactions

Decomposes in the presence of air, light, increased temperature.
Hazardous polymerization does not occur.

Conditions to Avoid

Excess heat. Open flames, sparks, static discharge, heat and other ignition sources. Sunlight. Water, moisture or humidity. Depletion of inhibitor. Temperatures above 500.0 ºC (932.0 ºF)

Incompatible Materials

Strong acids (e.g. hydrochloric acid), strong bases (e.g. sodium hydroxide), strong oxidizing agents (e.g. perchloric acid), reactive metals, aluminum.

Hazardous Decomposition Products

Very toxic carbon monoxide, carbon dioxide; corrosive chlorine; corrosive hydrogen chloride.

SECTION 11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure

Inhalation; skin contact; eye contact; ingestion.

Acute Toxicity

Chemical Name	LC50	LD50 (oral)	LD50 (dermal)
Tetrachloroethylene	~ 5200 ppm (rat) (4-hour exposure)	2629 mg/kg (rat)	> 3228 mg/kg (rabbit)

Skin Corrosion/Irritation

Causes severe irritation.

Serious Eye Damage/Irritation

Animal tests show very mild irritation.

STOT (Specific Target Organ Toxicity) - Single Exposure

Inhalation

Causes depression of the central nervous system. Symptoms may include headache, nausea, dizziness, drowsiness and confusion.

Ingestion

May cause severe irritation or burns to the mouth, throat and stomach. Symptoms may include nausea, vomiting, stomach cramps and diarrhea.

Aspiration Hazard

May be drawn into the lungs (aspirated) if swallowed or vomited.

STOT (Specific Target Organ Toxicity) - Repeated Exposure

May cause harmful effects on the liver, harmful effects on the kidneys, effects on the central nervous system, irritation of the respiratory system. May cause respiratory tract injury.

Respiratory and/or Skin Sensitization

No information was located.

Carcinogenicity

Chemical Name	IARC	ACGIH®	NTP	OSHA
Tetrachloroethylene	Group 2A	A3	Reasonably anticipated	Not Listed

Key to Abbreviations

IARC = International Agency for Research on Cancer. Group 2A = Probably carcinogenic to humans.
ACGIH® = American Conference of Governmental Industrial Hygienists. A3 = Animal carcinogen.

Reproductive Toxicity

Development of Offspring

Conclusions cannot be drawn from the limited studies available.

Sexual Function and Fertility

Conclusions cannot be drawn from the limited studies available.

Effects on or via Lactation

No information was located.

Germ Cell Mutagenicity

Conclusions cannot be drawn from the limited studies available.

Interactive Effects

No information was located.

SECTION 12. ECOLOGICAL INFORMATION

This section is not required by WHMIS. This section is not required by OSHA HCS 2012.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal Methods

Dispose of contents and container in accordance with local, regional, national and international regulations.

SECTION 14. TRANSPORT INFORMATION

Regulation	UN No.	Proper Shipping Name	Transport Hazard Class(es)	Packing Group
US DOT	UN1897	TETRACHLOROETHYLENE	6.1	III
Canadian TDG	UN1897	TETRACHLOROETHYLENE	6.1	III

Special Precautions Not applicable

Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15. REGULATORY INFORMATION

Safety, Health and Environmental Regulations

Canada

Domestic Substances List (DSL) / Non-Domestic Substances List (NDSL)

Listed on the DSL.

USA

Toxic Substances Control Act (TSCA) Section 8(b)

Listed on the TSCA Inventory.

SECTION 16. OTHER INFORMATION

NFPA Rating	**Health - 2 Flammability - 0 Instability - 0**
SDS Prepared By	Alphachem Limited
Phone No.	(905)-821-2995
Date of Preparation	September 01, 2017
Date of Last Revision	September 01, 2017
References	CHEMINFO database. Canadian Centre for Occupational Health and Safety (CCOHS).
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