

## 1. PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** Carbon tetrafluoride      **CHEMICAL FORMULA:** CF<sub>4</sub>      **PRODUCT CODE:**

**COMPANY NAME:**

**PELICHEM:** The Chemical Division of NECSA

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## 2. COMPOSITION/INFORMATION ON INGREDIENTS

**CHEMICAL NAME OF SUBSTANCE:**

Carbon tetrafluoride

**SYNONYMS:**

Tetrafluorure de carbone, Perfluoromethane  
Tetrafluoromethane, Fluorocarbon 14  
FC 14, Carbon Fluoride, R 14, Methane,  
tetrafluoro, Freon 14, Tetrafluorocarbon, CF<sub>4</sub>

**UN No:**  
1982

**CAS-No:**  
75-73-0

## 3. HAZARDS IDENTIFICATION

**EMERGENCY OVERVIEW**

## 4. FIRST AID MEASURES

**Inhalation:** Remove to fresh air. Assist in breathing if necessary. Keep affected person warm and at rest. treat symptomatically and supportively. Get medical attention immediately.

**Ingestion:** It is unlikely that emergency treatment will be required. If adverse affects occur, treat symptomatically and supportively and get medical attention.

**Skin:** If adverse affects occur get medical attention. In case of frostbite, warm affected skin in warm water at a temp. of 107°F. If warm water is not available gently wrap affected part in blankets. Encourage victim to exercise affected part while it is being warmed. Allow circulation to return naturally. Get medical attention immediately.

**Eyes:** Immediately wash eye out with large amounts of water, occasionally lifting upper and lower lids, until no evidence of chemical remains. If frostbite is present, warm water may be preferred. Get medical attention immediately.

## 5. FIRE FIGHTING MEASURES

### FIRE AND EXPLOSION HAZARDS:

Non-flammable gas

### COMBUSTION AND THERMAL DECOMPOSITION PRODUCTS:

Carbon monoxide, carbon dioxide, hydrogen fluoride gas

### EXTINGUISHING MEDIA:

Dry chemical, carbon dioxide, or Halon. For larger fires use water spray, fog, or standard foam.

### SPECIAL FIRE-FIGHTING PROCEDURES:

Move containers from fire area if possible. Cool fire-exposed containers with water from the side until well after the fire is out. Withdraw immediately if rising sound venting or discoloration of tanks due to fire. Do not use water directly on materials, use fog to absorb vapors.

## 6. ACCIDENTAL RELEASE MEASURES

Wear self-contained breathing apparatus and protective clothing. Stop leak if you can do so without risk. Keep unnecessary people away; isolate hazard area and deny entry

## 7. HANDLING AND STORAGE

### INCOMPATIBLES:

Aluminum: (exothermic reaction)

## 8. EXPOSURE CONTROLS, PERSONAL PROTECTION

Measure oxygen content of the workplace air, especially in confined spaces, because displacement of oxygen by high concentrations of carbon tetrafluoride is possible.

### EYES:

Gas form: none required but recommended.

Liquid form: splash proof goggles and faceshield are required.

### SKIN:

**Gas form:** protective clothing is not required. Wear full protective cold insulating gloves.

**Liquid form:** If contact with the liquid form is possible, employee must wear appropriate protective clothing and equipment to prevent skin from freezing.

### INHALATION:

Chemical cartridge respirator with an organic vapor cartridge with an acid gas cartridge and full facepiece.

**SPECIAL PRECAUTIONS:**

**Ventilation:** Provide general dilution ventilation.

Emergency eyewash should be provided.

Quick drench shower should be provided.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

**MOLECULAR WEIGHT:** 88.01

**APPEARANCE AND ODOUR:** Colourless, odourless gas

**CONVERSION FACTOR:** 1 ppm = 3.59 mg/m<sup>3</sup>; 1 mg/m<sup>3</sup> = 0.278 ppm at 25° (calculated)

**MELTING POINT:** -304°F (-187°C)

**FREEZING POINT:** -184°C (-299.2°F) (2)

**BOILING POINT:** -198 °F (-128°C)

**RELATIVE DENSITY (SPECIFIC GRAVITY):** (Liquid) 1.89 at -183°C (water =1) (1)

**SOLUBILITY IN WATER:** 0.0015 % (at 25°C)

**SOLUBILITY IN OTHER LIQUIDS:** Soluble in benzene, chloroform (3)

**VAPOUR DENSITY:** 3.04 (air=1) (3)

**VAPOUR PRESSURE:** 799 mmHg (at -127°C)

**SATURATION VAPOUR CONCENTRATION:** Not applicable

**VISCOSITY:** 0.170 CP (at-60°C)

**SPECIFIC GRAVITY:** 1.89 (at-183°C)

**LATENT HEAT OF VAPORIZATION:** 135.95 kJ/kg (at-128°C)

**pH Value:** Not available

**CRITICAL TEMPERATURE:** -45.6°C (-50.08°F) (5)

**CRITICAL PRESSURE:** 3.74Mpa (5)

**10. STABILITY AND REACTIVITY**

**STABILITY:**

Thermally stable, chemically very inert (1).

**INCOMPATIBLE MATERIALS:**

Not available.

**HAZARDOUS POLYMERISATION:**

Will not occur.

**HAZARDOUS DECOMPOSITION PRODUCTS:**

Toxic and Corrosive fumes of Fluorides.

## 11. TOXICOLOGICAL INFORMATION

ORAL-RAT LCLO 895,000 ppm/15 minutes.

**INHALATION:**

May cause hypoxia with dizziness, disorientation, incoordination, narcosis, nausea, and vomiting.

**SKIN:**

Skin contact with the liquid may cause irritation or frostbite

**EYE:**

Liquid splashed in the eye may cause freezing resulting in frostbite, temporary irritation or serious damage.

**INGESTION:**

Ingestion of a gas is unlikely.

## 12. ECOLOGICAL INFORMATION

## 13. DISPOSAL CONSIDERATIONS

Comply with all federal, state, and local regulations.

## 14. TRANSPORT INFORMATION

<b>UN No:</b> 1982		
<b>ADR/RID:</b>	<b>Class:</b> 2.2 <b>Label:</b> Non-flammable gas	<b>Proper shipping name:</b> Tetrafluoromethane (R14)
<b>IMDG:</b>	<b>Class:</b> 2.2 <b>Label:</b> Non-flammable gas	<b>Proper shipping name:</b> Tetrafluoromethane (R14)
<b>IATA:</b>	<b>Class:</b> 2.2 <b>Label:</b> Non-flammable gas	<b>Proper shipping name:</b> Tetrafluoromethane (R14)



## 15. REGULATORY INFORMATION

### APPLICABLE REGULATIONS:

Refer to country of destination.

### SAFETY AND RISK PHRASES:

Refer to country of destination.

## 16. OTHER INFORMATION

### SELECTED BIBLIOGRAPHY:

1. The Merck Index: an encyclopedia of chemicals, drugs, and biologicals, 11<sup>th</sup> ed. Merck, 1989 p.276.
2. Hawley's condensed chemical dictionary, 12<sup>th</sup> ed. Van Nostrand Reinhold, 1993. p. 1130.
3. HSDB record for carbon tetrafluoride. Last updated 9412.
4. The Sigma Aldrich library of chemical safety data. Edition II. Sigma Aldrich, 1988 p. 686C.
5. Kirk-Othmer encyclopedia of chemical technology. Vol 103, 4<sup>th</sup> ed. John Wiley & Sons, 1980 p. 957.

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