

Common Name: **SILICON TETRACHLORIDE**

Synonyms: Silicon Chloride; Tetrachlorosilicon

CAS No: 10026-04-7

 Molecular Formula: SiCl₄

RTK Substance No: 1666

Description: Clear, colorless, fuming liquid with an irritating odor

HAZARD DATA

Hazard Rating	Firefighting	Reactivity
3 - Health 0 - Fire 2W - Reactivity DOT#: UN 1818 ERG Guide #: 157 Hazard Class: 8 (Corrosive)	CORROSIVE AND WATER REACTIVE Extinguish fire using an agent suitable for type of surrounding fire. Silicon Tetrachloride itself does not burn. Silicon Tetrachloride may react with WATER and FOAM to release toxic and corrosive gases. When using Alcohol Resistant Aqueous Film Forming Foam (AR-AFFF) use at medium expansion and carefully float onto spill to form a continuous layer. POISONOUS GASES ARE PRODUCED IN FIRE, including <i>Hydrogen Chloride</i> and <i>Silicon Oxide</i> . CONTAINERS MAY EXPLODE IN FIRE. Use water spray to keep fire-exposed containers cool but DO NOT get water into containers.	Silicon Tetrachloride reacts violently with WATER and MOIST AIR to form heat, and toxic and corrosive Hydrogen Chloride gas. Contact between Hydrogen Chloride gas and METALS may release flammable and explosive <i>Hydrogen gas</i> . Silicon Tetrachloride reacts violently with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE); ALCOHOLS; STRONG ACIDS (such as HYDROCHLORIC, SULFURIC and NITRIC); STRONG BASES (such as SODIUM HYDROXIDE and POTASSIUM HYDROXIDE); KETONES; and ALDEHYDES. Prevent contact with LIGHT, HEAT and AIR.

SPILL/LEAKS

Isolation Distance:

 Spill (small): 30 meters (100 feet)
 (large): 100 meters (300 feet)

Fire: 800 meters (1/2 mile)

Absorb liquids in dry sand, earth, or a similar material and place into sealed containers for disposal.

AR-AFF Foam can be used to suppress vapors and blanket release.

Silicon Tetrachloride spilled in water produces large amounts of *Hydrogen Chloride*.

 Neutralize spills using *Sodium Hydroxide* with a 1 to 1 ratio of *Sodium Hydroxide* to *Chlorosilane* or use a 2 to 1 ratio of *Sodium Bicarbonate* to *Chlorosilane*.

 Keep **Silicon Tetrachloride** out of confined spaces, such as sewers, because of the possibility of an explosion.

PHYSICAL PROPERTIES

Odor Threshold:	1 to 5 ppm
Flash Point:	Nonflammable
Vapor Density:	5.8 (air = 1)
Vapor Pressure:	194 mm Hg at 68°F (20°C)
Specific Gravity:	1.48 (water = 1)
Water Solubility:	Reactive (Decomposes)
Boiling Point:	136°F (58°C)
Freezing Point:	-57°F (-70°C)
Ionization Potential:	12.74 eV (as <i>Hydrogen Chloride</i>)
Molecular Weight:	169.9

EXPOSURE LIMITS

OSHA/NIOSH: 5 ppm, Ceiling (as *Hydrogen Chloride*)

ACGIH: 2 ppm, Ceiling (as *Hydrogen Chloride*)

IDLH: 50 ppm (as *Hydrogen Chloride*)

The Protective Action Criteria values are:

PAC-1 = 0.45 ppm PAC-2 = 5.5 ppm

PAC-3 = 25 ppm

PROTECTIVE EQUIPMENT

Gloves:	Viton (>8-hr breakthrough)
Coveralls:	Tychem® BR, CSM and TK (>8-hr breakthrough)
Respirator:	SCBA

HEALTH EFFECTS

Eyes:	Severe irritation, burns and possible eye damage
Skin:	Irritation and burns
Inhalation:	Nose, throat and lung irritation, with coughing, and severe shortness of breath (pulmonary edema)

FIRST AID AND DECONTAMINATION

Remove the person from exposure.
Flush eyes with large amounts of water for at least 30 minutes. Remove contact lenses if worn. Seek medical attention immediately.
Quickly remove contaminated clothing and wash contaminated skin with large amounts of soap and water. Seek medical attention.
Begin artificial respiration if breathing has stopped and CPR if necessary.
Transfer promptly to a medical facility.
Medical observation is recommended as symptoms may be delayed.