

MATERIAL
SAFETY
DATA SHEET

PRODUCT NAME Silicon Tetrachloride	CAS# 10026-04-7
TRADE NAME AND SYNONYMS Silicon Tetrachloride, Tetrachlorosilane	DOT I.D. NO. UN 1818
CHEMICAL NAME AND SYNONYMS Silicon Tetrachloride, Tetrachlorosilane	DOT HAZARD CLASS Division 8 (Corrosive)
ISSUE DATE AND REVISIONS Revised March 2007	FORMULA SiCl ₄

HEALTH HAZARD DATA

EMERGENCY OVERVIEW	
<p>Silicon Tetrachloride is a corrosive, colorless, nonflammable liquid with a suffocating odor. The vapors are irritating to the mucous membranes and form dense fumes when exposed to humid air. It hydrolyses rapidly in moist air, releasing hydrogen chloride.</p>	
SYMPTOMS OF EXPOSURE	
<p><u>Ingestion</u>: Highly toxic. May cause severe burns of the alimentary canal with severe painful of abdominal and chest. There will be nausea, vomiting, diarrhea, dizziness, drowsiness, faintness, circulatory collapse and coma.</p> <p><u>Skin Contact</u>: Corrosive; causes burns. Prolonged or widespread skin contact may result in the absorption of potentially harmful amounts of material.</p> <p><u>Inhalation</u>: Low concentrations will cause irritation of the eye and respiratory tract, experienced as eye discomfort, cough, excess sputum, and chest discomfort. High concentrations will result in the inhalation of harmful, and potentially lethal, amounts of material due to lung injury.</p> <p><u>Eye Contact</u>: Vapor causes severe irritation to eye. If high concentrations of hydrogen chloride vapor are formed, corneal injury could occur. Permanent blindness could result in the injury, if no appropriate treatment is taken.</p>	
TOXICOLOGICAL PROPERTIES	
PEL/TLV as HCl	5 ppm
LC ₅₀	750ppm
IDLH	100ppm
RECOMMENDED FIRST AID TREATMENT	
<p>PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO SILICON TETRACHLORIDE. RESCUERS SHOULD BE EQUIPPED WITH ADEQUATE PERSONAL PROTECTIVE APPARATUS.</p> <p><u>Ingestion</u>: Do not induce vomiting. If patient is conscious, give large quantities of milk or water.</p> <p><u>Skin Contact</u>: Remove contaminated clothing and flush skin with water.</p> <p><u>Inhalation</u>: Remove patients to fresh air. Give artificial respiration if not breathing. Qualified personnel may give oxygen if breathing is difficult.</p> <p><u>Eye Contact</u>: Immediately flush eyes with copious quantities of water and continue flushing for at least 15 minutes.</p>	

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES

Formation of hydrochloric acid on contact with moisture.

PHYSICAL DATA

BOILING POINT 57.3 °C	CRITICAL TEMPERATURE 234°C
MOLECULAR WEIGHT 169.89	CRITICAL PRESSURE 37.5 bar abs
SOLUBILITY IN WATER Reacts violently	DENSITY, LIQUID (20 °C, 1 atm) 1.48g/ml
EVAPORATION RATE 20	SPECIFIC GRAVITY (AIR=1) 1.48 at 70°F
APPEARANCE AND ODOR Colorless liquid with pungent suffocating odor.	

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) N/A	EXTINGUISHING MEDIA N/A	FLAMMABLE LIMITS % BY VOLUME LEL N/A UEL N/A	
SPECIAL FIRE FIGHTING PROCEDURES Evacuate all personnel from danger area. In case of small fires, extinguish with carbon dioxide, dry chemical extinguishers, or dry sand, properly applied. In case of a large fire, water spray may be used as an extinguishing agent if applied in large quantities, sufficient to absorb the heat of reaction with the silicon tetrachloride and knock down the hydrogen chloride fumes.			
UNUSUAL FIRE AND EXPLOSION HAZARDS In case of the reaction of silicon tetrachloride with water or decomposition in the presence of heat and air, dense white clouds of silica particles and hydrogen chloride can be evolved. Fire fighters should wear Self-Contained Breathing Apparatus and protective clothing.			

REACTIVITY DATA

STABILITY		CONDITIONS TO AVOID In the presence of moisture will corrode most common metals. But anhydrous silicon tetrachloride is quite stable at normal temperatures and thermal decomposition begins at temperatures around 800°C.
Unstable		
Stable	X	
INCOMPATIBILITY (Materials to avoid) Water, bases, organic materials, potassium and sodium. Reacts extremely with alcohols, primary and secondary amines, ammonia and other compounds containing active hydrogen atoms.		
HAZARDOUS POLYMERIZATION		HAZARDOUS THERMAL DECOMPOSITION PRODUCTS Thermal decomposition or burning may produce hydrochloric acid and silicon oxides, which react vigorously with water to form hydrogen chloride fumes.
May Occur		
Will Not Occur	X	

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Evacuate all personnel from affected area. Flush down with large amount of water, spills must be contained in areas protected from pollution of environment and exposure of personnel. Wear Self-Contained Breathing Apparatus and protective clothing
WASTE DISPOSAL METHOD Waste disposal must be in accordance with appropriate Federal, State, and local regulations. For emergency disposal assistance, contact HSG for specific advice.

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type) Use air-supplied respirator for concentrations up to 10 times the applicable permissible exposure limit while a full-face self-contained breathing apparatus in a positive pressure demand mode is required for higher concentrations.		
MECHANICAL (Gen.) Not recommended as a primary ventilation.	OTHER N/A	SPECIAL Canopy type of a forced draft fume hood.
PROTECTIVE GLOVES Neoprene or similar.		
EYE PROTECTION Goggles and face shield.		
OTHER PROTECTIVE EQUIPMENT Full-face shield, apron, eye bath and safety shower. Metatarsal shoes for container handling. Other protective clothing to prevent skin contact.		

SPECIAL PRECAUTIONS*

SPECIAL LABELING INFORMATION DOT Shipping Name: Silicon Tetrachloride DOT Shipping Label: Corrosive	DOT Hazard Class: Division 8 I.D. No.: UN 1818
SPECIAL HANDLING RECOMMENDATIONS Use only in well-ventilated areas. Valve protection caps must remain in place unless cylinder is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to lower pressure piping or system. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.	
SPECIAL STORAGE RECOMMENDATIONS Keep valve-output plug tightly installed. Store away from heat, sparks, and open flame. Store with adequate ventilation. Avoid all contact with water including moisture in the air.	
OTHER RECOMMENDATIONS OR PRECAUTIONS Silicon tetrachloride vapors react with moisture in air to produce dense white clouds of silica and hydrogen chloride. Therefore, this product should be confined within enclosed equipment and should not be vented in to air. Where venting is necessary, it should be vented through a scrubber system equipped to handle hydrogen chloride.	

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