

**HONG KONG SPECIALTY GASES CO., LTD.**

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**MATERIAL
SAFETY
DATA SHEET**

PRODUCT NAME Silicon Tetrafluoride	CAS# 7783-61-1
TRADE NAME AND SYNONYMS Silicon Tetrafluoride, Compressed (D.O.T.)	DOT I.D. NO. UN 1859
CHEMICAL NAME AND SYNONYMS Silicon Tetrafluoride; Tetrafluorosilane	DOT HAZARD CLASS Division 2.3
ISSUE DATE AND REVISIONS Revised November 2001	FORMULA SiF ₄

HEALTH HAZARD DATA

EMERGENCY OVERVIEW Silicon Tetrafluoride is a colorless, nonflammable, toxic gas with a suffocating odor. Severe exposures cause irritation of the nose and eyes, smarting of the skin, some degree of conjunctival and respiratory irritation.
SYMPTOMS OF EXPOSURE Corrosive and irritating to the upper and lower respiratory tracts, skin and eyes. It hydrolyzes very rapidly yielding hydrofluoric acid so that skin burns and mucosal irritation are like that from exposure to that acid. Symptoms include lacrymation, cough, labored breathing and excessive salivary and sputum formation. Excessive irritation of the lungs causes acute pneumonitis and pulmonary edema which could be fatal. Hydrofluoric acid dermal burns exhibit severe pain, redness, possible swelling and early necrosis.
TOXICOLOGICAL PROPERTIES Silicon Tetrafluoride is irritating and corrosive to all living tissues. Toxic level exposure to dermal tissue causes hydrofluoric acid burns and skin lesions resulting in necrosis and eventual scarring. Burns are progressive while any residual active fluorides remain. Chemical pneumonitis and pulmonary edema result from exposure to the lower respiratory tract and deep lung. Residual pulmonary malfunction might also occur. Burns of the eye result in lesions and possible loss of vision. Extended low level systemic absorption of fluorides may cause fluorosis, an abnormal calcification pattern of the skeletal system.
RECOMMENDED FIRSTAID TREATMENT PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO SILICON TETRAFLUORIDE. RESCUERS SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS. Inhalation: Conscious persons should be assisted to an uncontaminated area and breathe fresh air. Quick removal from contaminated area is most important. Unconscious persons should be moved to an uncontaminated area and given assisted respiration and supplemental oxygen. Keep the victim warm and quiet. Give artificial respiration if not breathing. Qualified personnel may give oxygen if breathing is difficult. Skin Contact: Remove contaminated clothing as rapidly as possible and flush affected area with copious quantities of water. Eye Contact: Immediately flush eyes with copious quantities of water and continue flushing for at least 30 minutes. Part eyelids with fingers to assure complete flushing.

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES

Reacts with moisture in air or in water to form hydrogen fluoride and silicic acid.

PHYSICAL DATA

BOILING POINT Sublimation @ -139.2 °F (-95.1 °C)	LIQUID DENSITY AT BOILING POINT 95.3 lbs/ft ³ (1526 kg/m ³)
VAPOR PRESSURE @ 70 °F (21.1 °C) = Above the critical temperature of 6.5 °F (-14.2 °C)	FREEZING POINT -130 °F (-90 °C)
SOLUBILITY IN WATER Hydrolyzes	GAS DENSITY AT 70 °F, 1 atm 0.266 lb/ft ³ (4.26 kg/m ³)
EVAPORATION RATE N/A (Gas)	SPECIFIC GRAVITY (AIR=1) 0.594 at 70°F
APPEARANCE AND ODOR Colorless gas with an irritating odor.	

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) N/A	AUTO IGNITION TEMPERATURE N/A	FLAMMABLE LIMITS % BY VOLUME LEL N/A UEL N/A	
EXTINGUISHING MEDIA Non-flammable		ELECTRICAL CLASSIFICATION Nonhazardous	
SPECIAL FIRE FIGHTING PROCEDURES If cylinders are involved in a fire, safely relocate or keep cool with water spray.			
UNUSUAL FIRE AND EXPLOSION HAZARDS None			

REACTIVITY DATA

STABILITY		CONDITIONS TO AVOID Do not allow the free gas (outside of cylinder) to exceed 30 psia. Cylinders should not be exposed to sudden shock or sources of heat.
Unstable		
Stable	X	
INCOMPATIBILITY (Materials to avoid) Alkali and alkaline earth metals and water.		
HAZARDOUS DECOMPOSITION PRODUCTS Hydrogen fluoride and silicic acid on hydrolysis		
HAZARDOUS POLYMERIZATION		CONDITIONS TO AVOID None
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. Use appropriate protective equipment. Wear Self-Contained Breathing Apparatus and protective clothing. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is in container or container valve, contact HSG for specific advice.
WASTE DISPOSAL METHOD Do not attempt to dispose of waste or unused quantities. Return in the shipping container properly labeled, with any valve outlet plugs or caps secured and valve protection cap in place to HSG. For emergency disposal assistance, contact HSG for specific advice.

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type) Positive pressure air line with mask or self-contained breathing apparatus should be available for emergency use.	
VENTILATION Hood with forced ventilation.	SPECIAL N/A
MECHANICAL (Gen.) N/A	OTHER N/A
LOCAL EXHAUST To prevent accumulation above the TWA for hydrogen fluoride.	
PROTECTIVE GLOVES Plastic or rubber.	
EYE PROTECTION Safety goggles or glasses	
OTHER PROTECTIVE EQUIPMENT Safety shoes, safety shower, eyewash "fountain", face shield.	

SPECIAL PRECAUTIONS*

SPECIAL LABELING INFORMATION DOT Shipping Name: Silicon Tetrafluoride, Compressed DOT Shipping Label: Toxic Gas, Corrosive	DOT Hazard Class: Division 2.3 I.D. No.: UN 1859
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 Protect cylinders from physical damage. Store in cool, dry, well-ventilated area of noncombustible construction away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 125°F (°C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in – first out" inventory system to prevent full cylinders being stored for excessive periods of time. Post "No Smoking or Open Flames" signs in the storage or use area.	
OTHER RECOMMENDATIONS OR PRECAUTIONS Most metals form a passive fluoride film that protects the metal from further corrosion. Keep equipment scrupulously dry. Many of the metal fluorides are water soluble so that the passive film corrosion protection may be destroyed if wetted with water. Compressed gas cylinders should not be refilled except by qualified producers of compressed gases.	

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