

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

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**MATERIAL
SAFETY
DATA SHEET**

PRODUCT NAME Silane	CAS# 7803-62-5
TRADE NAME AND SYNONYMS Silane	DOT I.D. NO. UN 2203
CHEMICAL NAME AND SYNONYMS Silicon tetrahydride, Monosilane, Silicane	DOT HAZARD CLASS Division 2.1 (Flammable gas)
ISSUE DATE AND REVISIONS Revised March 2000	FORMULA SiH ₄

HEALTH HAZARD DATA

EMERGENCY OVERVIEW Silane is a pyrophoric gas, which may ignite spontaneously in air either immediately or delayed. It causes irritation to eye, skin, and respiratory tract.
SYMPTOMS OF EXPOSURE <u>Inhalation:</u> Expected to be irritating to respiratory tract. Not expected to be toxic. Do not breathe fumes from fires or decomposition. <u>Skin Contact:</u> Not expected to be absorbed in acutely toxic amounts. Expected to be a skin irritant. <u>Eye Contact:</u> Expected to be an eye irritant. <u>Ingestion:</u> Not expected to be a primary route of exposure.
TOXICOLOGICAL PROPERTIES INHALATION: LC50 (rat) > 9600 ppm (4 hrs.). DERMAL: LD50 (rat) = 3540 mg/kg Silane is in compliance with the TOXIC SUBSTANCE CONTROL ACT (15 USC 2601-2629).
RECOMMENDED FIRSTAID TREATMENT PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO SILANE. RESCUERS SHOULD BE EQUIPPED WITH ADEQUATE PERSONAL PROTECTIVE APPARATUS. <u>Inhalation:</u> Conscious person should be assisted to an uncontaminated area and inhale fresh air. Unconscious persons should be moved to an uncontaminated area and given mouth-to-mouth resuscitation and supplemental oxygen. Keep the victim warm and quiet, and under medical observation. <u>Eye Contact:</u> Flush contaminated eye(s) with copious quantities of water for minimum of 15 minutes. <u>Skin Contact:</u> Flush affected area with soap and copious quantities of water. Wash clothing before reuse. <u>Ingestion:</u> If swallowed, give two glasses of water.

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES

None

PHYSICAL DATA

BOILING POINT -112 °C	CRITICAL TEMPERATURE -3.4 °C
MOLAR SPECIFIC HEAT (25 oC, 1 bar abs, contact pressure) 42.844 J/mol °K	CRITICAL PRESSURE 48.43 bar abs
SOLUBILITY IN WATER N/A	SPECIFIC VOLUME(21.1 oC, 1 bar abs) 751.8 dm ³ /kg
EVAPORATION RATE N/A	SPECIFIC GRAVITY (AIR=1) 1.114 at 70 °F
APPEARANCE AND ODOR Colorless gas/repulsive, choking odor.	

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) Pyrophoric gas	EXTINGUISHING MEDIA N/A	FLAMMABLE LIMITS % BY VOLUME LEL 1-3% UEL 97%	
SPECIAL FIRE FIGHTING PROCEDURES Evacuate all personnel from danger area. Only approach area with Self-Contained Breathing Apparatus and protective clothing. Cool containers with water spray from maximum distance immediately. Stop flow of gas if without risk while continuing cooling water spray. If flow of gas cannot be shut off, allow fire to burn out. Reduce combustion products with water spray or fog. Remove all containers from area of fire if without risk.			
UNUSUAL FIRE AND EXPLOSION HAZARDS Pryophoric (may ignite spontaneously in air either immediately or delayed) gas. Containers may rupture due to heat of fire. No part of a container should be subjected to a temperature higher than 52 °C/126 °F. Backflow into cylinder may cause explosion. Most containers are provided with pressure relief device designed to vent contents when they are exposed to elevated temperature.			

REACTIVITY DATA

STABILITY		CONDITIONS TO AVOID
Unstable	X	Cylinder temperature should never higher than 52 °C/126 °F.
Stable		
INCOMPATIBILITY (Materials to avoid) Air, water, solutions of bases, oxidizing agents and halogens.		
HAZARDOUS POLYMERIZATION		HAZARDOUS THERMAL DECOMPOSITION PRODUCTS
May Occur		Includes amorphous silica dust
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. Shut off leak, if possible without risk. Silane may accumulate without pyrophoric ignition, creating a potentially dangerous condition, which could lead to a violent explosion.
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) NIOSH approved dust, fume, mist respirator for decomposition product.		
MECHANICAL (Gen.) Recommended	OTHER N/A	SPECIAL N/A
PROTECTIVE GLOVES Use loose fitting aluminized or leather gloves.		
EYE PROTECTION Chemical goggles and the aluminized hood of a proximity suit. Goggles and face shield for small scale laboratory operation.		
OTHER PROTECTIVE EQUIPMENT Full aluminized proximity suit when transferring large quantities of material.		

SPECIAL PRECAUTIONS*

SPECIAL LABELING INFORMATION DOT Shipping Name: Silane DOT Shipping Label: Flammable gas	DOT Hazard Class: Division 2.1 I.D. No.: UN 2203
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.	
OTHER RECOMMENDATIONS OR PRECAUTIONS Flammable, pyrophoric (may ignite spontaneously in air either immediately or delayed), high pressure gas. May form explosive mixture with air. Do not need a source of ignition. Use piping and equipment adequately designed to withstand pressures to be encountered. Use only in a closed system purged with an inert gas prior to discharge from cylinder. Backflow into cylinder may cause explosion. Always use check valve or protection apparatus in any line or piping from the cylinder to prevent backflow.	

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