

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

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**MATERIAL  
SAFETY  
DATA SHEET**

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|---|---|
| <b>PRODUCT NAME</b><br>Trichlorosilane  | <b>CAS#</b><br>10025-78-2               |
| <b>TRADE NAME AND SYNONYMS</b><br>Trichlorosilane   | <b>DOT I.D. NO.</b><br>UN 1295          |
| <b>CHEMICAL NAME AND SYNONYMS</b><br>Trichlorosilane, Silicochloroform, Trichloromonosilane | <b>DOT HAZARD CLASS</b><br>Division 4.3 |
| <b>ISSUE DATE AND REVISIONS</b><br>Revised March 2000                                       | <b>FORMULA</b><br>SiHCl <sub>3</sub>    |

**HEALTH HAZARD DATA**

|   |                |       |                  |         |
|---|----------------|-------|------------------|---------|
| <b>EMERGENCY OVERVIEW</b> <p>Trichlorosilane is a corrosive, colorless, flammable 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>  |                |       |                  |         |
| <b>SYMPTOMS OF EXPOSURE</b> <p><b>Ingestion:</b> Highly to seriously 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><b>Skin Contact:</b> Brief contact will cause itching or discomfort, sustained contact will cause pain, local redness, swelling or ulceration. Prolonged or widespread skin contact may result in the absorption of potentially harmful amounts of material.</p> <p><b>Inhalation:</b> 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><b>Eye Contact:</b> 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> |                |       |                  |         |
| <b>TOXICOLOGICAL PROPERTIES</b> <table><tr><td>PEL/TLV as HCl</td><td>5 ppm</td></tr><tr><td>LC<sub>50</sub></td><td>1040ppm</td></tr></table>  | PEL/TLV as HCl | 5 ppm | LC <sub>50</sub> | 1040ppm |
| PEL/TLV as HCl  | 5 ppm          |       |                  |         |
| LC <sub>50</sub>  | 1040ppm        |       |                  |         |
| <b>RECOMMENDED FIRSTAID TREATMENT</b> <p>PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO TRICHLOROSILANE. RESCUERS SHOULD BE EQUIPPED WITH ADEQUATE PERSONAL PROTECTIVE APPARATUS.</p> <p><b>Ingestion:</b> Do not induce vomiting. If patient is conscious, give two glasses of milk or water.</p> <p><b>Skin Contact:</b> Remove contaminated clothing and wash skin with soap and water.</p> <p><b>Inhalation:</b> Remove patients to fresh air. Give artificial respiration if not breathing. Qualified personnel may give oxygen if breathing is difficult.</p> <p><b>Eye Contact:</b> 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

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| Formation of dense white clouds of silica and hydrogen chloride on contact with moisture. |
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## PHYSICAL DATA

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| <b>BOILING POINT</b><br>31.9 °C   | <b>CRITICAL TEMPERATURE</b><br>468 °C             |
| <b>MOLECULAR WEIGHT</b><br>135.45   | <b>CRITICAL PRESSURE</b><br>34.5 bar abs          |
| <b>SOLUBILITY IN WATER</b><br>Reacts violently  | <b>DENSITY, LIQUID (20 °C, 1 atm)</b><br>1.48g/ml |
| <b>EVAPORATION RATE</b><br>40   | <b>SPECIFIC GRAVITY (AIR=1)</b><br>1.48 at 70 °F  |
| <b>APPEARANCE AND ODOR</b><br>Colorless liquid with pungent suffocating hydrochloric acid odor. |   |

## FIRE AND EXPLOSION HAZARD DATA

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| <b>FLASH POINT (Method used)</b><br>-18 °F, TCC; ASTM D56<br>7 °F, TOC; ASTM 1310   | <b>AUTOIGNITION TEMPERATURE</b><br>Vapor has relatively low autoignition temperature of 182 °±2 °C | <b>FLAMMABLE LIMITS % BY VOLUME</b><br>LEL 6.9-7.1<br>UEL 80.8-86.0 |
| <b>EXTINGUISHING MEDIA</b><br>For small fires, use large amount of water spray to react with the chlorosilane. Reacts violently with water to form hydrogen chloride fumes. Material is reactive with water but can be extinguished with a 6% solution in water of medium expansion Hazmat II Foam. |  |   |
| <b>SPECIAL FIRE FIGHTING PROCEDURES</b><br>Do not approach area without self-contained breathing apparatus and protective clothing. Immediately cool containers with water spray from maximum distance.   |  |   |
| <b>UNUSUAL FIRE AND EXPLOSION HAZARDS</b><br>Flammable, toxic, corrosive gas. Forms explosive mixtures with air and oxidizing agents. Container may rupture due to heat of fire. If flames are extinguished, explosive re-ignition may occur.   |  |   |

## REACTIVITY DATA

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| <b>STABILITY</b>  |   | <b>CONDITIONS TO AVOID</b><br>Reacts with surface moisture to form hydrochloric acid, which corrodes common metals and forms flammable hydrogen gas.   |
| Unstable  |   |  |
| Stable  | X |  |
| <b>INCOMPATIBILITY (Materials to avoid)</b><br>Water, oxidizing agents, bases, organic materials, aqueous acids, alkalies, ketones and aldehydes. Reacts very rapidly with alcohols, amines, acetone and ammonia. |   |  |
| <b>HAZARDOUS POLYMERIZATION</b>   |   | <b>HAZARDOUS THERMAL DECOMPOSITION PRODUCTS</b><br>Thermal decomposition or burning may produce hydrogen chloride, chlorine and silicon oxides, which react vigorously with water to form hydrogen chloride fumes. |
| May Occur   |   |  |
| Will Not Occur  | X |  |

## SPILL OR LEAK PROCEDURES

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| <b>STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED</b><br>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 |
| <b>WASTE DISPOSAL METHOD</b><br>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

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| <b>RESPIRATORY PROTECTION (Specify type)</b><br>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. |                     |  |
| <b>MECHANICAL (Gen.)</b><br>Not recommended as a primary ventilation.  | <b>OTHER</b><br>N/A | <b>SPECIAL</b><br>Canopy type of a forced draft fume hood. |
| <b>PROTECTIVE GLOVES</b><br>Neoprene   |                     |  |
| <b>EYE PROTECTION</b><br>Goggles and face shield.  |                     |  |
| <b>OTHER PROTECTIVE EQUIPMENT</b><br>Full-face shield, apron, eye bath and safety shower. Metatarsal shoes for container handling. Other protective clothing to prevent skin contact.  |                     |  |

## SPECIAL PRECAUTIONS\*

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| <b>SPECIAL LABELING INFORMATION</b><br>DOT Shipping Name: Trichlorosilane<br>DOT Shipping Label: Corrosive, Flammable liquid   |  | DOT Hazard Class: Division 4.3<br>I.D. No.: UN 1295 |  |
| <b>SPECIAL HANDLING RECOMMENDATIONS</b><br>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. |  |   |  |
| <b>SPECIAL STORAGE RECOMMENDATIONS</b><br>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.   |  |   |  |
| <b>OTHER RECOMMENDATIONS OR PRECAUTIONS</b><br>Trichlorosilane 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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