

TRIMETHYLCHLOROSILANE

TMC

CAUTIONARY RESPONSE INFORMATION

Common Synonyms Chlorotrimethylsilane Trimethylsilyl chloride		Liquid	Colorless	Sharp irritating odor
Reacts violently with water. Irritating gas is produced on contact with water.				
<p>Evacuate. Keep people away. Avoid contact with liquid and vapor. Shut off ignition sources. Call fire department. Notify local health and pollution control agencies. Protect water intakes.</p>				
Fire	<p>FLAMMABLE. POISONOUS GASES MAY BE PRODUCED IN FIRE. Containers may explode in fire. Flashback along vapor trail may occur. Vapor may explode if ignited in an enclosed area. Extinguish with dry chemicals or carbon dioxide. DO NOT USE WATER OR FOAM ON FIRE. Cool exposed containers with water.</p>			
Exposure	<p>Call for medical aid.</p> <p>VAPOR Irritating to eyes, nose and throat. Harmful if inhaled. Move victim to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.</p> <p>LIQUID Will burn skin and eyes. Harmful if swallowed. Remove contaminated clothing and shoes. Flush affected areas with plenty of water. IF IN EYES, hold eyelids open and flush with plenty of water. IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk. DO NOT INDUCE VOMITING.</p>			
Water Pollution	<p>Effect of low concentrations on aquatic life is unknown. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.</p>			

1. CORRECTIVE RESPONSE ACTIONS

Dilute and disperse
Stop discharge
Chemical and Physical Treatment:
Neutralize
Do not burn

2. CHEMICAL DESIGNATIONS

2.1 CG Compatibility Group: Not listed.
2.2 Formula: (CH₃)₃SiCl
2.3 IMO/UN Designation: 3.2/1298
2.4 DOT ID No.: 1298
2.5 CAS Registry No.: 75-77-4
2.6 NAERG Guide No.: 155
2.7 Standard Industrial Trade Classification: 51550

3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Acid-vapor-type respiratory protection; rubber gloves; chemical worker's goggles; other protective equipment as necessary to protect skin and eyes.
- 3.2 **Symptoms Following Exposure:** Inhalation of vapor irritates mucous membranes. Contact of liquid with eyes or skin causes severe burns. Ingestion causes severe burns of mouth and stomach.
- 3.3 **Treatment of Exposure:** Get medical attention following all exposures to this compound. INHALATION: remove victim from exposure; if breathing is difficult or stopped, give artificial respiration. EYES: flush with water for 15 min. SKIN: flush with water. INGESTION: do NOT induce vomiting; give large amount of water.
- 3.4 TLV-TWA: Not listed.
3.5 TLV-STEL: Not listed.
3.6 TLV-Ceiling: Not listed.
3.7 **Toxicity by Ingestion:** Grade 3; LD₅₀ = 0.5 to 5 g/kg
3.8 **Toxicity by Inhalation:** Currently not available.
3.9 **Chronic Toxicity:** Currently not available
3.10 **Vapor (Gas) Irritant Characteristics:** Vapors cause severe irritation of eyes and throat and can cause eye and lung injury. They cannot be tolerated even at low concentrations.
3.11 **Liquid or Solid Characteristics:** Severe skin irritant. Causes second- and third-degree burns on short contact and is very injurious to the eyes.
3.12 **Odor Threshold:** Currently not available
3.13 IDLH Value: Not listed.
3.14 OSHA PEL-TWA: Not listed.
3.15 OSHA PEL-STEL: Not listed.
3.16 OSHA PEL-Ceiling: Not listed.
3.17 EPA AEGL: Not listed

4. FIRE HAZARDS

- 4.1 **Flash Point:**
-18°F C.C.; 0°F O.C.
- 4.2 **Flammable Limits in Air:** 1.8% (LFL); 6.0% (UFL)
- 4.3 **Fire Extinguishing Agents:** Dry chemical
- 4.4 **Fire Extinguishing Agents Not to Be Used:** Water, foam
- 4.5 **Special Hazards of Combustion**
Products: Toxic and irritating hydrogen chloride and phosgene may be formed in fires.
- 4.6 **Behavior in Fire:** Difficult to extinguish; re-ignition may occur. Contact with water applied to adjacent fires produces irritating hydrogen chloride gas.
- 4.7 **Auto Ignition Temperature:** 743°F
- 4.8 **Electrical Hazards:** Currently not available
- 4.9 **Burning Rate:** 5.3 mm/min.
- 4.10 **Adiabatic Flame Temperature:** Currently not available
- 4.11 **Stoichiometric Air to Fuel Ratio:** 28.6 (calc.)
- 4.12 **Flame Temperature:** Currently not available
- 4.13 **Combustion Molar Ratio (Reactant to Product):** 9.0 (calc.)
- 4.14 **Minimum Oxygen Concentration for Combustion (MOCC):** Not listed

5. CHEMICAL REACTIVITY

- 5.1 **Reactivity with Water:** Reacts vigorously, evolving hydrogen chloride (hydrochloric acid).
- 5.2 **Reactivity with Common Materials:** Reacts with surface moisture to evolve hydrogen chloride, which will corrode common metals and form flammable hydrogen gas.
- 5.3 **Stability During Transport:** Stable
- 5.4 **Neutralizing Agents for Acids and Caustics:** Flush with water, rinse with sodium bicarbonate or lime solution.
- 5.5 **Polymerization:** Not pertinent
- 5.6 **Inhibitor of Polymerization:** Not pertinent

6. WATER POLLUTION

- 6.1 **Aquatic Toxicity:**
Currently not available
- 6.2 **Waterfowl Toxicity:** Currently not available
- 6.3 **Biological Oxygen Demand (BOD):**
Currently not available
- 6.4 **Food Chain Concentration Potential:**
None
- 6.5 **GESAMP Hazard Profile:**
Bioaccumulation: 0
Damage to living resources: 1
Human Oral hazard: (1)
Human Contact hazard: II
Reduction of amenities: XX

7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** 98+%
- 7.2 **Storage Temperature:** Ambient
- 7.3 **Inert Atmosphere:** No requirement
- 7.4 **Venting:** Pressure-vacuum
- 7.5 **IMO Pollution Category:** Currently not available
- 7.6 **Ship Type:** Currently not available
- 7.7 **Barge Hull Type:** Currently not available

8. HAZARD CLASSIFICATIONS

- 8.1 **49 CFR Category:** Flammable liquid
- 8.2 **49 CFR Class:** 3
- 8.3 **49 CFR Package Group:** II
- 8.4 **Marine Pollutant:** No
- 8.5 **NFPA Hazard Classification:**
- | Category | Classification |
|---------------------------|----------------|
| Health Hazard (Blue)..... | 3 |
| Flammability (Red)..... | 3 |
| Instability (Yellow)..... | 2 |
| Special (White)..... | W |
- 8.6 **EPA Reportable Quantity:** Not listed.
- 8.7 **EPA Pollution Category:** Not listed.
- 8.8 **RCRA Waste Number:** Not listed
- 8.9 **EPA FWPCA List:** Not listed

9. PHYSICAL & CHEMICAL PROPERTIES

- 9.1 **Physical State at 15° C and 1 atm:** Liquid
- 9.2 **Molecular Weight:** 108.7
- 9.3 **Boiling Point at 1 atm:** 135°F = 57°C = 330°K
- 9.4 **Freezing Point:** Not pertinent
- 9.5 **Critical Temperature:** Not pertinent
- 9.6 **Critical Pressure:** Not pertinent
- 9.7 **Specific Gravity:** 0.846 at 25°C (liquid)
- 9.8 **Liquid Surface Tension:** (est.) 17.8 dynes/cm = 0.0178 N/m at 20°C
- 9.9 **Liquid Water Interfacial Tension:** Not pertinent
- 9.10 **Vapor (Gas) Specific Gravity:** 3.7
- 9.11 **Ratio of Specific Heats of Vapor (Gas):** (est.) 1.0683
- 9.12 **Latent Heat of Vaporization:** 126 Btu/lb = 70 cal/g = 2.9 X 10⁵ J/kg
- 9.13 **Heat of Combustion:** (est.) -10,300 Btu/lb = -5,700 cal/g = -240 X 10⁵ J/kg
- 9.14 **Heat of Decomposition:** Not pertinent
- 9.15 **Heat of Solution:** Currently not available
- 9.16 **Heat of Polymerization:** Currently not available
- 9.17 **Heat of Fusion:** Currently not available
- 9.18 **Limiting Value:** Currently not available
- 9.19 **Reid Vapor Pressure:** Currently not available

NOTES

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9.20 SATURATED LIQUID DENSITY		9.21 LIQUID HEAT CAPACITY		9.22 LIQUID THERMAL CONDUCTIVITY		9.23 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit inch per hour-square foot-F	Temperature (degrees F)	Centipoise
42	53.960	51	0.350	50	0.873		
44	53.890	52	0.350	52	0.873		N
46	53.820	53	0.350	54	0.873		O
48	53.750	54	0.350	56	0.873		T
50	53.680	55	0.350	58	0.873		
52	53.610	56	0.350	60	0.873		P
54	53.540	57	0.350	62	0.873		E
56	53.470	58	0.350	64	0.873		R
58	53.410	59	0.350	66	0.873		T
60	53.340	60	0.350	68	0.873		I
62	53.270	61	0.350	70	0.873		N
64	53.200	62	0.350	72	0.873		E
66	53.130	63	0.350	74	0.873		N
68	53.060	64	0.350	76	0.873		T
70	52.990	65	0.350	78	0.873		
72	52.920	66	0.350	80	0.873		
74	52.850	67	0.350	82	0.873		
76	52.780	68	0.350	84	0.873		
78	52.710	69	0.350	86	0.873		
80	52.640	70	0.350	88	0.873		
82	52.570	71	0.350				
84	52.500	72	0.350				
86	52.430	73	0.350				
		74	0.350				
		75	0.350				
		76	0.350				

9.24 SOLUBILITY IN WATER		9.25 SATURATED VAPOR PRESSURE		9.26 SATURATED VAPOR DENSITY		9.27 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
	R	65	0.935	65	0.01804	100	0.293
	E	70	1.068	70	0.02041	120	0.297
	A	75	1.216	75	0.02303	140	0.301
	C	80	1.382	80	0.02593	160	0.305
	T	85	1.566	85	0.02912	180	0.310
	S	90	1.771	90	0.03262	200	0.314
		95	1.997	95	0.03646	220	0.318
		100	2.247	100	0.04065	240	0.322
		105	2.523	105	0.04524	260	0.327
		110	2.826	110	0.05023	280	0.331
		115	3.159	115	0.05567	300	0.335
		120	3.524	120	0.06156	320	0.339
		125	3.923	125	0.06795	340	0.344
		130	4.359	130	0.07486	360	0.348
		135	4.835	135	0.08232	380	0.352
		140	5.352	140	0.09037	400	0.356
		145	5.913	145	0.09903	420	0.361
		150	6.523	150	0.10830	440	0.365
		155	7.182	155	0.11830	460	0.369
		160	7.895	160	0.12900	480	0.373
		165	8.665	165	0.14050	500	0.378
		170	9.495	170	0.15270	520	0.382
		175	10.390	175	0.16580	540	0.386
		180	11.350	180	0.17970	560	0.390
						580	0.395
						600	0.399