•	Detail of 75-77-4
•	Molecular Structure:
	L., ci
•	_SI<
•	Name: TRIMETHYL CHLOROSILANE
•	CAS Number:75-77-4
•	<b>Molecular Formula:</b> C <sub>3</sub> H <sub>9</sub> ClSi
•	Molecular Weight: 108.66
•	EINECS:200-900-5
•	Density:0.856
•	Melting Point:-58 °C
•	Boiling Point:57 °C
•	Flash Point:-18 °C
•	Solubility:REACTS
•	Risk Codes:R11;R14;R21;R34 Details
•	Appearance: colourless liquid
•	liansport Information:UN 1298
•	Hazard Symbols: Flammable, dangerous fire risk, reacts violently with water.
	Strong irritant to tissue.
•	<b>Properties:</b> Colorless liquid. Bp: 57°, mp: -40°, d: 0.854 @ 25°/25°, flash p: -18°F. Sol in benzene.

ether, perchloroethylene.

## Chlorotrimethylsilane Basic information

Product Name:	Chlorotrimethylsilane
Synonyms:	DOW CORNING(R) PRODUCT Z-1224;CHLOROTRIMETHYLSILANE;SILANE M3;TMCS;TMSCL;TRIMETHYLSILYL CHLORIDE;TRIMETHYL SILICON CHLORIDE;TRIMETHYLCHLOROSILANE
CAS:	<u>75-77-4</u>
MF:	C3H9ClSi
MW:	108.64
EINECS:	200-900-5
Product Categories:	Pharmaceutical Intermediates; Chloro; Organics; Analytical Chemistry; Biochemistry; GC Derivatizing Reagents; Monochlorosilanes; Nucleosides, Nucleotides & Related Reagents; Protecting Agents for Hydroxyl and Amino Groups; Protecting Agents, Phosphorylating Agents & Condensing Agents; Protection & Derivatization Reagents (for Synthesis); Reagents for Oligosaccharide Synthesis; Si (Classes of Silicon Compounds); Si-Cl Compounds; Silicon Compounds (for Synthesis); Silylation (GC Derivatizing Reagents); Synthetic Organic Chemistry; Trimethylsilylation (GC Derivatizing Reagents); Blocking Agents; Chloro Silanes; Protective Agents; Silylating Agents
Mol File:	<u>75-77-4.mol</u>

-și-ci

# **Chlorotrimethylsilane Chemical Properties**

mp	-40 °C(lit.)
bp	57 °C(lit.)
density	1.257 g/mL at 25 °C
vapor density	3.7 (vs air)
vapor pressure	100 mm Hg ( 25 °C)
refractive index	<i>n</i> 20/D 1.500
Fp	104 °F
storage temp.	Store at RT.
Water Solubility	REACTS
Sensitive	Moisture Sensitive
BRN	1209232
Stability:	Stable. Highly flammable - note low flash point. Reacts violently with water. Incompatible with water, moisture, strong oxidizing agents, strong acids, strong bases, aldehydes, alcohols, amines, esters, ketones.
CAS DataBase Reference	75-77-4(CAS DataBase Reference)
NIST Chemistry Reference	<u>75-77-4(NIST)</u>
EPA Substance Registry System	75-77-4(EPA Substance)

## Safety Information

Hazard Codes	T,F,C,Xn
Risk Statements	20/21-36/38-34-21-14-11-37-35-19-40-10
Safety Statements	26-36/37/39-45-16-36/37
RIDADR	UN 2924 3/PG 2
WGK Germany	2
RTECS	VV2710000
F	10-21
Hazard Note	Highly Flammable/Corrosive/Moisture Sensitive
TSCA	Yes

HazardClass	3
PackingGroup	II
HS Code	29310095
Hazardous Substances Data	75-77-4(Hazardous Substances Data)

## [Product Name]

Chlorotrimethylsilane

## [Synonyms]

Chlorotrimethylsilane Chlorotrimethylsilicane Trimethyl silyl chloride

# [CAS]

75-77-4

## [Formula]

C3H9ClSi

## [Molecular Weight]

108.64

# [EINECS]

200-900-5

## [RTECS]

VV2710000

## [RTECS Class]

Tumorigen; Mutagen; Primary Irritant

## [Beilstein/Gmelin]

1209232

## [Beilstein Reference]

4-04-00-04007

## [EC Class]

highly flammable, corrosive

# **Physical and Chemical Properties**

Back to Contents

## [Appearance]

A colorless fuming liquid with a pungent odor.

## [Solubility in water]

Slightly soluble

[Melting Point]

-58

## [Boiling Point]

59

## [Vapor Pressure]

220 (25 C)

## [Density]

0.8576 g/cm3

## [Partition Coefficient]

2.18

## [Heat Of Vaporization]

28.9 kJ/mol

[Heat Of Combustion]

-2362 kJ/mol

## [Usage]

Intermediate for silicone fluids, as a chain terminating agent, imparting water repellency.

#### [Vapor Density]

3.7

## [Refractive Index]

1.3870 (20 C)

## **First Aid Measures**

Back to Contents

## [Ingestion]

Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

## [Inhalation]

Get medical aid immediately. Remove from exposure to fresh air immediately. If breathing is difficult, give oxygen.

## [Skin]

Get medical aid immediately. Immediately flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes.

## [Eyes]

Get medical aid immediately. Extensive irrigation is required (at least 30 minutes).

# **Handling and Storage**

Back to Contents

## [Storage]

Keep away from sources of ignition. Store in a cool, dry place. Store in a tightly closed container. Flammablesarea.

## [Handling]

Wash thoroughly after handling. Use only in a well ventilated area. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Do not get in eyes, on skin, or on clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Avoid contact with heat, sparks and flame. Do not ingest or inhale. Do not allow contact with water. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

# Hazards Identification

Back to Contents

## [Inhalation]

May cause irritation of the respiratory tract with burning pain in the nose and throat, coughing, wheezing, shortness of breath and pulmonary edema. Inhalation may be fatal as a result of spasm, inflammation, edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema. Vapors may cause dizziness or suffocation.

## [Skin]

Contact with skin causes irritation and possible burns, especially if the skin is wet or moist. May be harmful if absorbed through the skin.

## [Eyes]

Causes severe eye burns.

## [Ingestion]

May cause severe gastrointestinal tract irritation with nausea, vomiting and possible burns.

## [Hazards]

Violent reaction with water. Toxic and irritating hydrogen chloride and phosgene may be formed in fires. Difficult to extinguish, re-ignition may occur. Flashback along vapor trail may occur. Containers may explode in fire. Vapor may explode if ignited in enclosed area. When heated to decomposition or on contact with acids or acid fumes, chloride fumes are emitted. Reacts with surface moisture, releasing hydrogen chloride, which will corrode common metals and form flammable hydrogen gas. Avoid contact with water; it readily hydrolyzes, liberating hydrochloric acid.

## [EC Risk Phrase]

R 11 14 21 34

#### [EC Safety Phrase]

S 16 26 36/37/39 45

[UN (DOT)]

# **Exposure Controls/Personal Protection**

Back to Contents

#### **[Personal Protection]**

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166. Skin: Wear appropriate protective gloves to prevent skin exposure. Clothing: Wear appropriate protective clothing to prevent skin exposure.

## [Respirators]

Follow the OSHA respirator regulations found in 29CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

#### [Exposure Effects]

Prolonged or repeated skin contact may cause dermatitis.

## **Fire Fighting Measures**

Back to Contents

#### [Flash Point]

-18

## [Autoignition]

417

## [Fire Fighting]

Wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Use water spray to keep fire-exposed containers cool. Extremely flammable liquid. Water Reactive. Extinguishing media: Use carbon dioxide or dry chemical. DO NOT USE WATER! Contact professional fire-fighters immediately.

#### [Upper exp. limit]

6.0

#### [Lower exp. limit]

1.8

1298

## [Fire Potential]

Dangerous fire hazard when exposed to heat or flame. Contact with water applied to adjacent fires produces irritating hydrogen chloride. Flammable liquid. Trichlorosilane is highly flammable. Trichlorosilane

# **Accidental Release Measures**

Back to Contents

#### [Small spills/leaks]

Absorb spill with inert material, (e.g., dry sand or earth), then place into a chemical waste container. Remove all sources of ignition. Use a spark-proof tool.

# **Stability and Reactivity**

Back to Contents

#### [Disposal Code]

24

## [Incompatibilities]

Acids, methanoic acid, oxalic acid), alcohols and glycols (e.g. butyl alcohol, ethanol, methanol, ethylene glycol), aldehydes (e.g. acetaldehyde, acrolein, chloral hydrate, formaldehyde), amides (e.g. butyramide, diethyltoluamide, dimethyl formamide), amines (aliphatic and aromatic, e.g. dimethyl amine, propylamine, pyridine, triethylamine), azo, diazo, and hydrazines (e.g. dimethyl hydrazine, hydrazine, methyl hydrazine), dithiocarbamates (e.g. ferbam, maneb, metham, thiram), esters (e.g. butyl acetate, ethyl acetate, propyl formate), halogenated organics (e.g. dibromoethane, hexachlorobenzene, methyl chloride, trichloroethylene), isocyanates (e.g. methyl isocyanate), ketones (e.g. acetone, ac

## [Stability]

Stable under normal temperatures and pressures.

## [Decomposition]

Hydrogen chloride, phosgene, carbon monoxide, carbon dioxide, silicon oxide.

#### **[Combustion Products]**

Toxic and irritating hydrogen chloride and phosgene may be formed in fires.

# **Transport Information**

Back to Contents

## [UN Number]

1298

## [Hazard Class]

3

# [Packing Group]

Π

# [HS Code]

2931 00 95

## MATERIAL SAFETY DATA SHEET Chlorotrimethylsilane, 1M solution in tetrahydrofuran

Section 1 - Chemical Product and Company Identification						
MSDS Name: Chlorotrimethylsilane, 1M solution in tetrahydrofur		solution in tetrahydrofuran				
Catalog Numbers: 38161-0000, 38161-1000,		, 38161-8000				
Synonyms:	Synonyms:					
Company Identification:		Acros Organics BVBA Janssen Pharmaceuticalaan 3a 2440 Geel, Belgium				
Company Identification: (USA)		Acros Organics One Reagent Lane Fair Lawn, NJ 07410				
For information in the US, call:		800-ACROS-01				
For information in Europ	e, call:	+32 14 57 52 11				
Emergency Number, Europe:		+32 14 57 52 99				
Emergency Number US:		201-796-7100				
CHEMTREC Phone Number, US:		800-424-9300				
CHEMTREC Phone Number, Europe:		703-527-3887				

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name:	%	EINECS#	Hazard Symbols:	Risk Phrases:

75-77-4	Chlorotrimethylsilane	10.9%	200-900-5	FC	11 14 20/21 29 35
109-99-9	Tetrahydrofuran	89.1%	203-726-8	FΧI	11 19 36/37

Text for R-phrases: see Section 16

#### Hazard Symbols:



**Risk Phrases:** 

11 14 19 29 35

#### Section 3 - Hazards Identification

#### **EMERGENCY OVERVIEW**

*Highly flammable. Reacts violently with water. May form explosive peroxides. Contact with water liberates toxic gas. Causes severe burns.* 

#### **Potential Health Effects**

Eye:	Causes eye burns.
Skin:	Causes skin burns.
Ingestion:	Causes gastrointestinal tract burns.
Inhalation:	Causes chemical burns to the respiratory tract.
Chronie	

Chronic:

#### Section 4 - First Aid Measures

Eyes:	Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.
Skin:	Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Ingestion:	Do not induce vomiting. Get medical aid immediately.
Inhalation:	Get medical aid immediately. Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.
Notes to Physician:	Treat symptomatically and supportively.

## Section 5 - Fire Fighting Measures

General Information:	As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Water Reactive. Material will react with water and may release a flammable and/or toxic gas. May form explosive peroxides. Flammable liquid and vapor.			
Extinguishing Media:	Use foam, dry chemical, or carbon dioxide. DO NOT USE WATER!			
Section 6 - Accidental Release Measures				
General	Use proper personal protective equipment as indicated in Section 8.			
Information:	Use proper personal protective equipment as indicated in Section 8.			

Section 7 - Handling and Storage

- **Handling:** Do not breathe dust, vapor, mist, or gas. Do not get in eyes, on skin, or on clothing. Use only in a chemical fume hood.
- **Storage:** Store in a cool, dry place. Store in a tightly closed container. Flammables-area. Corrosives area. Store protected from moisture. Store under nitrogen.

Section 8 - Exposure Controls, Personal Protection

#### **Engineering Controls:**

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

#### **Exposure Limits**

CAS# 75-77-4:

CAS# 109-99-9:

United Kingdom, WEL - TWA: 50 ppm TWA; 150 mg/m3 TWA United Kingdom, WEL - STEL: 100 ppm STEL; 300 mg/m3 STEL United States OSHA: 200 ppm TWA; 590 mg/m3 TWA Belgium - TWA: 200 ppm VLE; 599 mg/m3 VLE Belgium - STEL: 100 ppm VLE; 300 mg/m3 VLE France - VME: 50 ppm VME; 150 mg/m3 VME France - VLE: 100 ppm VLE; 300 mg/m3 VLE Germany: 50 ppm TWA; 150 mg/m3 TWA Germany: skin notation Japan: 200 ppm OEL; 590 mg/m3 OEL Malaysia: 200 ppm TWA; 590 mg/m3 TWA Netherlands: 100 ppm MAC; 300 mg/m3 MAC

Spain: 50 ppm VLA-ED; 150 mg/m3 VLA-ED Spain: 100 ppm VLA-EC; 300 mg/m3 VLA-EC

#### **Personal Protective Equipment**

**Eyes:** Wear chemical splash goggles.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

- **Clothing:** Wear appropriate protective clothing to prevent skin exposure.
- Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European

Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

#### Section 9 - Physical and Chemical Properties

Physical State:	Liquid
Color:	Not available
Odor:	Not available
pH:	Not available
Vapor Pressure:	Not available
Viscosity:	Not available
Boiling Point:	Not available
Freezing/Melting Point:	Not available
Autoignition Temperature:	Not available
Flash Point:	-20 deg C ( -4.00 deg F)
Explosion Limits: Lower:	Not available
Explosion Limits: Upper:	Not available
Decomposition Temperature:	Not available
Solubility in water:	Not available
Specific Gravity/Density:	0.880
Molecular Formula:	C3H9ClSi
Molecular Weight:	108.64

## Section 10 - Stability and Reactivity

Chemical Stability:	May form explosive peroxides. Moisture sensitive.
Conditions to Avoid:	Incompatible materials, exposure to moist air or water.
Incompatibilities with Other Materials	Strong oxidizing agents.
Hazardous Decomposition Products	Hydrogen chloride, carbon monoxide, carbon dioxide.
Hazardous Polymerization	Has not been reported.

#### Section 11 - Toxicological Information

RTECS#:	CAS# 75-77-4: VV2710000 CAS# 109-99-9: LU5950000	
LD50/LC50:	RTECS: <b>CAS# 75-77-4:</b> Draize test, rabbit, eye: 5 uL Moderate; Draize test, rabbit, skin: 500 uL Moderate; Oral, rat: LD50 = 5660 uL/kg; Skin, rabbit: LD50 = 1780 uL/kg;	
	RTECS: CAS# 109-99-9: Inhalation, rat: LC50 = 21000 ppm/3H; Oral, rat: LD50 = 1650 mg/kg;	
Carcinogenicity:	Chlorotrimethylsilane - Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.	

Tetrahydrofuran - ACGIH: A3 - Confirmed animal carcinogen with unknown relevance to humans

**Other:** The toxicological properties have not been fully investigated. See actual entry in RTECS for complete information.

Section 12 - Ecological Information

Other:

Do not empty into drains.

Section 13 - Disposal Considerations

Dispose of in a manner consistent with federal, state, and local regulations.

Section 14 - Transport Information

Shipping	FLAMMABLE LIQUID,	FLAMMABLE LIQUID,	FLAMMABLE LIQUID,
Name:	CORROSIVE, N.O.S.*	CORROSIVE, N.O.S.	CORROSIVE, N.O.S.
Hazard Class:	3 (8)	3 (8)	3 (8)

## Section 15 - Regulatory Information

USA RQ: CAS# 109-99-9: 1000 lb final RQ; 454 kg final RQ

UN Number:	2924	2924	2924
Packing Group:	Π	II	Π

#### **European/International Regulations**

European Labeling in Accordance with EC Directives

Hazard Symbols: F C

Risk Phrases:

- R 11 Highly flammable.
- R 14 Reacts violently with water.
- R 19 May form explosive peroxides.
- R 29 Contact with water liberates toxic gas.
- R 35 Causes severe burns.

Safety Phrases:

S 16 Keep away from sources of ignition - No smoking.

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S 29 Do not empty into drains.

S 33 Take precautionary measures against static discharges.

S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

WGK (Water Danger/Protection)

CAS# 75-77-4: 1

CAS# 109-99-9: 1

Canada

CAS# 75-77-4 is listed on Canada's DSL List

CAS# 109-99-9 is listed on Canada's DSL List

#### **US Federal**

TSCA

CAS# 75-77-4 is listed on the TSCA Inventory. CAS# 109-99-9 is listed on the TSCA Inventory.

#### Section 16 - Other Information

#### Text for R-phrases from Section 2

R 11 Highly flammable.

R 14 Reacts violently with water.

R 19 May form explosive peroxides.

R 20/21 Harmful by inhalation and in contact with skin.

R 29 Contact with water liberates toxic gas.

R 35 Causes severe burns.

R 36/37 Irritating to eyes and respiratory system.

MSDS Creation Date:	11/22/2004
Revision #1 Date	12/11/2007