OTTO CHEMIE PVT LTD

201, 51-53 Maroo Bhavan, Kalbadevi, Mumbai – 400002, India. Tel : + 91 22 2207 0099 / 6638 2599
Email : info@ottokemi.com, Web : www.ottokemi.com

----------ISO 9001: 2015----------

MATERIAL SAFETY DATA SHEET

Section 1 - Chemical Product and Company Identification
Tetraethyl orthosilicate, 98%
Code T 1412

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
78-10-4	Tetraethyl orthosilicate	95+	201-083-8

Section 3 - Hazards Identification
EMERGENCY OVERVIEW
Appearance: APHA: 20 max liquid. Flash Point: 45 deg C.
Warning! Flammable liquid and vapor. Causes eye, skin, and respiratory tract irritation. Harmful if inhaled.
Target Organs: Blood, kidneys, central nervous system, liver, spleen, respiratory system, eyes, skin.
Potential Health Effects
Eye: Causes severe eye irritation. Vapors cause eye irritation. In humans, 1200 ppm of ethyl silicate is lacrimatory, and 250 ppm produces slight eye irritation.
Skin: Causes skin irritation. May cause contact dermatitis. Contact with the skin defats the skin.
Ingestion: May cause gastrointestinal irritation with nausea, vomiting and diarrhea. May be harmful if swallowed.
Inhalation: Harmful if inhaled. Causes respiratory tract irritation. May cause narcotic effects in high concentration. May cause lung damage.
Chronic: Prolonged or repeated skin contact may cause defatting and dermatitis. May cause liver and kidney damage. Repeated exposure may cause damage to the spleen. Chronic exposure may cause blood effects. Prolonged or repeated exposure may cause lung irritation, chest pain, and pulmonary edema.

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.
Skin: Get medical aid. 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.
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. Vapors may form an explosive mixture with air. Vapors can travel to a source of ignition and flash back. Will burn if involved in a fire. Containers may explode in the heat of a fire. Flammable liquid and vapor.
Extinguishing Media: Use water spray to cool fire-exposed containers. Use foam, dry chemical, or carbon dioxide.
Flash Point: 45 deg C (113.00 deg F)
Autoignition Temperature: 225 deg C (437.00 deg F)
Explosion Limits, Lower:1.3 vol %
Upper: 23 vol %
NFPA Rating: (estimated) Health: 2; Flammability: 2; Instability: 1

Section 6 - Accidental Release Measures
General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Wear a self contained breathing apparatus and appropriate personal protection. (See Exposure Controls, Personal Protection section). Remove all sources of ignition. Use a spark-proof tool. Do not let this chemical enter the environment.

Section 7 - Handling and Storage
Handling: Use spark-proof tools and explosion proof equipment. Do not get in eyes, on skin, or on clothing. Keep away from heat, sparks and flame. Do not ingest or inhale. Use only in a chemical fume hood.
Storage: Keep away from sources of ignition. Store in a cool, dry place. Store in a tightly closed container. Flammables-area.

Section 8 - Exposure Controls, Personal Protection
Engineering Controls: Use explosion-proof ventilation equipment. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use only under a chemical fume hood.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Tetraethyl orthosilicate	10 ppm TWA	10 ppm TWA; 85 mg/m3 TWA 700 ppm IDLH	100 ppm TWA; 850 mg/m3 TWA

OSHA Vacated PELs: Tetraethyl orthosilicate: 10 ppm TWA; 85 mg/m3 TWA
Personal Protective Equipment
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: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

Section 9 - Physical and Chemical Properties
Physical State: Liquid
Appearance: clear, colorless - APHA: 20 max
Odor: ester-like - slight characteristic odor
pH: Not available.
Vapor Pressure: 1 mbar @ 20 deg C
Vapor Density: 7.2 (air=1)
Evaporation Rate:Not available.
Viscosity: 0.75 mPa @ 20 deg C
Boiling Point: 166 - 169 deg C @ 760 mmHg
Freezing/Melting Point:-77 deg C
Decomposition Temperature:Not available.
Solubility: Hydrolysis.
Specific Gravity/Density:0.940
Molecular Formula:C8H20O4Si
Molecular Weight:208.33

Section 10 - Stability and Reactivity
Chemical Stability: Moisture sensitive.
Conditions to Avoid: Incompatible materials, ignition sources, excess heat, exposure to moist air or water.
Incompatibilities with Other Materials: Strong oxidizing agents, strong acids, alkali metals, alkaline earth metals, caustic alkalis.
Hazardous Decomposition Products: Carbon monoxide, carbon dioxide, ethyl alcohol, silicon dioxide, organic acids.
Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information
RTECS#:
CAS# 78-10-4: VV9450000
LD50/LC50:
CAS# 78-10-4:
Draize test, rabbit, eye: 100 mg Mild;
Draize test, rabbit, eye: 500 mg/24H Mild;
Draize test, rabbit, skin: 500 mg/24H Moderate;
Oral, rat: LD50 = 6270 mg/kg;
Skin, rabbit: LD50 = 6300 uL/kg;
.

Carcinogenicity:
CAS# 78-10-4: Not listed by ACGIH, IARC, NTP, or CA Prop 65.
Epidemiology: No information available.
Teratogenicity: No information available.
Reproductive Effects: No information available.
Mutagenicity: No information available.
Neurotoxicity: No information available.
Other Studies:

Section 12 - Ecological Information
Ecotoxicity: No data available. No information available.
Environmental: No information available.
Physical: No information available.
Other: Do not empty into drains.

Section 13 - Disposal Considerations
Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transport Information

US DOT	Canada TDG
Shipping Name:	TETRAETHYL SILICATE	TETRAETHYL SILICATE
Hazard Class:	3	3
UN Number:	UN1292	UN1292
Packing Group:	III	III
Additional Info:		FLASHPOINT 37 C

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 78-10-4 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 78-10-4: immediate, delayed, fire, reactive.

Section 313 No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 78-10-4 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

XN

Risk Phrases:

R 10 Flammable.
R 36/37 Irritating to eyes and respiratory system.
R 20 Harmful by inhalation.

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

WGK (Water Danger/Protection)

CAS# 78-10-4: 1

Canada - DSL/NDSL

CAS# 78-10-4 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of B2, D2B.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

CAS# 78-10-4 is listed on the Canadian Ingredient Disclosure List.

Section 16: Other Information

This safety data sheet should be used in conjunction with technical sheets. It does not replace them. The information given is based on our knowledge of this product, at the time of publication. It is given in good faith. The attention of the user is drawn to the possible risks incurred by using the product for any other purpose other than that for which it was intended. This does not in any way excuse the user from knowing and applying all the regulations governing his activity. It is the sole responsibility of the user to take all precautions required in handling the product. The aim of the mandatory regulations mentioned is to help the user to fulfill his obligations regarding the use of hazardous products.