SAFETY DATA SHEET

Preparation Date: 10/27/2017 **Revision Date:** 10/27/2017 **Revision Number:** G1

1. IDENTIFICATION

Product identifier

Product code: E1100
Product Name: ETHYL SILICATE

Other means of identification
Synonyms: Ethyl orthosilicate
Silane, tetraethoxy-
Silicate d'ethyle (French)
Silicate tetraethylique (French)
TEOS
Tetraethoxysilane
Tetraethyl orthosilicate

CAS #: 78-10-4
RTECS # VV9450000
CI#: Not available

Recommended use of the chemical and restrictions on use
Recommended use: Preservative for stone, brick, concrete, and plaster.
Uses advised against No information available

Supplier:
Spectrum Chemical Mfg. Corp
14422 South San Pedro St.
Gardena, CA 90248
(310) 516-8000

Order Online At: https://www.spectrumchemical.com
Emergency telephone number Chemtrec 1-800-424-9300
Contact Person: Martin LaBenz (West Coast)
Contact Person: Ibad Tirmiz (East Coast)

2. HAZARDS IDENTIFICATION

Classification

This chemical is considered hazardous according to the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Considered a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Acute toxicity - Inhalation (Dusts/Mists)	Category 4
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2
Flammable liquids	Category 3

Label elements

Warning

Hazard statements
Harmful if inhaled
Causes skin irritation
Causes serious eye irritation
Flammable liquid and vapor

Hazards not otherwise classified (HNOC)
Not Applicable

Other hazards
Not available

Precautionary Statements - Prevention
Avoid breathing dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wash face, hands and any exposed skin thoroughly after handling
Wear eye/face protection
Wear protective gloves
Keep away from heat/sparks/open flames/hot surfaces. — No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting/.../equipment
Use only non-sparking tools
Take precautionary measures against static discharge

Precautionary Statements - Response

In case of fire: Use CO2, dry chemical, or foam to extinguish.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
If skin irritation occurs: Get medical advice/attention
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

Precautionary Statements - Storage
Store in a well-ventilated place. Keep cool

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS-No.	Weight %
Ethyl Silicate	78-10-4	100

4. FIRST AID MEASURES

First aid measures

General Advice: National Capital Poison Center in the United States can provide assistance if you have a poison emergency and need to talk to a poison specialist. Call

1-800-222-1222.

Skin Contact: Wash off immediately with soap and plenty of water removing all contaminated clothing and shoes. Get medical attention. If skin irritation persists, call a physician.

Eye Contact: Flush eyes with water for 15 minutes. Get medical attention.

Inhalation: Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.

Ingestion: Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Consult a physician if necessary.

Most important symptoms and effects, both acute and delayed

Symptoms

Causes serious eye irritation
Moderately irritating to the eyes
Causes skin irritation
Moderately irritating to the skin
Irritating to respiratory system
Dyspnea (Difficulty breathing and shortness of breath)
May cause pulmonary edema
Nausea
Vomiting
Abdominal pain
Central nervous system effects
Tremors
Dizziness
Weakness
Unsteadiness
Unconciousness
Narcosis
May cause defatting, drying, cracking, inflammation of the skin.
It may affect the kidneys
May affect the liver
It may affect the blood

Indication of any immediate medical attention and special treatment needed

Notes to Physician: Treat symptomatically.

Protection of first-aiders
First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste.

5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: Carbon dioxide (CO2). Dry chemical. Alcohol-resistant foam. Water spray.

Unsuitable Extinguishing Media: Do not use a solid (straight) water stream as it may scatter and spread fire.

Specific hazards arising from the chemical

Hazardous Combustion Products: Carbon Monoxide, Carbon Dioxide. Silicon oxides.

Specific hazards: Flammable. May be ignited by heat, sparks or flames. Material can burn with invisible flame. Vapor may travel considerable distance to source of ignition and flash back. Vapors may form explosive mixtures with air. Most vapors

are heavier than air. They will spread along the ground and collect in low or confined areas (sewers, basements, tanks). Container explosion may occur under fire conditions or when heated. Fire may produce irritating, corrosive and/or toxic gases.

Special Protective Actions for Firefighters

Specific Methods: Water mist may be used to cool closed containers. For larger fires, use water spray or fog. Cool containers with flooding quantities of water until well after fire is out.

Special Protective Equipment for Firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions: Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid contact with skin, eyes and clothing. Use personal protective equipment. Remove all sources of ignition. Pay attention to flashback. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use spark-proof tools and explosion-proof equipment. In case of large spill, water spray or vapor suppressing foam may be used to reduce vapors, but may not prevent ignition in closed spaces.

Environmental precautions Prevent further leakage or spillage if safe to do so. Prevent entry into waterways, sewers, basements or confined areas.

Methods and material for containment and cleaning up

Methods for containment Stop leak if you can do it without risk. Absorb spill with inert material (e.g. vermiculite, dry sand or earth). In case of large spill, dike if needed. Dike far ahead of liquid spill for later disposal.

Methods for cleaning up Use appropriate tools to put the spilled material in a suitable chemical waste disposal container. Use only non-sparking tools. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Precautions for safe handling

Technical Measures/Precautions:
Provide sufficient air exchange and/or exhaust in work rooms. Remove all sources of ignition. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Keep away from incompatible materials.

Safe Handling Advice
Wear personal protective equipment. Use only in well-ventilated areas. Avoid contact with skin, eyes and clothing. Keep away from heat and sources of ignition. Do not breathe vapors or spray mist. Do not ingest. When using do not smoke. Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Technical Measures/Storage Conditions:
Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Store in a segregated and approved area. Store away from incompatible materials.

Incompatible Materials:
Strong oxidizing agents
Water
Strong acids
Alkalis

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

National occupational exposure limits

United States

Components	CAS-No.	OSHA	NIOSH	ACGIH	AIHA WEEL
Ethyl Silicate	78-10-4	100 ppm TWA 850 mg/m³ TWA	10 ppm TWA 85 mg/m³ TWA	10 ppm TWA	None

Canada

Components	CAS-No.	Canada - Alberta	Canada - British Columbia	Canada - Ontario	Canada - Quebec
Ethyl Silicate	78-10-4	10 ppm TWA 85 mg/m³ TWA	10 ppm TWA	10 ppm TWA	10 ppm TWAEV 85 mg/m³ TWAEV

Australia and Mexico

Components	CAS-No.	Australia	Mexico
Ethyl Silicate	78-10-4	10 ppm TWA 85 mg/m³ TWA	10 ppm TWA 85 mg/m³ TWA 30 ppm STEL 255 mg/m³ STEL

Appropriate engineering controls

Engineering measures to reduce exposure: Ensure adequate ventilation. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors and mist below their respective threshold limit value.

Individual protection measures, such as personal protective equipment

Personal Protective Equipment

Eye protection: Goggles Safety glasses with side-shields

Skin and body protection: Chemical resistant apron
Long sleeved clothing
Gloves

Respiratory protection: Vapor respirator. Be sure to use an approved/certified respirator or equivalent.

Hygiene measures: Avoid contact with skin, eyes and clothing. When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:
Liquid

Appearance:
No information available.

Color:
Colorless.

Odor:
Sharp. Ester-like.

Taste
No information available.

Formula:
C8H20O4Si

Molecular/Formula weight:
208.33

Flammability:
Flammable

Flashpoint (°C/°F):
52 °C/125.6 °F
37.2 °C/99 °F

Flash Point Tested according to:
Open cup
Closed cup

Autoignition Temperature (°C/°F):
260°C/500 °F

Lower Explosion Limit (%):
1.3%

Upper Explosion Limit (%):
23%

Melting point/range(°C/°F):
-77 to -82.5 °C/-106.6 to -116.5 °F

Decomposition temperature(°C/°F):
No information available

Boiling point/range(°C/°F):
165-169 °C/329-336.2 °F

Bulk density:
No information available

Density (g/cm3):
No information available

Specific gravity:
0.9335-0.9358

pH:
No information available

Vapor pressure @ 20°C (kPa):
0.133

Evaporation rate:
No information available

Vapor density:
7.22

VOC content (g/L):
No information available

Odor threshold (ppm):
No information available

Partition coefficient (n-octanol/water):
log Kow = 0.04

Viscosity:
No information available

Miscibility:
Miscible with alcohol

Solubility:
Soluble in Ether
Slightly soluble in Benzene
Decomposes in water

10. STABILITY AND REACTIVITY

Reactivity
No information available

Chemical stability

Stability: Stable under recommended storage conditions.

Possibility of Hazardous Reactions: Hazardous polymerization does not occur

Conditions to avoid: Heat. Ignition sources. Exposure to water. Incompatible materials.

Incompatible Materials:
Strong oxidizing agents
Water
Strong acids
Alkalis

Hazardous decomposition products: Carbon monoxide. Carbon dioxide. Silicon oxides.

Other Information
Corrosivity: No information available

Special Remarks on Corrosivity: No information available

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Principal Routes of Exposure:
Skin. Ingestion. Inhalation.

Acute Toxicity

Component Information

Ethyl Silicate	
CAS-No.	78-10-4

LD50/oral/rat = 6270 mg/kg Oral LD50 Rat
LD50/oral/mouse = No information available
LD50/dermal/rabbit = 6300 µL/kg or 5859 mg/kg Dermal LD50
LD50/dermal/rat = No information available
LC50/inhalation/rat = No information available
LC50/inhalation/mouse = No information available
Other LD50 or LC50information = No information available

Product Information

LD50/oral/rat =
VALUE- Acute Tox Oral = 6270 mg/kg

LD50/oral/mouse =
Value - Acute Tox Oral = No information available

LD50/dermal/rabbit
VALUE-Acute Tox Dermal = 5859 mg/kg

LD50/dermal/rat
VALUE -Acute Tox Dermal = No information available

LC50/inhalation/rat
VALUE-Vapor = No information available
VALUE-Gas = No information available
VALUE-Dust/Mist = No information available

LC50/Inhalation/mouse
VALUE-Vapor = No information available
VALUE - Gas = No information available
VALUE - Dust/Mist = No information available

Symptoms

Skin Contact: Causes skin irritation. Moderately to strongly irritating. It may be absorbed through the skin.

Eye Contact: Causes serious eye irritation. Causes moderate to severe eye irritation.

Inhalation Harmful by inhalation. Irritating to respiratory system. Exposure to vapor or mist causes eye irritation. Symptoms may include coughing and shortness of breath. May cause respiratory difficulty and unconciousness. It may cause pulmonary edema. May cause salivation. It may affect behavior/central nervous system (tremors). May cause unsteadiness. May cause dizziness. It may affect behavior/central nervous system (general anesthetic). It may affect the liver. May affect the kidneys. May affect blood (changes in red blood cell count). May affect

blood (changes in white blood cell count). May cause weakness.

Ingestion Ingestion may cause nausea, vomiting. May cause abdominal pain.

Aspiration hazard No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Chronic Toxicity Repeated or prolonged skin contact may cause dryness and cracking of the skin. Chronic exposure may cause central nervous system effects. Chronic exposure may affect the liver, kidneys, and blood.

Sensitization: No information available.

Mutagenic Effects: No information available

Carcinogenic effects: Not considered carcinogenic.

Components	CAS-No.	IARC	ACGIH - Carcinogens	NTP	OSHA HCS - Carcinogens	Australia - Notifiable Carcinogenic Substances	Australia - Prohibited Carcinogenic Substances
Ethyl Silicate	78-10-4	Not listed	Not listed	Not listed	Not listed	Not listed	Not listed

ACGIH (American Conference of Governmental Industrial Hygienists)

IARC (International Agency for Research on Cancer)

NTP (National Toxicology Program)

OSHA (Occupational Safety and Health Administration of the US Department of Labor)

Reproductive toxicity No data is available

Reproductive Effects: No information available
Developmental Effects: No information available
Teratogenic Effects: No information available

Specific Target Organ Toxicity

STOT - single exposure No information available.
STOT - repeated exposure No information available.
Target Organs: No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity effects: No data available.

Persistence and degradability: No information available

Bioaccumulative potential: Potential for bioconcentration in aquatic organisms is low.

Mobility: It is expected to have high mobility in soil.

13. DISPOSAL CONSIDERATIONS

Disposal Methods

Waste from residues / unused products:
Waste must be disposed of in accordance with Federal, State and Local regulation.

Contaminated packaging:
Empty containers should be taken for local recycling, recovery or waste disposal

Components	CAS-No.	RCRA - F Series Wastes	RCRA - K Series Wastes	RCRA - P Series Wastes	RCRA - U Series Wastes
Ethyl Silicate	78-10-4	None	None	None	None

14. TRANSPORT INFORMATION

DOT

UN-No:	UN1292
Proper Shipping Name:	Tetraethyl silicate
Hazard Class:	3
Subsidiary Class	No information available
Packing group:	III
Emergency Response Guide Number	129
Marine Pollutant	No data available
DOT RQ (lbs):	No information available
Special Provisions	B1, IB3, T2, TP1
Symbol(s):	No information available
Description:	UN1292, Tetraethyl silicate, 3, III

TDG (Canada)

UN-No:	UN1292
Proper Shipping Name:	Tetraethyl silicate
Hazard Class:	3
Subsidiary Risk:	No information available
Packing Group:	III
Marine Pollutant	No Information available
Description:	UN1292, Tetraethyl silicate, 3, III

ADR

UN-No:	UN1292
Proper Shipping Name:	Tetraethyl silicate
Hazard Class:	3
Packing Group:	III
Subsidiary Risk:	No information available
Description:	UN1292, Tetraethyl silicate, 3, III

IMO / IMDG

UN-No:	UN1292
Proper Shipping Name:	Tetraethyl silicate
Hazard Class:	3
Subsidiary Risk:	No information available
Packing Group:	III
Marine Pollutant	No information available
EMS:	F-E
Description	UN1292, Tetraethyl silicate, 3, III

RID

UN-No:	UN1292
Proper Shipping Name:	Tetraethyl silicate
Hazard Class:	3

Subsidiary Risk: No information available
Packing Group: III
Description: UN1292, Tetraethyl silicate, 3, III

ICAO

UN-No: UN1292
Proper Shipping Name: Tetraethyl silicate
Hazard Class: 3
Subsidiary Risk: No information available
Packing Group: III
Description: UN1292, Tetraethyl silicate, 3, III

IATA

UN-No: UN1292
Proper Shipping Name: Tetraethyl silicate
Hazard Class: 3
Subsidiary Risk: No information available
Packing Group: III
ERG Code: 3L
Special Provisions No information available
Description: UN1292, Tetraethyl silicate, 3, III

15. REGULATORY INFORMATION

International Inventories

Components	CAS-No.	U.S. TSCA	KOREA KECL	Philippines (PICCS)	Japan ENCS	CHINA	Australia (AICS)	EINECS-No.
Ethyl Silicate	78-10-4	Present	Present KE-33411	Present	Not present	Present	Present	Present 201-083-8

U.S. Regulations

Ethyl Silicate

Massachusetts RTK: Present
New Jersey RTK Hazardous Substance List: 0909
Pennsylvania RTK: Present
Minnesota - Hazardous Substance List: Present
California Directors List of Hazardous Substances: Present

California Prop. 65: Safe Drinking Water and Toxic Enforcement Act of 1986.

Chemicals Known to the State of California to Cause Cancer:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Chemicals Known to the State of California to Cause Reproductive Toxicity:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Components	CAS-No.	Carcinogen	Developmental Toxicity	Male Reproductive Toxicity	Female Reproductive Toxicity:
Ethyl Silicate	78-10-4	Not Listed	Not Listed	Not Listed	Not Listed

CERCLA/SARA

Components	CAS-No.	CERCLA - Hazardous Substances and their Reportable Quantities	Section 302 Extremely Hazardous Substances and TPQs	Section 302 Extremely Hazardous Substances and RQs	Section 313 - Chemical Category	Section 313 - Reporting de minimis
Ethyl Silicate	78-10-4	None	None	None	None	None

U.S. TSCA

Components	CAS-No.	**TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)**	**TSCA 8(d) -Health and Safety Reporting**
Ethyl Silicate	78-10-4	Not Applicable	Not Applicable

Canada

WHIMIS 2015 - GHS Classifications

WHMIS 2015 Hazard Classification Information: .

Component	WHMIS 2015 Hazard Classification
Ethyl Silicate 78-10-4 (100)	Flammable liquids - Category 3: H226 Flammable liquid and vapour.; Skin corrosion/irritation - Category 2: H315 Causes skin irritation.

Canada Hazardous Products Regulation This product has been classified according to the hazard criteria of the HPR (Hazardous Products Regulation) and the SDS contains all of the information required by the HPR

WHMIS 1988 Hazard Class
B2 Flammable liquid
D2B Toxic materials

Canada Controlled Products Regulation:
This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

Components	**WHMIS Ingredient Disclosure List -**
Ethyl Silicate	1 %

Inventory

Components	CAS-No.	Canada (DSL)	Canada (NDSL)
Ethyl Silicate	78-10-4	Present	Not Listed

Components	CAS-No.	CEPA Schedule I - Toxic Substances
Ethyl Silicate	78-10-4	Not listed
Components	CAS-No.	CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting
Ethyl Silicate	78-10-4	Not listed

EU Classification

EU GHS - SV - CLP 1272/2008

Components	CAS-No.	EU GHS - SV - CLP (1272/2008)
Ethyl Silicate	78-10-4	Flammable liquids - Flam. Liq. 3: H226 Flammable liquid and vapour.; Acute toxicity - Inhalation - Acute Tox. 4: H332 Harmful if inhaled. (Minimum classification); Serious Eye Damage/Eye Irritation - Eye Irrit. 2: H319 Causes serious eye irritation.; Specific target organ toxicity - Single exposure - STOT SE 3: H335 May cause respiratory irritation.014-005-00-0

EU - CLP (1272/2008)

R-phrase(s)

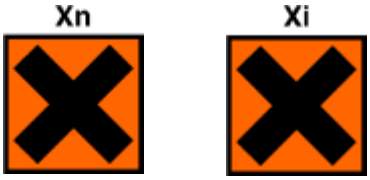
R10 - Flammable.
R20 - Harmful by inhalation.
R36/37 - Irritating to eyes and respiratory system.

S -phrase(s)
S 2 - Keep out of the reach of children.

Components	CAS-No.	**Classification**	**Concentration Limits:**	**Safety Phrases**
Ethyl Silicate	78-10-4	R10 Xn; R20 Xi; R36/37	No information	S2

The product is classified in accordance with Annex VI to Directive 67/548/EEC

Indication of danger:
Flammable
Xn - Harmful.
Xi - Irritant.



16. OTHER INFORMATION

Preparation Date: 10/27/2017
Revision Date: 10/27/2017
Prepared by: Sonia Owen

Disclaimer: All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. The physical properties reported in this SDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.

End of Safety Data Sheet