



TRIETHOXYSILYLUNDECANAL, tech-95

Safety Data Sheet SIT8194.0

Date of issue: 01/09/2015 Version: 1.0

SECTION 1: Identification

1.1. Identification

Product name : TRIETHOXYSILYLUNDECANAL, tech-95
 Product code : SIT8194.0
 Product form : Substance
 Physical state : Liquid
 Formula : C17H36O4Si
 Synonyms : 11-(TRIETHOXYSILYL)UNDECANALDEHYDE
 Chemical family : ORGANOETHOXYSILANE

1.2. Recommended use and restrictions on use

Recommended use : Chemical intermediate

1.3. Supplier

GELEST, INC.

11 East Steel Road
 Morrisville, PA 19067
 USA

T 215-547-1015 - F 215-547-2484 - (M-F): 8:00 AM - 5:30 PM EST

info@gelest.com - www.gelest.com

1.4. Emergency telephone number

Emergency number : CHEMTREC: 1-800-424-9300 (USA); +1 703-527-3887 (International)

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification

Skin corrosion/irritation Category 2 H315 Causes skin irritation
 Serious eye damage/eye irritation Category 2A H319 Causes serious eye irritation
 Specific target organ toxicity (single exposure) Category 3 H335 May cause respiratory irritation
 Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS US labeling

Hazard pictograms (GHS US) :



Signal word (GHS US) :

Warning

Hazard statements (GHS US) :

H315 - Causes skin irritation
 H319 - Causes serious eye irritation
 H335 - May cause respiratory irritation

Precautionary statements (GHS US) :

P280 - Wear protective gloves/protective clothing/eye protection/face protection.
 P261 - Avoid breathing vapors.
 P264 - Wash hands thoroughly after handling.
 P312 - Call a doctor if you feel unwell
 P271 - Use only outdoors or in a well-ventilated area.
 P302+P352 - If on skin: Wash with plenty of water
 P332+P313 - If skin irritation occurs: Get medical advice/attention.
 P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
 P337+P313 - If eye irritation persists: Get medical advice/attention.
 P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
 P362 - Take off contaminated clothing and wash before reuse.
 P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
 P405 - Store locked up.
 P501 - Dispose of contents/container to licensed waste disposal facility.

2.3. Hazards not otherwise classified (HNOC)

Other hazards not contributing to the classification

: On contact with water this compound liberates ethanol which is known to have a chronic effect on the central nervous system. Overexposure to ethanol by skin absorption, inhalation or ingestion may have a narcotic effect (headache, nausea, drowsiness). This product contains ethanol which is classified as a carcinogen by IARC in alcoholic beverages.

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2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Substance type : Mono-constituent
Name : TRIETHOXSILYLUNDECANAL, tech-95
CAS-No. : 116047-42-8

| Name | Product identifier | % | GHS-US classification |
|-------------------------|-----------------------|------|---|
| Triethoxysilylundecanal | (CAS-No.) 116047-42-8 | > 90 | Skin Irrit. 2, H315 Eye Irrit. 2A, H319 STOT SE 3, H335 |
| Ethanol | (CAS-No.) 64-17-5 | | Flam. Liq. 2, H225 Eye Irrit. 2A, H319 |

Full text of hazard classes and H-statements : see section 16

3.2. Mixtures

Not applicable

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general : Remove contaminated clothing and shoes. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). If possible show this sheet; if not available show packaging or label.

First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If you feel unwell, seek medical advice.

First-aid measures after skin contact : Wash with plenty of soap and water.

First-aid measures after eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention.

First-aid measures after ingestion : Never give anything by mouth to an unconscious person. Get medical advice/attention.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects after inhalation : May cause respiratory irritation. Overexposure may cause: Coughing. Headache. Nausea.

Symptoms/effects after skin contact : Causes skin irritation.

Symptoms/effects after eye contact : Causes serious eye irritation.

Symptoms/effects after ingestion : May be harmful if swallowed.

Chronic symptoms : On contact with water this compound liberates ethanol which is known to have a chronic effect on the central nervous system.

4.3. Immediate medical attention and special treatment, if necessary

No additional information available

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Water spray. Foam. Carbon dioxide. Dry chemical.

5.2. Specific hazards arising from the chemical

Fire hazard : Irritating fumes and organic acid vapors may develop when material is exposed to elevated temperatures or open flame.

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions : Use water spray to cool exposed surfaces. Exercise caution when fighting any chemical fire.

Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection. Avoid all eye and skin contact and do not breathe vapor and mist.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment : Equip cleanup crew with proper protection.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

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6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Clean up any spills as soon as possible, using an absorbent material to collect it. Sweep or shovel spills into appropriate container for disposal.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Use only in well ventilated areas. Avoid all eye and skin contact and do not breathe vapor and mist.

Hygiene measures : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Keep container tightly closed.

Incompatible materials : Acids. Alcohols. Oxidizing agent. Peroxides. Moisture. Water.

Storage area : Store in a well-ventilated place. Store away from heat.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

| Ethanol (64-17-5) | | |
|-------------------|--------------------------------------|------------------------|
| ACGIH | ACGIH STEL (ppm) | 1000 ppm |
| OSHA | OSHA PEL (TWA) (mg/m ³) | 1900 mg/m ³ |
| OSHA | OSHA PEL (TWA) (ppm) | 1000 ppm |
| IDLH | US IDLH (ppm) | 3300 ppm (10% LEL) |
| NIOSH | NIOSH REL (TWA) (mg/m ³) | 1900 mg/m ³ |
| NIOSH | NIOSH REL (TWA) (ppm) | 1000 ppm |

8.2. Appropriate engineering controls

Appropriate engineering controls : Provide local exhaust or general room ventilation.

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment:

Avoid all unnecessary exposure. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

Hand protection:

Neoprene or nitrile rubber gloves

Eye protection:

Chemical goggles. Contact lenses should not be worn

Skin and body protection:

Wear suitable protective clothing

Respiratory protection:

Where exposure through inhalation may occur from use, respiratory protection equipment is recommended. NIOSH-certified organic vapor (black cartridge) respirator.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|------------------|---------------------|
| Physical state | : Liquid |
| Appearance | : Clear liquid. |
| Molecular mass | : 332.56 g/mol |
| Color | : Straw. |
| Odor | : No data available |
| Odor threshold | : No data available |
| Refractive index | : 1.4343 |
| pH | : No data available |

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| | |
|---|----------------------------|
| Relative evaporation rate (butyl acetate=1) | : < 1 |
| Melting point | : No data available |
| Freezing point | : < 20 °C |
| Boiling point | : 150 - 155 °C @ 0.5 mm Hg |
| Flash point | : > 165 °C |
| Auto-ignition temperature | : No data available |
| Decomposition temperature | : No data available |
| Flammability (solid, gas) | : No data available |
| Vapor pressure | : < 0.5 mm Hg @ 20°C |
| Relative vapor density at 20 °C | : 1 |
| Relative density | : 0.93 |
| Solubility | : Reacts with water. |
| Log Pow | : No data available |
| Log Kow | : No data available |
| Viscosity, kinematic | : No data available |
| Viscosity, dynamic | : No data available |
| Explosive properties | : No data available |
| Oxidizing properties | : No data available |
| Explosion limits | : No data available |

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

10.2. Chemical stability

Stable in sealed containers.

10.3. Possibility of hazardous reactions

Reacts with water and moisture in air, liberating ethanol.

10.4. Conditions to avoid

Heat. Open flame. Sparks.

10.5. Incompatible materials

Acids. Alcohols. Oxidizing agent. Peroxides. Moisture. Water.

10.6. Hazardous decomposition products

Ethanol. Organic acid vapors.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

| TRIETHOXSILYLUNDECANAL, tech-95 (116047-42-8) | |
|---|------------------------|
| LD50 oral rat | 10060 µl/kg |
| Ethanol (64-17-5) | |
| LD50 oral rat | 7060 mg/kg |
| LC50 inhalation rat (mg/l) | 124.7 mg/l/4h |
| LC50 inhalation rat (ppm) | 20000 ppm 10 hrs. |
| LDLo oral rat | 1400 mg/kg (Human) |
| ATE US (oral) | 7060 mg/kg body weight |
| ATE US (vapors) | 124.7 mg/l/4h |
| ATE US (dust, mist) | 124.7 mg/l/4h |

| | |
|-----------------------------------|----------------------------------|
| Skin corrosion/irritation | : Causes skin irritation. |
| Serious eye damage/irritation | : Causes serious eye irritation. |
| Respiratory or skin sensitization | : Not classified |
| Germ cell mutagenicity | : Not classified |
| Carcinogenicity | : Not classified. |

| Ethanol (64-17-5) | |
|-------------------|----------------------------|
| IARC group | 1 - Carcinogenic to humans |

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| Ethanol (64-17-5) | |
|--|-----|
| In OSHA Hazard Communication Carcinogen list | Yes |

| | |
|--|--|
| Reproductive toxicity | : Not classified |
| Specific target organ toxicity – single exposure | : May cause respiratory irritation. |
| Specific target organ toxicity – repeated exposure | : Not classified |
| Aspiration hazard | : Not classified |
| Symptoms/effects after inhalation | : May cause respiratory irritation. Overexposure may cause: Coughing. Headache. Nausea. |
| Symptoms/effects after skin contact | : Causes skin irritation. |
| Symptoms/effects after eye contact | : Causes serious eye irritation. |
| Symptoms/effects after ingestion | : May be harmful if swallowed. |
| Chronic symptoms | : On contact with water this compound liberates ethanol which is known to have a chronic effect on the central nervous system. |
| Reason for classification | : Expert judgment |

SECTION 12: Ecological information

12.1. Toxicity

| Ethanol (64-17-5) | |
|-------------------|--|
| LC50 fish 1 | > 10000 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [static]) |
| LC50 fish 2 | > 13400 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static]) |

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

| Ethanol (64-17-5) | |
|-------------------|-------|
| Log Pow | -0.32 |

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

| | |
|---------------------------|---|
| Other adverse effects | : This substance may be hazardous to the environment. |
| Effect on the ozone layer | : No additional information available |

SECTION 13: Disposal considerations

13.1. Disposal methods

| | |
|--|--|
| Product/Packaging disposal recommendations | : May be incinerated. Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to licensed waste disposal facility. |
| Ecology - waste materials | : Avoid release to the environment. |

SECTION 14: Transport information

14.1. UN number

Not regulated for transport.

14.2. UN proper shipping name

Not applicable

14.3. Additional information

| | |
|-------------------|---|
| Other information | : No supplementary information available. |
|-------------------|---|

Transport by sea

No additional information available

Air transport

No additional information available

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SECTION 15: Regulatory information

15.1. US Federal regulations

TRIETHOXSILYLUNDECANAL, tech-95 (116047-42-8)

TSCA Exemption/Exclusion

CAUTION: This material is supplied for research and development purposes subject to the R&D exemption under TSCA, 40 CFR 720.36, and must meet the requirements of the exemption, including supervision by a "technically qualified individual" as defined by 40 CFR 720.3(ee). The use of this material for "commercial purposes" as defined by 40 CFR 720.3(r) is not permitted in the United States.

Ethanol (64-17-5)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Triethoxysilylundecanal (116047-42-8)

Not listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

CANADA

Ethanol (64-17-5)

Listed on the Canadian DSL (Domestic Substances List)

WHMIS Classification

Class B Division 2 - Flammable Liquid
Class D Division 2 Subdivision B - Toxic material causing other toxic effects

EU-Regulations

Ethanol (64-17-5)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations

Ethanol (64-17-5)

Listed on IARC (International Agency for Research on Cancer)
Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on the Canadian IDL (Ingredient Disclosure List)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on CICR (Turkish Inventory and Control of Chemicals)

15.3. US State regulations

WARNING: This product can expose you to Ethanol, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Ethanol (64-17-5)

| U.S. - California - Proposition 65 - Carcinogens List | U.S. - California - Proposition 65 - Developmental Toxicity | U.S. - California - Proposition 65 - Reproductive Toxicity - Female | U.S. - California - Proposition 65 - Reproductive Toxicity - Male | No significant risk level (NSRL) | Maximum allowable dose level (MADL) |
|---|---|---|---|----------------------------------|-------------------------------------|
| Yes | Yes | No | No | | |

Ethanol (64-17-5)

U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

SECTION 16: Other information

Full text of H-phrases::

| | |
|------|-----------------------------------|
| H225 | Highly flammable liquid and vapor |
| H315 | Causes skin irritation |
| H319 | Causes serious eye irritation |
| H335 | May cause respiratory irritation |

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Abbreviations and acronyms : Abbreviations: ND: Not Determined, No Data; NA: Not Applicable; LD: Lethal Dose; LC: Lethal Concentration; ATE: Acute Toxicity Estimates; H: hour; °: °C unless otherwise stated; mm: millimeters Hg, torr; PEL: permissible exposure level; TWA: time weighted average; TLV: threshold limit value; TG: Test Guideline; NIOSH: National Institute for Occupational Safety and Health; IARC: International Agency for Research on Cancer; NTP: National Toxicology Program; HMIS: Hazardous Material Information System; CAS No.: Chemical Abstract Service Registration Number; EC No.: European Commission Registration Number; EC Index No.: European Commission Index Number; OECD: The Organisation for Economic Co-operation and Development; GHS: The Globally Harmonized System of Classification and Labelling; APF: Assigned Protection Factor.

Hazard Rating

Health : 3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given

Flammability : 1 Slight Hazard - Materials that must be preheated before ignition will occur. Includes liquids, solids and semi solids having a flash point above 200 F. (Class IIIB)

Physical : 1 Slight Hazard - Materials that are normally stable but can become unstable (self-react) at high temperatures and pressures. Materials may react non-violently with water or undergo hazardous polymerization in the absence of inhibitors.

Prepared by safety and environmental affairs.

Date of issue: 01/09/2015 Version: 1.0

SDS US (GHS HazCom 2012) - Custom

According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

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