

**1 Identification of the substance/mixture and of the company/undertaking**

**Product identifier**  
**Trade name** **Tetraethoxysilane**  
**Stock number:** A14965, L04916  
**CAS Number:** 78-10-4  
**EINECS Number:** 201-083-8  
**Index number:** 014-005-00-0  
**Relevant identified uses of the substance or mixture and uses advised against**  
**Sector of Use** SU24 Scientific research and development  
**Details of the supplier of the safety data sheet**  
**Manufacturer/Supplier:** Alfa Aesar GmbH & Co.KG  
A Johnson Matthey Company  
Benzstrasse 3  
D-76185 Karlsruhe / Germany  
Tel: +49 (0) 721 84007 280  
Fax: +49 (0) 721 84007 300  
Email: tech@alfa.com  
www.alfa.com  
**Informing department:** Product safety department.  
**Emergency telephone number:** Product Safety Department +049 (0) 7275 988687-0 (business hours)  
Carechem 24: +44 (0) 1235 239 670 (Multi-language 24 hour emergency)  
Giftnotruf Universität Mainz / Poison Information Center Mainz  
www.giftinfo.uni-mainz.de Telefon:+49(0)6131/19240

**2 Hazards identification**

**Classification of the substance or mixture**  
**Classification according to Regulation (EC) No 1272/2008**



GHS02 flame

Flam. Liq. 3 H226 Flammable liquid and vapour.



GHS07

Acute Tox. 4 H332 Harmful if inhaled.

Eye Irrit. 2 H319 Causes serious eye irritation.

STOT SE 3 H335 May cause respiratory irritation.

**Classification according to Directive 67/548/EEC or Directive 1999/45/EC** Xn; Harmful

R20: Harmful by inhalation.

 Xi; Irritant

R36/37: Irritating to eyes and respiratory system.

R10: Flammable.

**Information concerning particular hazards for human and environment:**

Not applicable

**Label elements**  
**Labelling according to Regulation (EC) No 1272/2008****Hazard pictograms**

The substance is classified and labelled according to the CLP regulation.



GHS02 GHS07

**Signal word****Hazard statements**Warning  
H226 Flammable liquid and vapour.  
H332 Harmful if inhaled.  
H319 Causes serious eye irritation.  
H335 May cause respiratory irritation.**Precautionary statements**P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.  
P241 Use explosion-proof electrical/ventilating/lighting/equipment.  
P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.  
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P405 Store locked up.  
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.**Other hazards****Results of PBT and vPvB assessment****PBT:** Not applicable.**vPvB:** Not applicable.**3 Composition/information on ingredients****Chemical characterization: Substances****(CAS#) Designation:** 78-10-4 Tetraethoxysilane**Identification number(s):****EINECS Number:** 201-083-8**Index number:** 014-005-00-0**4 First aid measures****Description of first aid measures****After inhalation**

Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.

**After skin contact**Seek immediate medical advice.  
Instantly wash with water and soap and rinse thoroughly.**After eye contact**

Seek immediate medical advice.

**After swallowing**

Rinse opened eye for several minutes under running water. Then consult doctor.

**Information for doctor**

Seek immediate medical advice.

**Most important symptoms and effects, both acute and delayed**

No further relevant information available.

**Indication of any immediate medical attention and special treatment needed**

No further relevant information available.

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**5 Firefighting measures**

**Extinguishing media**  
**Suitable extinguishing agents**  
**For safety reasons unsuitable extinguishing agents**  
**Special hazards arising from the substance or mixture**

CO<sub>2</sub>, sand, extinguishing powder. Do not use water.  
Water.  
Can be released in case of fire:  
Carbon monoxide and carbon dioxide  
Silicon oxide

**Advice for firefighters**  
**Protective equipment:**

Wear self-contained breathing apparatus.  
Wear full protective suit.

**6 Accidental release measures**

**Personal precautions, protective equipment and emergency procedures**  
**Environmental precautions:**  
**Methods and material for containment and cleaning up:**  
**Reference to other sections**

Wear protective equipment. Keep unprotected persons away.  
Ensure adequate ventilation  
Keep away from ignition sources  
Do not allow material to be released to the environment without proper governmental permits.  
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).  
Dispose of contaminated material as waste according to item 13.  
Ensure adequate ventilation.  
Keep away from ignition sources.  
See Section 7 for information on safe handling  
See section 8 for information on personal protection equipment.  
See Section 13 for information on disposal.

**7 Handling and storage**

**Handling**  
**Precautions for safe handling**  
**Information about protection against explosions and fires:**  
**Conditions for safe storage, including any incompatibilities**  
**Storage**  
**Requirements to be met by storerooms and containers:**  
**Information about storage in one common storage facility:**  
**Further information about storage conditions:**  
**Specific end use(s)**

Handle under dry protective gas.  
Keep containers tightly sealed.  
Store in cool, dry place in tightly closed containers.  
Ensure good ventilation/exhaustion at the workplace.  
Keep ignition sources away - Do not smoke.  
Protect against electrostatic charges.  
Fumes can combine with air to form an explosive mixture.  
No special requirements.  
Store away from water.  
Store away from oxidizing agents.  
Store under dry inert gas.  
This product is moisture sensitive.  
Keep container tightly sealed.  
Store in cool, dry conditions in well sealed containers.  
Protect from humidity and keep away from water.  
No further relevant information available.

**8 Exposure controls/personal protection**

**Additional information about design of technical systems:**  
**Control parameters**  
**Components with critical values that require monitoring at the workplace:**  
**Additional information:**  
**Exposure controls**  
**Personal protective equipment**  
**General protective and hygienic measures**  
**Breathing equipment:**  
**Protection of hands:**  
**Material of gloves**  
**Penetration time of glove material**  
**Eye protection:**  
**Body protection:**

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.  
No data  
The usual precautionary measures should be adhered to in handling the chemicals.  
Keep away from foodstuffs, beverages and food.  
Instantly remove any soiled and impregnated garments.  
Wash hands during breaks and at the end of the work.  
Avoid contact with the eyes.  
Avoid contact with the eyes and skin.  
Use breathing protection with high concentrations.  
Check protective gloves prior to each use for their proper condition.  
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.  
Impervious gloves  
Not determined  
Safety glasses  
Face protection  
Protective work clothing.

**9 Physical and chemical properties**

**Information on basic physical and chemical properties**  
**General Information**  
**Appearance:**  
**Form:**  
**Colour:**  
**Smell:**  
**Odour threshold:**  
**pH-value:**  
**Change in condition**  
**Melting point/Melting range:**  
**Boiling point/Boiling range:**  
**Sublimation temperature / start:**

Liquid  
Colourless  
Pleasant  
Not determined.  
Not determined.  
-85°C  
168°C  
Not determined

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**Safety data sheet**  
according to 1907/2006/EC, Article 31

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<b>Flash point:</b>	46°C
<b>Inflammability (solid, gaseous)</b>	Not applicable.
<b>Ignition temperature:</b>	270°C
<b>Decomposition temperature:</b>	Not determined
<b>Self-inflammability:</b>	Not determined.
<b>Critical values for explosion:</b>	
Lower:	1.3 Vol %
Upper:	23 Vol %
<b>Steam pressure at 20°C:</b>	1.7 hPa
<b>Density at 20°C</b>	0.934 g/cm <sup>3</sup>
<b>Relative density</b>	Not determined.
<b>Vapour density</b>	Not determined.
<b>Evaporation rate</b>	Not determined.
<b>Solubility in / Miscibility with Water:</b>	Not miscible or difficult to mix
<b>Segregation coefficient (n-octanol/water):</b>	Not determined.
<b>Viscosity:</b>	
dynamic:	Not determined.
kinematic:	Not determined.
<b>Other information</b>	No further relevant information available.

**10 Stability and reactivity**

<b>Reactivity</b>	
<b>Chemical stability</b>	
<b>Thermal decomposition / conditions to be avoided:</b>	No decomposition if used and stored according to specifications.
<b>Possibility of hazardous reactions</b>	No dangerous reactions known
<b>Incompatible materials:</b>	Water/moisture Oxidizing agents
<b>Hazardous decomposition products:</b>	Carbon monoxide and carbon dioxide Silicon oxide

**11 Toxicological information**

<b>Information on toxicological effects</b>	
<b>Acute toxicity:</b>	
<b>Primary irritant effect:</b>	
<b>on the skin:</b>	May cause irritation
<b>on the eye:</b>	Irritant effect.
<b>Sensitization:</b>	No sensitizing effect known.
<b>Additional toxicological information:</b>	To the best of our knowledge the acute and chronic toxicity of this substance is not fully known. The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute and/or other multiple dose toxicity data for components in this product. No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

**12 Ecological information**

<b>Toxicity</b>	
<b>Acquatic toxicity:</b>	No further relevant information available.
<b>Persistence and degradability</b>	No further relevant information available.
<b>Behaviour in environmental systems:</b>	
<b>Bioaccumulative potential</b>	No further relevant information available.
<b>Mobility in soil</b>	No further relevant information available.
<b>Additional ecological information:</b>	
<b>General notes:</b>	Water hazard class 1 (Assessment by list): slightly hazardous for water. Do not allow undiluted product or large quantities of it to reach ground water, water bodies or sewage system. Do not allow material to be released to the environment without proper governmental permits.
<b>Results of PBT and vPvB assessment</b>	
<b>PBT:</b>	Not applicable.
<b>vPvB:</b>	Not applicable.
<b>Other adverse effects</b>	No further relevant information available.

**13 Disposal considerations**

<b>Waste treatment methods</b>	
<b>Recommendation</b>	Hand over to disposers of hazardous waste. Must be specially treated under adherence to official regulations. Consult state, local or national regulations for proper disposal.
<b>Uncleaned packagings:</b>	
<b>Recommendation:</b>	Disposal must be made according to official regulations.

**14 Transport information**

Land transport ADR/RID and GGVS/GGVE (cross-border/domestic)



<b>ADR/RID-GGVS/E Class:</b>	3 (F1) Flammable liquids.
<b>Kemler Number:</b>	30
<b>UN-Number:</b>	1292
<b>Packaging group:</b>	III
<b>Label</b>	3
<b>UN proper shipping name:</b>	1292 TETRAETHYL SILICATE
<b>Limited quantities (LQ)</b>	LQ7
<b>Transport category</b>	3

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Tunnel restriction code D/E

Maritime transport IMDG/GGVSea:



IMDG/GGVSea Class: 3  
 UN Number: 1292  
 Label: 3  
 Packaging group: III  
 EMS Number: F-E, S-D  
 Marine pollutant: No  
 Correct technical name: TETRAETHYL SILICATE

Air transport ICAO-TI and IATA-DGR:



ICAO/IATA Class: 3  
 UN/ID Number: 1292  
 Label: 3  
 Packaging group: III  
 Correct technical name: TETRAETHYL SILICATE

UN "Model Regulation": UN1292, TETRAETHYL SILICATE, 3, III  
 Special precautions for user Warning: Flammable liquids.

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable.

**15 Regulatory information**

Safety, health and environmental regulations/legislation specific for the substance or mixture

Labelling according to Regulation (EC) No 1272/2008

Hazard pictograms

The substance is classified and labelled according to the CLP regulation.



GHS02 GHS07

Signal word

Warning

Hazard statements

H226 Flammable liquid and vapour.  
 H332 Harmful if inhaled.  
 H319 Causes serious eye irritation.  
 H335 May cause respiratory irritation.

Precautionary statements

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.  
 P241 Use explosion-proof electrical/ventilating/lighting/equipment.  
 P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.  
 P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 P405 Store locked up.  
 P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

National regulations

Information about limitation of use:

Employment restrictions concerning young persons must be observed.  
 For use only by technically qualified individuals.

Water hazard class:

Water hazard class 1 (Assessment by list): slightly hazardous for water.

Chemical safety assessment:

A Chemical Safety Assessment has not been carried out.

**16 Other information**

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing data specification sheet: Health, Safety and Environmental Department.

Contact: Zachariah C. Holt  
Global EHS Manager

Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)  
 RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)  
 IMDG: International Maritime Code for Dangerous Goods  
 IATA: International Air Transport Association  
 IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)  
 ICAO: International Civil Aviation Organization  
 ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)  
 GHS: Globally Harmonized System of Classification and Labelling of Chemicals  
 EINECS: European Inventory of Existing Commercial Chemical Substances  
 CAS: Chemical Abstracts Service (division of the American Chemical Society)

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