SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name Tetraethoxysilane

Stock number: A14965, L04916

CAS Number: 78-10-4

EC number: 201-083-8

Index number: 014-005-00-0

1.2 Relevant identified uses of the substance or mixture and uses advised against.

Identified use: SU24 Scientific research and development

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier: Thermo Fisher (Kandel) GmbH

Zeppelinstr. 7b
76185 Karlsruhe / Germany

Tel: +49 (0) 721 84007 280
Fax: +49 (0) 721 84007 300

Email: tech@alfa.com

Informing department: Product safety Tel + +049 (0) 7275 988687-0

1.4 Emergency telephone number:

Carechem 24: +44 (o) 1235 239 670 (Multi-language emergency number)

Poison Information Center Mainz

www.giftinfo.uni-mainz.de Telephone: +49(0)6131/19240

SECTION 2: Hazards identification

2.1 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.

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008 The substance is classified and labelled according to the CLP regulation.

Hazard pictograms

GHS02 GHS07

Signal word Warning

Hazard statements

H226 Flammable liquid and vapour.

H332 Harmful if inhaled.

H319 Causes serious eye irritation.

Precautionary statements

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P303+P361+P353 IF ON SKIN (or hair): 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.

2.3 Other hazards

Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

SECTION 3: Composition/information on ingredients

3.1 Substances

CAS# Designation: 78-10-4 Tetraethoxysilane

Concentration: ≤100%

Identification number(s):

EC number: 201-083-8

Index number: 014-005-00-0

SECTION 4: First aid measures

4.1 Description of first aid measures

After inhalation

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

Seek immediate medical advice.

After skin contact

Immediately wash with water and soap and rinse thoroughly. Seek immediate medical advice.

After eye contact

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

After swallowing

Seek medical treatment.

4.2 Most important symptoms and effects, both acute and delayed

Causes serious eye irritation. Harmful if inhaled.
SECTION 5: Firefighting measures

5.1 Extinguishing media
Suitable extinguishing agents: CO2, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.

5.2 Special hazards arising from the substance or mixture:
If this product is involved in a fire, the following can be released:
- Carbon monoxide and carbon dioxide
- Silicon oxide

5.3 Advice for firefighters
- Protective equipment: Wear self-contained breathing apparatus. Wear full protective suit.
- Preventive measures: Keep away from ignition sources.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
- Wear protective equipment. Keep unprotected persons away.
- Ensure adequate ventilation
- Keep away from ignition sources
- Prevention of secondary hazards: Keep away from ignition sources.

6.2 Environmental precautions:
- Wear protective equipment.
- Do not allow product to reach sewage system or water bodies.

6.3 Methods and material for containment and cleaning up:
- Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
- Dispose of contaminated material as waste according to section 13.
- Ensure adequate ventilation.

6.4 Reference to other sections
- See Section 7 for information on safe handling
- See section 8 for information on personal protection equipment.
- See Section 13 for information on disposal.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
- 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.

7.2 Conditions for safe storage, including any incompatibilities
- Store away from water.
- Store away from oxidising agents.
- Further information about storage conditions:
  - 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.

7.3 Specific end use(s)
- No further relevant information available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

8.2 Exposure controls
- Personal protective equipment
  - General protective and hygienic measures
    - 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.
    - Maintain an ergonomically appropriate working environment.
    - Breathing equipment: Use breathing protection with high concentrations.
    - Recommended filter device for short term use:
      - Use a respirator with multi-purpose combination (US) or type ABEK (EN 14387) as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards such as NIOSH (USA) or CEN (EU).
  - Protection of hands:
    - 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.
    - Material of gloves: Nitrile rubber, NBR.
    - Penetration time of glove material (in minutes): 480
  - Glove thickness: 0.4 mm
  - Eye protection:
    - Safety glasses with side shields / NIOSH (US) or EN 166(EU)
  - Face protection
Trade name: **Tetraethoxysilane**

**SECTION 9: Physical and chemical properties**

9.1 Information on basic physical and chemical properties

**General Information**

**Appearance:** Liquid

**Odour:** Pleasant

**Odour threshold:** Not determined.

**pH-value:** Not determined.

**Change in condition**

- **Melting point/freezing point:** -85 °C
- **Initial boiling point and boiling range:** 106 °C
- **Sublimation temperature / start:** Not determined

**Flash point:** 46 °C

**Inflammability (solid, gaseous):** Not determined.

**Ignition temperature:** 270 °C

**Decomposition temperature:** Not determined

**Self-inflammability:** Not determined.

**Explosive properties:** Product is not explosive. However, formation of explosive air/steam mixtures is possible.

**Critical values for explosion:**

- **Lower:** 1,3 Vol %
- **Upper:** 23 Vol %

**Steam pressure at 20 °C:** 1.7 hPa

**Density at 20 °C:** 0.934 g/cm³

**Relative density:** Not determined.

**Vapour density:** Not determined.

**Evaporation rate:** Not determined.

**Solubility in / Miscibility with**

- **Water:** Not miscible or difficult to mix

**Partition coefficient: n-octanol/water:** Not determined.

**Viscosity:**

- **Dynamic:** Not determined.
- **Kinematic:** Not determined.

9.2 Other information

No further relevant information available.

**SECTION 10: Stability and reactivity**

10.1 Reactivity No information known.

10.2 Chemical stability Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions Reacts with strong oxidising agents

10.4 Conditions to avoid No further relevant information available.

10.5 Incompatible materials:

- Oxidising agents
- Water/moisture

10.6 Hazardous decomposition products:

- Carbon monoxide and carbon dioxide
- Silicon oxide

**SECTION 11: Toxicological information**

11.1 Information on toxicological effects

**Acute toxicity**

- Harmful if inhaled.
- The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for this substance.

**Skin irritation or corrosion:** May cause irritation

**Eye irritation or corrosion:**

- Causes serious eye irritation.
- Causes serious eye irritation.

**Respiratory or skin sensitisation:** Based on available data, the classification criteria are not met.

**Germ cell mutagenicity:** No effects known.

**Carcinogenicity:** No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

**Reproductive toxicity:** No effects known.

**Specific target organ system toxicity - repeated exposure:** No effects known.

**Specific target organ system toxicity - single exposure:** May cause respiratory irritation.

**Aspiration hazard:** No effects known.

**Subacute to chronic toxicity:** The Registry of Toxic Effects of Chemical Substances (RTECS) contains multiple dose toxicity data for this substance.

**Additional toxicological information:** To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

**SECTION 12: Ecological information**

12.1 Toxicity

**Aquatic toxicity:** No further relevant information available.

**Bioaccumulative potential:** No further relevant information available.

**Mobility in soil:** No further relevant information available.

**Additional ecological information:**

**General notes:**

- Water hazard class 1 (Assessment by list): slightly hazardous for water.
- Do not allow undiluted product or large quantities to reach ground water, water course or sewage system.
- Avoid transfer into the environment.

**Results of PBT and vPvB assessment**

- **PBT:** Not applicable.
- **vPvB:** Not applicable.

**Further adverse effects:** No further relevant information available.

**SECTION 13: Disposal considerations**

13.1 Waste treatment methods

**Recommendation:**

Hand over to disposers of hazardous waste.
Trade name **Tetraethoxysilane**

(Contd. of page 3)

Must be specially treated under adherence to official regulations. Consult state, local or national regulations for proper disposal.

UncLEANED packagings: Recommendation: Disposal must be made according to official regulations.

### SECTION 14: Transport information

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#### 14.2 UN proper shipping name

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#### 14.3 Transport hazard class(es)

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<tr>
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<td>Label</td>
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<tr>
<td>III</td>
<td>3 (F1) Flammable liquids.</td>
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</tbody>
</table>

#### 14.4 Special precautions for user

**Warning:** Flammable liquids.

Kemler Number: 30
EMS Number: F-E-S-D
Stowage Category A

#### 14.5 Environmental hazards:

Not applicable.

#### 14.6 Special precautions for user

**Warning:** Flammable liquids.

Kemler Number: 30
EMS Number: F-E-S-D
Stowage Category A

#### 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable.

### SECTION 15: Regulatory information

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

Australian Inventory of Chemical Substances Substance is listed.

Standard for the Uniform Scheduling of Medicines and Poisons Substance is not listed.

Directive 2012/18/EU
Named dangerous substances - ANNEX I Substance is not listed.

Seveso category P5c FLAMMABLE LIQUIDS

Qualifying quantity (tonnes) for the application of lower-tier requirements 5,000 t
Qualifying quantity (tonnes) for the application of upper-tier requirements 50,000 t

REGULATION (EC) No 1907/2006 ANNEX XVII Conditions of restriction: 3, 40

National regulations Information about limitation of use:

Employment restrictions concerning young persons must be observed.

For use only by technically qualified individuals.

Classification according to VbF: A II
Water hazard class: Water hazard class 1 (Assessment by list): slightly hazardous for water.

ELINCS (European List of Notified Chemical Substances) Substance is not listed.

Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006. Substance is not listed.

The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.

Substance is not listed.

Annex XIV of the REACH Regulations (requiring Authorisation for use) Substance is not listed.

#### 15.2 Chemical safety assessment:

A Chemical Safety Assessment has not been carried out.

### SECTION 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 Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing SDS: Global Marketing Department

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)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonised 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)

VBF: Verordnung über brennbare Flüssigkeiten, Österreich (Ordinance on the storage of combustible liquids, Austria)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

SVHC: Substances of Very High Concern
Trade name **Tetraethoxysilane**

(vPvB: very Persistent and very Bioaccumulative  
NIOSH: National Institute for Occupational Safety  
OSHA: Occupational Safety and Health Administration (USA)  
TLV: Threshold Limit Value  
REL: Permissible Exposure Limit  
REL: Recommended Exposure Limit  
BEI: Biological Exposure Limit  
Flam. Liq. 3: Flammable liquids – Category 3  
Acute Tox. 4: Acute toxicity – Category 4  
Eye Irrit. 2: Serious eye damage/eye irritation – Category 2  
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3)