1. Identification

Product identifier
VITAFOL H Hardener

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

Use of the substance/mixture
Use as laboratory reagent

Details of the supplier of the safety data sheet
Company name: VITA Zahnfabrik H.Rauter GmbH & Co.KG
Post-office box: 1338
79704 Bad Säckingen
Telephone: +49(0)7761-562-0
Telefax: +49(0)7761-562-299
Email: info@vita-zahnfabrik.com
Internet: www.vita-zahnfabrik.com
Emergency telephone number: +49-(0)761-19240

2. Hazard identification

Classification of the substance or mixture
WHMIS 2015
Flammable liquid: Flam. Liq. 3
Acute toxicity: Acute Tox. 4 (inhalation)
Serious eye damage/eye irritation: Eye Irrit. 2
Specific target organ toxicity - single exposure: STOT SE 3 (respiratory tract irritation)
Specific target organ toxicity - repeated exposure: STOT RE 2

Label elements
WHMIS 2015
Signal word: Warning
Pictograms:

Hazard statements
Flammable liquid and vapour.
Causes serious eye irritation.
Harmful if inhaled.
May cause respiratory irritation.
May cause damage to organs through prolonged or repeated exposure.

Precautionary statements
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Keep container tightly closed.
Use explosion-proof electrical/ventilating/lighting equipment.
Do not breathe dust/fume/gas/mist/vapours/spray.
Wear protective gloves/protective clothing/eye protection/face protection.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Store in a well-ventilated place. Keep cool.

Other hazards
No information available.
3. Composition/information on ingredients

Mixtures

Hazardous components

<table>
<thead>
<tr>
<th>CAS No</th>
<th>Chemical name</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>78-10-4</td>
<td>ethyl silicate, tetraethyl silicate</td>
<td>45 - &lt; 70% (*)</td>
</tr>
<tr>
<td>78-10-4</td>
<td>tetraethyl silicate; ethyl silicate</td>
<td>10 - &lt; 30% (*)</td>
</tr>
<tr>
<td>93925-43-0</td>
<td>Silicic acid (H4SiO4), tetraethyl ester, reaction products with bis(acetyloxy)dioctylstannane</td>
<td>7 - &lt; 13% (*)</td>
</tr>
<tr>
<td>68299-15-0</td>
<td>Bis(neodecanoyloxy)dioctylstannane</td>
<td>1 - &lt; 5% (*)</td>
</tr>
</tbody>
</table>

(*) The actual concentration is withheld as a trade secret.

4. First-aid measures

Description of first aid measures

After inhalation
Provide fresh air. Medical treatment necessary.

After contact with eyes
After contact with the eyes, rinse with water with the eyelids open for a sufficient length of time, then consult an ophthalmologist immediately.

After ingestion
Rinse mouth immediately and drink plenty of water. Induce vomiting when the affected person is not unconscious. Medical treatment necessary.

Most important symptoms and effects, whether acute or delayed
No information available.

Indication of immediate medical attention and special treatment needed
Treat symptomatically.

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media
Carbon dioxide (CO2), Foam, Extinguishing powder.

Unsuitable extinguishing media
Water.

Specific hazards arising from the hazardous product
Flammable. Vapours can form explosive mixtures with air.

Special protective equipment and precautions for fire-fighters
In case of fire: Wear self-contained breathing apparatus.

Additional information
Use water spray jet to protect personnel and to cool endangered containers. Suppress gases/vapours/mists with water spray jet. Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Remove all sources of ignition. Do not breathe gas/fumes/vapour/spray. Avoid contact with skin, eyes and clothes. Use personal protection equipment.
Environmental precautions
Do not allow uncontrolled discharge of product into the environment. Danger of explosion

Methods and material for containment and cleaning up
Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents). Treat the recovered material as prescribed in the section on waste disposal.

Reference to other sections
Safe handling: see section 7
Personal protection equipment: see section 8
Disposal: see section 13

7. Handling and storage

Precautions for safe handling

Advice on safe handling
If handled uncovered, arrangements with local exhaust ventilation have to be used. Do not breathe gas/fumes/vapour/spray.

Advice on protection against fire and explosion
Keep away from sources of ignition - No smoking. Take precautionary measures against static discharges. Vapours can form explosive mixtures with air.

Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels
Keep container tightly closed. Keep locked up. Store in a place accessible by authorized persons only. Provide adequate ventilation as well as local exhaust at critical locations. Keep in a cool, well-ventilated place. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Hints on joint storage
Do not store together with: Oxidising agent. Pyrophoric or self-heating substances.

8. Exposure controls/Personal protection

Control parameters

Exposure controls

Appropriate engineering controls
If handled uncovered, arrangements with local exhaust ventilation have to be used. Do not breathe gas/fumes/vapour/spray.

Protective and hygiene measures
Remove contaminated, saturated clothing immediately. Draw up and observe skin protection programme. Wash hands and face before breaks and after work and take a shower if necessary. When using do not eat or drink.

Eye/face protection
Suitable eye protection: goggles.

Hand protection
When handling with chemical substances, protective gloves must be worn with the CE-label including the four control digits. The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves. Recommended glove articles KCK Dermatril P NBR (Nitrile rubber) Breakthrough time (maximum wearing time) 30 min
Skin protection
  Wear suitable protective clothing.

Respiratory protection
  Technical ventilation of workplace Provide adequate ventilation as well as local exhaustion at critical locations.

9. Physical and chemical properties

Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Liquid</td>
</tr>
<tr>
<td>Colour</td>
<td>light red</td>
</tr>
<tr>
<td>Odour</td>
<td>characteristic</td>
</tr>
<tr>
<td>pH-Value</td>
<td>not determined</td>
</tr>
<tr>
<td>Changes in the physical state</td>
<td></td>
</tr>
<tr>
<td>Melting point</td>
<td>not determined</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>166 °C</td>
</tr>
<tr>
<td>Flash point</td>
<td>37 °C</td>
</tr>
<tr>
<td>Flammability</td>
<td></td>
</tr>
<tr>
<td>Solid</td>
<td>not applicable</td>
</tr>
<tr>
<td>Gas</td>
<td>not applicable</td>
</tr>
<tr>
<td>Lower explosive limits</td>
<td>not determined</td>
</tr>
<tr>
<td>Upper explosive limits</td>
<td>not determined</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td></td>
</tr>
<tr>
<td>Solid</td>
<td>not applicable</td>
</tr>
<tr>
<td>Gas</td>
<td>not applicable</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>not determined</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td></td>
</tr>
<tr>
<td>Not oxidising</td>
<td></td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>&lt;=1100 hPa</td>
</tr>
<tr>
<td>(at 50 °C)</td>
<td></td>
</tr>
<tr>
<td>Density</td>
<td>not determined</td>
</tr>
<tr>
<td>Water solubility</td>
<td>No</td>
</tr>
<tr>
<td>Solubility in other solvents</td>
<td>not determined</td>
</tr>
<tr>
<td>Partition coefficient</td>
<td>not determined</td>
</tr>
<tr>
<td>Vapour density</td>
<td>not determined</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>not determined</td>
</tr>
<tr>
<td>Other information</td>
<td></td>
</tr>
<tr>
<td>Solid content</td>
<td>0,0 %</td>
</tr>
</tbody>
</table>

10. Stability and reactivity

Reactivity
  Flammable.

Chemical stability
  The product is stable under storage at normal ambient temperatures.

Possibility of hazardous reactions
  No known hazardous reactions.
Conditions to avoid
Keep away from sources of heat (e.g. hot surfaces), sparks and open flames. Vapours can form explosive mixtures with air.

Incompatible materials
No information available.

Hazardous decomposition products
No known hazardous decomposition products.

11. Toxicological information

Information on toxicological effects

Acute toxicity
Harmful if inhaled.

ATEmixture calculated
ATE (inhalation vapour) 13,10 mg/l; ATE (inhalation aerosol) 1,786 mg/l

<table>
<thead>
<tr>
<th>CAS No</th>
<th>Chemical name</th>
<th>Route of exposure</th>
<th>Dose</th>
<th>Species</th>
<th>Source</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>78-10-4</td>
<td>ethyl silicate, tetraethyl silicate</td>
<td>dermal</td>
<td>LD50 mg/kg</td>
<td></td>
<td>5860</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>inhalation vapour</td>
<td>ATE</td>
<td></td>
<td>11 mg/l</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>inhalation aerosol</td>
<td>ATE</td>
<td></td>
<td>1,5 mg/l</td>
<td></td>
</tr>
<tr>
<td>78-10-4</td>
<td>tetraethyl silicate; ethyl silicate</td>
<td>oral</td>
<td>LD50 mg/kg</td>
<td></td>
<td>6270</td>
<td>GESTIS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>dermal</td>
<td>LD50 mg/kg</td>
<td></td>
<td>5880</td>
<td>GESTIS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>inhalation vapour</td>
<td>ATE</td>
<td></td>
<td>11 mg/l</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>inhalation aerosol</td>
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<td>Silicic acid (H4SiO4), tetraethyl ester, reaction products with bis(acetyloxy)dioctylstannane</td>
<td>oral</td>
<td>ATE 500 mg/kg</td>
<td>Rat</td>
<td>GESTIS</td>
<td></td>
</tr>
</tbody>
</table>

Irritation and corrosivity
Causes serious eye irritation.
Skin corrosion/irritation: Based on available data, the classification criteria are not met.

Sensitizing effects
Based on available data, the classification criteria are not met.

Carcinogenic/mutagenic/toxic effects for reproduction
Based on available data, the classification criteria are not met.

STOT-single exposure
May cause respiratory irritation. (ethyl silicate, tetraethyl silicate; tetraethyl silicate; ethyl silicate)

STOT-repeated exposure
May cause damage to organs through prolonged or repeated exposure. (Bis(neodecanoyloxy)dioctylstannane)

Aspiration hazard
Based on available data, the classification criteria are not met.

Additional information on tests
The mixture is classified as hazardous according to regulation (EC) No 1272/2008 [CLP].
12. Ecological information

**Ecotoxicity**

The product is not: Ecotoxic.

**Persistence and degradability**

The product has not been tested.

**Bioaccumulative potential**

The product has not been tested.

**Mobility in soil**

The product has not been tested.

**Other adverse effects**

No information available.

**Further information**

Do not allow to enter into surface water or drains. Do not allow to enter into soil/subsoil.

13. Disposal considerations

**Waste treatment methods**

**Disposal recommendations**

Do not allow to enter into surface water or drains. Do not allow to enter into soil/subsoil. Dispose of waste according to applicable legislation.

**Contaminated packaging**

This material and its container must be disposed of as hazardous waste. Handle contaminated packages in the same way as the substance itself.

14. Transport information

**Marine transport (IMDG)**

- **UN number:** UN 1292
- **United Nations proper shipping name:** TETRAETHYL SILICATE
- **Transport hazard class(es):** 3
- **Packing group:** III
- **Hazard label:** 3

**Special Provisions:** -

- **Limited quantity:** 5 L
- **Excepted quantity:** E1
- **EmS:** F-E, S-D

**Air transport (ICAO-TI/IATA-DGR)**

- **UN number:** UN 1292
- **United Nations proper shipping name:** TETRAETHYL SILICATE
- **Transport hazard class(es):** 3
- **Packing group:** III
- **Hazard label:** 3
Limited quantity Passenger: 10 L
Passenger LQ: Y344
Excepted quantity: E1
IATA-packing instructions - Passenger: 355
IATA-max. quantity - Passenger: 60 L
IATA-packing instructions - Cargo: 366
IATA-max. quantity - Cargo: 220 L

Environmental hazards
ENVIRONMENTALLY HAZARDOUS: no

15. Regulatory information

Canadian regulations

16. Other information

Abbreviations and acronyms
ADR: Accord européen sur le transport des marchandises dangereuses par Route
(IM 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 Harmonized System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service
LC50: Lethal concentration, 50%
LD50: Lethal dose, 50%

Further Information
The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

(The data for the hazardous ingredients were taken respectively from the last version of the sub-contractor’s safety data sheet.)