SAFETY DATA SHEET
SODIUM SILICATE LIQUID (Molar ratio > 3.2)


Issue Number : 10
Issue Date : 17/07/2015

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product name : Sodium silicate liquid (molar ratio > 3.2)
Chemical name(s) : Sodium silicate liquid; Silicic acid, sodium salt; Sodium hydroxy(oxo)silanolate
Formula : Na$_2$O.xSiO$_2$ + H$_2$O (x > 3.2)
CAS-nr. : 1344-09-8
EC-nr. : 215-687-4
REACH registration nr. : 01-2119448725-31-0012

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

Identified use(s):
- Industrial uses
- Consumer uses
- Professional uses

Uses advised against:
- None known

1.3. Details of the supplier of the safety data sheet

Adress: SILMACO NV
Industrieweg 90
B-3620 Lanaken
Belgium

Telephone: +32 (0)89/730 222
Fax: +32 (0)89/722 724
Email: info@silmaco.com

1.4. Emergency telephone number

SILMACO : +32 (0)89/730 222 (only during office hours)
Poison Center : +32 (0)70/245 245 (24/24h)

2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

GHS Classification according to EC 1272/2008:
- Not classified.

Hazards summary:
- Alkaline solution.

2.2. Label elements (according to EC 1272/2008)

Hazard pictogram(s) : None
Signal word(s): None
Hazard statement(s): None
2.3. Other hazards
Not applicable

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

<table>
<thead>
<tr>
<th>Ingredient(s)</th>
<th>% WW</th>
<th>EC-nr.</th>
<th>REACH registration nr.</th>
<th>GHS-classification according to EC 1272/2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium silicate (molar ratio &gt; 3.2)</td>
<td>20 - 60</td>
<td>215-687-4</td>
<td>01-2119448725-31-0012</td>
<td>Not classified</td>
</tr>
<tr>
<td>Water</td>
<td>40 – 80</td>
<td>231-791-2</td>
<td></td>
<td>Not classified</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

4.1. Description of first aid measures
- **After eye contact:** Immediately flush eyes with eyewash solution or water (for 10 minutes). Seek an oculist if necessary.
- **After skin contact:** Rinse with running water and soap. Apply replenishing cream. Change all contaminated clothing.
- **After inhalation:** After inhalation of spray mist: bring to fresh air, seek medical advice if necessary.
- **After ingestion:** Rinse mouth and throat. Drink 1-2 glasses of water. Seek medical advice.

4.2. Most important symptoms and effects, both acute and delayed
Not classified as a hazardous substance or mixture.

4.3. Indication of any immediate medical attention and special treatment needed

- Speed in removal of material is of prime importance
- Remove soiled clothing immediately

5. FIRE-FIGHTING MEASURES

5.1. Extinguishing Media
- **Suitable extinguishing media:** Not applicable. Inorganic material. Non-combustible, therefore define extinguishing measures according to neighbouring conditions.
- **Unsuitable extinguishing media:** Not applicable.

5.2. Special hazards arising from the substance or mixture
Not applicable. Inorganic material. Non-combustible.

5.3. Advice for firefighters
No particular measures required.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures
- Avoid contact with skin and eyes.
- Danger of slipping on spilled product.
6.2. Environmental precautions
⇒ Do not allow to enter drains / surface water / ground water. Prevent the spreading of the product into the environment by diking with sand or other absorbent material.
⇒ Contact the authorities in the event of large product spillage to water courses or sewage systems or if spillage has contaminated soil.

6.3. Methods and materials for containment and cleaning up
⇒ Remove with liquid-absorbing material for example sand.
⇒ Remove last traces by diluting with plenty of (warm) water.

6.4. Reference to other sections
See also section 8

7. HANDLING AND STORAGE

7.1. Precautions for safe handling
⇒ Avoid contact with eyes, skin and clothing.
⇒ Wear protective equipment, see also section 8.
⇒ Eye wash facilities should be readily available.

7.2. Conditions for safe storage, including any incompatibilities
⇒ Keep packaging / storage vessel closed.
⇒ Protect from freezing.
⇒ Keep away from acids.
⇒ Compatible materials : (Stainless) steel.
⇒ Incompatible materials : Zinc, Tin, Aluminum, Cupper and their alloys.
⇒ Storage class regarding TGRS 510 (VCI, Germany): 12 (non-combustible liquid)
⇒ See also title 10

7.3. Specific end use(s)
None known

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Control parameters
No particular measures required.

Derived No Effect Level for workers:

<table>
<thead>
<tr>
<th>Exposure pattern</th>
<th>Route</th>
<th>Descriptor</th>
<th>DNEL</th>
<th>Most sensitive endpoint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-term - systemic effects</td>
<td>Dermal (mg/kg bw /day)</td>
<td>DNEL 1,59</td>
<td></td>
<td>repeated dose toxicity</td>
</tr>
<tr>
<td>Long-term - systemic effects</td>
<td>Inhalation (mg/m³)</td>
<td>DNEL 5,61</td>
<td></td>
<td>repeated dose toxicity</td>
</tr>
</tbody>
</table>

Derived No Effect Level for consumers:

<table>
<thead>
<tr>
<th>Exposure pattern</th>
<th>Route</th>
<th>Descriptor</th>
<th>DNEL</th>
<th>Most sensitive endpoint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-term - systemic effects</td>
<td>Dermal (mg/kg bw /day)</td>
<td>DNEL 0,8</td>
<td></td>
<td>repeated dose toxicity</td>
</tr>
<tr>
<td>Long-term - systemic effects</td>
<td>Inhalation (mg/m³)</td>
<td>DNEL 1,38</td>
<td></td>
<td>repeated dose toxicity</td>
</tr>
<tr>
<td>Long-term - systemic effects</td>
<td>Oral (mg/kg bw /day)</td>
<td>DNEL 0,8</td>
<td></td>
<td>repeated dose toxicity</td>
</tr>
</tbody>
</table>

Predicted No Effect Concentration (PNEC) mg/L

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshwater</td>
<td>7,5</td>
</tr>
<tr>
<td>Marine water</td>
<td>1</td>
</tr>
<tr>
<td>Intermittent releases</td>
<td>7,5</td>
</tr>
<tr>
<td>Sewage treatment plant</td>
<td>348</td>
</tr>
</tbody>
</table>
8.2. Exposure controls

8.2.1. Engineering controls
Engineering methods to prevent or control exposure are preferred. Methods include process or personal enclosure and control of process conditions. For example: ventilation if due to the application a product mist can be formed.

8.2.2. Personal protection

Respiratory protection: In the eventual risk of spray, avoid inhalation of spray.
Eye/face protection: Wear suitable tightly fitting goggles.
Skin protection: Wear suitable protective clothing and alkaline resistant gloves (PVC, rubber or natural latex) tested according to EN 374.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

- Appearance: viscous liquid, colourless to translucent
- Odour: odourless
- Odour threshold (ppm): not applicable
- pH (value): 1% solutions ranges from 11 to 13
- Melting/freezing point (°C): ranges from 0 to -12°C
- Boiling point/ range (°C): ± 100 °C
- Flash point (°C): not applicable
- Evaporation rate: no data
- Flammability (solid, gas): not applicable
- Explosive limit ranges: not applicable
- Vapor pressure (mm Hg): similar to H₂O
- Vapor density (air=1): no data
- Density (kg/l): 1.30 – 1.60 kg/l
- Solubility (water): soluble
- Solubility (other): no data
- Partition coefficient: not applicable
- Auto ignition temperature (°C): not applicable
- Decomposition temperature (°C): not applicable
- Viscosity (mPa.s): ranges from 10 to 10.000 mPas
- Explosive properties: not applicable
- Oxidising properties: not applicable

9.1. Other information
No data

10. STABILITY AND REACTIVITY

10.1. Reactivity
See section 10.3.

10.2. Chemical stability
Stable under recommended storage and handling conditions

10.3. Possibility of hazardous reactions
- Aqueous solutions will react with aluminium, zinc, tin, cuppur and their alloys evolving hydrogen gas which can form an explosive mixture with air.
- Exothermic reaction if in contact with acids

10.4. Conditions to avoid
Avoid contact in concentrated form with acids.
10.5. Incompatible materials
Avoid contact with aluminum, zinc, tin, copper and their alloys.

10.6. Hazardous decomposition products
None known

11. TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Acute toxicity
The hazard of sodium silicates, by all routes, comes from its alkalinity.

⇒ Ingestion: Oral LD50 (rat): 3,400 mg/kg bw
⇒ Inhalation: In case of inhalation, irritation of the respiratory system can be expected. Inhalation LC50 (rat) > 2,06 g/m3.
⇒ Skin contact: Slightly irritating, not classified as harmful.
⇒ Eye contact: Slightly irritating, not classified as harmful.

Skin corrosion/irritation: Not classified.
Serious eye damage/irritation: Not classified.
Sensitisation: Not sensitising (LLNA).
Carcinogenicity: No structural alerts.
Reproductive toxicity: Effects on fertility: NOAEL (rat) > 159 mg/kg bw/d.
STOT-single exposure: no data
STOT-repeated exposure: no data
Aspiration hazard: Not classified.

12. ECOLOGICAL INFORMATION

12.1. Toxicity
⇒ Acute fish toxicity (Brachydanio rerio): LC50 (96 hour): 1108 mg/l
⇒ Acute invertebrates toxicity (Daphnia magna): EC50 (48 hour): 1700 mg/l
⇒ Algae / cyanobacteria (Scenedesmus subspicatus): EC50 (72 h, biomass): 207 mg/L, EC50 (72 h, growth rate): > 345.4 mg/L

12.2. Persistence and degradability
Inorganic. Soluble silicates, upon dilution, rapidly depolymerise into molecular species indistinguishable from natural dissolved silica. They combine with ions like Ca, Mg, Fe, Al and others to end up as insoluble compounds similar to constituents of natural soils.

12.3. Bioaccumulative potential
Inorganic. The substance has no potential for bioaccumulation.

12.4. Mobility in soil
Not applicable.

12.5. Results of PBT and vPvB assessment
Not classified as PBT or vPvB.

12.6. Other adverse effects
The alkalinity of this material will have a local effect on ecosystems sensitive to changes in pH.
13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods
   ⇒ Waste disposal according national or regional regulations, neutralisation prior to disposal is advisory.
   ⇒ Dispose contaminated packaging according national or regional regulations, preliminary cleaning with
     water is advisory.
   ⇒ EWC (European Waste Catalog) - number: 06 02 99

14. TRANSPORT INFORMATION

14.1. UN number Not applicable
14.2. UN proper shipping name Not applicable
14.3. Transport hazard class(es) Not applicable
14.4. Packing Group Not applicable
14.5. Environmental hazards Not classified as a marine pollutant
14.6. Special precautions for user See title 7.2. for incompatible materials
14.7. Transport in bulk according to annex II of MARPOL 73/78 and
      the IBC Code Not applicable

15. REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislations specific for the substance
       or mixture.
   ⇒ TSCA inventory status: reported/included
   ⇒ AICS inventory status: reported/included
   ⇒ DSL/NDSL inventory status: reported/included

15.2. Chemical safety assessment
   A chemical safety assessment has been conducted. The results are summarized in annex. The annex covers
   workplace and consumer exposure scenario’s.

16. OTHER INFORMATION

The following sections contain revisions or new statements:
• Section 2.1.: removed DSD-Classification
• Section 7.2.: storage class TRGS 510
• Section 8.1.: addition of DNEL and PNEC values
• Annex: update of the exposure scenario’s

Sources of key data: IUCLID and CSR Sodium Silicate
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## Section 1

### Exposure Scenario Title

Workplace exposure to silicic acid, sodium salt (EC 215-687-4) solutions

### Use Descriptor

Sector of Use (SU) 3 and 22 (including the supplementary SU’s 2a, 2b, 4, 5, 6b, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20)

Process Categories (PROC): 1, 2, 3, 4, 5, 6, 7, 8a, 8b, 9, 10, 11, 13, 14, 15, 16, 17, 19, 21, 22, 23, 24, 25, 26

Environmental Release Categories (ERC): 1, 2, 3, 4, 5, 6a, 6b, 6d, 7, 8a, 8b, 8c, 8d, 8e, 8f, 9a, 9b

Processes, tasks, activities covered

Manufacture and formulation of the substance as well as industrial and professional uses.

## Section 2

### Operational conditions and risk management measures

If possible, local exhaust ventilation should be used. In addition, whenever silicic acid, sodium salt as a substance on its own or in a preparation is handled outside closed systems, suitable personal protective equipment (gloves, goggles, dust masks or respirators) is the preferred and only measure of control.

### Section 2.1

#### Control of worker exposure

**Product characteristics**

- **Physical form of product**: liquid, solution, vapour pressure 0.31 Pa (1165 °C)
- **Concentration of substance in product**: Covers percentage substance in the product up to 100 %, unless otherwise stated.
- **Amounts used**: No limit
- **Frequency and duration of use**: Covers frequency up to: daily use, weekly, monthly, yearly
- **Human factors not influenced by risk management**: Not applicable
- **Other Operational Conditions affecting worker exposure**: Assumes a good basic standard of occupational hygiene is implemented. The work occurs inside as well outside.

#### Contributing Scenarios

**PROC 1, 2, 3**

Handle substance within a closed system. No other specific measures identified.

**PROC 4, 5, 6, 8a, 8b, 9, 10, 13, 14, 15, 16, 17, 19, 21, 22, 23, 24, 25, 26**

Wear suitable gloves (tested to EN374) and eye protection.

**PROC 7, 11**

Provide enhanced general ventilation by mechanical means. Wear suitable gloves (tested to EN374) and eye protection. or Wear a respirator conforming to EN140 with Type A/P2 filter or better. Wear suitable gloves (tested to EN374) and eye protection.

### Section 2.2

#### Control of environmental exposure

Not required, as soluble silicates including silicic acid, sodium salt do not meet the criteria for classification as dangerous to the environment according to 67/548/EEC (See Article 14.4 of REACH Regulation). Furthermore, as high production volume substances, soluble silicates have been reviewed to a great extent for their exposure potential to the environment and the possible risks arising from their release (Van Dokkum et al. 2002, OECD SIDS 2004, HERA 2005, and CEES 2008). It was concluded that soluble silicates are currently of low priority for further work because of their low hazard profile.

## Section 3

### Exposure Estimation

#### Health

When the recommended risk management measures (RMM) and operational conditions (OC) including personal protective equipment (PPE) are used, the exposure to aqueous solutions of silicic acid, sodium salt will be negligible. RMMs are based on a qualitative risk characterization.
Section 4 | Guidance to check compliance with the Exposure Scenario
4.1 | Health
The implemented RMMs and OCs including PPE will ensure that workers´ exposure is reduced in a way that health hazard effects are avoided and that the risk is considered to be adequately controlled.

Section 1 Exposure Scenario Title
Title
Use in Consumer products
Use Descriptor
Sector(s) of Use (SU) 21 (including the supplementary SU´s 2a, 6b, 10, 13, 18, 19)
Product Categories (PC) 1, 3, 8, 9a, 9b, 14, 15, 26, 31, 35, 37, 39
Environmental Release Categories (ERC) 8a, 8b, 8c, 8d, 8e, 8f, 9a, 9b
Processes, tasks, activities covered
Covers general exposures to consumers arising from the use of household products sold
Assessment Method
See Section 3.

Section 2 Operational conditions and risk management measures
Section 2.1 Control of consumer exposure
Product characteristics
Physical form of product Powder or liquid
Vapour pressure 0.31 Pa (1165 °C)
Concentration of substance in product Unless otherwise stated, cover concentrations up to 100%
Amounts used No limit
Frequency and duration of use/exposure Covers frequency up to: daily use, weekly, monthly, yearly
Other Operational Conditions affecting exposure Unless otherwise stated assumes use at ambient temperatures; assumes use in a 20 m³ room (ECHA guidance R.15, 2008) assumes use with typical ventilation.

Product Category Specific Risk Management Measures (RMM) and Operational Conditions (OC) (only required controls to demonstrate safe use listed)

PCs - general case OC In consumer products the irritation hazard of soluble silicates is addressed, if necessary, by appropriate labelling and the advice to use (household) gloves on the consumer product. In general, dermal, inhalation and oral consumer exposure to commercially available products is minimised due to formulation (limited concentration of soluble silicates, particle size distribution, agglomeration and dust potential, tablets and gels), packaging and bad taste of commercially available products.

1, 3, 8, 9a, 9b, 14, 15, 26, 31, 35, 37, 39 RMM No specific RMMs identified beyond those OCs stated.

OC Covers use up to 365 days/year; covers use under typical household ventilation.

RMM No specific RMMs identified beyond those OCs stated.

Section 3 Exposure Estimation
3.1 Health
Some product uses could result in local irritation (skin and eyes) if highly concentrated products, which is usually not the case, are used. This hazard is addressed, if necessary, by appropriate labelling and the advice to use household gloves on the consumer product. In general, dermal, inhalation and oral consumer exposure to commercially available products is minimised by formulation measures (use of limited concentrations, reduction of dust potential by agglomeration or use of tablets and gels), bad taste of the products, packaging devices (sealing of tablets, child-resistant fastenings) or denaturing.

Section 4 Guidance to check compliance with the Exposure Scenario
4.1 Health
Besides the product integrated RMMs, consumer instructions and the communication on the safe use should be implemented, including technical use instructions, instructions on use of protective clothing and behaviour, storage and disposal instructions. The implemented risk mitigation measures will ensure that consumer exposure is reduced in a way that health hazard effects are avoided and that the risk is considered to be adequately controlled.