

SAFETY DATA SHEET

SODIUM SILICATE LIQUID (Molar ratio > 2,6; ≤ 3,2)

This document complies with the European Regulation (EC) No. 1907/2006 (REACH), Annex II

Issue Number : 10

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

1.1. Product identifier

Product name : Sodium silicate liquid (molar ratio > 2,6; ≤ 3,2)
Chemical name(s) : Sodium silicate liquid; Silicic acid, sodium salt; Sodium hydroxy(oxo)silanolate
Formula : $\text{Na}_2\text{O} \cdot x\text{SiO}_2 + \text{H}_2\text{O}$ ($x > 2,6$ and $< / = 3,2$)
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

Company: Nafis Silicate

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2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

GHS Classification according to EC 1272/2008:

Hazard classes/categories	Hazard Statements
Skin Irrit. 2 Eye Irrit. 2	H315: Causes skin irritation. H319: Causes serious eye irritation.

DSD/DPD-Classification according to 67/548/EEC and 1999/45/EC:

Hazard classes/categories	Hazard Statements
Xi; Irritant	R38: Irritating to skin. R36: Irritating to eyes.

Hazards summary: Alkaline solution. Causes skin irritation and serious eye irritation.

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

Hazard pictogram(s) :



Signal word(s):

Warning

Hazard statement(s):

H315: Causes skin irritation.

H319: Causes serious eye irritation.

Precautionary statement(s):

P262: Do not get in eyes, on skin, or on clothing.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

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.

2.3. Other hazards

Not applicable

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Ingredient(s)	%WW	EC-nr.	REACH registration nr.	GHS-classification according to EC 1272/2008
Sodium silicate (molar ratio > 2,6; ≤ 3,2)	20 - 60	215-687-4	01-2119448725-31-0012	Skin Irrit. 2 – H315 Eye Irrit. 2 – H319
Water	40 – 80	231-791-2		Not classified

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.

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

⇒ Causes skin irritation.

⇒ Causes serious eye irritation.

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, Copper and their alloys.
- ⇒ 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.

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 H ₂ O
⇒ 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, copper 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:** Irritation. Dermal LD50 (rat) > 5000 mg/kg bw.
- ⇒ **Eye contact:** Causes serious eye irritation.

Skin corrosion/irritation:	Causes skin irritation.
Serious eye damage/irritation:	Causes serious eye irritation.
Sensitisation:	Not sensitising (LLNA).
Mutagenicity:	No evidence of genotoxicity. In vitro/in vivo negative.
Carcinogenicity:	No structural alerts.
Reproductive toxicity:	Effects on fertility: NOAEL (rat) > 159 mg/kg bw/d. Developmental toxicity: NOAEL (mouse) > 200 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 MARPOL73/78 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: all sections

Sources of key data: IUCLID and CSR Sodium Silicate

DSD/DPD-Classification according to 67/548/EEC and 1999/45/EC:

Hazard symbols : Irritant (Xi)

R-phrases :

R36: Irritating to eyes.

R38: Irritating to skin.

S-phrases :

S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

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ANNEX TO SAFETY DATASHEET

Section 1 Exposure Scenario Title	
Title	Workplace exposure to sodium silicate (EC 215-687-4) solutions.
Use Descriptor	Sector of Use: SU 3 and SU 22
	Process Categories (PROC): 1, 2, 3, 4, 5, 6, 7, 8a, 8b, 9, 10, 11, 13, 14, 22, 23, 24
	Environmental Release Categories: not required
Processes, tasks, activities covered	Manufacture of the substance as well as industrial and professional uses.
Section 2 Operational conditions and risk management measures	
	Whenever handling sodium silicate as a substance on its own (Powder/granules or liquid) or in a preparation outside closed systems, depending on the use and concentration suitable personal protective equipment (gloves, goggles, dust masks or respirators) are the preferred and only measure of control.
Section 2.1 Control of worker exposure	
Product characteristics	
Physical form of product	liquid, solution, vapour pressure 0.0103 kPa (1175 °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 Except for PROCs 7 and 11: Avoid carrying out operation for more than 1 hour
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 Risk Management Measures.	
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, 22, 23, 24	Wear suitable gloves (tested to EN374) and eye protection.
PROC 7, 11	Covers percentage substance in the product up to 25%. Provide enhanced general ventilation by mechanical means or wear a respirator conforming to EN140 with Type A/P2 filter or better. Avoid carrying out operation for more than 1 hour. Wear suitable gloves (tested to EN374) and eye protection.
Section 2.2 Control of environmental exposure	
	Not required, as soluble silicates, including sodium silicate, 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	
3.1. Health	
The ECETOC TRA tool with modifications as outlined in the CAS has been used to estimate worker exposures.	
Section 4 Guidance to check compliance with the Exposure Scenario	
4.1. Health	
<p>Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.</p> <p>Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.</p>	

Section 1 Exposure Scenario Title		
Title: Consumer exposure to sodium silicate (EC 215-687-4) solutions. Use in Consumer products.		
Use Descriptor		
Sector(s) of Use	21	
Product Categories	1, 9a, 9b, 14, 15, 17, 23, 24, 26, 30, 33, 34, 35, 39	
Environmental Release Categories	not required	
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 (kPa)	< 0.5 kPa	
Concentration of substance in product	Unless otherwise stated, cover concentrations up to 100%.	
Amounts used	Unless otherwise stated, covers use amounts up to 37500 g; covers skin contact area up to 6660 cm2.	
Frequency and duration of use/exposure	Unless otherwise stated, covers use frequency up to 4 times per day; covers exposure up to 8 hours per event.	
Other Operational Conditions affecting exposure	Unless otherwise stated assumes use at ambient temperatures; assumes use in a 20 m³ room; assumes use with typical ventilation.	
Product Category	Specific Risk Management Measures and Operating Conditions (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 are 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.
	RMM	No specific RMMs identified beyond those OCs stated.
PC 1, 9a, 9b, 14, 15, 17, 23, 24, 26, 30, 33, 34, 39	OC	Covers use up to 365 days/year; covers use under typical household ventilation; covers default OCs of ECETOC TRA tool.
	RMM	No specific RMMs identified beyond those OCs stated.
PC 35 - laundry handwashing (example)	OC	Unless otherwise stated, covers concentrations up to 25%; covers use up to 4 days/week; covers use up to 1 time/on day of use; covers skin contact area up to 1980 cm2; covers use under typical household ventilation; covers use in room size of 20m3; for each use event, covers exposure up to 0.17 hr/event.
	RMM	No specific RMMs identified beyond those OCs stated.
PC 35 - pre-treatment of clothes (example)	OC	Unless otherwise stated, covers concentrations up to 60%; covers use up to 21 tasks/week; covers skin contact area up to 840 cm2; covers use under typical household ventilation; covers use in room size of 20 m3; for each use event, covers exposure up to 0.17 hr/event.
	RMM	No specific RMMs identified beyond those OCs stated.
Section 3 Exposure Estimation		
3.1. Health		
The ECETOC TRA tool has been used to estimate consumer exposures, consistent with the content of ECETOC Report no. 107 and the Chapter R15 of the IR&CSA TGD. Where exposure determinants differ to these sources, then they are indicated.		
Section 4 Guidance to check compliance with the Exposure Scenario		
4.1. Health		
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.		