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

1.1. Product identifier

Name and identification number: **Silicic acid, sodium salt; MR > 3.2; lumps**
 CAS number:: **1344-09-8**
 EC number: **215-687-4**
 The registration number: **01-2119448725-31-0007**
 Index Number: **none**
 EC name: **silicic acid; sodium salt**
 CAS name: **silicic acid; sodium salt**
 Other names: **glassy sodium silicate MR > 3.2;**
sodium silicate MR > 3.2
 Trade name **VITROSIL S ***

Note: Sodium silicates with different molar ratio (MR) are defined, defined as the molar ratio of SiO₂ to Na₂O in the substance in solid (lump or powder) or liquid form. MR and physical state have a significant impact on classification and labeling.

*An appropriate numerical symbol corresponding to the type of product within the scope of the indicated module is added to the trade name.

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

Relevant identified uses: water glass production, production of: silica; silica gel; zeolites; silicates; aluminium; ceramics; glass catalysts; production and application for liquid and solid detergents for washing fabrics, washing dishes; industrial cleaning and disinfecting agents; production of corrosion inhibitors and anti-limescale agents; production of adhesives and binders in various industries - paper, ceramic, wood, building and refractory materials, foundry, plastic insulation, anti-dusting agents; production of dispersion agents in various industries - cosmetics, textiles; production of flame retardants, flotation agents, impregnates, stabilizers.

Uses advised against: consumer applications.

1.3. Details of the supplier of the safety data sheet

Producer: CIECH Vitrosilicon S. A.


Address: Poland, PL 68-120 IłOWA, Żagańska 27 Street

Telephone: tel. +48 68 360 07 47, +48 68 360 07 77; fax: +48 68 360 07 00

E-mail address of the person responsible for the SDS: ciechvitrosilicon@ciechgroup.com

1.4. Emergency telephone number

112 (emergency call), 999 (emergency telephone number)

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SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation 1272/2008/EC:

Does not meet the classification criteria.

2.2. Label elements

Label accordance with Regulation 1272/2008/EC (CLP)

Hazard pictograms, signal words: None.

Hazard statements: None.

Precautionary statements: None.

2.3. Other hazards

The substance does not meet the PBT or vPvB criteria. The criteria of Annex XIII to the Regulation 1907/2008/EC (PBT or vPvB) does not apply to inorganic substances.

Potential hazard at workplaces: possibility of dust release, which may exceed the TWA ratio.


SECTION 3: Composition/information on ingredients

3.1. Substances

Substance name:	Silicic acid, sodium salt MR > 3.2
Content of pure substance:	99 % (Na₂O+SiO₂)
Common proper name:	soda water glass MR > 3.2
EC name:	silicic acid, sodium salt; No EC: 215-687-4
CAS name:	silicic acid, sodium salt; No CAS: 1344-09-8
IUPAC name:	sodium hydroxy(oxo)silanolate
Chemical formula:	Na₂O × nSiO₂

Description of substance: UVCB inorganic substance. Is a composition of oligomers of SiO₄ silicate anions combined with sodium cations.

The structural structure of the substance and its properties depend on the SiO₂ to Na₂O molar ratio (MR).

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Featured product about MR > 3.2 contains:

Molar ratio ((MR)	SiO ₂ :Na ₂ O	SiO ₂ content	Na ₂ O content
>3.2		> 76 %	< 24 %

Description of impurities: Occurring contaminants below 1 % of the above do not affect the classification of the substance. These are metal oxides derived from raw materials (quartz sand) e.g. oxides of: calcium, magnesium, aluminium, titanium, iron, etc.

SECTION 4: First aid measures

4.1. Description of first aid measures

General instructions: Persons carrying first aid should wear personal protective equipment. In case of contact with the product, always bring a doctor and present him with the label and product safety data sheet.

Inhalation: Move the victim out of the place of exposure, put him in a comfortable reclining position or sitting position, ensure peace, protect against heat loss. Place the unconscious in a stable position on the side. In case of apnea, apply artificial respiration. Ensure access to fresh air and peace. Call a physician immediately.

Skin contact (or hair): Soiled, soaked clothing should be removed immediately. Rinse skin/hair with a strong water jet/shower.

Eye contact: Remove contact lenses, if present and easy to do. Immediately flush contaminated eyes with plenty of water for 10-15 minutes. Keep eyelids wide open to rinse the entire surface of the eyes with water, including the eyelids. Call a physician immediately. During transportation to the doctor should continue flushing eyes.

Ingestion: Rinse mouth with water. Give plenty of water to drink to conscious person in small portions. Do not induce vomiting. Call a physician immediately.

4.2. Most important symptoms and effects, both acute and delayed

Inhalation: May cause respiratory irritation. Prolonged exposure may cause: cough, headache, nausea.

Eye contact: Causes serious eye damage.

Skin contact: Causes severe skin irritation.

Ingestion: Causes damage to mucosa.


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

Eyes: In case of persistent eye irritation or redness after washing with plenty of water, call an ophthalmologist.

Skin (hair): In case of prolonged repeated skin irritation contact a physician.

Ingestion: Give the injured a large amount of water to drink, call a doctor/ambulance.

Inhalation: Move the injured person to fresh air, in case of further difficulties in breathing contact a doctor. Each time, when using medical assistance, it is recommended to present this safety data sheet to the person providing assistance.

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SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media: Non-flammable and does not support smoking. Extinguishing measures to suit nearby materials.

Unsuitable extinguishing media: No data on non-recommended funds.

5.2. Special hazards arising from the substance or mixture

Non-explosive, non-flammable substance. At temperatures above 60 °C, reacts dangerously with the following materials: aluminium and its alloys, zinc and its alloys; hydrogen may form (danger of explosion).

Reacts violently with solutions of mineral acids (e.g. nitric, sulfuric) and concentrated hydrofluoric acid.

5.3. Advice for firefighters

Avoid direct contact with exposed skin and eyes. Stay in the danger zone in protective clothing intended for protection against chemicals and a suitable breathing apparatus. Do not allow the substance and fire waste to flow into surface or ground water.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel: Access of non-emergency personnel to the area of accident should be restricted until the completion of the disposal of the product. Wear appropriate personal protective equipment. Do not drink, eat and smoke. Provide adequate local and general ventilation. Avoid direct contact with the substance. Avoid inhalation of dust.


For emergency responders: Wear appropriate personal protective equipment. Do not drink, eat and smoke. Provide adequate local and general ventilation. Avoid direct contact with the substance. Avoid inhalation of dust.

6.2. Environmental precautions

Do not allow the substance to enter drains, surface and ground waters, reservoirs and watercourses. In the event of contamination of the environment with a large amount of the preparation, notify the relevant authorities and chemical rescue services.

6.3. Methods and material for containment and cleaning up

Secure the gullies. Protect damaged packaging. Collect the product released into the environment mechanically and forward for utilization. Do not rinse with water, do not neutralize.

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6.4. Reference to other sections

Disposal - see Section 13. Personal protective equipment - see Section 8.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Avoid contact with eyes and skin. Avoid breathing dust. Proceed in accordance with the general principles of health and safety at work with chemical substances, the principles of good industrial practice and the manufacturer's instructions. If substance handling is necessary, use personal protective equipment as described in section 8 of this card.

Do not eat, drink or smoke when handling the substance, except at designated places; wash hands before breaks and after work. Take off contaminated clothing and wash before reuse. Protect against penetration into surface and ground water, soil and sewage system.

7.2. Conditions for safe storage, including any incompatibilities

Store loose or in containers at roofed, hardened storage areas. Do not store in containers / tanks made or coated with zinc. Store in a dry place.

Keep away from incompatible materials (see subsection 10.5).

7.3. Specific end use(s)

See Section 1.2. Follow the instructions given in this SDS.

SECTION 8: Exposure controls/personal protection


8.1. Control parameters

Substance name	TWA	STEL	BLV
Dusts	10 mg/m ³ (inhalable dust)	-	-
	4 mg/m ³ (respirable dust)		

Legal basis: Ordinance on maximum permissible concentration and intensity of harmful factors in the work environment in accordance with national limit values.

EH40/2005 Workplace exposure limits, fourth edition, published 2020, ISBN 978 0 7176 6733 8.

In the REACH registration dossier, DNEL (derived no-effect level) values have been set out in accordance with the following tables.

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For employees employed in manufacturing and processing in which the concentration of the substance in the product and mixture exceeds 25 %.

Operation	Exposure route	DNEL
long-term general operation	dermal	1.59 mg/kg b.w./d
	inhalation	5.61 mg/m ³
long-term local operation	dermal	Not applicable
	inhalation	Not applicable

Workers may be exposed to sodium silicate during the manufacture, processing and filling of containers. DNEL levels have been determined for workers, for long-term exposure by inhalation (5.61) and dermal (1.59).

OEL levels (critical concentration at the workplace) were determined: 3 mg/m³ (alveolar fraction) and 10 mg/m³ (respirable fraction) for inhalation. Exceeding the assigned doses at the workplace for sodium silicate with MR > 3.2 in the form of lumps is unlikely, because absorption through the skin practically does not occur.

The product in the form of lamps does not appear on the consumer market.

PNEC values determined (predicted no-effect concentration):

- for the aquatic environment – freshwater:	7.5 mg/L
- for the aquatic environment – marinewater:	1.0 mg/L
- Intermittent release into water:	7.5 mg/L
- for sewage sludge:	348.0 mg/L

PNEC values have not been determined for the remaining environmental components due to the very small, impossible risk assessment for the environment.

8.2. Exposure controls

8.2.1 Appropriate engineering controls

Under production or processing conditions, local exhaust ventilation should be used wherever possible to prevent the inhalation absorption of a substance present in the form of dust, e.g. in transport, handling or processing. If the substance is manufactured or processed outside rooms or tightly closed systems - use individual respiratory protection, skin and eye protection.


8.2.2 Individual protection measures, such as personal protective equipment

Eye/face protection: Wear suitable safety goggles according to EN 166 and a face shield.

Skin Protection: Use protective clothing and protective gloves in accordance with EN 388, e.g. consisting of 45 % NBR (acrylonitrile-butadiene rubber) and 55 % cotton.

Respiratory protection: If the product is used in large quantities indoors, adequate respiratory protection is required. The correct breathing apparatus should be used in an environment where there is a risk of exposure to dust. Depending on the working conditions, wear a type A respirator with a white type filter (P).

Thermal Hazards: Not required.

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Used personal protective equipment should meet the requirements of local/regional/national laws. The employer must provide personal protective equipment appropriate to the type of work and in accordance with all requirements, including maintenance and cleaning.

Concentrations of hazardous substances in the workplace should be monitored in accordance with acknowledged test methods. Mode, method, type and frequency of testing and measurement of harmful factors in the working environment should meet the requirements of local/regional/national laws.


8.2.3 Environmental exposure controls

Do not introduce the product to ground water, sewage, waste water or soil. The solid substance in the form of lumps does not pose significant environmental hazards. Spilled product must be collected mechanically or manually and returned to the process.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Solid in the form of shapeless hard lumps, colorless or bluish, greenish or celadon
Odour	Odourless
Odour threshold	Odor is not perceptible
pH	10-12 at 20 °C
Melting point/freezing point	Due to the glassy nature, solid sodium silicate does not have a clear melting point: - softening temperature: 550-670 °C - pour point: 730-870 °C
Initial boiling point and boiling range	Not applicable – sodium silicate melts at temperatures above 300 °C
Flash point	Not applicable - inorganic substance
Evaporation rate	Not applicable - inorganic solid
Flammability (solid, gas)	Non-flammable substance
Upper/lower flammability or explosive limits	Not applicable - non-flammable substance
Vapour pressure	below 0.0103 kPa (1175 °C)
Vapour density	Not applicable
Relative density	1.26-1.71 g/cm ³ (solutions)
Solubility	The product is poorly soluble in water, quantitative

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	determination of water solubility [g/cm ³ at 20 °C] is not possible
Partition coefficient: n-octanol/ water	Not applicable - inorganic substance
Auto-ignition temperature	Not applicable
Decomposition temperature	No data available - the substance does not decompose at temperatures below 1400 °C
Viscosity	Not applicable - solid
Explosive properties	The substance has no explosive properties
Oxidising properties	The substance has no oxidizing properties

9.2. Other information

None.

SECTION 10: Stability and reactivity

10.1. Reactivity

Alkaline substance, under normal conditions very slightly soluble in water. On the surface it reacts with carbonic anhydride to form Na₂CO₃, it can react with acidic vapors.

10.2. Chemical stability

Stable under normal conditions of use, storage and storage.

10.3. Possibility of hazardous reactions

Avoid contact with strong acids and hydrofluoric acid. The reaction with acids is accompanied by the release of some heat. The reaction with hydrofluoric acid is accompanied by the evolution of hazardous gases.

10.4. Conditions to avoid


Protect from moisture.

10.5. Incompatible materials

Keep away from oxidizing agents, strong alkalis, strong acids as well as alkali metals, alkaline earth metals, zinc, aluminium, tin, lead and their alloys.

10.6. Hazardous decomposition products

Under normal conditions of use and storage, the substance does not decompose.

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SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity:

Based on available data, the classification criteria are not met.
 The substance has no acute toxic effect by any route of exposure.

Silicic acid, sodium salt MR > 3.2 [CAS: 1344-09-8]

Oral: LD₅₀ (rat) >3400 mg/kg b.w.

Inhalation: LC₅₀ (rat) >2.06 g/m³

Skin: LD₅₀ (rat) >5000 mg/kg b.w.

Skin corrosion/irritation:

For module MR > 3.2 there are no grounds for qualifying substances due to irritant effects. The substance may have an irritating to corrosive effect depending on the MR molar ratio. As MR increases, the corrosivity/irritation decreases. For MR = 3.3, at the concentration of 38-41 % there was no irritating effect (Cuthbert and Carr 1985).

Serious eye damage/irritation:

For module MR > 3.2 there are no grounds for qualifying substances due to irritant effects. For the benefit of the animals, no *in vivo* studies have been performed because the substance is skin irritant/corrosive. A series of non-approved *in vitro* tests indicate the same inverse correlation between molar ratio and irritation that has been observed for skin irritation.

Respiratory or skin sensitization:

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

Germ cell mutagenicity:

Available test results do not indicate negative germ cell mutagenicity. *In vitro* bacterial mutagenicity tests available were all negative. Sodium silicate (MR = 3.3) did not cause chromosomal aberrations or HPRT mutations in mammalian V79 cells *in vitro*.


Carcinogenicity:

There are no data (test results) that indicate carcinogenic effect of soluble sodium silicates.

Reproductive toxicity:

Harmful effects of the substance on reproduction, including: adverse effects on reproductive function and fertility and adverse effects on offspring development, were assessed on the basis of available animal studies, which show that:

- The substance is harmless to reproduction and progeny.

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STOT-single exposure:

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

STOT-repeated exposure:

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

Sodium silicate was tested in repeated oral toxicity studies in the exposure range from 28 days to 180 days in rats and dogs. No adverse effects were observed in male and female rats given test substance via drinking water for 180 days (Smith *et al.*, 1973). NOAEL specified as >159 mg/kg b.w./day.

Aspiration hazard:

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

Health effects of local exposure are given in section 4.2

SECTION 12: Ecological information

12.1. Toxicity

The substance does not meet the criteria for classification as hazardous to the environment. Soluble silicates are indistinguishable from natural forms of silicates, which constitute 59 % of the earth's crust and enter waters as a result of natural geochemical processes. Soluble silicates getting into waters as a result of production and processing have no anthropogenic significance.

Acute toxicity to fish:

LC₅₀ (96h) (*Brachydanio rerio*) >1108 mg/l

LC₅₀ (96h) (*Onchorhynchus mykiss*) 260-310 mg/l

Chronic toxicity to fish:

NOEC cannot be designated.

Acute toxicity to invertebrates:

EC₅₀ (48 h): 1700 mg/L (*Daphnia magna*)

Algae and aquatic plants:


EC₅₀ (72h, biomass) (*Scenedesmus subspicatus*) 207 mg/l

EC₅₀ (72h, speed of growth) (*Scenedesmus subspicatus*) > 345.4mg/l

12.2. Persistence and degradability

The substance is hydrolysed.

As an inorganic substance and due to its chemical structure, soluble silicates are not biodegradable.

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12.3. Bioaccumulative potential

The substance has low potential for bioaccumulation - as confirmed by the results of toxicokinetic studies on vertebrates.

12.4. Mobility in soil

Inorganic substance - not biodegradable in soil.

12.5. Results of PBT and vPvB assessment

Not applicable - inorganic substance.

12.6. Other adverse effects

Alkaline substance, well soluble in water. Unintentional release of a significant amount of the substance into the aquatic environment may cause harmful local changes in pH.

The substance is not harmful to soil organisms, bees, birds and mammals.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

During removal of waste comply with the regional / national laws.

Community legislation:

- Directive **2008/98/EC** of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives as amended.
- European Parliament and Council Directive **94/62/EC** of 20 December 1994 on packaging and packaging waste as amended.


Disposal methods for the product: Do not release into the environment. If recovery and recycling are not possible, the waste product should be forwarded in properly labelled containers to an authorized company.

Disposal methods for used packaging: Dispose of contaminated packaging in the same way as the product; hand over in properly labelled containers to an authorized company.

SECTION 14: Transport information

14.1. UN number

Not applicable.

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14.2. UN proper shipping name

Not applicable.

14.3. Transport hazard class(es)

Not applicable.

14.4. Packing group

It is not a hazardous material within the meaning of RID and ADR regulations.

14.5. Environmental hazards

Substance is not dangerous for the environment in accordance with the UN Model Regulations criteria.

14.6. Special precautions for user

Alkaline substance. In case of accidental release, collect mechanically using personal protective equipment (see section 8).

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


Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC as amended.

Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 as amended.

Commission Regulation (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

15.2. Chemical safety assessment

A Chemical Safety Report has been prepared for the substance. The report is part of the registration dossier submitted to ECHA. The report concerns the substance production process and its identified uses.

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SECTION 16: Other information

Key to abbreviations and acronyms:

ADR - The European agreement concerning the international carriage of dangerous goods by road.

BLV - Biological limit values.

DNEL - Derived no-effect level.

EC₅₀ - Half maximal effective concentration.

LC₅₀ - Median lethal concentration.

LD₅₀ - Median lethal dose.

PNEC - Predicted No Effect Concentration.

RID - The Regulations concerning the International Carriage of Dangerous Goods by Rail.

STEL - Short-term exposure limit.

TWA - 8 hours' time-weighted average.

Sources of key data:

REACH registration dossier for silic acid, sodium salt.

Training advice: Before use read the SDS.

The information above is based on a current available data concerning the product, but also on the experience and knowledge in this field of the producer. They are neither a quality description of the product nor a guarantee of particular features. They are also treated as aid to safety in transport, storage and usage of the product. This does not free the user from the responsibility of improper usage of the information above also of improper compliance with the law norms in the field.

The information contained in this SDS has been prepared by the manufacturer and verified by the ISOTOP s.c. Consulting Company from Gdańsk; www.isotop.pl; e-mail: reach@isotop.pl