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

1.1. Product identifier

Name and identification number:	**Silicic acid, potassium salt MR > 3.2; lumps**
CAS number:	**1312-76-1**
EC number:	**215-199-1**
The registration number:	**01-2119456888-17-0005**
Index Number:	**none**
EC name:	**silicic acid; potassium salt**
CAS name:	**silicic acid; potassium salt**
Other names:	**potassium water glass MR >3.2;** **potassium silicate solution MR > 3.2**
Trade name:	**VITROLIQ P***

Note: Potassium silicates are produced with a different molar ratio (MR), defined as the molar ratio of SiO_2 to K_2O in the substance in solid (lump or powder) or liquid form. MR and physical state have a significant impact on classification and labelling.

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

Synonyms: glassy potassium silicate MR> 3.2, potassium silicate MR> 3.2.

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

Relevant identified uses: production of water glass, production of silicates, production and use of liquid and solid detergents for washing fabrics, dishwashing, industrial washing and disinfecting agents, production of adhesives and binders in various industries - paper, ceramics, building and refractory materials, foundry, plastic insulation plastics, anti-dusting and anti-smoking agents, production of paints, including anti-corrosion paints, plasters, impregnates, stabilizers, viscosity regulators.

Uses advised against: not identified.

1.3. Details of the supplier of the safety data sheet

Producer: CIECH Vitrosilicon S. A.
Address: Poland, PL 68-120 IŁOWA, 27 Żagańska 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)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture
Classification according to Regulation 1272/2008/EC:
Does not meet the criteria for classification.

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.

SECTION 3: Composition/information on ingredients

3.1. Substances

Substance name: Silicic acid, potassium salt MR > 3.2; lumps

Content of pure substance:	**99 % ww (K_2O+SiO_2)**
Common proper name:	**glassy potassium silicate MR >3.2**
EC name:	silicic acid, potassium salt; No EC: 215-199-1
CAS name:	silicic acid, potassium salt; No CAS:1312-76-1
IUPAC name:	potassium hydroxy(oxo)silanolate
Chemical formula:	K_2O x nSiO_2

Description of substance: UVCB inorganic substance. Is a composition of oligomers of SiO_4 silicate anions combined with potassium cations.
The structural structure of the substance and its properties depend on the SiO_2 to K_2O molar ratio (MR).

Featured product about MR > 3.2 contains:

Molar ratio (MR) SiO_2:K_2O	SiO_2 content	K_2O content
≥3.2	>67 %	<33 %

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 apnoea, 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.

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, it reacts dangerously with the following materials: aluminium and its alloys, zinc and its alloys; hydrogen may form (danger of explosion).
Reacts 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 breathing 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 breathing 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 drains. Secure damaged packages. Collect the product released into the environment mechanically and forward for utilization. Do not rinse with water, do not neutralize.

6.4. Reference to other sections
Personal protective equipment - see Section 8. Disposal - see Section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Avoid contact with eyes and skin. Avoid breathing dust. Handle in accordance with the general principles of health and safety at work with chemical, the principles of good industrial practice and the manufacturer's recommendations. If it is necessary to

manipulate the substance, use personal protection measures according to the rules described in section 8 of this safety data sheet.
Do not eat, drink or smoke tobacco while working with the substance, except in places designed for this; wash hands before breaks and at the end of work. Take off contaminated clothing and wash it before reuse. Prevent it from reaching surface and ground waters, soil and sewage system.

7.2. Conditions for safe storage, including any incompatibilities
Store loose or in containers in roofed, hardened storage yards. Do not store in containers/ tanks made of or covered with zinc. Store in a dry place.
Keep away from incompatible materials (see subsection 10.5).

7.3. Specific end use(s)
Listed in 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.

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 potassium silicate during manufacturing and processing.

OEL levels (critical concentration at the workplace) were determined: 3 mg/m^3 (alveolar fraction) and 10 mg/m^3 (respirable fraction) for inhalation.
Exceeding the prescribed doses at the workplace for potassium 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 lumps is not available on the consumer market.

PNEC values determined (predicted no-effect concentration):
- for the aquatic environment - fresh water: 7.5 mg/L
- for the aquatic environment - sea water: 1.0 mg/L
- for 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
In the conditions of production or processing, in order to prevent inhalation absorption of the substance present in the form of dust, e.g. during transport, during reloading or during processing, local exhaust ventilation should be used wherever possible. If the substance is produced or processed outside rooms or tightly closed systems - use individual respiratory, skin and eye protection measures.

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. A suitable respirator should be used in an environment where there is a risk of exposure to aerosol or mist during spraying or similar activities. Depending on the working conditions, wear a type A respirator with a white type filter (P).
Thermal Hazards: Not required.

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
The product should not be allowed to enter groundwater, sewage system, sewage or soil. The solid substance in the form of lumps does not pose significant threats to the environment. The spilled product should 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

Physical state	Solid in the form of shapeless hard lamps
Colour	Colorless or bluish, greenish or celadon
Odour	Odourless
Melting point/freezing point	Due to the glass nature, solid potassium silicate does not have a distinct melting point: - softening temperature: above 700 °C - pour point: app. 900 °C
Boiling point or initial boiling point and boiling range	Not applicable – potassium silicate melts at the temperature above 300 °C.
Flammability	Non-flammable substance
Lower and upper explosion limit	Not applicable - non-flammable substance
Flash point	Not applicable - inorganic substance
Auto-ignition temperature	Not applicable
Decomposition temperature	No data available - the substance does not decompose at temperatures below
pH	10-12 at 20 °C
Kinematic viscosity	Not applicable - solid substance
Solubility	The product is poorly soluble in water, quantification of the quantitative solubility in water [g/cm^3 at 20 °C] is not possible.
Partition coefficient n-octanol/water (log value)	Not applicable - inorganic substance
Vapour pressure	Below 0.0103 kPa (1175 °C)
Density and/or relative density	1.26-1.71 g/cm^3 (solutions)
Relative vapour density	Not applicable
Particle characteristics	Not applicable

9.2. Other information

9.2.1. Information with regard to physical hazard classes
Not applicable.

9.2.2. Other safety characteristics
Not applicable.

SECTION 10: Stability and reactivity

10.1. Reactivity
Alkaline substance, very slightly soluble in water under normal conditions. On the surface it reacts with carbonic acid anhydride to form K_2CO_3, may react with acid 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 with hydrofluoric acid. Some heat is released when reacting with acids. Forms hazardous gases when reacting with hydrofluoric acid.

10.4. Conditions to avoid
Protect against 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.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

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, potassium salt with modulus MR > 3.2 [CAS: 1312-76-1]
Oral: LD_{50} (rat) >5000 mg/kg b.w.
Inhalation: LC_{50} (rat) >2.06 g/m^3
Skin: LD_{50} (rat) >5000 mg/kg b.w.

Skin corrosion/irritation:
For the MR module >3.2, there is no basis for classification of the substance as irritant.

Serious eye damage/irritation:
No human research results. For the MR module >3.2, there is no basis for classification of the substance as irritant. At the concentration of potassium silicate in solutions with

a concentration of up to 35 % for the molar modules of 2.47; 3.4 and 3.9, only a slight irritating effect on the eye or no irritating effect (rabbit) was found.

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

Germ cell mutagenicity:
Based on available data, the classification criteria are not met.
Available test results do not indicate negative germ cell mutagenicity. *In vitro* bacterial mutagenicity tests available were all negative.

Carcinogenicity:
There are no data (test results) showing the carcinogenic effect of soluble potassium silicates.

Reproductive toxicity:
Based on available data, the classification criteria are not met.
The harmful effects of the substance on reproduction, including: adverse effects on reproductive functions and fertility, and adverse effects on the development of offspring were assessed on the basis of available animal studies, which showed that the substance is not harmful to reproduction and offspring.

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.

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

11.2. Information on other hazards
11.2.1. Endocrine disrupting properties
Not applicable.

11.2.2. Other information
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.

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:
LC_{50} (48h) (*Leuciscus idus*) >146 mg/l

Chronic toxicity to fish:
NOEC cannot be designated.

Acute toxicity to invertebrates:
EC_{50} (24h) 146 mg/l (*Daphnia magna*)

Algae and aquatic plants:
EC_{50} (72h, biomass) (*Scenedesmus subspicatus*) 207 mg/l
EC_{50} (72h, speed of growth) (*Scenedesmus subspicatus*) > 345.4 mg/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.

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. Endocrine disrupting properties
Not applicable.

12.7. 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.

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 packing: 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 or ID number
Not applicable.

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. Maritime transport in bulk according to IMO instruments
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) 2020/878 of 18 june 2020 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.

SECTION 16: Other information

Key to abbreviations and acronyms:
DNEL - Derived no-effect level.
PNEC - Predicted No Effect Concentration.
EC_{50} - Half maximal effective concentration.
LC_{50} - Median lethal concentration.
LD_{50} - Median lethal dose.
TWA - 8 hours' time-weighted average.
ADR -The European agreement concerning the international carriage of dangerous goods by road.
RID - The Regulations concerning the International Carriage of Dangerous Goods by Rail.
BLV - Biological limit values.

Sources of key data:
REACH registration dossier for the substance silicic acid, potassium 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**