

REMAS

Safety Data Sheet

According to Annex II to REACH - Regulation (EU) 2020/878 and to Annex II to UK REACH

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

1.1. Product identifier

Code: **1101090015**
Product name: **REMAS**
UFI: **7N70-0058-A00T-JJ0**

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

Intended use: **Silicate-based consolidating agent for screeds**

Identified Uses	Industrial	Professional	Consumer
BUILDING	-	SU: 19.	SU: 19.

Ready to use product.
Product for craft and private use.
Any other use is not recommended.

1.3. Details of the supplier of the safety data sheet

Name: **FORNACI CALCE GRIGOLIN S.p. A.**
Full address: **Via Foscarini, 2**
District and Country: **31040 Nervesa della Battaglia (TV) Italy**
Tel.: **+39 0422 5261**
Fax: **+39 0422 526299**

e-mail address of the competent person responsible for the Safety Data Sheet: **info@fornacigrigolin.it**

1.4. Emergency telephone number

For urgent inquiries refer to: **HEALTH EMERGENCY - 112**

SECTION 2. Hazards identification

2.1. Classification of the substance or mixture

The product is classified as hazardous pursuant to the provisions set forth in (EC) Regulation 1272/2008 (CLP) (and subsequent amendments and supplements). The product thus requires a safety datasheet that complies with the provisions of (EU) Regulation 2020/878. Any additional information concerning the risks for health and/or the environment are given in sections 11 and 12 of this sheet.

Hazard classification and indication:

Eye irritation, category 2	H319	Causes serious eye irritation.
Skin irritation, category 2	H315	Causes skin irritation.

2.2. Label elements

Hazard labelling pursuant to EC Regulation 1272/2008 (CLP) and subsequent amendments and supplements.

Hazard pictograms:



Signal words: **Warning**

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SECTION 2. Hazards identification ... / >>

Hazard statements:

H319	Causes serious eye irritation.
H315	Causes skin irritation.

Precautionary statements:

P262	Do not get in eyes, on skin, or on clothing.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or 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.
P280	Wear protective gloves/ protective clothing / eye protection / face protection.
P337+P313	If eye irritation persists: Get medical advice / attention.

Contains: SODIO SILICATO

2.3. Other hazards

On the basis of available data, the product does not contain any PBT or vPvB in percentage \geq than 0,1%.

The product does not contain substances with endocrine disrupting properties in concentration \geq 0.1%.

In contact with aluminum or amphoteric metals it can develop hydrogen in gaseous form.

SECTION 3. Composition/information on ingredients

3.2. Mixtures

Contains:

Identification	x = Conc. %	Classification (EC) 1272/2008 (CLP)
SODIO SILICATO		
<i>INDEX</i>	$30 \leq x < 50$	Eye Irrit. 2 H319, Skin Irrit. 2 H315, STOT SE 3 H335
<i>EC</i>	215-687-4	
<i>CAS</i>	1344-09-8	
<i>REACH Reg.</i>	01-2119448725-31	

The full wording of hazard (H) phrases is given in section 16 of the sheet.

The classification "STOT SE 3, H335: May cause respiratory irritation" only concerns dusts.

Impurities: there are present, in quantities lower than 0.1%, impurities which are not relevant for the classification of the mixture and consist of metal oxides deriving from the raw materials (such as for example aluminium, iron and titanium oxides)

SECTION 4. First aid measures

4.1. Description of first aid measures

EYES: Remove contact lenses, if present. Wash immediately with plenty of water for at least 15 minutes, opening the eyelids fully. If problem persists, seek medical advice.

SKIN: Remove contaminated clothing. Rinse skin with a shower immediately. Wash contaminated clothing before using it again.

INHALATION: Remove to open air. If the subject stops breathing, administer artificial respiration. Get medical advice/attention immediately.

INGESTION: Get medical advice/attention immediately. Do not induce vomiting. Do not administer anything not explicitly authorised by a doctor.

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

Acute symptoms and effects: irritation or injury to the upper airways following inhalation in aerosol form; obstruction of the lower airways is possible in case of aspiration of the liquid; skin irritation following contact; severe eye irritation following contact; irritation, injury and/or obstruction of the digestive system following ingestion.

Delayed symptoms and effects: similar to acute symptoms.

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

In case of illness, consult your doctor and present this card to him.

Rapid removal of the material is of primary importance.

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SECTION 5. Firefighting measures

5.1. Extinguishing media

SUITABLE EXTINGUISHING EQUIPMENT

The extinguishing equipment should be of the conventional kind: carbon dioxide, foam, powder and water spray.

UNSUITABLE EXTINGUISHING EQUIPMENT

None in particular.

5.2. Special hazards arising from the substance or mixture

HAZARDS CAUSED BY EXPOSURE IN THE EVENT OF FIRE

Do not breathe combustion products.

The product does not burn. When heated, it releases water vapour.

Alkaline mists may form. Do not breathe any mists or aerosols.

5.3. Advice for firefighters

GENERAL INFORMATION

Use jets of water to cool the containers to prevent product decomposition and the development of substances potentially hazardous for health.

Always wear full fire prevention gear. Collect extinguishing water to prevent it from draining into the sewer system. Dispose of contaminated water used for extinction and the remains of the fire according to applicable regulations.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS

Normal fire fighting clothing i.e. fire kit (BS EN 469), gloves (BS EN 659) and boots (HO specification A29 and A30) in combination with self-contained open circuit positive pressure compressed air breathing apparatus (BS EN 137).

Avoid direct contact with eyes and skin.

Prevent flow into sewers, surface waters and groundwater.

SECTION 6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Block the leakage if there is no hazard.

Wear suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing. These indications apply for both processing staff and those involved in emergency procedures.

Slipping hazard.

6.2. Environmental precautions

The product must not penetrate into the sewer system or come into contact with surface water or ground water.

6.3. Methods and material for containment and cleaning up

Collect the leaked product into a suitable container. Evaluate the compatibility of the container to be used, by checking section 10. Absorb the remainder with inert absorbent material.

Make sure the leakage site is well aired. Contaminated material should be disposed of in compliance with the provisions set forth in point 13.

Remediation method: wash thoroughly with water and dispose of, after any neutralization of waste water.

6.4. Reference to other sections

Any information on personal protection and disposal is given in sections 8 and 13.

SECTION 7. Handling and storage

7.1. Precautions for safe handling

Before handling the product, consult all the other sections of this material safety data sheet. Avoid leakage of the product into the environment. Do not eat, drink or smoke during use.

- Recommendations for safe handling:

During handling, use suitable personal protective equipment: tight goggles, rubber gloves, non-slip shoes, work overalls as reported in section 8.

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SECTION 7. Handling and storage ... / >>

Avoid contact with eyes and skin.
Carry out handling of the product in environments equipped with an eyewash or at least a well-signposted water supply.
Do not inhale any dust or mists.
Clearly label containers and lines. Do not use food containers – risk of error.
Wash your hands after use.
Do not eat/drink/smoke in work areas.
- Recommendations to prevent the handling of incompatible substances or mixtures:
Do not mix with acids or solvents.
Avoid contact with aluminum and zinc, risk of development of hydrogen gas.
Avoid pouring freely from containers.
Keep containers tightly closed.
- Technical recommendations for the prevention of fires and explosions:
Non-flammable product. Transfer slowly and ensure a grounding system to avoid the formation of electrostatic charges. Prevent electrolysis of the product if electrowelding is performed outside the tank.
- Recommendations to prevent environmental risks:
Avoid dispersing the product into the environment.
Where required by law, install a container for retaining liquids, such as a tank without a drain. It is recommended to have absorbent material near the product.

7.2. Conditions for safe storage, including any incompatibilities

Keep the product in clearly labelled containers. Keep containers away from any incompatible materials, see section 10 for details.
Safe storage: the product can be stored in well-closed iron, steel or plastic containers.
Store only in the original container.
Keep containers tightly closed and correctly labelled.
Avoid overheating.
Store between 5 and 50°C.
Incompatibility: avoid polyester resin tanks, amphoteric metals and their alloys, glass.
In contact with aluminium, zinc, copper or light alloys it could develop hydrogen in gaseous form. Keep away from strong acids; Protect from frost.
Tanks and pipes used for storage, handling and transport of the product must not be used for other products without first having been carefully washed.

7.3. Specific end use(s)

See attached exposure scenario.

SECTION 8. Exposure controls/personal protection

8.1. Control parameters

Regulatory References:

TLV-ACGIH ACGIH 2022

SODIO SILICATO

Threshold Limit Value

Type	Country	TWA/8h		STEL/15min		Remarks / Observations
		mg/m3	ppm	mg/m3	ppm	
TLV-ACGIH		2				

Predicted no-effect concentration - PNEC

Normal value in fresh water	7,5	mg/l
Normal value in marine water	1	mg/l
Normal value for water, intermittent release	7,5	mg/l
Normal value of STP microorganisms	348	mg/l

Health - Derived no-effect level - DNEL / DMEL

Route of exposure	Effects on consumers		Effects on workers					
	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Oral				0,8				
				mg/kg bw/d				
Inhalation				1,38			5,61	
				mg/m3			mg/m3	
Skin				0,8			1,59	
				mg/kg bw/d			mg/kg bw/d	

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SECTION 8. Exposure controls/personal protection ... / >>

Legend:

(C) = CEILING ; INHAL = Inhalable Fraction ; RESP = Respirable Fraction ; THORA = Thoracic Fraction.

VND = hazard identified but no DNEL/PNEC available ; NEA = no exposure expected ; NPI = no hazard identified ; LOW = low hazard ; MED = medium hazard ; HIGH = high hazard.

Skin contact and inhalation DNEL values for workers were determined using route to route extrapolation. The existing OEL value for dust is 3 mg/m³ (alveolar fraction) and 10 mg/m³ (respirable fraction). The most critical value of 3 mg/m³ is based on effects (5% increase in evidence of chronic bronchitis and pulmonary emphysema) observed in epidemiological studies taking into account a typical workplace dust density of 2.5 mg/cm³.

The DNEL value extrapolated for inhalation is greater than the OEL value for dust; therefore, long-term systemic effects caused by sodium silicate are not expected to occur as long as the OEL value is met.

Due to the alkalinity of sodium silicate, possible local effects on the skin, eyes and respiratory tract must be considered.

Direct and indirect exposure routes of skin contact, inhalation and ingestion, as well as accidental overexposure, are identified and attested by HERA (2005) as relevant to consumer exposure scenarios for sodium silicate .

Primary source of exposure is skin contact. Short-term exposure to dust can only occur with the use of the product in powder or granular form; applications of the product in physical states different from the previous ones are not relevant with regards to inhalation. For consumers, exposure through ingestion is usually marginal.

PNEC values for aquatic and terrestrial sediment are not available, as the silica in solution resulting from the product is indistinguishable from the natural source.

Given the low vapor pressure of the product, release into the atmosphere following use is not expected.

8.2. Exposure controls

As the use of adequate technical equipment must always take priority over personal protective equipment, make sure that the workplace is well aired through effective local aspiration.

When choosing personal protective equipment, ask your chemical substance supplier for advice.

Personal protective equipment must be CE marked, showing that it complies with applicable standards.

Provide an emergency shower with face and eye wash station.

HAND PROTECTION

Protect hands with category III work gloves.

The following should be considered when choosing work glove material (see standard EN 374): compatibility, degradation, failure time and permeability.

The work gloves' resistance to chemical agents should be checked before use, as it can be unpredictable. The gloves' wear time depends on the duration and type of use.

SKIN PROTECTION

Wear category II professional long-sleeved overalls and safety footwear (see Regulation 2016/425 and standard EN ISO 20344). Wash body with soap and water after removing protective clothing.

EYE PROTECTION

Wear airtight protective goggles (see standard EN 166).

RESPIRATORY PROTECTION

If the threshold value (e.g. TLV-TWA) is exceeded for the substance or one of the substances present in the product, wear a type FFP2 or higher class face mask if otherwise required by the risk assessment (see standard EN 149).

Respiratory protection devices must be used if the technical measures adopted are not suitable for restricting the worker's exposure to the threshold values considered. The protection provided by masks is in any case limited.

If the substance considered is odourless or its olfactory threshold is higher than the corresponding TLV-TWA and in the case of an emergency, wear open-circuit compressed air breathing apparatus (in compliance with standard EN 137) or external air-intake breathing apparatus (in compliance with standard EN 138). For a correct choice of respiratory protection device, see standard EN 529.

ENVIRONMENTAL EXPOSURE CONTROLS

The emissions generated by manufacturing processes, including those generated by ventilation equipment, should be checked to ensure compliance with environmental standards.

Not required, given that sodium silicate does not fall within the classification criteria as dangerous for the environment pursuant to 67/548/EEC (see art.14.4 of the REACH regulation). Given the alkalinity of the product, it is recommended to neutralize the product before disposal according to the indications in section 13.

SECTION 9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Properties	Value	Information
Appearance	liquid	
Colour	colourless	
Odour	odourless	
Odour threshold	inodore	

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SECTION 9. Physical and chemical properties ... / >>

Melting point / freezing point	not available	Remark:the aqueous solution freezes at a temperature just below 0°C; for the pure substance: softening point: 550-670°C melting point: 730-870°C
Initial boiling point	110 °C	Remark:exempted from verification as it melts above 300°C
Flammability	not applicable	Reason for missing data:inorganic product
Lower explosive limit	not applicable	Reason for missing data:incombustible
Upper explosive limit	not applicable	Reason for missing data:incombustible
Flash point	not applicable	Reason for missing data:inorganic product
Auto-ignition temperature	not applicable	Remark:evidence of self-heating up to 400°C is excluded
Decomposition temperature	not applicable	Reason for missing data:inorganic product
pH	13-15	Temperature: 20 °C
Kinematic viscosity	not available	
Dynamic viscosity	20-100 mPa*s	Remark:liquid with Newtonian behavior Temperature: 20 °C
Solubility	completely dispersible in water	Remark:slow dissolution under standard conditions for the solid residue;
Partition coefficient: n-octanol/water	not applicable	Reason for missing data:inorganic product
Vapour pressure	2.2 kPa	Remark:substance: 0.0103 kPa (1175°C) Temperature: 20 °C
Density and/or relative density	1355-1381 g/l	
Relative vapour density	not available	Remark:analogous to water at the corresponding temperatures
Particle characteristics	not applicable	

9.2. Other information

9.2.1. Information with regard to physical hazard classes

Information not available

9.2.2. Other safety characteristics

Acid/alkaline reserve	date not available	
Miscibility	not mixable with alcohol, possible formation of gels	
Corrosiveness	non-corrosive	
Explosive properties	not applicable	Reason for missing data:absence of functional groups associated with explosive properties
Oxidising properties	not applicable	Reason for missing data:Based on the chemical structure, the product cannot react exothermically with combustible materials

SECTION 10. Stability and reactivity

10.1. Reactivity

There are no particular risks of reaction with other substances in normal conditions of use.

The product reacts with acids with heat release.

The product can react with amphoteric metals such as aluminium, zinc and copper with the development of flammable hydrogen gas.

10.2. Chemical stability

The product is stable in normal conditions of use and storage.

Any sedimentation/gelling of the product does not lead to an increase in product management risk.

10.3. Possibility of hazardous reactions

No hazardous reactions are foreseeable in normal conditions of use and storage.

SECTION 10. Stability and reactivity ... / >>

Heating by exotherm following reaction with acids.

Possible pressurization of the container following the development of flammable hydrogen gas in contact with amphoteric metals.

10.4. Conditions to avoid

None in particular. However the usual precautions used for chemical products should be respected.

Contact with incompatible substances.

Prevent electrolysis of the product if electrowelding is performed outside the tank.

10.5. Incompatible materials

Acidic substances, amphoteric metals (aluminium, zinc, etc), polyester resins, ammonium salts, oxidising agents, cyanides, phenols, nitrile compounds, calcium or magnesium salts, combustible organic substances.

10.6. Hazardous decomposition products

There are no known dangerous decomposition products.

SECTION 11. Toxicological information**11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008**

In the absence of experimental toxicological data on the product itself, any health hazards of the product were assessed based on the properties of the substances contained, according to the criteria established by the reference legislation for classification. Therefore, consider the concentration of the individual dangerous substances possibly mentioned in section. 3, to evaluate the toxicological effects deriving from exposure to the product.

Metabolism, toxicokinetics, mechanism of action and other information

Symptoms related to physical, chemical and toxicological characteristics

The impact of sodium silicate on the body is mainly due to its intrinsic alkalinity.

INGESTION: irritation, burning in the mouth, esophagus, stomach, gastrointestinal disorders (abdominal pain, nausea), dysphagia, sedation, vomiting with risk of aspiration. In case of rapid and massive ingestion: possibility of collapse/shock, even fatal.

SKIN: redness, swelling.

EYES: burning, redness, acute pain in the eyes, photophobia, hypersensitivity to exposure to air.

INHALATION: the liquid, under normal conditions of use, releases only water vapour. In case of inhalation of dust or mists, there is coughing, dryness of the throat, sneezing, slightly hindered breathing up to dyspnoea, stridor and respiratory arrest and death in case of direct inhalation of liquids.

Information on likely routes of exposure

For workers: Where sodium silicate is used as such or in mixtures outside of closed systems, industrial and professional workers may be exposed to sodium silicate through skin contact, eye contact or inhalation. Given the low vapor pressure, inhalation of aqueous sodium silicate solutions is not believed to be a significant route of exposure. In any case, respiratory exposure could occur through inhalation of dust or aerosols generated by nebulization and spray management applications.

For consumers: Sodium silicate is used as an ingredient in a wide variety of consumer products (adhesives, impregnants and binders, construction materials, textiles, clothing, glass and ceramics, lubricants, greases, paints and coatings, paper products, photographic products, detergents and hair preparations). It is mainly used in soaps and detergents. Exposure can occur through different routes, such as dermal, ocular, inhalation and oral. The HERA report on soluble silicates is available on request, which provides sufficient and detailed information on consumer exposure to soluble silicate as an ingredient in household cleaning products (HERA 2005). Dermal, ocular, inhalation and oral exposure are minimized by correct formulation, packaging and unpleasant taste of commercially available products.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Refer to section 4.2 for both acute and delayed effects.

INGESTION: damage to the mucous membranes and parts affected by the passage, occlusion of the stomach and intestine due to precipitation of silica gel. Risk of difficult to control bleeding, glottic edema, aspiration pneumonia, pulmonary shock (ARDS).

The systemic bioavailability of sodium silicate is believed to play only a minor role.

SKIN: erythema, swelling, alopecia depending on contact time, concentration and MR. Penetration through the skin is supposed to be limited due to the high water solubility and poor lipophilicity of sodium silicate, but it can be increased by superficial damage caused by the corrosion itself following contact. In a single clinical case, contact dermatitis and urticaria following further exposure to sodium silicate were highlighted following repeated formation of ulcers due to prolonged professional exposure.

EYES: irritation to the conjunctiva, possible damage to the cornea due to prolonged contact.

INHALATION: the liquid, under normal conditions of use, releases only water vapour. Inhalation of dust or mists normally causes only irritation of the upper airways; following massive exposure to fine dust or mists, the formation of edema/tissue damage in the larynx, throat, bronchi,

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laryngospasm/glottic edema, pulmonary edema, bronchopneumonia is possible. Inhalation of the liquid as it is can lead to suffocation due to pulmonary obstruction following precipitation of the silica gel.

Interactive effects

No interactive phenomena are known.

ACUTE TOXICITY

ATE (Inhalation) of the mixture:	Not classified (no significant component)
ATE (Oral) of the mixture:	Not classified (no significant component)
ATE (Dermal) of the mixture:	Not classified (no significant component)

SODIO SILICATO

LD50 (Dermal):	5000 mg/kg RAT
LD50 (Oral):	3400 mg/kg RAT
LC50 (Inhalation mists/powders):	> 2060 mg/l/4h RAT

Sodium silicates of different molar ratio (MR:0.5-3.38) and concentration (35-90%) were tested on rats and mice. Observed and dose-related clinical symptoms consist of sedation, abdominal discomfort, slowness and loss of consciousness. In rats, the acute oral toxicity of soluble silicates is generally inversely related to the MR, ranging from an LD50 of 500 mg/kg bw with MR:0.5 up to 8650 mg/kg bw with MR:3.38. Based on available data, the classification criteria are not met.

SKIN CORROSION / IRRITATION

Causes skin irritation

The degree of irritation is inversely related to the MR of sodium silicate, as demonstrated in the studies of Cuthbert and Carr (1985). The concentration effect overlaps with this correlation: low concentrations will give rise to modest irritation compared to higher concentrations of the same MR. Silicates with MR 2.0 and 2.4 show irritating action, while silicates with MR 2.8 and 3.3 appear to be non-irritating. The correlation to concentration becomes evident by comparing the irritant effect of silicates with identical MR but at different concentrations. A sodium silicate of MR 2.4 is irritant at concentrations of 40% and corrosive at 82% (Cuthbert and Carr 1985, Karlsson and Loden 1984). CLP classification: skin irritation, category 2. H315

SERIOUS EYE DAMAGE / IRRITATION

Causes serious eye irritation

Studies on non-human organisms.
The studies conducted on the irritant/corrosive properties are summarized below: tests not conducted in vivo, pursuant to REACh regulation, Annex VIII, column 2, for the protection of animals as the product is irritant/corrosive to the skin. Unvalidated in vitro studies suggest the same inverse correlation between irritation and MR as that observed for skin irritation. Silicate powders of various MR show, on the eyes of enucleated rabbits, effects ranging from severely irritating (MR2.0, 2.4 and 2.6) to moderately irritating (MR2.8, 3.0, 3.3).
CLP classification: Eye irritation, category 2. H319

RESPIRATORY OR SKIN SENSITISATION

Does not meet the classification criteria for this hazard class

Skin sensitization

The read-across substance, sodium metasilicate, is not a sensitizing agent in the local lymph node assay. A human case is reported in which sodium silicate induced contact urticaria in an individual.

GERM CELL MUTAGENICITY

Does not meet the classification criteria for this hazard class

Mutagenicity tests with available in vitro bacteria are negative. Furthermore, sodium silicate (MR:3,3) does not generate chromosomal aberrations and HPRT mutations in vitro in mammalian V79 cells, both in the presence and absence of metabolic activation. In vivo, sodium metasilicate does not induce chromosomal aberrations in the bone marrow of mice. From the available data it is concluded that there is no evidence of genotoxic potential for sodium silicate. Negative tests both in vivo and in vitro.

CARCINOGENICITY

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Does not meet the classification criteria for this hazard class

No reliable data is available. In addition, sodium silicate does not present any alarming functional groups regarding carcinogenicity.

REPRODUCTIVE TOXICITY

Does not meet the classification criteria for this hazard class

Adverse effects on sexual function and fertility

In a study with rats up to the fourth generation, the total number of births at doses of 79 mg/kg bw/d was reduced by 67% after weaning compared to 46% in the control group (Smith et al., 1973). The NOAEL for parental animals was determined to be > 159 mg/kg bw/d. No NOAEL has been identified for the F1 generation. Due to serious limitations of the study and intervening deaths, including in the control group, it is in any case difficult to draw firm conclusions from this study. In addition, in repeated dose oral toxicity studies in mice and dogs, the macro examination and microscopic examination of the reproductive organs revealed no treatment-related effects (Newberne and Wilson, 1970). The NOAEL for mice and dogs was >2400 mg/kg bw/d. Kamboj and Kar (1964) found no effects for sodium silicate injected either subcutaneously or intratesticularly in male mice. The NOAEL was > 8 mg/kg bw/d.

Adverse effects on development of the offspring

No data are available for sodium silicate, but for sodium metasilicate. A read-across study was conducted based on a categorical approach. In a non-standard study, sodium metasilicate was administered to pregnant mice from days 0 to 18 of gestation (Saiwai et al., 1980). Development of fetal harm NOAEL >200 mg/kg bw/d (mouse). Examination of various fetuses and newborns was conducted. No treatment effects on body weight, organs or number of pregnancies were observed across the entire group. The death of two mothers was recorded in the medium and high dose group. The malformations observed in newborns at the skeletal level, such as cervical vertebrae, caudal vertebrae and vomer, also appear in the control group, and reveal no correlation with the dosage. No malformations of the skeleton or internal organs are observed in fetuses removed with hysterectomy; the frequency of malformations and anomalies of the external integument, such as open eyes, cleft palate and exencephaly shows a slight tendency to correlate with the dosage, but is lower than in the control group. No effects are observed on the main organs of the parent and the newborn when compared to the control group.

STOT - SINGLE EXPOSURE

Does not meet the classification criteria for this hazard class

STOT - REPEATED EXPOSURE

Does not meet the classification criteria for this hazard class

Ingestion NOAEL >159 mg/kg bw/d (rat).

Inhalation - studies not available

Skin/eye contact - studies not available

The toxicity effects of ingestion in mice and dogs were evaluated for repeated doses of sodium silicate for 28 to 180 days. No adverse effects were observed in male and female mice administered the substance in ingested water for 180 days (Smith et al., 1973). In a subchronic study, the only treatment-related effects in mice were polydipsia, polyuria, and loose stools at 2400 mg/kg bw/d (Newberne and Wilson, 1970). Dogs show renal cortical lesions, polydipsia, polyuria, and loose stools at 2400 mg/kg bw/d (Newberne and Wilson, 1970).

ASPIRATION HAZARD

Does not meet the classification criteria for this hazard class

Irritation of the upper airways. Given the product's high solubility in water, it is normally absorbed by the mucous membranes of the first section of the airways.

11.2. Information on other hazards

Based on the available data, the product does not contain substances listed in the main European lists of potential or suspected endocrine disruptors with human health effects under evaluation.

Properties of interference with the endocrine system: the mixture does not contain substances identified as endocrine disruptors according to Regulations (EC) 1907/2006, (EU) 2017/2100, (EU) 2018/605.

SECTION 12. Ecological information

Use this product according to good working practices. Avoid littering. Inform the competent authorities, should the product reach waterways or contaminate soil or vegetation.

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SECTION 12. Ecological information ... / >>

12.1. Toxicity

SODIO SILICATO

LC50 - for Fish	1108 mg/l/96h Brachydanio rerio
EC50 - for Crustacea	1700 mg/l/48h Daphnia magna
EC50 - for Algae / Aquatic Plants	> 345,4 mg/l/72h Scenedesmus subspicatus

Silica introduced into the environment with commercial soluble silicates is indistinguishable from natural soluble silica. Furthermore, silica makes up over 59% of the earth's crust and similar percentages are present in sediments and soils. The amount of soluble silicate introduced into the environment must be considered in the context of the background value relating to the dissolution of silicate minerals by atmospheric agents. For example, the global flux of soluble silica carried from rivers to the sea in Western Europe is estimated at 5 Mt. SiO₂/year (Van Dokkum et al., 2004). The anthropogenic contribution from the various compartments is negligible compared to the concentrations related to the natural flow of soluble silica.

Evaluation of acute fish toxicity

species *Onchorhynchus mykiss* LC50 (96h) 260-310 mg/l
Brachydanio rerio species NOAEC (96h, mortality) 348 mg/l

Acute toxicity evaluation of microorganisms in wastewater - *Pseudomonas putida* species:

EC0 (18h) (for concentrations neutralized at pH 7.6-7.8) >10000 mg/l (equivalent to >3480 mg active substance/l)
EC0 (18h) (for concentrations as is at pH>9) >1000 mg/l (equivalent to >348 mg active substance/l)
EC0 (30 minutes) 3454 mg/l

Acute toxicity assessment of the terrestrial compartment (macro and microorganisms of the soil, terrestrial plants): pursuant to the REACH regulation, annex IX, 9.4, and annex X, 9.4, column 2, it is not necessary to conduct the study as direct emissions of sodium solutions silicate in the terrestrial compartment are considered negligible. Silicates are also natural components of minerals.

Acute toxicity assessment of arthropods - *Apis mellifera* species:

LD50 (48h) >25 µg a.i./l

Evaluation of acute toxicity in the atmosphere: aqueous solutions of sodium silicate release water vapor upon heating. Due to the low vapor pressure of the dry residue of the product, its release into the atmosphere following use of the product is not expected.

Chronic toxicity assessment of the aquatic compartment:

Fish - comparable to tests on *Desmodesmus subspicatus* EC0 207 mg/l
Aquatic invertebrates: pursuant to REACH regulation, Annex IX, 9.1, column 2, it is not necessary to conduct this study as the available data demonstrate toxicity lower than the effects of the natural environment.
Algae - Algae species NOEC/EC0 35 mg/l
Microorganisms in wastewater - *Pseudomonas putida* species PNEC stp 348 mg/l
Organisms in the sediment: pursuant to REACH regulation, Annex

Chronic toxicity assessment of the terrestrial compartment (macro and microorganisms of the soil, terrestrial plants): pursuant to the REACH regulation, annex IX, 9.4, and annex X, 9.4, column 2, it is not necessary to conduct the study as direct emissions of sodium solutions silicate in the terrestrial compartment are considered negligible. Silicates are also natural components of minerals.

Evaluation of chronic toxicity in the atmosphere: aqueous solutions of sodium silicate release water vapor upon heating. Due to the low vapor pressure of the dry residue of the product, its release into the atmosphere following use of the product is not expected.

12.2. Persistence and degradability

SODIO SILICATO

Solubility in water 115 mg/l

The soluble silicates after dilution rapidly depolymerize to make their molecules indistinguishable from dissolved natural silica. However the pH of many commercial silicate solutions is above the acceptable limit for direct discharge into sewers or waterways.

12.3. Bioaccumulative potential

Based on the available data, the possibility of bioaccumulation is excluded. Half-life of SiO₂ in urine after direct administration into the stomach: 24h (rats).

12.4. Mobility in soil

In the event of accidental releases of the product, as well as intentional soil treatments, the product reacts with the acidic constituents and multivalent metal ions of the soil, forming an impermeable gel. Following this reaction, further diffusion of the product into the soil is not expected.

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SECTION 12. Ecological information ... / >>

12.5. Results of PBT and vPvB assessment

On the basis of available data, the product does not contain any PBT or vPvB in percentage \geq than 0,1%.

12.6. Endocrine disrupting properties

Based on the available data, the product does not contain substances listed in the main European lists of potential or suspected endocrine disruptors with environmental effects under evaluation.

The product does not contain substances listed in the European lists of potential or suspected endocrine disruptors with effects on the environment.

12.7. Other adverse effects

Alkaline substance highly soluble in water.

The temporary aquatic toxicity of the product is mainly linked to its alkalinity and attenuates, depending on the pH of the aquatic environment and due to the effect of atmospheric CO₂, until it disappears.

SECTION 13. Disposal considerations

Refer to sections 7.1 and 8.2 for instructions regarding safety in handling and managing waste.

13.1. Waste treatment methods

Reuse, when possible. Product residues should be considered special hazardous waste. The hazard level of waste containing this product should be evaluated according to applicable regulations.

Disposal must be performed through an authorised waste management firm, in compliance with national and local regulations.

CONTAMINATED PACKAGING

Contaminated packaging must be recovered or disposed of in compliance with national waste management regulations.

The product has an alkaline pH: dispose of after high dilution, to avoid the formation of gels, and careful neutralization with acid solutions.

Do not dispose of residues in drains and do not dispose of in the environment.

Completely empty packaging can be reused for the storage of the same product.

The waste identification codes are established according to European legislation based on origin. Since the product can be used in different industrial fields, the waste identification code must be defined in agreement with the body responsible for disposal or with the competent authorities.

SECTION 14. Transport information

The product is not dangerous under current provisions of the Code of International Carriage of Dangerous Goods by Road (ADR) and by Rail (RID), of the International Maritime Dangerous Goods Code (IMDG), and of the International Air Transport Association (IATA) regulations.

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

not applicable

14.5. Environmental hazards

not applicable

SECTION 16. Other information ... / >>

Use descriptor system:

SU 19 Building and construction work**LEGEND:**

- ADR: European Agreement concerning the carriage of Dangerous goods by Road
- ATE: Acute Toxicity Estimate
- CAS: Chemical Abstract Service Number
- CE50: Effective concentration (required to induce a 50% effect)
- CE: Identifier in ESIS (European archive of existing substances)
- CLP: Regulation (EC) 1272/2008
- DNEL: Derived No Effect Level
- EmS: Emergency Schedule
- GHS: Globally Harmonized System of classification and labeling of chemicals
- IATA DGR: International Air Transport Association Dangerous Goods Regulation
- IC50: Immobilization Concentration 50%
- IMDG: International Maritime Code for dangerous goods
- IMO: International Maritime Organization
- INDEX: Identifier in Annex VI of CLP
- LC50: Lethal Concentration 50%
- LD50: Lethal dose 50%
- OEL: Occupational Exposure Level
- PBT: Persistent bioaccumulative and toxic as REACH Regulation
- PEC: Predicted environmental Concentration
- PEL: Predicted exposure level
- PNEC: Predicted no effect concentration
- REACH: Regulation (EC) 1907/2006
- RID: Regulation concerning the international transport of dangerous goods by train
- TLV: Threshold Limit Value
- TLV CEILING: Concentration that should not be exceeded during any time of occupational exposure.
- TWA: Time-weighted average exposure limit
- TWA STEL: Short-term exposure limit
- VOC: Volatile organic Compounds
- vPvB: Very Persistent and very Bioaccumulative as for REACH Regulation
- WGK: Water hazard classes (German).

GENERAL BIBLIOGRAPHY

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 2. Regulation (EC) 1272/2008 (CLP) of the European Parliament
 3. Regulation (EU) 2020/878 (II Annex of REACH Regulation)
 4. Regulation (EC) 790/2009 (I Atp. CLP) of the European Parliament
 5. Regulation (EU) 286/2011 (II Atp. CLP) of the European Parliament
 6. Regulation (EU) 618/2012 (III Atp. CLP) of the European Parliament
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 8. Regulation (EU) 944/2013 (V Atp. CLP) of the European Parliament
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 16. Delegated Regulation (UE) 2018/1480 (XIII Atp. CLP)
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- The Merck Index. - 10th Edition
 - Handling Chemical Safety
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 - Patty - Industrial Hygiene and Toxicology
 - N.I. Sax - Dangerous properties of Industrial Materials-7, 1989 Edition
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Note for users:

The information contained in the present sheet are based on our own knowledge on the date of the last version. Users must verify the suitability and thoroughness of provided information according to each specific use of the product.

This document must not be regarded as a guarantee on any specific product property.

The use of this product is not subject to our direct control; therefore, users must, under their own responsibility, comply with the current health and safety laws and regulations. The producer is relieved from any liability arising from improper uses.

Provide appointed staff with adequate training on how to use chemical products.

CALCULATION METHODS FOR CLASSIFICATION

Chemical and physical hazards: Product classification derives from criteria established by the CLP Regulation, Annex I, Part 2. The data for evaluation of chemical-physical properties are reported in section 9.

Health hazards: Product classification is based on calculation methods as per Annex I of CLP, Part 3, unless determined otherwise in Section 11.

Environmental hazards: Product classification is based on calculation methods as per Annex I of CLP, Part 4, unless determined otherwise in Section 12.