



SAFETY DATA SHEET SODIUM SILICATE SOLUTION MR 2.6 – 3.2

Hazardous Chemical in accordance with the WHS
Hazardous Substance in accordance with NOSHC
Not a Dangerous Good according to the ADG Code.

Section 1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

IDENTIFICATION

Product Name **Sodium Silicate Solution, MR 2.6-3.2**

Other Names Silicic Acid, Sodium Salt Solution; Water Glass; Soluble Glass.
N-Grade, O-Grade, JHG-Grades, NG-Grade

Trade Names:
As Defined

Manufacturer:
POTTERS CHEMICALS PTY LTD

USE

May be used as a: detergent ingredient; adhesive; binder; feedstock silica source; general chemical.

COMPANY DETAILS

Company Name	Potters Chemicals Pty Ltd	A.C.N. No. 005 399 100
Address	HEAD OFFICE: 9-13 Rhur Street PO Box 4380 Dandenong South VICTORIA 3164 Tel: (03) 9708 9200 Fax: (03) 9708 9250	N.S.W. Branch 8-10 Riverside Road Chipping Norton New South Wales 2170 Tel: (03) 9708 9200

**Emergency Telephone
Number Australia:** **1800 240 779**

**Emergency Telephone
Number New Zealand:** **+(64)-98010034 (Chemtrec)**

Section 2. HAZARDS IDENTIFICATION

Signal Word
WARNING
Dangerous Goods Information:

Not a Dangerous Good according to the ADG Code.

Hazardous Chemical Information:
Hazardous Chemical according to WHS

Hazardous Substance Information
Hazardous Substance according to NOSHC

Poison Schedule

Scheduled Poison S5

Emergency Overview

Alkaline; may be harmful by ingestion and contact with skin and eyes

Acute Health Effects

Swallowed	Swallowing can result in nausea, vomiting, abdominal pain and diarrhoea. May cause severe irritation to the mouth, throat and stomach.
Eye	A severe eye irritant. May cause conjunctivitis (inflammation of the eyes) and possibly corneal burns and ulceration.
Skin	Irritating to skin. May cause itching and skin rash.
Inhaled	Exposure to vapours at room temperature is an unlikely route of exposure due to its low vapour pressure. Spray mist will cause respiratory irritation and may result in coughing as well as inflammation of nose, throat and windpipe.

Chronic Health Effects

All Routes	Prolonged or repeated skin contact may cause dry skin. Defatting of the skin can result in irritation and dermatitis (inflammation of the skin).
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Hazardous Classes and Categories

Physical	Not applicable	
Health:	Acute toxicity (oral)	Category 5 – May be harmful if swallowed
	Acute toxicity (inhalation)	Not applicable
	Contact Hazard (eye)	Category 2A – Causes serious eye irritation
	Contact hazard (skin)	Category 2 – Causes skin irritation
	Carcinogenicity	Not classified by NOHSC, OSHA, IARC
Environmental	Not applicable	

Labelling Elements

Signal Word: **WARNING**

Hazard Statements: H303 May be harmful if swallowed
 H315 Causes skin irritation
 H319 Causes serious eye irritation

Precautionary Statements

Prevention P264 Wash thoroughly after handling
 P270 Do not eat, drink or smoke when using this product
 P280 Wear protective gloves/clothing/eye protection/face protection

Response P301 + P312 IF SWALLOWED: Call a poison center or doctor if you feel unwell
 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 so. Continue rinsing.
 P332 + P313 If skin irritation occurs get medical advice/attention

Storage P405 Store locked up

General P101 If medical advice is needed have product container or label at hand
 P102 Keep out of reach of children
 P103 Read label before use



Pictogram:

Pictogram Description: Exclamation Mark

Section 3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Identity of Ingredients	CAS No.	EINECS No	Proportion
Sodium Silicate	1344-09-8	2156874	30-60 %
Water	7732-18-5	2317912	30-60 %

Section 4. FIRST AID MEASURES

Scheduled Poisons	Poisons Information Centre in each Australian State capital city can provide additional assistance for scheduled poisons. (Telephone Australia 13 1126) or a doctor immediately
First Aid Facilities	Safety shower and eye wash facilities should be easily accessible in the immediate area
Swallowed	Immediately rinse mouth with water. Repeat until product is thoroughly removed. Give water to drink. DO NOT induce vomiting due to risk of further damage. If vomiting occurs give water to drink to further dilute the product. Seek medical attention. Contact the Poisons Information Centre (available in each State capital city).
Eye	Hold eyelids apart and flush the eyes continuously with running water. Continue flushing until advised to stop by the Poisons Information Centre or a doctor for at least 15minutes. If irritation develops seek medical attention.
Skin	Immediately wash contaminated skin with plenty of water. Soaked clothing should be removed while under the safety shower and skin washed with running water for a minimum of 30 minutes. No attempt should be made to neutralize the alkali with acid solutions, as this could aggravate the burns. Seek medical attention if health effects develop or persist.
Inhaled	Not expected to be an inhalation hazard under normal use. Remove victim to fresh air. Seek medical attention if health effects develop or persist.
Advice to Doctor	Treat symptomatically as for strong alkalis.

Section 5 - FIRE FIGHTING MEASURES

Fire or Explosion Hazard:	Aqueous solution, not flammable under normal conditions of use. Flammable hydrogen gas may be produced on prolonged contact with metals such as aluminium, tin, lead, and zinc.
Extinguishing Media	Compatible with dry chemical water spray, regular foam and carbon dioxide fire extinguishing media. No media identified as unsuitable.
Specific Combustion Hazards	Product is non combustible. Flammable hydrogen gas may be produced on prolonged contact with metals such as aluminium, tin, lead, and zinc.
Special Protective Precautions & Equipment	Chemical goggles, body-covering protective clothing, chemical resistant gloves, and rubber boots.
Flash Point	Not applicable
Flammability	Product is non flammable according to the Australian Code for Transport of Dangerous Goods.

Section 6 - ACCIDENTAL RELEASE MEASURES

Personal Precautions	Avoid contact with skin and eyes and avoid breathing any fumes formed. Dries to form glass film which can easily cut skin. Spilled liquids are very slippery. Wear appropriate personal protective equipment as recommended in Section 8
Methods for Containment and Cleaning Up	<p>Small spill cleanup: Prevent runoff from entering into storm sewers and ditches which lead to natural waterways. Isolate, dike and store discharged material, if possible. Use sand or earth to contain spilled material. Shovel dried waste into suitable container and dispose of in accordance with Section 13.</p> <p>Large spill cleanup: Keep unnecessary people away; isolate hazard area and deny entry. Do not touch or walk through spilled material. Stop leak if you can do so without risk. Prevent runoff from entering into storm sewers and ditches which lead to natural waterways. Isolate, dike and store discharged material using sand or earth. Spilled liquid may be collected using a vacuum truck. If containment is impossible, neutralize contaminated area and flush with large quantities of water. Cover remaining liquid with sand or earth and shovel dried material into suitable container. Dispose of any material collected in accordance with Section 13.</p>
Environmental Precautions	Sinks and mixes with water. Liquid is alkaline and may increase the pH. High pH can be harmful to aquatic life. Avoid release into water systems and sewers.

Section 7 - HANDLING and STORAGE

Safe Handling	Avoid contact with eyes, skin and clothing. Avoid breathing spray mist. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Take appropriate precautions when handling bulk product that is transported/shipped whilst hot as it can cause thermal burns. Wear appropriate personal protective equipment as recommended in Section 8. Keep containers closed. Promptly clean residue from closures with cloth.
Safe Storage	Store in accordance with all local regulations and codes of practice. Ensure containers are labelled and kept closed when not in. Storage temperature 0-90° C. Loading temperature 10-70 ° C. Mild steel is the most suitable material of construction for drums, tanks, valves, pipe-work, etc. Concrete storage tanks can be used but must be strong enough to hold the weight of Sodium Silicate solution to be stored and thick enough to prevent seepage of water.
Incompatibilities/ Materials to Avoid	Do not store in aluminum, fiberglass, copper, brass, zinc or galvanized containers. Store away from acids and foodstuffs. Store in clean steel or plastic containers. Separate from acids, reactive metals, and ammonium salts.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

National Exposure Standards No exposure standards have been established for the ingredients in this product by Workplace Exposure Standards as published by Safe Work Australia

An exposure limit of 2mg/m³ (15min TQA) is recommended by analogy with sodium hydroxide

This standard is the manufacturers recommended limit for good practice.
All atmospheric contamination should be minimized.

Design and Engineering Control Measures Use in well ventilated area. Avoid generating and inhaling mists.
Ensure exposure is managed within recommended exposure limits.

Environmental Controls Ensure material is used in an appropriately bunded area to prevent release into soil, water systems and sewers.

Personal Protective Equipment Avoid skin and eye contact. Avoid inhaling the vapour or mist. Follow normal industrial safety practices. The use of protective clothing and equipment depends on the degree and nature of exposure. The following personal protective equipment should be used:

Eye/Face Wear glasses with side shields. If contact with material is likely the use of chemical resistant goggles in combination with a full face shield is recommended. Ensure a suitable eyewash station is within the immediate vicinity.

Skin/Body Wear chemical resistant overalls, a full apron or similar protective clothing. Wear appropriate chemical resistant protective boots.

Hand Wear chemical resistant gloves. If contact is likely wear the use of full arm length gauntlets is recommended. Dried silicate can present physical hazards including cuts and abrasions. Wear cut resistant gloves if handling dried silicate.

Respiratory Respiratory protection is not normally required due to low inhalation risk. If material is likely to be vaporized the use an approved respirator is necessary. Consult a respiratory equipment supplier to aid selection of the appropriate type.

Wash contaminated clothing and protective equipment before storing and re-using.
The use of barrier cream is recommended.

Refer to Section 15 in relation to the Australian Standards for PPE

Section 9 - PHYSICAL and CHEMICAL PROPERTIES

Appearance and Odour	Clear to hazy, colorless, odorless, thick liquid.
Chemical Formula	$x\text{SiO}_2/\text{Na}_2\text{O}$ (<i>x ranges from 2.0–3.3</i>)
Melting Point / Boiling Point	MP: 0°C approx. BP: 105 to 108°C
Decomposition Temperature	Water Boils off at 102°C to 108°C
Vapour Pressure	Not determined
Relative Vapour Density	Not applicable

Specific Gravity or Density	1.2 to 1.6 (<i>typical range</i>)
Solubility	Soluble in water.
pH	11 to 13 (of the concentrate)
Viscosity	20 – 5000cps
Percent Volatile	30-60%
VOC Content	0%
Octanol/Water Partition Co-efficient	log P(octanol/water) – Not available
Corrosiveness	Some corrosive effects on Aluminium, Copper, Tin, Zinc, Lead etc
Flammable Properties	Non combustible liquid. The aqueous solution is not flammable under normal conditions of use. Flammable hydrogen gas may be produced on prolonged contact with metals such as aluminium, tin, lead, and zinc.
Flashpoint	Not applicable to aqueous solutions
Flammability Limits (FL) (%)	Not applicable to aqueous solutions
Autoignition Temp	Not applicable to aqueous solutions

Section 10 - STABILITY AND REACTIVITY

Chemical Stability	Stable in sealed containers. Absorbs Carbon Dioxide on exposure to air, which results in the deposition of Insoluble Silica.
Conditions To Avoid:	Leaving solutions exposed to carbon dioxide in the air. Prolonged storage above 50°C or below 10°C
Incompatible Materials:	Will react exothermically with acids.
Shelf Life	When stored in accordance with temperature guidelines sealed containers will have a shelf life of at least 12months. Where practicable, PQ recommends mixing products prior to use. If materials have been in extended storage or there is any noticeable change in properties PQ recommend sending samples for verification of quality and suitability for use in the intended application.
Unsuitable Container Materials:	Sodium Silicate solutions are strongly alkaline and are not compatible with aluminium, copper, brass, bronze, zinc, tin and lead. Can etch glass if not promptly removed.
Hazardous Decomposition Products:	If Overheated: The solution will boil and irritating Sodium Silicate containing mists will be released.
Hazardous Reactions:	Flammable hydrogen gas will form on reaction with aluminium, copper, zinc etc. Gels and generates heat when mixed with acid. May react with ammonium salts resulting in evolution of ammonia gas.

Section 11 - TOXICOLOGICAL INFORMATION

Toxicity Data:

Acute Oral Toxicity

LD50 (rat): 5000 mg/kg (as 100%)

The acute oral toxicity of this product has not been tested. When Sodium Silicates were tested on a 100% solids basis, their single dose acute oral LD50 in rats ranged from 1152 mg/kg (above) to 5700 mg/kg. The acute oral lethality resulted from nonspecific causes. These products contain 30-60% Sodium Silicate thus each overall product has an Acute Oral Toxicity LD50 (rat): >3000 mg/kg.

Subchronic Data:

In a study of rats fed Sodium Silicate in drinking water for three months, at 200, 600 and 1800 ppm, changes were reported in the blood chemistry of some animals, but no specific changes to the organs of the animals due to Sodium Silicate administration were observed in any of the dosage groups. Another study reported adverse effects to the kidneys of dogs fed Sodium Silicate in their diet at 2.4g/kg/day for 4 weeks, whereas rats fed the same dosage did not develop any treatment-related effects. Decreased numbers of births and survival to weaning was reported for rats fed Sodium Silicate in their drinking water at 600 and 1200 ppm.

Skin Corrosion/Irritation:

When tested for primary skin irritation potential, this material produced irritation with a primary irritation index of 3 to abraded skin and 0 to intact skin.

Human experience confirms that irritation occurs when this material gets on clothes at the collar, cuffs or other areas where abrasion may occur.

Sodium silicates can be irritating to corrosive to the skin of rabbits, depending on their molar ratio and concentration. Irrespective of the counterion (Na^+ or K^+), silicates were found to be corrosive at molar ratios up to 1.6 and concentrations >50%. At molar ratios >1.6, silicates are irritating to the skin, while molar ratios >3.2 and concentrations <40% did not lead to irritative effects.

Eye Damage/Irritation:

When tested for primary eye irritation potential according to OECD Guidelines, Section 405, this material produced corneal, iridal and conjunctival irritation.

Some eye irritation was still present 14 days after treatment, although the average primary irritation score had declined from 19.7 after 1 day to 4.0 after 14 days.

Respiratory or Skin Sensitization

In a mouse local lymph node assay, sodium metasilicate was not sensitising. In humans, a single case of contact urticaria elicited by sodium silicate is reported.

Mutagenicity

In vitro, soluble silicates did not induce gene mutations in bacteria. Sodium silicate was negative in an E. coli reverse mutation. In a modern guideline study that was performed in accordance with OECD TG 473, an aqueous sodium silicate solution (36% active ingredient, WR 3.3) induced no chromosomal aberrations in Chinese hamster V79 cells. From the available evidence it can be concluded that there is no evidence of a genotoxic potential for soluble silicates.

Carcinogenicity

The information available does not indicate any potential for carcinogenicity. Frequent ingestion over extended periods of time of gram quantities of silicates is associated with the formation kidney stones and other siliceous urinary calculi in humans. Sodium Silicate is not listed by IARC, NTP or OSHA as a carcinogen.

Reproductive Toxicity

In a developmental toxicity study, pregnant mice were administered 12.5, 50 or 200 mg/kg bw/d sodium metasilicate in aqueous solution from day 0 until 17/18 of gestation by daily gavage. Litter size and fertility index were unaffected at concentrations up to and including 200 mg/kg bw/d. Furthermore, no developmental effects were observed up to and including 200 mg/kg bw/d.

Also, in repeat dose toxicity studies with rats, mice and dogs the macroscopic and microscopic examination of reproductive organs did not reveal treatment-related effects.

In summary, no indications of reproductive effects for silicates have been reported.

Section 12 - ECOLOGICAL INFORMATION

General: Avoid contaminating waterways. Soluble in water.
 Sinks and mixes with water. Only water will evaporate from this material.

Ecotoxicity Data: Acute toxicity testing in fish, invertebrates and algae indicate a low order of toxicity: the soluble silicates exhibit aquatic toxicities in excess of 100 mg/l irrespective of molar ratio or metal cation.

Group	Type	Concentration	Molar Ratio	Dose Rate
Fish	Danio rerio	LC50 (96h)	Na, MR 1.0	210mg/l
Fish	Oncorhynchus mykiss	LC50 (96h)	Na, MR 3.1	260-310mg/l
Invertebrate	Daphnia Magna	EC50 (48h)	Na, MR 3.2	1700mg/l
Microorganisms	Pseudomonas putida	EC0 (18h)	Na, MR 3.46	348mg/l
Microorganisms	Pseudomonas putida	EC0 (30min)	Na, MR 1.0	1000mg/l

Persistence & Degradability This material is not persistent in aquatic systems, but its high pH when undiluted or unneutralized is acutely harmful to aquatic life. Diluted material rapidly depolymerizes to yield dissolved silica in a form that is indistinguishable from natural dissolved silica. It does not contribute to BOD. This material does not bioaccumulate except in species that use silica as a structural material such as diatoms and siliceous sponges.

Neither silica nor sodium will appreciably bioconcentrate up the food chain.

Mobility Expected to be mobile in soil. Diluted material rapidly depolymerizes to yield dissolved silica in a form that is indistinguishable from natural dissolved silica.

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Methods & Containers Disposal to be in accordance with Local, State & Federal EPA waste regulations. Normally suitable for disposal at approved land waste site after dilution or neutralisation.

Landfill, Incineration After dilution or neutralisation may be landfilled. Not suitable for incineration.

Section 14 - TRANSPORT INFORMATION

ROAD & RAIL: Not defined as a Dangerous Good: by the Australian Code for the Transport of Dangerous Goods by Road & Rail.

SEA: Not a Dangerous Good according to the International Maritime Dangerous Goods Code (IMDG Code).

AIR: Not a Dangerous Good according to the International Air Transport Association (IATA) Dangerous Goods Regulations.

Section 15 - REGULATORY INFORMATION

Labelling: **Workplace Hazardous Substance Labelling**
 Signal Word: **WARNING**

Scheduled Poison Labelling for S5

The labelling requirements of the SUSDP do not apply to a poison that:

1. is packed and sold solely for dispensary, industrial, laboratory or manufacturing purposes; and
2. is labelled in accordance with the NOHSC *National Code of Practice for the Labelling of Workplace Hazardous Substances* [NOHSC:2012(1994)]

Not a Dangerous Good:

Packaging Mild steel is the most suitable material of construction for drums, tanks, valves, pipe-work, etc.

Australian Chemical Control Schemes		
NICNAS – AICS		<i>All ingredients listed</i>
Aust. Pesticides & Veterinary Medicine Authority	- Ag & Vet Chemicals	<i>Not applicable</i>
Therapeutic Goods Administration	- SUSMP	<i>Scheduled poison S5</i>
Food Standards Australian & New Zealand	- Food	<i>Not applicable</i>
<i>Chemicals weapons Act</i>		<i>Not applicable</i>
<i>Ozone Depleting Substance Act</i>		<i>Not applicable</i>

Australian Standards

AS/NZS 1337.1:2010 Personal eye protection – Eye and face protectors for occupational applications

AS/NZS1715:2009 Selection use and maintenance of respiratory protective equipment

AS/NZS2161.1:2000 Occupational protective gloves – Selection, use and maintenance

AS/NZS2161.2:2005 Occupational protective gloves – General Requirements

AS/NZS2161.10.1:2005 Occupational protective gloves – Terminology and Performance requirements

AS/NZS2161.10.2:2005 Occupational protective gloves – Determination of resistance to penetration

AS/NZS2161.10.3:2005 Occupational protective gloves – Determination of resistance to permeation by chemicals

AS/NZS2210.1:2010 Safety, protective and occupational footwear – Guide to selection, care and use

AS/NZS2210.3:2009 Safety, protective and occupational footwear – Specification for safety footwear

AS/NZS2210.4:2009 Safety, protective and occupational footwear – Specification for protective footwear

AS/NZS4501.1:2008 Occupational protective clothing – Guidelines on selection, use and maintenance

AS/NZS4501.2:2006 Occupational protective clothing – General requirements

Section 16 - OTHER INFORMATION

MSDS Dates and Revisions

MSDS Original Preparation Date : 26th November 2004
MSDS Latest Revision Date : 5th March 2021
Sections Changed in Latest Revision : Change in business name and logo

Technical Manager:

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ADG Code	Australian Dangerous Goods Code for the Transport of Dangerous Goods by Road & Rail
AICS	Australian Inventory of Chemical Substances
CAS No.	Chemical Abstracts Service Registry Number
GHS	Globally Harmonised System of Classification and Labelling of Chemicals proposed by the UN
IMDG	International Maritime Dangerous Goods Code
IATA	International Air Transport Association
NOHSC	Australian National Occupational Health and Safety Commission
SUSMP	Standard for Uniform Scheduling of Medicines and Poisons
UN No.	United Nations Dangerous Goods Number
WHS	Work Health and Safety legislation introduced by the Australian government which consists of an integrated package of a model Work Health and Safety (WHS) Act supported by WHS Regulations, Codes of Practice and a National Compliance and Enforcement Policy. The WHS Regulations implement a system of chemical hazard classification, labelling and safety data sheet requirements based on the GHS

MSDS Code Used This MSDS has been prepared according to Australian WHS criteria

This MSDS summarises to the best of our knowledge the health and safety hazard information on the product and how to safely handle and use the product in the workplace. Each user should read this MSDS and consider the information in the context of how the product will be handled and used in the workplace, including in conjunction with other products. If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact this company.

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