Infosafe No™	3CHBM	Issue Date : July 2020	RE-ISSUED by CHEMSUPP

Product Name : **POTASSIUM SILICATE**

Classified as hazardous

1. Identification

GHS Product Identifier POTASSIUM SILICATE

Company Name CHEM-SUPPLY PTY LTD (ABN 19 008 264 211)

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Recommended use of the chemical and restrictions on use Potassium silicate can be used as an adhesive; binder, detergent component, general chemical or as a feedstock silica source.

Other Names

Name	Product Code
Potassium Silicate	PT321

Other Information

Chem-Supply Pty Ltd does not warrant that this product is suitable for any use or purpose. The user must ascertain the suitability of the product before use or application intended purpose. Preliminary testing of the product before use or application is recommended. Any reliance or purported reliance upon Chem-Supply Pty Ltd with respect to any skill or judgement or advice in relation to the suitability of this product of any purpose is disclaimed. Except to the extent prohibited at law, any condition implied by any statute as to the merchantable quality of this product or fitness for any purpose is hereby excluded. This product is not sold by description. Where the provisions of Part V, Division 2 of the Trade Practices Act apply, the liability of Chem-Supply Pty Ltd is limited to the replacement of supply of equivalent goods or payment of the cost of replacing the goods or acquiring equivalent goods.

2. Hazard Identification

GHS classification of the substance/mixture Eye Damage/Irritation: Category 1
Skin Corrosion/Irritation: Category 2

Signal Word (s) DANGER

Hazard Statement (s) H315 Causes skin irritation.
H318 Causes serious eye damage.

Pictogram (s) Corrosion

Precautionary statement – Prevention P264 Wash skin thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary statement – Response P302+P352 IF ON SKIN: Wash with plenty of soap and water.
P337+P313 If eye irritation persists: Get medical advice/attention.
P362 Take off contaminated clothing and wash before reuse.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER or doctor/physician.

Precautionary statement – Disposal P501 Dispose of contents/container to an approved waste disposal plant.

3. Composition/information on ingredients

Chemical Characterization Liquid

Ingredients

Name	CAS	Proportion	Hazard Symbol	Risk Phrase
Water	7732-18-5	30-60 %		

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	Potassium silicate	1312-76-1	30-60 %		

4. First-aid measures

Inhalation	If inhaled, remove from contaminated area to fresh air immediately. Apply artificial respiration if not breathing. If breathing is difficult, give oxygen. Immediately obtain medical aid if cough or other symptoms appear.
Ingestion	Rinse mouth thoroughly with water immediately, repeat until all traces of product have been removed. DO NOT INDUCE VOMITING. Seek medical advice if effects persist.
Skin	Remove contaminated clothing and wash before re-use. If irritation occurs seek medical advice. Wash affected areas with copious quantities of water immediately, for at least 30 minutes. Do not attempt to neutralise with acid solutions.
Eye contact	Immediately irrigate with copious quantity of water for at least 15 minutes. Eyelids to be held open. Obtain medical attention immediately.
First Aid Facilities	Maintain eyewash fountain and safety shower in work area.
Advice to Doctor	Treat symptomatically based on judgement of doctor and individual reactions of the patient. Treat symptomatically as for strong alkalis.
Other Information	For advice, contact a Poisons Information Centre (Phone eg Australia 13 1126; New Zealand 0800 764 766) or a doctor at once.

5. Fire-fighting measures

Suitable extinguishing media	Regular foam, dry chemical, water spray, Carbon dioxide fire extinguishing media.
Hazards from Combustion Products	Prolonged contact with metals (aluminium, tin, lead and zinc) may produce flammable hydrogen gas.
Specific Methods	Use extinguishing media most appropriate for the surrounding fire. No limitations to the type of extinguishing media.
Specific hazards arising from the chemical	Material does not burn. Fire or heat will produce irritating, poisonous and/or corrosive gases. Runoff may pollute waterways.
Decomposition Temp.	Water boils off at 105 - 108°C
Precautions in connection with Fire	Use suitable protective equipment for surrounding fire.

6. Accidental release measures

Spills & Disposal	Material is slippery. Water will only evaporate from spilled material. When dry the material forms glass film, which can easily cut skin. Sinks and mixes with water. This material is harmful to aquatic life due to its high pH. Evacuate the area of unnecessary personnel.
Personal Precautions	Evacuate the area of all non-essential personnel. Avoid inhalation, contact with skin, eyes and clothing. Shut off leaks, if possible without personal risk.
Personal Protection	Wear protective clothing specified for normal operations (see Section 8)
Clean-up Methods - Small Spillages	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.
Clean-up Methods - Large Spillages	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.
Environmental Precautions	Prevent from entering into drains, ditches, rivers or the sea.

7. Handling and storage

Precautions for 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. 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.
Conditions for safe storage, including any incompatabilities	Store in accordance with all local regulations and codes of practice. Ensure containers are labelled and kept closed when not in. Storage temperature 0-70ºC. Loading temperature 10-50ºC. Mild steel is the most suitable material of construction for drums, tanks, valves, pipework, etc. Concrete storage tanks can be used but must be strong enough to hold the weight of Potassium Silicate solution to be stored and thick enough to prevent seepage of water.

8. Exposure controls/personal protection

Other Exposure Information	No exposure standards have been established for this product by Safe Work Australia, however, the TWA exposure standard for dusts/mists not otherwise specified is 10 mg/m3. All atmospheric contamination should be kept to as low a level as is workable. Potassium silicate solutions: TWA - 5mg/m3, STEL - 5mg/m3. This is the manufacturers recommended limit for good practice.
Appropriate engineering controls	Maintain the concentrations values below the TWA. This may be achieved by process modification, use of local exhaust ventilation, capturing substances at the source, or other methods.
Respiratory Protection	Where ventilation is not adequate, respiratory protection may be required. Avoid breathing dust, vapours or mists. Respiratory protection should comply with AS 1716 - Respiratory Protective Devices and be selected in accordance with AS 1715 - Selection, Use and Maintenance of Respiratory Protective Devices. Filter capacity and respirator type depends on exposure levels. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.
Eye Protection	The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336.
Hand Protection	Wear gloves of impervious material conforming to AS/NZS 2161: Occupational protective gloves - Selection, use and maintenance. Final choice of appropriate glove type will vary according to individual circumstances. This can include methods of handling, and engineering controls as determined by appropriate risk assessments. Avoid skin contact when removing gloves from hands, do not touch the gloves outer surface. Dispose of gloves as hazardous waste.
Personal Protective Equipment	Personal protective equipment should not solely be relied upon to control risk and should only be used when all other reasonably practicable control measures do not eliminate or sufficiently minimise risk. Guidance in selecting personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.
Footwear	Safety boots in industrial situations is advisory, foot protection should comply with AS 2210, Occupational protective footwear - Guide to selection, care and use.
Body Protection	Clean impervious clothing should be worn. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.
Hygiene Measures	Always wash hands before smoking, eating or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.
Other Information	Final choice of personal protective equipment will depend on individual circumstances and/or according to risk assessments undertaken.

9. Physical and chemical properties

Form	Liquid
Appearance	Thick, clear to hazy, colourless liquid.
Physical and Chemical Properties	Proportion of potassium oxide, silica and water varies, depending on the grade. The mean ratio for SiO2/K2O is from 1.5 - 3.5
Odour	Odourless.
Decomposition Temperature	Water boils off at 105 - 108°C
Melting Point	0°C
Boiling Point	105 - 108°C
Solubility in Water	Soluble
Specific Gravity	1.2 - 1.7
pH	11 - 13 (Concentrate)

Volatile Component	30 - 60%
Flammability	Non combustible material.
Flammable Limits - Upper	May cause corrosive effects on aluminium, copper, tin, zinc, lead, etc.

10. Stability and reactivity

Chemical Stability	Stable in sealed containers. Absorbs carbon dioxide on exposure to air, resulting in the deposition of insoluble silica.
Conditions to Avoid	Avoid leaving solutions exposed to carbon dioxide in the air.
Incompatible Materials	Strong acids.
Hazardous Decomposition Products	Overheating will cause the solution to boil and irritating Potassium Silicate containing mists will be released.
Possibility of hazardous reactions	Will form flammable hydrogen gas on reaction with aluminium, copper, zinc, etc. Gels and generates heat when mixed with acid. May react with ammonium salts resulting in the formation of ammonia gas.
Other Information	Unsuitable container materials: Potassium silicate solutions are strongly alkaline and not compatible with aluminium, copper, brass, bronze, zinc, tin and lead. May etch Glass if not properly removed.

11. Toxicological Information

Acute Toxicity - Oral	LD50, rat: Not determined. The acute oral toxicity of this product has not been tested. When chemically similar Sodium Silicates were tested on a 100% solid basis, their single dose acute oral LD50 in rats ranged from 1280 mg/kg to 3400 mg/kg. The acute oral lethality resulted from nonspecific causes. These products contain 30-60% Potassium Silicate thus each product is estimated to have an Acute Oral Toxicity LD50, rat: >3000 mg/kg. Supplier's SDS.
Respiratory sensitisation	Not classified based on available information.
Skin Sensitisation	Not classified based on available information.
Germ cell mutagenicity	In vitro, soluble silicates did not induce gene mutations in bacteria. Chemically similar 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 chemically similar 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 related effects. In summary, no indications of roductive effects for silicates have been reported.
STOT-single exposure	Not classified based on available information.
STOT-repeated exposure	Not classified based on available information.
Chronic Effects	Prolonged or repeated skin contact may cause dry skin. Defatting of the skin can result in irritation and dermantitis.
Serious eye damage/irritation	At concentrations of 35 % and 29 % (highest tested concentrations) potassium silicates with molar ratios of 3.4 was only slightly irritating to the eyes of rabbits. Results from non-validated in vitro assays with sodium silicates indicate that the severity of eye effects is inversely correlated with the molar ratio.
Mutagenicity	No evidence of mutagenic properties.
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 theirmolar 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.
Subchronic/Chronic Toxicity	Where rats were fed chemically similar 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.

12. Ecological information

Ecotoxicity	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.
Persistence and 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 depolymerises to yield dissolved silica in a form that is indistinguishable from natural dissolved silica.
Acute Toxicity - Fish	Danio rerio, LC50 (96h) = 210mg/l (Molar Ratio Na MR 1.0) Oncorhynchus mykiss, LC50 (96h) = 260-310mg/l (Molar Ratio Na MR 3.1)
Acute Toxicity - Daphnia	Daphnia magna, EC50 (48h) = 1700mg/l (Molar Ratio Na MR 3.2)
Acute Toxicity - Algae	Pseudomonas putida, EC0 (18h) = 348mg/l (Molar Ratio Na MR 3.46) Pseudomonas putida, EC0 (30min) = 1000mg/l (Molar Ratio Na MR 1.0)
Other Information	Do not allow to enter waters, waste water, or soil!

13. Disposal considerations

Disposal Considerations	Whatever cannot be saved for recovery or recycling should be disposed of according to relevant local, state and federal government regulations.

14. Transport information

Transport Information	Not classified as a Dangerous Good according to the Australian Code for the Transport of Dangerous Goods by Road and Rail.

15. Regulatory information

Regulatory Information	All of the significant ingredients in this formulation are compliant with Australian Industrial Chemicals Introduction Scheme (AICIS) regulations. Not listed under WHS Regulation 2011, Schedule 10 - Prohibited carcinogens, restricted carcinogens and restricted hazardous chemicals.
Poisons Schedule	S5

16. Other Information

Literature References	'Standard for the Uniform Scheduling of Medicines and Poisons .', Commonwealth of Australia. National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.'. Safe Work Australia, 'National Code of Practice fot the Preparation of Safety Data Sheets for Hazardous Chemicals'. Standards Australia, 'SAA/SNZ HB 76:2010 Dangerous Goods - Initial Emergency Response Guide', Standards Australia/Standards New Zealand. Safe Work Australia, 'Hazardous Chemical Information System'. Safe Work Australia, 'National Code of Practice for the Labelling of Safe Work Hazardous Substances'. Safe Work Australia, 'National Exposure Standards for Atmospheric Contaminants in the Occupational Environment'.
Contact Person/Point	Paul McCarthy Ph. (08) 8440 2000 DISCLAIMER STATEMENT: All information provided in this data sheet or by our technical representatives is compiled from the best knowledge available to us. However, since data, safety standards and government regulations are subject to change and the conditions of handling and use, or misuse, are beyond our control, we make no warranty either expressed or implied, with respect to the completeness or accuracy to the information contained herein. Chem-Supply accepts no responsibility whatsoever for its accuracy or for any results

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