1. IDENTIFICATION

Product Name	**Potassium Silicate Solutions (MR 1.6 - 2.6)**
Other Names	AGSIL 32; Potash Water Glass Solution; Soluble Potash Gass
Uses	Agriculture applications.
Chemical Family	No Data Available
Chemical Formula	xSiO2/K2O (x ranges from 1.6 - 2.6)
Chemical Name	Silicic acid, potassium salt, solution
Product Description	Liquid potassium silicate.

Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
Redox Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox Ltd	11 Mayo Road Wiri Auckland 2104 New Zealand	+64-9-2506222
Redox Inc.	3960 Paramount Boulevard Suite 107 Lakewood CA 90712 USA	+1-424-675-3200
Redox Chemicals Sdn Bhd	Suite 13A.03, Menara Summit Persiaran Kewajipan USJ1 47600 UEP Subang Jaya Selangor, Malaysia	+60-3-5614-2111

Emergency Contact Details

For emergencies only; DO NOT contact these companies for general product advice.

Organisation	Location	Telephone
Poisons Information Centre	Australia – Westmead NSW	1800-251525 131126
Chemcall	Australia	1800-127406 +64-4-9179888
Chemcall	Malaysia	+64-4-9179888
National Poison Centre	Malaysia	+60-4-6536-999
Chemcall	New Zealand	0800-243622 +64-4-9179888
National Poisons Centre	New Zealand	0800-764766
CHEMTREC	USA & Canada	1-800-424-9300 CN723420 +1-703-527-3887

2. HAZARD IDENTIFICATION

Poisons Schedule (Aust)	Schedule 5

Globally Harmonised System

Hazard Classification		Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)	
Hazard Categories		Acute Toxicity (Oral) - Category 5 Skin Corrosion/Irritation - Category 2 Serious Eye Damage/Irritation - Category 1	
Pictograms			
Signal Word		Danger	
Hazard Statements		**H303**	May be harmful if swallowed.
		H315	Causes skin irritation.
		H318	Causes serious eye damage.
Precautionary Statements	Prevention	**P280**	Wear protective gloves/eye protection/face protection.
	Response	**P305 + P351 + P338 + P310**	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTRE/doctor.
		P302 + P352	IF ON SKIN: Wash with plenty of water.
		P332 + P313	If skin irritation occurs: Get medical attention.
		P312	Call a POISON CENTER or doctor if you feel unwell.
		P362 + P364	Take off contaminated clothing and wash it before reuse.

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification	NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Safe Work Australia

National Guide for Classifying Hazardous Chemicals under the Model WHS Regulations

Hazard Classification	Hazardous according to the criteria of Safe Work Australia under Model WHS Regulations

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Potassium silicate	Unspecified	1312-76-1	30 - 60 %
Water	H2O	7732-18-5	30 - 60 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed	IF SWALLOWED: Rinse mouth thoroughly with water, then give water to drink. Do not induce vomiting. If vomiting occurs, drink more water to further dilute the product. Call a Poison Centre or doctor/physician for advice.
Eye	IF IN EYES: Immediately flush eyes with running water for several minutes, holding eyelids open and occasionally lifting the upper and lower lids. Remove contact lenses if present and easy to do. Continue rinsing for at least 15 minutes. Immediately call a Poison Centre or doctor/physician for advice.
Skin	IF ON SKIN: Immediately flush skin with running water for at least 20 minutes, while removing contaminated clothing and shoes. If skin irritation occurs, get medical advice/attention. Wash contaminated clothing and shoes before reuse. *No attempt should be made to neutralize the alkali with acid solutions, as this could aggravate the burns.
Inhaled	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing until recovered. If respiratory symptoms persist, get medical advice/attention.
Advice to Doctor	Treat symptomatically as for strong alkalis.
Medical Conditions Aggravated by Exposure	No information available.

5. FIRE FIGHTING MEASURES

General Measures	If safe to do so, move undamaged containers from fire area. Cool containers with water spray until well after fire is out.
Flammability Conditions	Non-combustible under normal conditions of use (aqueous solution).
Extinguishing Media	If material is involved in a fire, use dry chemical, Carbon dioxide (CO2), foam or water spray for extinction. No media identified as unsuitable.
Fire and Explosion Hazard	Flammable hydrogen gas may be produced on prolonged contact with metals such as aluminium, tin, lead and zinc.
Hazardous Products of Combustion	Fire or heat may produce irritating, toxic and/or corrosive fumes, including Potassium silicate containing mists.
Special Fire Fighting Instructions	Contain runoff from fire control or dilution water - Runoff may cause pollution.
Personal Protective Equipment	Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.
Flash Point	No Data Available
Lower Explosion Limit	No Data Available
Upper Explosion Limit	No Data Available
Auto Ignition Temperature	No Data Available
Hazchem Code	No Data Available

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Ensure adequate ventilation. ELIMINATE all ignition sources. Do not touch or walk through spilled material - Spilled liquids are very slippery! Avoid breathing any fumes formed, and contact with eyes, skin and clothing. *Dries to form glass film which can easily cut skin.
Clean Up Procedures	Spilled liquid may be collected using a vacuum truck. Absorb remaining liquid with earth, sand or other non-combustible material and transfer to a suitable container for disposal (see SECTION 13).
Containment	Stop leak if you can do it without risk. Prevent entry into waterways, sewers, basements or confined areas. Dike far ahead of large spill for later disposal.
Decontamination	If containment is impossible, neutralize contaminated area and flush with large quantities of water.
Environmental Precautionary Measures	Prevent entry into drains and waterways.
Evacuation Criteria	Spill or leak area should be isolated immediately. Keep unauthorised personnel away.

Personal Precautionary Measures	Use personal protective equipment as required (see SECTION 8).

7. HANDLING AND STORAGE

Handling	Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Avoid generating and inhaling vapours/spray mist, and contact with eyes, skin and clothing. Do not ingest. Use personal protective equipment as required (see SECTION 8). Avoid overheating (decomposition). Take appropriate precautions when handling (bulk) product whilst hot as it can cause thermal burns. Ensure material is used in an appropriately bunded area to prevent release into soil, drains and waterways.
Storage	Store in a cool, dry and well-ventilated place, out of direct sunlight. Ensure containers are labelled and kept closed when not in use; Promptly clean residue from closures with cloth. Avoid exposure to air. Avoid prolonged storage above 50 °C or below 10 °C. Store away from foodstuffs and incompatible materials (see SECTION 10). Store in accordance with all local regulations and codes of practice. - Storage temperature: 0 - 70 °C - Loading temperature: 10 - 50 °C
Container	Store in clean steel or plastic containers. Store in clean steel or plastic containers. 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 Potassium Silicate solution to be stored and thick enough to prevent seepage of water.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	No specific exposure standards are available for this product. Manufacturers recommended limit for good practice (by analogy with Potassium hydroxide): - Safe Work Australia Exposure Standard: TWA = 2 mg/m3 Peak limitation. *Peak limitation means a maximum or peak airborne concentration of a particular substance determined over the shortest analytically practicable period of time, which does not exceed 15 minutes.
Exposure Limits	No Data Available
Biological Limits	No information available.
Engineering Measures	Ensure exposure is managed within recommended exposure limits. A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.
Personal Protection Equipment	- Respiratory protection: 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. Recommended: Consult a respiratory equipment supplier to aid selection of the appropriate type. - Eye/face protection: Wear appropriate eye protection to prevent eye contact. Recommended: 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. - Hand protection: Wear protective gloves. Recommended: Wear chemical resistant gloves. If contact is likely, the use of full arm length gauntlets is recommended. - Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Wear chemical resistant overalls, a full apron, or similar protective clothing, and chemical resistant protective boots.
Special Hazards Precaustions	The use of protective clothing and equipment depends on the degree and nature of exposure. Dried silicate can present physical hazards including cuts and abrasions. Wear cut resistant gloves if handling dried silicate.
Work Hygienic Practices	Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Wash contaminated clothing and protective equipment before storing and re-using. The use of barrier cream is recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid

Appearance	Thick liquid
Odour	Odourless
Colour	Clear to hazy, colourless
pH	11 - 13 (of the concentrate)
Vapour Pressure	No Data Available
Relative Vapour Density	No Data Available
Boiling Point	105 - 108 °C
Melting Point	approx. 0 °C
Freezing Point	No Data Available
Solubility	Soluble in water
Specific Gravity	1.2 - 1.6 (typical range)
Flash Point	No Data Available
Auto Ignition Temp	No Data Available
Evaporation Rate	No Data Available
Bulk Density	No Data Available
Corrosion Rate	No Data Available
Decomposition Temperature	102 - 108 °C
Density	No Data Available
Specific Heat	No Data Available
Molecular Weight	No Data Available
Net Propellant Weight	No Data Available
Octanol Water Coefficient	No Data Available
Particle Size	No Data Available
Partition Coefficient	No Data Available
Saturated Vapour Concentration	No Data Available
Vapour Temperature	No Data Available
Viscosity	20 - 5,000 cps (@ No Data Available)
Volatile Percent	30 - 60%
VOC Volume	0 %
Additional Characteristics	Absorbs Carbon dioxide on exposure to air, which results in the deposition of insoluble silica.
Potential for Dust Explosion	Not applicable.
Fast or Intensely Burning Characteristics	No information available.
Flame Propagation or Burning Rate of Solid Materials	No information available.
Non-Flammables That Could Contribute Unusual Hazards to a Fire	No information available.
Properties That May Initiate or Contribute to Fire Intensity	Non-combustible under normal conditions of use (aqueous solution).
Reactions That Release Gases or Vapours	Fire or heat may produce irritating, toxic and/or corrosive fumes, including Potassium silicate containing mists.
Release of Invisible Flammable Vapours and Gases	Flammable hydrogen gas will form on reaction with aluminium, copper, zinc, etc.

10. STABILITY AND REACTIVITY

General Information	Strongly alkaline; Will react exothermically with acids. Gels and generates heat when mixed with acid. May react with

	ammonium salts resulting in evolution of ammonia gas. Can etch glass if not promptly removed.
Chemical Stability	Stable in sealed containers.
Conditions to Avoid	Avoid exposure to air. Avoid prolonged storage above 50 ºC or below 10 ºC.
Materials to Avoid	Incompatible/reactive with acids, aluminium, copper, brass, bronze, zinc, tin and lead.
Hazardous Decomposition Products	The solution will boil if overheated, and irritating Potassium silicate containing mists will be released. Flammable hydrogen gas will form on reaction with aluminium, copper, zinc, etc.
Hazardous Polymerisation	No information available.

11. TOXICOLOGICAL INFORMATION

General Information	- Acute toxicity: May be harmful if swallowed. Swallowing can result in nausea, vomiting, abdominal pain and diarrhoea; May cause severe irritation to the mouth, throat and stomach. - Skin corrosion/irritation: Causes skin irritation. May cause itching and skin rash. Prolonged or repeated skin contact may cause dry skin. Defatting of the skin can result in irritation and dermatitis (inflammation of the skin). - Eye damage/irritation: Causes serious eye damage. A severe eye irritant; May cause conjunctivitis (inflammation of the eyes) and possibly corneal burns and ulceration. - Respiratory/skin sensitisation: Not considered to be a skin sensitiser. Not sensitising (Mouse LLNA - Sodium metasilicate). - Germ cell mutagenicity: There is no evidence of a genotoxic potential for soluble silicates. - Carcinogenicity: The information available does not indicate any potential for carcinogenicity. - Reproductive toxicity: No indications of reproductive effects for silicates have been reported. - STOT (single exposure): 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. - STOT (repeated exposure): 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. - Aspiration toxicity: No information available.
Acute	
Ingestion	Acute toxicity (Oral): - LD50, Rat: >3,000 mg/kg [By analogy: 30-60% Sodium silicate].
Carcinogen Category	None

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/Degradability	This material is not persistent in aquatic systems; Diluted material rapidly depolymerizes to yield dissolved silica in a form that is indistinguishable from natural dissolved silica. It does not contribute to BOD.
Mobility	Soluble in water (Sinks and mixes with water). Expected to be mobile in soil.
Environmental Fate	This material is not acutely toxic in aquatic systems, but its high pH when undiluted or un-neutralized is acutely harmful to aquatic life. Avoid contaminating waterways.
Bioaccumulation Potential	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.
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	Dispose of contents/container in accordance with local/regional/national regulations.

Special Precautions for Land Fill	Normally suitable for disposal at approved land waste site after dilution or neutralisation. Not suitable for incineration.

14. TRANSPORT INFORMATION

Land Transport (Australia)
ADG Code

Proper Shipping Name	Potassium Silicate Solutions (MR 1.6 - 2.6)
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (Malaysia)
ADR Code

Proper Shipping Name	Potassium Silicate Solutions (MR 1.6 - 2.6)
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (New Zealand)
NZS5433

Proper Shipping Name	Potassium Silicate Solutions (MR 1.6 - 2.6)
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (United States of America)
US DOT

Proper Shipping Name	Potassium Silicate Solutions (MR 1.6 - 2.6)
Class	No Data Available

Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Sea Transport
IMDG Code

Proper Shipping Name	Potassium Silicate Solutions (MR 1.6 - 2.6)
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
EMS	No Data Available
Marine Pollutant	No
Comments	NON-DANGEROUS GOODS: Not regulated for SEA transport.

Air Transport
IATA DGR

Proper Shipping Name	Potassium Silicate Solutions (MR 1.6 - 2.6)
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for AIR transport.

National Transport Commission (Australia)
Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification	NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

15. REGULATORY INFORMATION

General Information	No Data Available
Poisons Schedule (Aust)	Schedule 5

Environmental Protection Authority (New Zealand)
Hazardous Substances and New Organisms Amendment Act 2015

Approval Code	Additives Process Chemicals and Raw Materials Subsidiary Hazard Group Standard 2020 HSR002503 *HSR004658 (Revoked)

National/Regional Inventories

Australia (AIIC)	Listed
Canada (DSL)	Not Determined
Canada (NDSL)	Not Determined
China (IECSC)	Not Determined
Europe (EINECS)	Not Determined
Europe (REACh)	Not Determined
Japan (ENCS/METI)	Not Determined
Korea (KECI)	Not Determined
Malaysia (List of Classified Substances)	Not Determined
New Zealand (NZIoC)	Listed
Philippines (PICCS)	Not Determined
Taiwan (TCSI)	Not Determined
USA (TSCA)	Not Determined
Mexico (INSQ)	Not Determined

16. OTHER INFORMATION

Related Product Codes	POTSIL2100, POTSIL5000, POTSIL5200, POTSIL6000, POTSIL6050, POTSIL6051, POTSIL6052, POTSIL6053, POTSIL7000
Revision	5
Revision Date	05 Mar 2021
Reason for Issue	SDS updated
Key/Legend	< Less Than > Greater Than **AICS** Australian Inventory of Chemical Substances **atm** Atmosphere **CAS** Chemical Abstracts Service (Registry Number) **cm^2** Square Centimetres **CO2** Carbon Dioxide **COD** Chemical Oxygen Demand **deg C (°C)** Degrees Celcius **EPA (New Zealand)** Environmental Protection Authority of New Zealand **deg F (°F)** Degrees Farenheit **g** Grams **g/cm^3** Grams per Cubic Centimetre **g/l** Grams per Litre **HSNO** Hazardous Substance and New Organism **IDLH** Immediately Dangerous to Life and Health **immiscible** Liquids are insoluable in each other. **inHg** Inch of Mercury

inH2O Inch of Water
K Kelvin
kg Kilogram
kg/m^3 Kilograms per Cubic Metre
lb Pound
LC50 LC stands for lethal concentration. LC50 is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.
LD50 LD stands for Lethal Dose. LD50 is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.
ltr or **L** Litre
m^3 Cubic Metre
mbar Millibar
mg Milligram
mg/24H Milligrams per 24 Hours
mg/kg Milligrams per Kilogram
mg/m^3 Milligrams per Cubic Metre
Misc or **Miscible** Liquids form one homogeneous liquid phase regardless of the amount of either component present.
mm Millimetre
mmH2O Millimetres of Water
mPa.s Millipascals per Second
N/A Not Applicable
NIOSH National Institute for Occupational Safety and Health
NOHSC National Occupational Heath and Safety Commission
OECD Organisation for Economic Co-operation and Development
Oz Ounce
PEL Permissible Exposure Limit
Pa Pascal
ppb Parts per Billion
ppm Parts per Million
ppm/2h Parts per Million per 2 Hours
ppm/6h Parts per Million per 6 Hours
psi Pounds per Square Inch
R Rankine
RCP Reciprocal Calculation Procedure
STEL Short Term Exposure Limit
TLV Threshold Limit Value
tne Tonne
TWA Time Weighted Average
ug/24H Micrograms per 24 Hours
UN United Nations
wt Weight