

1. Identification

Product identifier:	AgriSil K50	
Synonyms:	Silicic acid potassium salt solution, potassium silicate solution	
Company product code or Supplier code:	N/A	
Fertiliser Group:	2	
RSA Reg. No. (Act No. 36 of 1947):	B3756	
Supplier:	Andermatt Madumbi (Pty) Ltd Suite 105, 24 Hilton Ave, Hilton KZN 3245, South Africa Telephone: +27 (0) 33 342 3984 (09:00 to 16:00) Email address (technical): support@anderstatt.co.za	
Recommended use:	Foliar fertiliser	
Restrictions on use:	Do not use for any other purpose than described on the product label	
Emergency numbers:	+27 (0) 33 342 3984 +27 (0) 82 446 8946	(09:00 to 16:00) (24 H)

2. Hazards identification

Classification of this liquid mixture: Skin corrosion/irritation, Category 2
Serious eye damage/eye irritation, Category 2
Specific target organ toxicity, single exposure, Category 3

Signal word: **WARNING**

Hazard statements:	CAUSES SKIN IRRITATION	H315
	CAUSES SERIOUS EYE IRRITATION	H319
	MAY CAUSE RESPIRATORY IRRITATION	H335



Precautionary statements:

Wear protective gloves/protective clothing/eye protection.	P280
Do not eat, drink, or smoke when using this product.	P270
Store locked up in a well-ventilated place. Keep container tightly closed.	P405+P403+P233
Use only outdoors or in a well-ventilated area.	P271
Wash hands and face thoroughly after handling. Do not touch eyes.	P264+P265
Avoid breathing mist or spray.	P261
IF ON SKIN: Wash with plenty of water.	P302+P352
Take off contaminated clothing and wash it before reuse.	P362+P364
If skin irritation occurs, get medical help	P332+P317
IF INHALED: Remove person to fresh air and keep comfortable for breathing.	P304+P340
Get medical help if you feel unwell.	P319
IF IN THE EYES: Rinse cautiously with water for several minutes.	P305+P351
Remove contact lenses, if present and easy to do. Continue rinsing.	P338
If eye irritation occurs, get medical help.	P337+P317
Specific treatment (see on the label). <i>Information to be supplied by Andermatt Madumbi</i>	P321
Dispose of contents and/or container in accordance with regulations.	P501
Refer to the manufacturer or supplier for information on disposal, recovery or recycling.	P503

3. Composition/information on ingredients

Component of the substance	CAS number	%
Silicic acid potassium salt	1312-76-1	20-40
Water	7732-18-5	60-80
Other elements	Various	< 0.01
Impurities	Unknown	Not known

Soluble silicic acid potassium salt (or potassium silicate) is not a single distinct molecule with a specific chemical formula and molecular weight, but rather dissolved silicon oxides with varying amounts of potassium ions, characterised by the molar ratio $\text{SiO}_2/\text{K}_2\text{O}$. This ratio can be between 0.5 and 5, for example 0.5 for tetrapotassium orthosilicate (assigned CAS number 14293-88-0), and 1 for dipotassium metasilicate (assigned CAS number 10006-28-7). The CAS number 1312-76-1 is used to designate potassium silicate of any molar ratio. The molar ratio of AgriSil K50 is approximately 4.

4. First aid measures

Inhalation:	Most important acute symptoms/effects: irritation of the upper airway, coughing, redness. Suffocation or breathing difficulties may result from inhalation of mist, spray or heat-induced degradation products.
	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Get medical help if the casualty feels unwell.
Eye contact:	Most important acute symptoms/effects: eye irritation, redness and tearing.

	<p>IF IN THE EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical help.</p>
Skin contact:	<p>Most important acute symptoms/effects: irritation, redness.</p> <p>IF ON SKIN: Wash with plenty of water. Do not rub or wipe the area. Take off contaminated clothing and wash it before reuse. If skin irritation occurs, get medical help</p>
Ingestion:	<p>Most important acute symptoms/effects: irritation of the mouth, oesophagus, and stomach.</p> <p>IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Get medical help if the casualty feels unwell.</p> <p>If casualty is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person.</p>
Most important delayed symptoms/effects after exposure:	<p>The sensation of a burnt or sore throat.</p>
Indication of immediate medical attention:	<p>Treat symptomatically. Pre-existing conditions may be aggravated, such as eye disorders, skin disorders or respiratory tract disorders. If eye or skin irritation persists, get medical help. If special treatment is required, contact the supplier.</p>
Protection of first responders:	<p>Wear protective gloves. Avoid undue contact with the substance and its solutions. Avoid breathing spray mist. Wear gloves and a mask to prevent transmission of pathogens.</p>

5. Firefighting measures

Appropriate/suitable extinguishing media:	<p>The product is an aqueous mixture and does not burn. Water spray, foam, carbon dioxide (CO₂) or dry powder may be used but select extinguishing media that is appropriate for local circumstances and the surroundings.</p>
Inappropriate extinguishing media:	<p>None known.</p>
Nature of hazardous combustion products:	<p>Suffocating potassium oxides and silicon oxides.</p>
Other hazards arising from the mixture:	<p>Irritation of the eyes, respiratory tract and skin. (There is no direct explosion hazard and no sensitivity to mechanical impact or to static discharge for this mixture).</p>

Special protective equipment:	Avoid breathing dust, vapours, and combustion by-products from other chemicals in the vicinity of the fire. Use self-contained breathing apparatus and complete protective clothing. Do not attempt to act without suitable protective equipment.
Precautions and/or protective actions:	Move containers from the fire area if it can be done without risk. Water spray may be used to cool down the containers, but only after considering other material in the vicinity that may pose a hazard. Stay upwind and keep out of low areas. Take precautions to prevent extinguishing media contaminating surface water or ground water.

6. Accidental release measures

Distinguish between large or small spills, leaks, or releases.

Personal precautions:	Spilled material is very slippery. Avoid contact with skin and eyes. Wash hands thoroughly after handling. Do not touch eyes. Do not eat, drink, or smoke during clean-up operations.
Protective equipment:	Wear protective gloves/protective clothing/eye protection such as chemical resistant gloves and alkaline resistant clothing that covers the whole body, rubber boots and goggles.
Emergency actions and procedures:	No special emergency actions or procedures are required.
Environmental precautions:	Avoid release to the environment as the high pH of this material may be acutely harmful to aquatic life before dissipation and dilution. Therefore, prevent spills from entering storm sewers or drains. Report any release to the appropriate authorities.
Methods and materials for containment and cleaning up:	Move intact containers from the spill area. The product is a water miscible liquid. Stop leaks if it can be done safely and prevent run-off as far as possible. <u>Small spills:</u> Prevent spreading by using chemical pillows around the spill area. If possible, neutralise the liquid with a very weak acid (for example citric acid powder) or dilute with water. Mop up and place in an appropriate waste disposal container. <u>Large spills:</u> Keep unnecessary people away, isolate the hazard area and deny entry. Do not touch or walk through the spilled material as it will be slippery. Prevent entry into sewers, water courses, basements, or confined areas by diking if possible. Wash the spillage into an effluent treatment plant. Alternatively contain and neutralise the spillage (for example with citric acid powder but be aware that gelling and the generation of heat may occur), then collect the spillage, either by mopping up or with absorbent material like dry sand or saw dust, and transfer to containers for disposal. Flush the area with water if appropriate. Dispose of via a licensed waste disposal contractor.

7. Handling and storage

Precautions for safe handling: Wear protective gloves/protective clothing/eye protection, such as chemical resistant gloves and alkaline resistant clothing that covers the whole body, rubber boots and goggles. Wash gloves before taking them off.
Do not eat, drink, or smoke when using this product.
Do not touch eyes. Wash hands and face thoroughly after handling.

Conditions for safe storage: Store upright in the original container, and never in aluminium, fiberglass, copper, brass, zinc, or galvanized containers.
Keep containers well closed and out of direct sunlight.
Do not store above 50 °C for prolonged periods.
Store separately from acids, ammonium salts, and humus.
Store separately from any food, feed, or drinks.
Keep out of reach of children and uninformed persons.
Store in a facility designed to contain liquid spills.



Any incompatibilities: The material becomes very viscous at low temperatures.
It reacts with acids, ammonium salts, reactive metals, and some organic chemicals. It can etch glass if not promptly removed.
AgriSil K50 can be highly reactive in tank mix situations due to high concentration of soluble silica and high alkalinity (pH > 11). Products containing calcium, magnesium, zinc, or aluminium should be avoided.

8. Exposure controls/personal protection

No occupational exposure limit values have been established on this substance, but an exposure limit of 2 mg/m³ (15 min TWA) is recommended by comparison with potassium hydroxide

No biological limit values are available for this mixture.

Appropriate engineering controls include good general ventilation. Safety showers and eye wash facilities must be available near the work area.

Wear chemical resistant personal protective equipment (protective gloves/protective clothing/eye protection/appropriate footwear) when handling AgriSil K50. Wash the outside of gloves before removing them.

Use an approved respirator where spray mist occurs.



9. Physical and chemical properties

Physical state	Viscous liquid
Clarity:	Clear to hazy
Colour:	Colourless
Odour:	Odourless
Odour threshold:	Not applicable
Melting point/freezing point:	< 0 °C
Boiling point (or initial point and range):	No data available
Flammability (gases, liquids, solids):	Non-flammable
Lower and upper explosion limits:	Not applicable
Lower and upper flammability limits:	Not applicable
Flash point:	Non-combustible
Autoignition temperature:	Not applicable
Decomposition temperature:	No data available
pH, neat:	> 11
pH, aqueous dilution (10%):	> 11
Dissociation in water, pKa:	Completely dissociates
Kinematic viscosity (of liquids):	40 mm ² /s at 20 °C
Solubility in water:	Miscible with water
Solubility in a specified non-polar solvent:	Not soluble in or miscible with non-polar solvents
Partition coefficient (n-octanol/water):	Not applicable
Vapour pressure (at 25 °):	< 23.8 torr (mmHg) or < 3.17 kPa based on water
Density and/or relative density:	1.25
Relative vapour density:	Not known
Particle characteristics:	Not applicable
Evaporation rate:	Only water evaporates

10. Stability and reactivity

Chemical stability:	AgriSil 50K is chemically stable when properly stored and handled. No stabilisers were added or are required. The aqueous solution is highly alkaline (pH > 11) but is not buffered. The dissolved solids consist of dissociated potassium cations, hydroxide anions, and mono- and polysilicic acids. It is an oxidiser and will react with certain metals. It is not combustible.
Safety significance of any change in physical appearance:	If allowed, the solution will dry to form a glass film which can cut skin. It will gel and generates heat when mixed with acid.

- Possibility of hazardous reactions:** The solution will react with aluminium, zinc, tin and their alloys producing hydrogen gas which can form an explosive mixture with air.
Can react with sugar residues to form carbon monoxide.
May react with ammonium salts resulting in evolution of ammonia gas.
Ensure adequate ventilation before entering confined spaces.
- Conditions to avoid:** Do not allow AgriSil 50K to heat up excessively.
It can be highly reactive in tank mix situations. Products containing calcium, magnesium, zinc, or aluminium should be avoided.
Pressure, shock, static discharge, and vibrations have no known effect.
- Incompatible materials:** May react with aluminium, zinc, tin and their alloys unless diluted to less than 10% dissolved solids.
Can react violently if in contact with acids, forming a gel.
Can react with sugar and ammonium salts.
- Hazardous decomposition products:** AgriSil 50K won't decompose under normal storage and use conditions.

11. Toxicological information

The following information is available for a 29% potassium silicate solution (molar ratio 3.9):

Acute oral LD ₅₀ (rat)	> 5 000 mg/kg
Acute dermal LD ₅₀ (rat)	> 5 000 mg/kg
Acute inhalation LC ₅₀ (rat)	> 2.06 mg/ℓ
Skin irritation (rabbit)	Slightly irritating
Eye damage/irritation (rabbit)	Mildly irritating
Skin/respiratory sensitisation	Not sensitising

The following information is available for silicic acid potassium salt (solid material):

Acute oral LD ₅₀ (rat)	Not classified
Acute dermal LD ₅₀ (rat)	Not classified
Acute inhalation LC ₅₀ (rat)	Not classified
Skin corrosion/irritation	Category 1
Eye damage/irritation	Category 1
Germ cell mutagenicity	Not classified
Carcinogenicity	Not classified
Reproductive toxicity	Not classified
STOT SE	Category 3
STOT RE	Not classified

- Routes of exposure** Inhalation of the spray (without or after dilution), skin contact, and eye contact are the principle routes of exposure

Symptoms	Symptoms related to the physical, chemical, and toxicological characteristics of the mixture include irritation and redness upon skin contact. Eye contact can cause irritation, redness, and excessive tearing (epiphora)
Effects of exposure	Apart from irritation, no data on immediate, delayed, or chronic effects from short- or long-term skin or eye exposure are available.

Hazard class	Hazard category	Rationale for classification
Acute toxicity, oral:	Not classified	Based on available data.
Acute toxicity, dermal:	Not classified	Based on available data.
Acute toxicity, inhalation:	Not classified	Based on available data.
Skin corrosion/irritation:	Category 2 – causes irritation	Weight of evidence from available data.
Serious eye damage/irritation:	Category 2 – causes serious eye irritation	Weight of evidence from available data.
Respiratory or skin sensitisation:	Not classified	Based on available data.
Germ cell mutagenicity:	Not mutagenic	Based on available data.
Carcinogenicity:	Not carcinogenic	Based on available data.
Reproductive toxicity:	None expected	Based on available data.
STOT single exposure:	Category 3 – may cause respiratory irritation	Calculated from available data.
STOT repeated exposure:	Not classified	Based on available data.
Aspiration hazard:	Not classified	Calculated from available data.

12. Ecological information

AgriSil 50K is for terrestrial uses. It has a high alkalinity (pH > 11) but it is not buffered. Should an aquatic environment be exposed to aqueous dilutions of the substance, no long-term effect on the pH of the water is expected because of the high buffering capacity of natural environments. But there might be an acute transient effect because of the high pH. Do not apply AgriSil 50K directly to water, or to areas where surface water is present or to intertidal areas below the mean high-water mark.

The following information is available for silicic acid potassium salt (solid material):

Acute aquatic hazard, fish	Rainbow trout, pH 7.32 – 8.0	96 h LC ₅₀ 310 mg/ℓ
Acute aquatic hazard, invertebrates	<i>Daphnia magna</i> , pH not reported	48 h LC ₅₀ > 146 mg/ℓ
Acute aquatic hazard, aquatic plants	Algae, pH 8.2 – 9.5	72 h EC ₅₀ 207 mg/ ℓ
Chronic aquatic hazard		No effects expected

Acute toxicity for freshwater algae:	Not classified	Calculated from available data.
Toxicity for other aquatic plants:	None expected	Occurs naturally
Acute (short-term) toxicity for fish:	Not classified	Calculated from available data.
Acute toxicity for crustaceans:	Not classified	Calculated from available data.
Chronic toxicity for fish:	Not classified	Based on available data.
Toxicity for birds:	None expected	Based on available data.
Toxicity for earthworms:	None expected	Based on available data.
Toxicity for terrestrial plants:	None expected	Based on available data.
Toxicity for honeybees:	None expected	Based on available data.
Toxicity for soil micro-organisms:	None expected	Based on available data.
Possible impact on sewage treatment:	Not expected	Based on available data.
Persistence and degradability:	Occurs naturally	Available data.
Bio-accumulative potential:	No potential	An inorganic chemical.
Mobility in soil:	Occurs naturally	Available data.
Environmental fate:	Occurs naturally	Available data.
Ozone depletion potential:	None	An inorganic chemical.
Photochemical ozone creation potential:	None	An inorganic chemical.
Endocrine disrupting potential:	None	An inorganic chemical.
Climate change potential:	Occurs naturally	Available data.
Other adverse effects:	None expected	

13. Disposal considerations

Avoid release of AgriSil 50K to the environment. Do not contaminate water while cleaning the equipment.

Dispose of waste residues responsibly as low-hazard chemical waste through a licensed waste removal company.

Dispose of the container by rinsing it properly. Do not re-use. Destroy mechanically and dispose of as ordinary waste through a licensed waste removal company.

Refer to the manufacturer or supplier for information on recovery or recycling.

Refer to the manufacturer or supplier for options on reclamation.

Refer to manufacturer or supplier for information on disposal of unused material.

The physical/chemical properties of the product should have no significant effect on disposal procedures, but awareness of the high pH and following appropriate procedures are essential. .

The product consists mainly of water and no special precautions for incineration are necessary.

There are no special precautions for landfill, except to be aware of the high pH. Potassium and silicates occur naturally and are of no environmental concern.

There is no other relevant information

14. Transport information

UN number:	None. Not classified as dangerous in the context of transport regulations.
UN proper shipping name:	Not applicable.
UN packing group number:	Not applicable.
UN transport hazard class(es):	Not applicable.
A known marine pollutant (IMDG Code)?	Not a marine pollutant.
A known severe marine pollutant?	Not a marine pollutant.
Environmentally hazardous, ADR?	Not classified as dangerous in the context of transport regulations.
Environmentally hazardous, RID?	Not classified as dangerous in the context of transport regulations.
Environmentally hazardous, ADN?	Not classified as dangerous in the context of transport regulations.
Transport in bulk by sea, IMO?	Not classified as dangerous in the context of transport regulations.
There are no special precautions which a user needs to be aware of or needs to comply with.	

15. Regulatory information

Relevant safety regulations:	Regulations for hazardous chemical agents 2021, Department of Employment and Labour (March 2021).
Relevant health regulations:	Occupational Health and Safety Act, 1993 (Act No. 85 of 1993).
Relevant environmental regulations:	The National Environmental Management Act, 107 of 1998 (NEMA). Guidelines on the administration of incidents, as described in section 30 of the NEMA, Department of Environmental Affairs (2019).
Subject to the Montreal Protocol?	No.
Subject to the Stockholm Convention?	No.
Subject to the Rotterdam Convention?	No.
Subject to any prohibitions?	No.
Subject to any restrictions?	No.

16. Other information

SDS identification or reference number: 005

Date of the previous revision of this SDS: Not dated.

Previous revision number: Not numbered.

There is no additional information relevant to the material's nature or use, or any other relevant information.

Abbreviations that may have been used:

AND means European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.

ADR means Agreement concerning the International Carriage of Dangerous Goods by Road.

CAS means Chemical Abstract Service.

Cat. Means Category.

GHS means Globally Harmonised System of Classification and Labelling of Chemicals.

IMDG Code means International Maritime Dangerous Goods Code.

IMO means International Maritime Organisation.

NEMA means National Environmental Management Act.

RID means Regulations concerning the International Carriage of Dangerous Goods by Rail.

SDS means safety data sheet.

STOT means specific target organ toxicity.

UN means United Nations.

This safety data sheet was compiled in compliance with the following regulations and guidelines:

- a. Regulations for hazardous chemical agents 2021, Department of Employment and Labour (March 2021).
- b. The globally harmonised system of classification and labelling of chemicals (GHS), 9th Revised Edition, United Nations (2021).
- c. Globally harmonised system of classification and labelling of chemicals (GHS), SANS 10234:2019, Ed. 2.00 (2019).