SAFETY DATA SHEET
ACCORDING TO 1907/2006/EC, 453/2010/EU, 2015/830/EU (REACH)

K-SIL

1.1 Product Identifier
   Product Name: K-SIL
   Product description: Fertiliser
   Product Type: Soluble Concentrate

1.2 Relevant identified uses of the substance or mixture and uses advised against
   Relevant uses: Fertiliser
   Uses advised against: All uses not specified in this section or in section 7.3

1.3 Details of the supplier of the safety data sheet
   Rolfes Agri (Pty) Ltd
   288 Mundt Street
   Waltloo
   Pretoria
   South Africa
   Tel: +27(0)12 803 0145
   Fax: +27(0)12 803 8418

1.4 Emergency telephone number

National advisory body/Poison Centre

   Telephone number: SOUTH AFRICA
   Griffon Poison Information Centre
   (24 Hour Poisoning Emergency Helpline)
   +27(0)82 446 8946
SECTION 2: Hazards identification

2.1 Classification of the substance or mixture:
CLP Regulation (EC) no 1272/2008:

Skin Irrit. 2: Skin Irritation, Category 2 - H315
Eye Dam. 2: Eye Damage, Category 1 - H318
STOT SE 3: Specific target organ (unknown) toxicity - single exposure, Category 3 - H335

2.2 Label elements
CLP Regulation (EC) no 1272/2008:

Hazard pictogram(s): Danger
Signal word: Danger
Hazard statement(s): H315 - Causes skin irritation
H318 - Causes serious eye damage
H335 - May cause respiratory irritation

Precautionary statement(s):
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.
P261 - Avoid breathing dust/fume/gas/mist/vapours/spray.
P264 - Wash hands thoroughly after handling.
P271 - Use only outdoors or in a well-ventilated area.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P312 - Call a POISON CENTER or doctor/physician if you feel unwell.
P321 - Specific treatment (see Section 4 on this label).
P362 - Take off contaminated clothing and wash before reuse.
P302+P352 - IF ON SKIN: Wash with plenty of soap and water.
P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do, continue rinsing.
P332+P313 - If skin irritation occurs: Get medical advice/attention.
P337+P313 - If eye irritation persists: Get medical advice/attention.
P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
P405 - Store locked up.
P501 - Dispose of the contents/containers in accordance with the current legislation on waste treatment.

2.3 Other hazards: Non-applicable

SECTION 3: Composition/information on ingredients

3.1 Substance:
Non-applicable

3.2 Mixture:
Chemical description: Multi-Constituent Substance
Components:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>silicic acid, potassium salt</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS:</td>
<td>1312-76-1</td>
</tr>
<tr>
<td>EC:</td>
<td>215-199-1</td>
</tr>
<tr>
<td>Index:</td>
<td>-</td>
</tr>
<tr>
<td>REACH:</td>
<td>-</td>
</tr>
<tr>
<td>Concentration:</td>
<td>&lt; 20%</td>
</tr>
</tbody>
</table>
Chemical Name: potassium silicate
CAS: -
EC: 910-339-4
Index: -
REACH: -
Concentration: > 70%

SECTION 4: First Aid Measures

4.1 Description of first aid measures
The symptoms resulting from intoxication can appear after exposure, therefore, in case of doubt, seek medical attention for direct exposure to the chemical product or persistent discomfort, showing the SDS of this product.

By inhalation:
Remove to fresh air. If not breathing gives artificial respiration. If breathing is difficult, give oxygen. Do not give mouth-to-mouth resuscitation if victim ingested or inhaled the substance. Keep person at rest and warm. Treat symptomatically and supportively as and when required. Obtain medical advice if necessary.

By skin contact:
In case of contact it is recommended to clean the affected area thoroughly with water and neutral soap. In case of modifications on the skin (stinging, redness, rashes, blisters) seek medical advice with this Safety data Sheet.

By eye contact:
This product contains substances classified as hazardous for eye contact. Rinse eyes thoroughly for at least 15 minutes with lukewarm water, ensuring that the person affected does not rub or close their eyes.

By ingestion / aspiration:
Have victim rinse mouth thoroughly with water. Give water to dilute the material if victim is alert and not convulsing. Do not induce vomiting without medical advice. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomits, rinse mouth and administer more water. Never give anything by mouth to an unconscious person. Qualified medical personnel should perform administration of oxygen. Seek medical advice if necessary.

4.2 Most important symptoms and effects, both acute and delayed
Irritation, allergic reactions, asthmatic complaints, breathing difficulties, gastrointestinal complaints.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician:
In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments:
Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Fire Extinguishing Media

Suitable extinguishing media:
Use dry chemical, Carbon Dioxide, foam or water mist or fog. If stored with other combustible products use water, CO₂ or dry chemical.

Unsuitable extinguishing media:
None known.
5.2 Special hazards arising from the substance or mixture

**Hazards from the substance or mixture:**
Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

**Hazardous thermal decomposition products:**
During fire, irritating and toxic gases will be released due to thermal decomposition or combustion.

5.3 Additional provisions:
Act in accordance with the Internal Emergency Plan and the Information Sheets on actions to take after an accident or other emergencies. Destroy any source of ignition. In case of fire, refrigerate the storage containers and tanks for products susceptible to inflammation, explosion or BLEVE as a result of high temperatures. Avoid spillage of the products used to extinguish the fire into an aqueous medium.

### SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures:
Isolate leaks provided that there is no additional risk for the people performing the task. Personal protection equipment must be used against potential contact with the spilt product (see section 8). Evacuate the area and keep out those who do not have protection.

6.2 Environmental precautions:
Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways or soil). Collect spillage.

6.3 Methods and materials for containment and cleaning up
Absorb the spillage using sand, saw dust or inert absorbent and move it to a safe place. For any concern related to disposal consult section 13.

6.4 Reference to other sections:
See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

### SECTION 7: Handling and storage

7.1 Precautions for safe handling:
A.- Precautions for safe manipulation
Comply with the current legislation concerning the prevention of industrial risks. Keep containers hermetically sealed. Control spills and residues, destroying them with safe methods (section 6). Avoid leakages from the container. Maintain order and cleanliness where dangerous products are used.

B.- Technical recommendations for the prevention of fires and explosions
Due to its non-flammable nature, the product does not present a fire risk under normal conditions of storage, manipulation and use.

C.- Technical recommendations to prevent ergonomic and toxicological risks
Do not eat or drink during the process, washing hands afterwards with suitable cleaning products.

D.- Technical recommendations to prevent environmental risks
It is recommended to have absorbent material available at close proximity to the product (See subsection 6.3)
7.2 Conditions for safe storage, including any incompatibilities:
A. - Technical measures for storage
   Minimum Temp.: 5 ºC
   Maximum Temp.: 30 ºC
   Maximum time: 36 Months

B. - General conditions for storage
   Avoid sources of heat, radiation, static electricity and contact with food. For additional information see subsection 10.5

7.3 Specific end use(s)
Except for the instructions already specified it is not necessary to provide any special recommendation regarding the uses of this product.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters
Substances whose occupational exposure limits have to be monitored in the work environment. Wear protective equipment to comply with good occupational hygiene practice. Do not eat, drink or smoke at the work place.

8.2 Exposure controls

Appropriate engineering controls:
No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Individual protection measures

Hygiene measures:
Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period.

Eye/face protection:
Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. Possible: safety glasses with side-shields

Skin protection

Hand protection:
Protective gloves against minor risks.

Body protection:
Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection:
Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection:
Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary.

Environmental exposure controls:
In accordance with the community legislation for the protection of the environment it is recommended to avoid environmental spillage of both the product and its container. For additional information see subsection 7.1.D
SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

**Appearance**
- Physical state: Soluble Concentrate (Liquid)
- Colour: Black
- Odour: Pungent odour.
- Odour threshold: Not available.
- pH: 12.5 - 13.8

- Boiling point at atmospheric pressure: > 100°C
- Vapour pressure at 20 °C: Non-applicable *
- Vapour pressure at 50 °C: Non-applicable *
- Evaporation rate at 20 °C: Non-applicable *

**Product description:**
- Density at 20 °C: 1.47
- Relative density at 20 °C: Non-applicable *
- Dynamic viscosity at 20 °C: Non-applicable *
- Kinematic viscosity at 20 °C: Non-applicable *
- Kinematic viscosity at 40 °C: Non-applicable *
- Vapour density at 20 °C: Non-applicable *
- Partition coefficient n-octanol/water 20 °C: Non-applicable *
- Solubility in water at 20 °C: Miscible.
- Solubility properties: Non-applicable *
- Decomposition temperature: Non-applicable *
- Melting point/freezing point: Non-applicable *
- Explosive properties: Not explosive in the presence of the following materials or conditions: open flames, sparks and static discharge, heat, shocks and mechanical impacts, oxidizing materials, reducing materials, combustible materials, organic materials, metals, acids, alkalis and moisture.
- Oxidising properties: Non-applicable *

**Flammability:**
- Flash Point: Non Flammable (>60 °C)
- Auto ignition temperature: Non-applicable *
- Lower flammability limit: Non-applicable *
- Upper flammability limit: Non-applicable *

*Not relevant due to the nature of the product, not providing information property of its hazards.

9.2 Other information
No additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity:
No hazardous reactions are expected because the product is stable under recommended storage conditions. See section 7.

10.2 Chemical stability:
Chemically stable under the conditions of storage, handling and use.
10.3 Possibility of hazardous reactions:
Under the specified conditions, hazardous reactions that lead to excessive temperatures or pressure are not expected. Silica salts are highly reactive. Avoid mixing with products containing salts of aluminium, calcium, magnesium and zinc. Can react violently if in contact with acids. Can react with sugar residues to form carbon monoxide.

10.4 Conditions to avoid:
Applicable for handling and storage at room temperature:

<table>
<thead>
<tr>
<th>Shock and friction</th>
<th>Contact with air</th>
<th>Increase in temperature</th>
<th>Sunlight</th>
<th>Humidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Avoid excessive heat.</td>
<td>Avoid</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

10.5 Incompatible materials:

<table>
<thead>
<tr>
<th>Acids</th>
<th>Water</th>
<th>Combustive materials</th>
<th>Combustible materials</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Refer to 10.3 above.</td>
</tr>
</tbody>
</table>

10.6 Hazardous decomposition products:
Aqueous solution will react with aluminium, zinc, tin and their alloys evolving hydrogen gas which can form an explosive mixture when in contact with air.

### SECTION 11: Toxicological information

The experimental information related to the eco-toxicological properties of the product itself is not available.

11.1 Information on toxicological effects

- Oral LD50 (rat) : > 5000 mg/kg bw
- LC50 (rat) : > 2.06 g/m³
- Dermal LD50 (rat) : > 5000 mg/kg bw

All symptoms of acute toxicity, respiratory tract, skin contact and eye contact are due to high alkalinity.

11.2 Dangerous health implications:
In case of exposure that is repetitive, prolonged or at concentrations higher than recommended by the occupational exposure limits, it may result in adverse effects on health depending on the means of exposure:

A. Ingestion (acute effect):
- Acute toxicity: Based on available data, the classification criteria are met. Refer to Section 2.
- Corrosively/Irritability: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect.

B. Inhalation (acute effect):
- Acute toxicity: Based on available data, the classification criteria are met. Refer to Section 2.
- Corrosively/Irritability: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect.

C. Contact with the skin and the eyes (acute effect):
- Contact with the skin: Based on available data, the classification criteria are met. Refer to Section 2.
- Contact with the eyes: Based on available data, the classification criteria are met. Refer to Section 2.

D. CMR effects (carcinogenicity, mutagenicity and toxicity to reproduction):
- Carcinogenicity: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for the effects mentioned.
- Mutagenicity: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect.
- Reproductive toxicity: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect.
E. Sensitizing effects:
- Respiratory: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect.
- Cutaneous: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect.

F. Specific target organ toxicity (STOT)-single time exposure:
Based on available data, the classification criteria are met. Refer to Section 2.

G. Specific target organ toxicity (STOT)-repeated exposure:
- Specific target organ toxicity (STOT)-repeated exposure: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect.
- Skin: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect.

H. Aspiration hazard:
Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect.

Other information:
Non-applicable

Specific toxicology information on the substance:
No data available

SECTION 12: Ecological information

The experimental information related to the eco-toxicological properties of the product itself is not available.

12.1 Toxicity:

LC50 (48hr) - Fish (Leuciscus idus): > 146 mg/l
EC50 (24hr) - Daphnia magna: > 146 mg/l

12.2 Persistence and degradability:
Inorganic. Soluble silicates, upon dilution, rapidly depolymerise into molecular species indistinguishable from natural dissolved silica.

12.3 Bio accumulative potential:
Inorganic. Does not bio-accumulated.

12.4 Mobility in soil:
No information available.

12.5 Results of PBT and vPvB assessment:
Not classified as PBT or vPvB.

12.6 Other adverse effects:
The alkalinity of this material will have a local effect on ecosystems sensitive to changes in pH.

SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

13.1 Waste treatment methods

Product
Methods of disposal:
The generation of waste should be avoided or minimised wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Hazardous waste:
Non-hazardous waste.

Packaging
Methods of disposal:
The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Special precautions:
This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

<table>
<thead>
<tr>
<th>14.1 UN Number</th>
<th>Land transport (ADR/RID)</th>
<th>Inland waterway transport (AND/ADNR)</th>
<th>Sea Transport (IMDG)</th>
<th>Air transport (ICAO-TI/ IATA-DGR)</th>
</tr>
</thead>
</table>

| 14.2 UN proper shipping name | - | - | - | - |

| 14.3 Transport hazard class(es) | - | - | - | - |

| 14.4 Packing group | - | - | - | - |

<table>
<thead>
<tr>
<th>14.5 Environmental pollutants</th>
<th>Not Marine Pollutant</th>
<th>Not Marine Pollutant</th>
<th>Not Marine Pollutant</th>
<th>Not Marine Pollutant</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>14.6 Special precautions for user</th>
<th>No data available</th>
<th>No data available</th>
<th>No data available</th>
<th>No data available</th>
</tr>
</thead>
</table>

| 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code: | No data available | No data available | No data available | No data available |

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:
Candidate substances for authorisation under the Regulation (EC) 1907/2006 (REACH): Non-applicable
Substances included in Annex XIV of REACH ("Authorisation List") and sunset date: Non-applicable
Regulation (EC) 1005/2009, about substances that deplete the ozone layer: Non-applicable
Article 95, REGULATION (EU) No 528/2012: Non-applicable
Regulation (EU) No 649/2012, in relation to the import and export of hazardous chemical products: Non-applicable
Limitations to commercialisation and the use of certain dangerous substances and mixtures (Annex XVII REACH, etc. …): Non-applicable

Specific provisions in terms of protecting people or the environment:
It is recommended to use the information included in this safety data sheet as data used in a risk evaluation of the local circumstances in order to establish the necessary risk prevention measures for the manipulation, use, storage and disposal of this product.

Other legislation:
The product could be affected by sectorial legislation

15.2 Chemical Safety Assessment: Not available.

SECTION 16: Other information

Legislation related to safety data sheets:
This safety data sheet has been designed in accordance with ANNEX II-Guide to the compilation of safety data sheets of Regulation (EC) N° 1907/2006 (Regulation (EU) No 453/2010, Regulation (EC) No 2015/830)

Texts of the legislative phrases mentioned in section 2:
The phrases indicated do not refer to the product itself; they are present merely for informative purposes and refer to the individual components which appear in section 3.

Texts of the legislative phrases mentioned in section 3:
Not applicable.

CLP Regulation (EC) no 1272/2008 (refer to section 3):
Skin Irrit. 2: Skin Irritation, Category 2 - H315
Eye Dam. 2: Eye Damage, Category 1 - H318
STOT SE 3: Specific target organ (unknown) toxicity - single exposure, Category 3 - H335

Advice related to training:
Minimal training is recommended to prevent industrial risks for staff using this product, in order to facilitate their comprehension and interpretation of this safety data sheet, as well as the label on the product.

Principal bibliographical sources:
http://echa.europa.eu
www.dguv.de/ifa/gestis-dnel
http://eur-lex.europa.eu

Relevant P-, H- and EUH-phrases (number and full text)
H315 - Causes skin irritation
H318 - Causes serious eye damage
H335 - May cause respiratory irritation
P101 - If medical advice is needed, have product container or label at hand.
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P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
P405 - Store locked up.
P501 - Dispose of the contents/containers in accordance with the current legislation on waste treatment.

Abbreviations and acronyms:
ADR - European agreement concerning the international carriage of dangerous goods by road
IMDG - International maritime dangerous goods code
IATA - International Air Transport Association
ICAO - International Civil Aviation Organisation
COD - Chemical Oxygen Demand
BOD5 - 5-day biochemical oxygen demand
BCF - Bio concentration factor
Log-POW - Octanol–water partition coefficient
KOC - Partition coefficient of organic carbon

Date of revision : 30/06/2019
Version : 2

Notice to reader

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The information and recommendations contained in this Safety Data Sheet ("SDS") relate only to the specific material referred to herein (the "Material") and do not relate to the use of such Material in combination with any other material or process. The information and recommendations contained herein are believed to be current and correct as of the date of this SDS. HOWEVER, THE INFORMATION AND RECOMMENDATIONS ARE PRESENTED WITHOUT WARRANTY, REPRESENTATION OR LICENSE OF ANY KIND, EXPRESS OR IMPLIED, WITH RESPECT TO THEIR ACCURACY, CORRECTNESS OR COMPLETENESS, AND THE SELLER, SUPPLIER AND MANUFACTURER OF THE MATERIAL AND THEIR RESPECTIVE AFFILIATES (COLLECTIVELY, THE "SUPPLIER") DISCLAIM ALL LIABILITY FOR RELIANCE ON SUCH INFORMATION AND RECOMMENDATIONS.
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