SAFETY DATA SHEET

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier
Product Name: KASIL® SS Powder Potassium Silicate
Alternative names: Potassium silicate
CAS No.: 1312-76-1
EINECS No.: 215-199-1
REACH Registration No.

1.2 Relevant identified uses of the substance or mixture and uses advised against
Identified use(s): General purpose industrial chemical for use in a wide range of applications. Binding agent; Dust binding agent; Flame retardant or fire preventing agent; Flotation agent; Stabiliser; Viscosity control agent
Uses advised against: None known.

1.3 Details of the supplier of the safety data sheet
Company Identification: National Silicates
429 Kipling Ave
Toronto, ON M8Z 5C7
Telephone: 416-255-7771
E-mail: sds.uk@pqcorp.com

1.4 Emergency telephone number
Emergency Phone No.: National Silicates 416-255-7771
USA CHEMTREC 1-800-424-9300 (24 hrs)

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
GHS Classification:
- Carcinogen Category 1
- Skin Irrit. 2
- Eye Irrit. 2
- STOT - single exposure Category 3

2.2 Label elements
Hazard pictogram(s):

Signal word(s): Danger
Hazard statement(s)
H315: Causes skin irritation.
H319: Causes serious eye irritation.
H335: May cause respiratory irritation.
H350: May cause cancer. (Inhalation)

Precautionary statement(s)
P201: Obtain special instructions before use.
P202: Do not handle until all safety precautions have been read and understood.
P261: Avoid breathing dust.
P262: Do not get in eyes, on skin, or on clothing.
P264: Wash (hands and exposed skin) thoroughly after handling.
P271: Use only outdoors or in a well-ventilated area.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. 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.
P308+P313: IF exposed or concerned: Get medical advice/attention. P332+P313: If skin irritation occurs: Get medical advice/attention. P362: Take off contaminated clothing and wash before reuse. P405: Store locked up.
P501: Dispose of contents/container to: Disposal should be in accordance with local, state or national legislation.

2.3 Other hazards
Not classified as PBT or vPvB. Can etch glass if not promptly removed.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredient(s)</th>
<th>%W/W</th>
<th>CAS No.</th>
<th>EINECS No. / REACH Registration</th>
<th>Hazard symbol(s) and hazard statement(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicic acid, potassium salt</td>
<td>&gt; 99</td>
<td>1312-76-1</td>
<td>215-199-1</td>
<td>H319 : Eye Irrit. 2 ; H315 : Skin Irrit. 2 ; H335 : STOT SE 3 ;</td>
</tr>
<tr>
<td>Crystalline silica</td>
<td>&lt;1</td>
<td>14808-60-7</td>
<td>2388784</td>
<td>Carcinogen Category 1</td>
</tr>
</tbody>
</table>

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures
Eye Contact
Irrigate with eyewash solution or clean water, holding the eyelids apart, for at least 15 minutes. Obtain immediate medical attention.

Skin Contact
Wash affected skin with plenty of water. If symptoms develop, obtain medical attention.

Inhalation
Remove patient from exposure, keep warm and at rest. Obtain medical attention.

Ingestion
Do not induce vomiting. Wash out mouth with water and give 200-300 ml (half a pint) of water to drink. Obtain medical attention.

4.2 Most important symptoms and effects, both acute and delayed
Alkaline.
Irritating to eyes, respiratory system and skin. The toxicity of potassium silicate is dependent on the silica to alkali ratio and on the pH.
4.3 Indication of any immediate medical attention and special treatment needed

Obtain immediate medical attention.

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Extinguishing media
Suitable Extinguishing Media: Compatible with all standard fire fighting techniques.
Unsuitable extinguishing Media: None known.

5.2 Special hazards arising from the substance or mixture
Not applicable. Inorganic powder or granules. Non-combustible.

5.3 Advice for fire-fighters
None.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Wear suitable protective clothing. Wear eye/face protection. An approved dust mask should be worn if dust is generated during handling. See Section: 8.2

6.2 Environmental precautions
Do not allow to enter drains, sewers or watercourses. Advise Authorities if spillage has entered water course or sewer or has contaminated soil or vegetation.

6.3 Methods and materials for containment and cleaning up
Caution - spillages may be slippery. Avoid generation of dust. Sweep or preferably vacuum up and collect in suitable containers for recovery or disposal. Transfer to a container for disposal or recovery.

6.4 Reference to other sections
See Also Section 8.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid contact with eyes, skin and clothing. Avoid generation of dust. Emergency shower and eye wash facilities should be readily available. See Also Section 8.

7.2 Conditions for safe storage, including any incompatibilities
Keep container tightly closed and dry. Unsuitable containers: Aluminium See Also Section 10.

7.3 Specific end use(s)
See also Annex to the extended Safety Data Sheet.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

<table>
<thead>
<tr>
<th>SUBSTANCE.</th>
<th>Occupational Exposure Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicic acid, potassium salt</td>
<td>No Occupational Exposure Limit assigned. An exposure limit of 2 mg/m3 (15 min TWA) is recommended by analogy with potassium hydroxide (UK EH40).</td>
</tr>
<tr>
<td>Crystalline silica</td>
<td>OSHA PEL 10 mg/m3 / %SiO2+2 (Respirable) ACGIH TLV 0.05 mg/m3 Respirable</td>
</tr>
</tbody>
</table>

8.2 Exposure controls
Wear protective equipment to comply with good occupational hygiene practice. Do not eat, drink or smoke at the work place.
8.2.1 Appropriate engineering controls

Engineering methods to prevent or control exposure are preferred. Methods include process or personnel enclosure, mechanical ventilation (dilution and local exhaust), and control of process conditions.

8.2.2 Personal Protection

Respiratory protection

Avoid inhalation of dusts. Wear suitable respiratory protective equipment if working in confined spaces with inadequate ventilation or where there is any risk of the exposure limits being exceeded. Advice on respiratory protective equipment is given in the HSE (Health and Safety Executive) publication HS(G)53. Dust mask: FFP2 (EN 149).

Eye/face protection

Chemical goggles (EN 166).

Skin protection

Wear suitable protective clothing and gloves. Plastic or rubber gloves. For example EN374-3, level 6 breakthrough time (>480min).

Wear suitable overalls. For example EN ISO 13982 (dust), EN 14605 (liquid splashes).

8.2.3 Environmental Exposure Controls

The primary hazard of potassium silicate is the alkalinity. Avoid generation of dust. Avoid release to the environment.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance

Flakes. White

Odour

Odourless.

Odour Threshold (ppm)

Not applicable.

pH (Value)

Alkaline. 11-12

Freezing Point (°C)

Not applicable.

Melting Point (°C)

> 1000

Boiling Point (°C)

Not applicable.

Flash Point (°C) [Closed cup]

Not applicable.

Evaporation rate

Not applicable.

Flammability (solid, gas)

Not applicable.

Explosive Limit Ranges

Not applicable.

Vapour pressure (Pascal)

No data.

Vapour Density (Air=1)

No data.

Density (g/ml)

Approximately 0.42 lbs/ft3 untamped.

Solubility (Water)

Soluble.

Solubility (Other)

No data.

Partition Coefficient

No data.

Auto Ignition Point (°C)

Not applicable.

Decomposition Temperature (°C)

Not applicable.

Viscosity (mPa. s)

Not applicable.

Explosive properties

Not applicable.

Oxidising Properties

Not applicable.

9.2 Other information

No data.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

See Section: 10.3

10.2 Chemical stability

Stable.
10.3 Possibility of hazardous reactions
When arc welding vessels containing aqueous solutions of this material, take care to control any explosion risk from hydrogen evolved by electrolysis. Aqueous solutions will react with aluminium, zinc, tin and their alloys evolving hydrogen gas which can form an explosive mixture with air. Can react violently if in contact with acids. Can react with sugar residues to form carbon monoxide.

10.4 Conditions to avoid
See Section: 10.3

10.5 Incompatible materials
See Section: 10.3

10.6 Hazardous decomposition product(s)
None known.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
Ingestion
All symptoms of acute toxicity are due to high alkalinity. Material will cause irritation. Oral LD50 (rat) >5000 mg/kg bw

Inhalation
Dust is irritant to the respiratory tract. All symptoms of acute toxicity are due to high alkalinity. Inhalation LC50 (rat) >2.06 g/m³

Skin Contact
Dermal LD50 (rat) >5000 mg/kg bw

Eye Contact
Material will cause severe irritation.

Skin corrosion/irritation
Material will cause irritation.

Serious eye damage/irritation
Irritating to eyes.

Sensitisation
Not sensitising.

Mutagenicity
No evidence of genotoxicity. In vitro/in vivo negative.

Carcinogenicity
Cancer hazard. Contains crystalline silica which can cause cancer and delayed lung injury (silicosis). Crystalline silica is listed by US NTP as a known human carcinogen, and it is classified by IARC in Group 1: materials for which there is sufficient evidence in humans for carcinogenicity.

Reproductive toxicity
No evidence of reproductive toxicity or developmental toxicity.

STOT - single exposure
Irritating to respiratory system.

STOT - repeated exposure
159 mg/kg bw/d
Prolonged or repeated inhalation of crystalline silica causes lung diseases including silicosis, emphysema, obstructive airway disease and lung cancer.

Aspiration hazard
Not classified

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity
Fish (Leuciscus idus) LC50 (48 hour) >146 mg/l

12.2 Persistence and degradability
Aquatic invertebrates: (Daphnia magna) EC50 (24 hour) >146 mg/l
Inorganic. Soluble silicates, upon dilution, rapidly depolymerise into molecular species indistinguishable from natural dissolved silica.

12.3 Bioaccumulative potential
Inorganic. The substance has no potential for bioaccumulation.

12.4 Mobility in soil
Not applicable.

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
13.1 Waste treatment methods
Discharge of this product to sewage treatment works is dependent on local regulations with regard to pH controls. Dispose of this material and its container to hazardous or special waste collection point.
This material is classified as hazardous waste under EC Directive 2008/98/EC. This material is classified as hazardous waste under the Hazardous Waste (England and Wales) Regulations SI 2005 No. 894.
Disposal should be in accordance with local, state or national legislation.

SECTION 14: TRANSPORT INFORMATION

14.1 UN number
Not applicable.
14.2 Proper Shipping Name
Not applicable.
14.3 Transport hazard class(es)
Not applicable.
14.4 Packing group
Not applicable.
14.5 Environmental hazards
Not classified as a Marine Pollutant.
14.6 Special precautions for user
No special packaging requirements.
Unsuitable containers: Aluminium
Not applicable.
14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
Not applicable.

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
TSCA Inventory Status: Reported/Included.
AICS Inventory Status: Reported/Included.
DSL/NDSL Inventory Status: Reported/Included.
Proposition 65 (California) : SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM :
Crystalline silica
SARA
Not an Extremely Hazardous Substance under §302. Not a Toxic Chemical under §313. Reportable as a hazardous substance. Hazard Categories under §§311/312:
Acute, Chronic. Check with your Local Emergency Planning Committee for reportable quantities.
German Water Hazard Classification VwVwS: Product ID number 1316, WGK class 1 (low hazard to water).

15.2 Chemical Safety Assessment
A Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

SECTION 16: OTHER INFORMATION

Data referenced in this eSDS is from company-owned information and from data legitimately accessed by PQ Corporation through membership of Industry Consortia or other agreements. This includes data relating to toxicology, ecotoxicology, DNELs, PNECs and other information in this eSDS and its annex.

This SDS was last reviewed: 02/2016
The following sections contain revisions or new statements: No significant changes required to this version at last review.
Signal word(s) Danger
GLOSSARY
H319: Causes serious eye irritation.
H315: Causes skin irritation.
H335: May cause respiratory irritation.
STOT SE 3 : Specific target organ toxicity — single exposure Category 3
R36/37/38: Irritating to eyes, respiratory system and skin.
DNEL : Derived No Effect Level
PNEC : Predicted No Effect Concentration
PBT: Persistent, Bioaccumulative and Toxic
THE INFORMATION ON THIS SAFETY DATA SHEET IS BELIEVED TO BE ACCURATE AND IT IS THE
BEST INFORMATION AVAILABLE TO NATIONAL SILICATES THIS DOCUMENT IS INTENDED ONLY
AS A GUIDE TO THE APPROPRIATE PRECAUTIONS FOR HANDLING A CHEMICAL BY A PERSON
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