National Silicates
an affiliate of PQ Corporation

MSDS

MATERIAL SAFETY DATA SHEET

Trade Name: **KASIL® 1 Potassium Silicate Solution**
Date Prepared: **April 5, 2012**

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product name: **KASIL® 1 Potassium silicate solution**
Product description: **A 2.50 weight ratio potassium silicate, 29.1% solution in water**
Product Use: **Binder for cements & fluxes, cleaning compounds**
Manufacturer: **PQ Corporation**
P. O. Box 840, Valley Forge, PA USA
Phone number: 610-651-4200
Supplier: **National Silicates**
429 Kipling Ave, Etobicoke, ON M8Z 5C7
Phone number: 416-255-7771
Fax number: 416-201-4347
In case of emergency call: **1 416-255-7771**

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical and Common Name	*CAS Registry Number*	*Wt. %*	*OSHA PEL*	*ACGIH TLV*
Water	**7732-18-5**	**70.9%**	**Not Established**	**Not Established**
Silicic acid, potassium salt; Potassium silicate	**1312-76-1**	**29.1%**	**Not Established**	**Not Established**

3. HAZARDS IDENTIFICATION

Emergency Overview: **Clear to hazy, colorless, odorless, thick liquid. Causes mild irritation, slight skin irritation, and digestive tract irritation. Spray mist causes irritation to respiratory tract. High pH is harmful to aquatic life. Noncombustible. Spills are slippery. Reacts with acids, ammonium salts, reactive metals and some organics.**
Eye contact: **Causes mild irritation to the eyes.**
Skin contact: **Causes slight irritation to the skin.**
Inhalation: **Spray mist irritating to respiratory tract.**
Ingestion: **May cause irritation to mouth, esophagus, and stomach.**
Chronic hazards: **No known chronic hazards. Not listed by NTP, IARC or OSHA as a carcinogen.**
Physical hazards: **Dries to form glass film which can easily cut skin. Spilled material is very slippery. Can etch glass if not promptly removed.**

4. FIRST AID MEASURES

Eye: **In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.**

Skin: **In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention.**

Inhalation: **Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.**

Ingestion: **If swallowed, DO NOT induce vomiting. Get medical attention immediately. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person.**

5. FIRE FIGHTING MEASURES

Flammable limits: **This material is noncombustible.**

Extinguishing Media: **This material is compatible with all extinguishing media**

Hazards to fire-fighters: **See Section 3 for information on hazards when this material is present in the area of a fire.**

Fire-fighting equipment: **The following protective equipment for fire fighters is recommended when this material is present in the area of a fire: chemical goggles, body-covering protective clothing, chemical resistant gloves, and rubber boots.**

Hazardous Combustion Products: **Not available**

Explosion Data:

Sensitivity to mechanical impact and static discharge: **Not available**

6. ACCIDENTAL RELEASE MEASURES

Personal protection: **Wear chemical goggles, body-covering protective clothing, chemical resistant gloves, and rubber boots. See section 8.**

Environmental Hazards: **Sinks and mixes with water. High pH of this material is harmful to aquatic life, see Section 12. Only water will evaporate from a spill of this material.**

Small spill cleanup: **Mop up and neutralize liquid, dispose in accordance with federal, provincial and local regulations or permits.**

Large spill cleanup: **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, if possible. Use sand or earth to contain spilled material. If containment is impossible, neutralize contaminated area and flush with large quantities of water.**

CERCLA RQ (US): **There is no CERCLA Reportable Quantity for this material. If a spill goes off site, notification of state and local authorities is recommended.**

7. HANDLING AND STORAGE

Handling: **Avoid contact with eyes, skin and clothing. Avoid breathing spray mist. Keep container closed. Promptly clean residue from closures with cloth dampened with water. Promptly clean up spills.**

Storage: **Keep containers closed. Store in clean steel or plastic containers. Separate from acids, reactive metals, and ammonium salts. Storage temperature 0-95º C. Loading temperature 45-95 º C. Do not store in aluminum, fiberglass, copper, brass, zinc or galvanized containers.**

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls: **Use with adequate ventilation. Keep containers closed. Safety shower and eyewash fountain should be within direct access.**

Respiratory protection: **Use a NIOSH-approved dust and mist respirator where spray mist occurs. Observe Provincial regulations for respirator use.**

Skin protection: **Wear body-covering protective clothing and gloves.**

Eye protection: **Wear chemical goggles.**

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: **Thick liquid.**
Color: **Clear to hazy white.**
Odor: **Odorless or musty odor.**
Odor Threshold: **Not available**
pH: **11.3**
Specific gravity: **1.26 g/cm$_3$ (20ºC), 29.8º Bé, 10.50 lbs/gal**
Solubility in water: **Miscible.**
Flashpoint: **Not applicable**
Auto-ignition Temperature: **Not applicable**
Vapor Pressure: **Not applicable**
Vapor Density: **Not applicable**
Evaporation Rate: **Not applicable**
Boiling Point: **Not applicable**
Freezing Point: **Not applicable**
Coefficient of water/oil Distribution: **Not applicable**

10. STABILITY AND REACTIVITY

Stability: **This material is stable under all conditions of use and storage.**
Conditions to avoid: **None.**
Materials to avoid: **Gels and generates heat when mixed with acid. May react with ammonium salts resulting in evolution of ammonia gas. Flammable hydrogen gas may be produced on contact with aluminum, tin, lead, and zinc.**
Hazardous decomposition products: **Hydrogen.**

11. TOXICOLOGICAL INFORMATION

Acute Data: **When tested for primary irritation potential, this material caused moderate irritation to the eyes and slight irritation to the skin. Human experience indicates that irritation occurs when potassium silicates get on clothes at the collar, cuffs or other areas where abrasion may occur. The acute oral toxicity of this product has not been tested. When chemically similar sodium silicates were tested on a 100% solids basis, their single dose acute oral LD_{50} in rats ranged from 1500 mg/kg to 3200 mg/kg. The acute oral lethality resulted from nonspecific causes.**

Subchronic Data: **The subchronic toxicity of this material has not been tested. In a study of rats 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 potassium silicate administration were observed in any of the dosage groups. Another study reported adverse effects to the kidneys of dogs fed potassium 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.**

Special Studies: **Frequent ingestion over extended periods of time of gram quantities of silicates is associated with the formation of kidney stones and other siliceous urinary calculi in humans.**
Mutagenicity: The mutagenic potential of this material has not been tested. Chemically similar sodium silicate was not mutagenic to the bacterium E. Coli when tested in a mutagenicity bioassay.
Carcinogenicity: There are no known reports of carcinogenicity of potassium silicates. Potassium silicate is not listed by IARC, NTP or OSHA as a carcinogen.
Sensitization to product: Not applicable
Reproductive toxicity: Not applicable
Teratogenicity: Not applicable
Name of toxicologically synergistic products: Not applicable

12. ECOLOGICAL INFORMATION

Ecotoxicity: **Several terrestrial toxicity assessments have been performed with potassium silicate solutions using Environment Canada test methods. The following data is reported: seed germination, seedling emergence, root elongation and earthworm survival LC50 / EC50, LC25 / EC25 > 100 - non-toxic. The following data is reported for chemically similar sodium silicates on a 100% solids basis: A 96 hour median tolerance for fish (Gambusia affnis) of 2320 ppm; a 96 hour median tolerance for water fleas (Daphnia magna) of 247 ppm; a 96 hour median tolerance for snail eggs (Lymnea) of 632 ppm; and a 96 hour median tolerance for Amphipoda of 160 ppm. This product contains approximately 29.1% potassium silicate.**

Environmental Fate: **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. Where abnormally low natural silica concentrations exist (less than 0.1 ppm), dissolved silica may be a limiting nutrient for diatoms and a few other aquatic algal species. However, the addition of excess dissolved silica over the limiting concentration will not stimulate the growth of diatom populations; their growth rate is independent of silica concentration once the limiting concentration is exceeded. Neither silica nor potassium will appreciably bioconcentrate up the food chain.**

Physical/Chemical: **Sinks and mixes with water. Only water will evaporate from this material.**

13. DISPOSAL CONSIDERATIONS

Disposal Method: **Dispose in accordance with federal, provincial and local regulations.**

14. TRANSPORT INFORMATION

TDG UN Status: **This material is not regulated hazardous material for transportation.**

15. REGULATORY INFORMATION

WHMIS (Canada):	**Class D2B** **This product has been classified in accordance with the hazard criteria of the *Controlled Products Regulations* and the MSDS contains all the information required by the *Controlled Products Regulations*.**
DSL (Canada):	**All components of this formulation are listed on the CEPA-DSL**
CERCLA (US):	**No CERCLA Reportable Quantity has been established for this material.**
SARA TITLE III (US):	**Not an Extremely Hazardous Substance under §302. Not a Toxic Chemical under §313. Hazard Categories under §§311/312: Acute**
TSCA (US):	**All ingredients of this material are listed on the TSCA inventory.**
FDA:	**Potassium silicate is regarded as GRAS (Generally Recognized As Safe) as a corrosion preventative in potable water.**

16. OTHER INFORMATION

Prepared by: **EHS Dept**
Supersedes revision of: **May 18, 2009**

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 TRAINED IN CHEMICAL HANDLING. NATIONAL SILICATES MAKES NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED WITH RESPECT TO SUCH INFORMATION OR THE PRODUCT TO WHICH IT RELATES, AND WE ASSUME NO LIABILITY RESULTING FROM THE USE OR HANDLING OF THE PRODUCT TO WHICH THIS SAFETY DATA SHEET RELATES. USERS AND HANDLERS OF THIS PRODUCT SHOULD MAKE THEIR OWN INVESTIGATIONS TO DETERMINE THE SUITABILITY OF THE INFORMATION PROVIDED HEREIN FOR THEIR OWN PURPOSES.