

CARBON ELITE HARD K1

SAFETY DATA SHEET

Section I – COMPANY AND PRODUCT IDENTIFICATION

Supplier

CARBON DIAMOND ABRASIVES
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Product/Chemical Name: CARBON ELITE HARD K1
Chemical Description: Potassium silicate solution
Recommended Use: Concrete densifier

Section II – HAZARDS IDENTIFICATION

Poison Schedule:

Not scheduled

Classification:

Hazardous substance, non-Dangerous Substance.

Classified as Hazardous according to the Globally Harmonised System of Classification and Labelling of Chemicals (GHS) including Work, Health and Safety Regulations, Australia.

Label elements:



Signal word:

Warning

Hazard classification:

Acute Toxicity - Dermal: Category 5

Eye Damage/Irritation: Category 2A

Skin Corrosion/Irritation: Category 2

Hazard statement(s):

H313 May be harmful in contact with skin.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

Precautionary statement(s) Prevention:

P264 Wash contaminated skin thoroughly after handling.

P280 Wear protective gloves/protective clothing/eye protection/face protection

Precautionary statement(s) Response:

P302+P352 IF ON SKIN: Wash with plenty of soap and water.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P312 Call a POISON CENTER or doctor/physician if you feel unwell.

P332+P313 If skin irritation occurs: Get medical advice/attention.

P337+P313 If eye irritation persists: Get medical advice/attention.

P362 Take off contaminated clothing and wash before reuse.

Other information:

HSNO Approval Number: HSR004658

Haz Classes: 6.1D(oral), 6.3A, 6.4A, 9.3C

Section III – COMPOSITION/INFORMATION ON INGREDIENTS

Mixture

Chemical description	CAS Number	% Weight
Water	7732-18-5	30-60
Potassium silicate	1312-76-1	30-60

Section IV – FIRST – AID MEASURES

Swallowed:

Immediately rinse mouth with water. Repeat until product is thoroughly removed. Give water to drink. DO NOT induce vomiting due to risk of further damage. If vomiting occurs give water to drink to further dilute the product. Get medical attention. Contact the Poisons Information Centre.

Eye:

Hold eyelids apart and flush the eyes continuously with running water. Continue flushing until advised to stop by the Poisons Information Centre, a doctor or at least 15 minutes. If irritation develops seek medical attention.

Skin:

Immediately wash contaminated skin with plenty of water. Soaked clothing should be removed while under the safety shower and skin washed with running water for a minimum of 30 minutes. No attempt should be made to neutralise the alkali with acid solutions, as this could aggravate the burns. Get medical attention if health effects develop or persist.

Inhaled:

Not expected to be an inhalation hazard under normal use. Remove victim to fresh air. Seek medical attention if health effects develop or persist.

First Aid Facilities:

Safety shower and eye wash facilities.

Advice to Doctor:

Treat symptomatically as for strong alkalis.

Section IV – FIRE-FIGHTING MEASURES

Suitable Extinguishing Media:

Compatible with dry chemical water spray, regular foam and carbon dioxide fire extinguishing media.

Unsuitable Extinguishing Media:

No media identified as unsuitable.

Specific hazards arising from the substance or mixture:

Aqueous solution, not flammable under normal conditions of use. Flammable hydrogen gas may be produced on prolonged contact with metals such as aluminium, tin, lead and zinc.

Special protective equipment:

Chemical goggles, body-covering protective clothing, chemical resistant gloves, and rubber boots.

Decomposition temperature:

Water boils off at 105 to 108°C.

Section VI – ACCIDENTAL RELEASE MEASURES

Personal precautions:

Avoid contact with skin and eyes and avoid breathing any fumes formed. Dries to form glass film which can easily cut skin. Spilled liquids are very slippery. Wear appropriate personal protective equipment as recommended in Section VIII.

Environmental precautions:

Sinks and mixes with water. Liquid is alkaline and may increase the pH. High pH can be harmful to aquatic life. Avoid release into water systems and sewers.

Methods for cleaning up or taking up:

Small spills:

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. Shovel dried waste into suitable container and dispose of in accordance with Section XIII.

Large spills:

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 using sand or earth. Spilled liquid may be collected using a vacuum truck. If containment is impossible, neutralize contaminated area and flush with large quantities of water. Cover remaining liquid with sand or earth and shovel dried material into suitable container. Dispose of any material collected in accordance with Section XIII.

Section VII HANDLING AND STORAGE

Handling:

Avoid contact with eyes, skin and clothing. Avoid breathing spray mist. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Take appropriate precautions when handling bulk product that is transported/shipped whilst hot as it can cause thermal burns. Wear appropriate personal protective equipment as recommended in Section 8. Keep containers closed. Promptly clean residue from closures with cloth. Do not store in aluminum, fiberglass, copper, brass, zinc or galvanized containers. Store away from acids and foodstuffs. Store in clean steel or plastic containers. Separate from acids, reactive metals, and ammonium salts.

Storage:

Store in accordance with all local regulations and codes of practice. Ensure containers are labelled and kept closed when not in. Storage temperature 0-70°C. Loading temperature 10-50°C. Mild steel is the most suitable material of construction for drums, tanks, valves, pipework, 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.

Section VIII EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure information:

No exposure standards have been established for the ingredients in this product as published by Safe Work Australia Workplace Exposure Standards. A peak limitation limit of 2mg/m³ TWA) is recommended by analogy with

potassium hydroxide. 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. This standard is the manufacturers recommended limit for good practice. All atmospheric contamination should be minimized; avoid creating mists or vapours.

Engineering controls:

Use in well ventilated area. Avoid generating and inhaling mists.

Personal protection:

The following Australian and New Zealand Standards will provide general advice regarding safety clothing and equipment: Respiratory equipment: AS/NZS 1715, Protective Gloves: AS 2161, Industrial Clothing: AS2919, Industrial Eye Protection: AS1336 and AS/NZS 1337, Occupational Protective Footwear: AS/NZS2210.

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. Consult a respiratory equipment supplier to aid selection of the appropriate type.

Eye protection:

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. Ensure a suitable eyewash station is within the immediate vicinity.

Hand Protection

Wear chemical resistant gloves. If contact is likely wear the use of full arm length gauntlets is recommended. Dried silicate can present physical hazards including cuts and abrasions. Wear cut resistant gloves if handling dried silicate.

Personal Protective Equipment

Avoid skin and eye contact. Avoid inhaling the vapour or mist. Follow normal industrial safety practices. The use of protective clothing and equipment depends on the degree and nature of exposure. Wear chemical resistant overalls, a full apron or similar protective clothing. Wear appropriate chemical resistant protective boots.

Hygiene Measures

Wash contaminated clothing and protective equipment before storing and re-using. The use of barrier cream is recommended.

Other information:

Environmental Controls: Ensure material is used in an appropriately bunded area to prevent release into soil, water systems and sewers.

Section IX PHYSICAL AND CHEMICAL PROPERTIES

Form:	Liquid
Colour:	Clear to hazy, colourless
Odour:	Odourless
Decomposition temperature:	Water boils off at 105 to 108°C
Melting point:	0°C approximately
Boiling point:	105 to 108°C
Solubility in water:	Soluble
Specific gravity:	1.2 to 1.6 (typical range)
pH:	11 to 13 (concentrate)
Volatiles:	30-60%
Vapour pressure (mmHg):	Not determined
Vapour density (air=1):	Not applicable
Partition component: n-octanol/water	log P (octanol/water) – Not available
Partition component:	
Flash point:	Not applicable to aqueous solutions.
Flammability: normal	Non-combustible liquid. The aqueous solution is not flammable under conditions of use. Flammable hydrogen gas may be produced on prolonged contact with metals such as aluminium, tin, lead and zinc.
Auto ignition temperature:	Not available to aqueous solutions
Flammable limits:	Upper: Not available to aqueous solutions; Lower: Not available to aqueous solutions
Other information:	
Chemical Formula: $xSiO_2/K_2O$ (x ranges from 2.6–3.2)	Corrosiveness: Some corrosive effects on Aluminium, Copper, Tin, Zinc, Lead etc

Section X – STABILITY AND REACTIVITY

Conditions to avoid:
Leaving solutions exposed to carbon dioxide in the air. Prolonged storage above 50C or below 10°C.

Incompatible materials:
Will react exothermically with acids.

Chemical stability:
Stable in sealed containers. Absorbs Carbon Dioxide on exposure to air, results in the deposition of Insoluble Silica.

Substances to avoid:
Reacts with water. Reaction causes the formation of: ethanol , methanol . Strong oxidising agents, strong acids.

Hazardous reactions:
If Overheated: The solution will boil and irritating Potassium Silicate containing mists will be released.

Hazardous reaction:

Flammable hydrogen gas will form on reaction with aluminium, copper, zinc, etc. Gels and generates heat when mixed with acid. May react with ammonium salts resulting in evolution of ammonia gas.

Unsuitable Container Materials:

Potassium Silicate solutions are strongly alkaline and are not compatible with aluminium, copper, brass, bronze, zinc, tin and lead. Can etch glass if not properly removed.

Section XI – TOXICOLOGICAL INFORMATION

Acute Toxicity:

Oral:

LD50, rat: Not determined.

The acute oral toxicity of this product has not been tested. When chemically similar Sodium Silicates were tested on a 100% solid basis, their single dose acute oral LD50 in rats ranged from 1280 mg/kg to 3400 mg/kg. The acute oral lethality resulted from nonspecific causes. These products contain 30-60% Potassium Silicate thus each product is estimated to have an Acute Oral Toxicity LD50, rat: >3000 mg/kg

Dermal:

No data available.

Inhalation:

No data available.

Sensitisation:

In a mouse local lymph node assay, sodium metasilicate was not sensitising. In humans, a single case of contact urticaria elicited by sodium silicate is reported.

Skin Sensitisation:

In a mouse local lymph node assay, sodium metasilicate was not sensitising. In humans, a single case of contact urticaria elicited by sodium silicate is reported.

Germ cell mutagenicity:

In vitro, soluble silicates did not induce gene mutations in bacteria. Chemically similar sodium silicate was negative in an E. coli reverse mutation. In a modern guideline study that was performed in accordance with OECD TG 473, an aqueous sodium silicate solution (36% active ingredient, WR 3.3) induced no chromosomal aberrations in Chinese hamster V79 cells. From the available evidence it can be concluded that there is no evidence of a genotoxic potential for soluble silicates.

Carcinogenicity:

The information available does not indicate any potential for carcinogenicity. 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. Sodium Silicate is not listed by IARC, NTP or OSHA as a carcinogen.

Reproductive Toxicity:

In a developmental toxicity study, pregnant mice were administered chemically similar 12.5, 50 or 200 mg/kg bw/d sodium metasilicate in aqueous solution from day 0 until 17/18 of gestation by daily gavage. Litter size and fertility index were unaffected at concentrations up to and including 200 mg/kg bw/d. Furthermore, no developmental effects were observed up to and including 200 mg/kg bw/d. Also, in repeat dose toxicity studies with rats, mice and dogs the macroscopic and microscopic examination of reproductive organs did not reveal related effects. In summary, no indications of reproductive effects for silicates have been reported.

STOT-Single exposure:

No data available.

STOT-Repeated exposure:

No data available.

Aspiration hazard:

No data available.

Serious eye damage/irritation:

At concentrations of 35 % and 29 % (highest tested concentrations) potassium silicates with molar ratios of 3.4 was only slightly irritating to the eyes of rabbits. Results from non-validated in vitro assays with sodium silicates indicate that the severity of eye effects is inversely correlated with the molar ratio.

Skin corrosion/irritation:

When tested for primary skin irritation potential, this material produced irritation with a primary irritation index of 3 to abraded skin and 0 to intact skin. Human experience confirms that irritation occurs when this material gets on clothes at the collar, cuffs or other areas where abrasion may occur. Sodium silicates can be irritating to corrosive to the skin of rabbits, depending on their molar ratio and concentration. Irrespective of the counterion (Na⁺ or K⁺), silicates were found to be corrosive at molar ratios up to 1.6 and concentrations >50%. At molar ratios >1.6, silicates are irritating to the skin, while molar ratios >3.2 and concentrations <40% did not lead to irritative effects.

Subchronic/Chronic Toxicity:

Where rats were 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 Sodium Silicate administration were observed in any of the dosage groups. Another study reported adverse effects to the kidneys of dogs fed Sodium 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.

Section XII – ECOLOGICAL INFORMATION

Ecological information:

Avoid contaminating waterways. Soluble in water. Sinks and mixes with water. Only water will evaporate from this material.

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 and degradability:

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. Neither silica nor sodium will appreciably bioconcentrate up the food chain.

Bioaccumulation potential:

No data available.

Mobility in soil:

Expected to be mobile in soil. Diluted material rapidly depolymerises to yield dissolved silica in a form that is indistinguishable from natural dissolved silica.

Acute toxicity:

Fish:

Danio rerio, LC50 (96h) = 210mg/l (Molar Ratio Na MR 1.0)

Oncorhynchus mykiss, LC50 (96h) = 260-310mg/l (Molar Ratio Na MR 3.1)

Daphnia:

Daphnia magna, EC50 (48h) = 1700mg/l (Molar Ratio Na MR 3.2)

Algae:

Pseudomonas putida, EC0 (18h) = 348mg/l (Molar Ratio Na MR 3.46)

Pseudomonas putida, EC0 (30min) = 1000mg/l (Molar Ratio Na MR 1.0)

Section XIII – DISPOSAL CONSIDERATIONS

Disposal considerations:

Disposal to be in accordance with Local, State & Federal EPA waste regulations. Normally suitable for disposal at approved land waste site after dilution or neutralisation.

Special precautions for landfill or incineration:

After dilution or neutralisation may be landfilled. Not suitable for incineration.

Section XIV – TRANSPORT CONSIDERATIONS

Domestic transport:

Not classified as a Dangerous Good according to the Australian Code for the Transport of Dangerous Goods by Road and Rail. Not regulated for transport of Dangerous Goods: ADG7, UN, IATA, IMDG.

Sea transport:

Not classified as a Dangerous Good according to the Australian Code for the Transport of Dangerous Goods by Road and Rail. Not regulated for transport of Dangerous Goods: ADG7, UN, IATA, IMDG.

Air transport:

Not classified as a Dangerous Good according to the Australian Code for the Transport of Dangerous Goods by Road and Rail. Not regulated for transport of Dangerous Goods: ADG7, UN, IATA, IMDG.

Section XV – REGULATORY INFORMATION

Poisons Schedule:

S5

AICS:

All components of this material are listed on or exempt from the Australian Inventory of Chemical Substances (AICS).

Section XVI – OTHER INFORMATION

Date of Preparation or Last Revision of MSDS: 30 May 2025

Prepared by: Carbon Diamond Abrasives

Sources for data

Material Safety Data Sheets from Suppliers

Literature references.

ADG Code: Australian Code for the Transport of Dangerous Goods by Road and Rail, 7th Edition

AICS: Australian Inventory of Chemical Substances

ASCC: Office of the Australian Safety and Compensation Council

BCF: Bioconcentration Factor

CAS number: Chemical Abstracts Service Registry Number

CMR:	Carcinogenic, Mutagenic or toxic to Reproduction
DMEL:	Derived Minimum Effect Level
DNEL:	Desired NO Effect Level
EPA:	Environmental Protection Agency
GHS:	Globally Harmonised System of Classification and Labelling of Chemicals
Hazchem Code:	Emergency action code of numbers and letters that provide information to emergency services especially fire fighters
IARC:	International Agency for Research on Cancer
IOELV:	Indicative Occupational Exposure Limit Value
LC50:	Lethal Concentration, 50 percent
LD50:	Lethal Dose, 50 percent
NICNAS:	National Industrial Notification & Assessment Scheme
NIOSH:	National Institute for Occupational Safety & Health
NOAEL:	No Observed Adverse Effect Level
NOEC:	No Observed Effect Concentration
NOS:	Not otherwise specified
NTP:	National Toxicology Program (USA)
OEL:	Occupational Exposure Limit
OSHA:	Occupational Safety & Health Administration
PBT:	Persistent Bioaccumulative Toxic chemical
PMCC:	Pensky Martens Closed Cup
PNEC:	Predicted No Effect Concentration
R-Phrase:	Risk Phrase
STEL:	Short Term Exposure Limit
STOT-SE:	Specific Target Organ Toxicity (Single Exposure)
STOT-RE:	Specific Target Organ Toxicity (Repeated Exposure)
SUSMP:	Standard for the Uniform Scheduling of Medicines & Poisons
TWA:	Time Weighted Average
UN Number:	United Nations Number
vPvB:	Very Persistent and Very Bioaccumulative
WEEL:	Workplace Environmental Exposure Level
WEL-TWA:	Workplace Exposure Limit, Time Weighted Average