

# MATERIAL SAFETY DATA SHEET

## SECTION 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT IDENTIFIER		Pro-Silicate		WHMIS CLASSIFICATION		D2B (Eye, skin irritant)	
PRODUCT USE		Fertilizer					
MANUFACTURERS NAME		Greenstar Plant Products Inc.		SUPPLIERS NAME			
STREET ADDRESS		9430 198 <sup>th</sup> Street		STREET ADDRESS			
CITY	Langley	PROVINCE	BC	CITY		PROVINCE	
POSTAL CODE	V1M 3C8	EMERGENCY TELEPHONE	604-882-7686	POSTAL CODE		EMERGENCY TELEPHONE	
DATE	September 4, 2009	PREPARED BY	Greenstar Plant Products			PHONE NUMBER	

## SECTION 2 – COMPOSITION/INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENTS	%	CAS	LD <sub>50</sub> OF INGREDIENT	LC <sub>50</sub> OF INGREDIENT
Potassium Silicate Solution	20-30%	1312-76-1	LD50 (oral, rat) > 5000 mg/kg	NAV
Potassium Chloride	1-5%	7447-40-7	LD50 (oral, rat) 3020 mg/kg	NAV

## SECTION 3 – HAZARDS IDENTIFICATION

<b>EMERGENCY OVERVIEW</b>	Causes moderate eye irritation, slight skin irritation and digestive tract irritation. Effects on eyes and skin may be delayed and damage may occur without sensation or the onset of pain. Spray mist causes irritation to respiratory tract. Spills are slippery. Reacts with acids, ammonium salts, reactive metals and some organics. Potassium chloride ingredient may be toxic to blood & cardiovascular system.
<b>WHMIS SYMBOL(S):</b>	NAV
<b>EFFECTS OF ACUTE EXPOSURE TO PRODUCT</b>	
<b>EYE CONTACT</b>	Causes moderate eye irritation. Effects may be delayed.
<b>SKIN CONTACT</b>	Causes slight irritation to the skin. Effects may be delayed.
<b>INHALATION</b>	Spray mist irritating to respiratory tract.
<b>INGESTION</b>	May cause irritation to the mouth, esophagus and stomach. Symptoms of potassium poisoning may occur. These include slow heartbeat, accelerated breathing. Muscle weakness and in severe cases, paralysis.
<b>EFFECTS OF CHRONIC EXPOSURE TO PRODUCT</b>	
No known chronic hazards. Ingredients not listed by NTP, IARC, or OSHA as carcinogens.	

## SECTION 4 – FIRST AID MEASURES

<b>EYE CONTACT</b>	Prompt removal from the material is essential. Immediately flush eyes with running water for a minimum of 20 minutes. Hold eye lids open during flushing. If irritation persists repeat flushing. Obtain medical attention IMMEDIATELY. Do not transport victim unless the recommended flushing period is completed or flushing can be continued during transport.
<b>SKIN CONTACT</b>	Immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Seek medical attention if irritation occurs or persists.
<b>INHALATION</b>	Remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult give oxygen. Seek medical attention.
<b>INGESTION</b>	If swallowed DO NOT induce vomiting. Seek medical attention immediately. If victim is fully conscious and not convulsing, give a cupful of water to dilute the material. Never give anything by mouth to an unconscious person.

## PRO-SILICATE

### SECTION 5 – FIRE FIGHTING MEASURES

FLAMMABLE	Not Flammable	IF YES, UNDER WHAT CONDITIONS?		NAP	
MEANS OF EXTINCTION	Dry chemical, CO <sub>2</sub> , water spray, foam or fog.				
FLASHPOINT & METHOD	NAP	UPPER FLAMMABLE LIMIT	NAP	LOWER FLAMMABILITY LIMIT	NAP
AUTO IGNITION TEMPERATURE	Non Flammable	SENSITIVITY TO IMPACT	Not expected to be sensitive to impact	SENSITIVITY TO STATIC DISCHARGE	Not expected to be sensitive to static discharge
HAZARDOUS COMBUSTION PRODUCTS		Thermal decomposition products are toxic and may include oxides of carbon, potassium, and silicon. Corrosive and toxic hydrogen chloride and/or chlorine gases, and other toxic and irritating fumes and gases may be formed			

### SECTION 6 – ACCIDENTAL RELEASE MEASURES

LEAK & SPILL PROCEDURES	<b>Small Spill Clean Up:</b> Ventilate area. Mop up and neutralize liquid, then dispose in accordance with Federal, Provincial and municipal regulations.
	<b>Large Spill Clean Up:</b> Stop leak if without risk. Ventilate area. Keep unnecessary people away from the spill. Isolate area and deny entry. Contain spilled material within a dike of solid absorbent (sawdust, vermiculite, or clay). Neutralize carefully with weak acid to a pH of approx 6. Effervescence may result. Neutralization is expected to be exothermic. Wear protective clothing. Dispose of material in accordance with Federal, Provincial and municipal regulations. Spilled caustics are very slippery. Care must be taken to avoid falls.

### SECTION 7 – HANDLING AND STORAGE

HANDLING PROCEDURES & EQUIPMENT	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 REQUIREMENTS	Store in a cool, well ventilated area. Keep away from heat, sparks and flames. Keep containers closed. Do not store in aluminum, fiberglass, copper, brass, zinc or galvanized containers. Do not expose sealed containers to temperatures above 40°C. Avoid moisture contamination. Protect from direct sun light. Protect against physical damage.

### SECTION 8 – EXPOSURE CONTROL / PERSONAL PROTECTION

EXPOSURE LIMITS	NAV
ENGINEERING CONTROLS	General exhaust is acceptable. Local exhaust ventilation preferred. Make up air should be supplied balance air that is removed by local or general exhaust ventilation. Ventilate low lying areas such as sumps or pits where dense vapours may collect.
PERSONAL PROTECTIVE EQUIPMENT	
GLOVES	Gloves and protective clothing made from rubber should be impervious under conditions of use. Discard contaminated gloves. Prior to use, user should confirm impermeability.
RESPIRATOR	No specific guidelines available. A NIOSH/MSHA-approved air purifying respirator equipped with dust, mist, fume cartridges when concentrations are higher or unknown.
EYE PROTECTION	Safety glasses with side shields are recommended to prevent eye contact. Use chemical safety goggles when there is a potential for eye contact. Contact lenses should not be worn when working with this material.
FOOTWEAR	Wear impermeable boots. Spilled caustics are very slippery. Care must be taken to avoid falls.
CLOTHING	Wear long sleeved shirt and long pants
OTHER	Wear impermeable apron. Locate safety shower and eyewash station close to chemical handling area. Take all precautions to avoid personal contact.

**PRO-SILICATE****SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES**

PHYSICAL STATE	Viscous liquid	ODOUR & APPEARANCE	Odourless	ODOUR THRESHOLD	NAV
EVAPORATION RATE	NAV	BOILING POINT	100°C	FREEZING PT	NAV
PH	9.7	COEFFICIENT OF WATER/OIL DISTRIBUTION	NAV	SOLUBILITY IN WATER	Product miscible in water

**SECTION 10 – STABILITY AND REACTIVITY**

CHEMICAL STABILITY		
√ YES	This material is stable under normal conditions of use.	
NO	UNDER WHAT CONTDITIONS?	NAP
INCOMPATABILITY WITH OTHER SUBSTANCES		
√ YES	INCOMPATIBLE SUBSTANCES	Avoid strong oxidizers. Lewis or mineral acids. Product 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.
NO	NAP	
REACTIVE		
YES	UNDER WHAT CONDITIONS?	NAP
√ NO	Not reactive under normal conditions of use. Avoid high temperatures, sparks, open flames and all other sources of ignition.	
HAZARDOUS DECOMPOSITION PRODUCTS		Hydrogen gas.

**SECTION 11 – TOXICOLOGICAL INFORMATION**

EFFECTS OF ACUTE EXPOSURE	Product causes moderate irritation to the eye, & mild irritation to the skin. Human experience indicates that irritation occurs when potassium silicate get on clothes at the collar, cuffs or other areas where abrasion may occur.
EFFECTS OF CHRONIC EXPOSURE	The chronic effects of this product have not been tested. Rats fed chemically similar sodium silicate in drinking water for three months 200, 600 and 1800 ppm showed changes in blood chemistry but no specific changes to internal organs. Another study of potassium silicate reported adverse effects to the kidneys of dogs fed this substance in their diet at 2.4g/kg/day for 4 weeks, where rats fed the same dosage did not develop any treatment-related effects.
IRRITANCY OF PRODUCT	Product causes moderate irritation to the eye, & mild irritation to the skin.
RESPIRATORY SENSITIZATION	No evidence
SKIN SENSITIZATION	No evidence
CARCINOGENICITY - IARC	Ingredients not listed as carcinogens
CARCINOGENICITY - ACGIH	Ingredients not listed as carcinogens
REPRODUCTIVE TOXICITY	<b>Sodium Silicate:</b> Decreased number of births and survival to weaning was reported for rats fed sodium silicate in their drinking water at 600 and 1200 ppm.
TERATOGENICITY	No evidence
MUTAGENICITY	<b>Potassium Silicate:</b> The mutagenic potential of potassium silicate has not been tested. Chemically similar sodium silicate was not mutagenic to E. Coli. <b>Potassium chloride:</b> mutagenic for mammalian somatic cells and bacteria and/or yeast.
EMBRYOTOXICITY	No evidence
SYNERGISTIC PRODUCTS/EFFECTS	NAV

## PRO-SILICATE

### SECTION 12 – ECOLOGICAL INFORMATION

ECOTOXICITY	<p><b>Potassium Silicate:</b> The Ecotoxicity of this product has not been tested. The following data is reported for chemically sodium silicates on a 100% solids basis: 96 hour median tolerance:</p> <ul style="list-style-type: none"><li>▪ Fish (<i>Gambusia affinis</i>), 2320 ppm</li><li>▪ Water fleas (<i>Daphnia magna</i>), 247 ppm</li><li>▪ Snail eggs (<i>Lymnea</i>), 632 ppm</li><li>▪ Amphipoda, 160 ppm</li></ul> <p>Environmental Fate: Potassium Silicate is not persistent in aquatic systems, but its high pH when undiluted or un-neutralized is acutely harmful to aquatic life. Diluted product rapidly depolymerizes to yield dissolved silica in a form that is indistinguishable from natural dissolved silica. This product does not bioaccumulate except in species that use silica as a structural material such as diatoms and siliceous sponges. Excess dissolved silica will not stimulate the growth of diatom populations. Silica &amp; potassium will not appreciably bioconcentrate up the food chain.</p> <p><b>Potassium Chloride:</b> NAV</p>
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### SECTION 13 – DISPOSAL CONSIDERATIONS

WASTE DISPOSAL	Dispose of water in accordance with federal, provincial and municipal environmental regulations.
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### SECTION 14 – TRANSPORT INFORMATION

SHIPPING INFORMATION	
TDG	Not regulated for transport
DOT	Not regulated for transport

### SECTION 15 – REGULATORY INFORMATION

WHMIS CLASSIFICATION	D2B (eye and skin irritant)	OSHA	Not listed
SERA	Sera Title III: Not an Extremely Hazardous Substance under 302. Not a Toxic Chemical under 313	TSCA	All ingredients of this material are listed on the TSCA inventory.
<i>This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by CPR</i>			

### SECTION 16 – OTHER INFORMATION

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*As of the date of this document, the foregoing information is believed to be accurate and is provided in good faith to comply with applicable laws. However, no warranty or representation of law or fact, with respect to such information is intended or given.*