MATERIAL SAFETY DATA SHEET

Trade Name: Sodium Silicate

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product name:	Sodium Metasilicate, Anhydrous
Product description:	Granular anhydrous sodium metasilicate
Product Use:	Cleaning compounds & detergents

2. COMPOSITION/INFORMATION ON INGREDIENTS

DRIED PRODUCT RESIDUE CAN ACT AS A REDUCING AGENT. MAY BE HARMFUL IF SWALLOWED.

NFPA Hazard Ratings: Health - 3, Flammability - 1, Instability - 0

NOTE: Hazard indexes involves data review and interpretation that may vary among companies. It is intended only for rapid, general identification of the magnitude of the potential hazards. To adequately address safe handling, ALL information in this MSDS must be considered.

3. HAZARDS IDENTIFICATION

Emergency Overview:	White, odorless, powder. Causes mild eye irritation and slight skin irritation. Due to high pH of product, release into surface water is harmful to aquatic life. Noncombustible. Reacts with acids and some organics.
Eye contact:	Causes mild irritation to the eyes.
Skin contact:	Causes slight irritation to the skin.
Inhalation:	Dust is irritating to respiratory tract.
Ingestion:	May cause irritation to mouth, esophagus, and stomach. Large doses are harmful if swallowed.
Chronic hazards:	Cancer hazard. Contains crystalline silica, which can cause cancer and delayed lung injury (silicosis). Crystalline silica is listed by 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.
Physical hazards:	Contact with water produces alkaline solution.

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 large quantities of this material are swallowed, call a physician immediately, DO NOT induce vomiting unless directed to do so by a physician. 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.

Fire-fighting equipment:	Wear turnout gear when this material is present in the area of a fire.

6. ACCIDENTAL RELEASE MEASURES

Personal protection:	Wear safety goggles, body-covering clothing, chemical and abrasion-resistant gloves, and NIOSH-approved respiratory protection appropriate to the level of hazard where dust occurs.
Environmental Hazards:	Sinks and slowly dissolves in water. In aqueous solution, the high pH of this material is harmful to aquatic life.
Small spill cleanup:	Carefully shovel or sweep up spilled material and place in suitable container. Avoid generating dust. Use appropriate Personal Protective Equipment
Large spill cleanup:	Keep unnecessary people away; isolate hazard area and deny entry. Do not touch or walk through spilled material. Carefully shovel or sweep up spilled material and place in suitable container. Avoid generating dust. Use appropriate Personal Protective Equipment (PPE). See section 8. In case of contact with water, prevent runoff from entering into storm sewers and ditches which lead to natural waterways. Neutralize contaminated area and flush with large quantities of water. Comply with applicable environmental regulations.
CERCLA RQ:	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 dust. Keep container closed. Promptly clean up spills.
Storage:	Keep containers closed. Store in clean steel or plastic containers. Separate from acids, reactive metals, and ammonium salts. 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 station should be within direct access. Respiratory protection: Use appropriate NIOSH-approved respiratory protection where dust hazard may occur. Observe OSHA regulations for respirator use.
Skin protection:	Wear body-covering protective clothing and gloves.
Eye protection:	Wear safety glasses with side shields or chemical goggles.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Powder.
Color:	White.
Odor:	Odorless.
pH:	Approximately 11.3 (50% w/v slurry in water)
Bulk density:	Approximately 65 lbs/ft3 untamped, 102 lbs/ft3 tamped
Solubility in water:	Soluble in all proportions. Dissolves slowly at room temperature.

10. STABILITY AND REACTIVITY

Stability:	This material is stable under all conditions of use and storage.
Conditions to avoid:	None.
Materials to avoid:	Generates heat when mixed with acid. May react with ammonium salt solutions resulting in evolution of ammonia gas. Flammable hydrogen gas may be produced on contact with aluminum, tin, lead, and zinc when damp

	or wet.
Hazardous decomposition products:	Hydrogen.

11. TOXICOLOGICAL INFORMATION

Acute Data:	When tested for eye and skin irritation potential, a similar material caused mild irritation to the eyes and slight irritation to the skin. Human experience indicates that skin irritation occurs, particularly, when sodium silicates get on clothes at the collar, cuffs or other areas where contact and abrasion may occur. The acute oral toxicity of this product has not been tested. When sodium silicates were tested on a 100% solids basis, their single dose acute oral LD50 in rats ranged from 1500 mg/kg to 3200 mg/kg. The acute oral lethality resulted from nonspecific causes.
Subchronic Data:	In a study of rats fed 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 were reported for rats fed sodium silicate in their drinking water at 600 and 1200 ppm; also, their offspring had reduced survival to weaning.
Special Studies:	This material contains a small amount (0.1-1 Wt.%) of crystalline silica. Prolonged or repeated inhalation of crystalline silica causes lung diseases including silicosis, emphysema, obstructive airway disease and lung cancer. Crystalline silica is listed by 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. Sodium silicate was not mutagenic to the bacterium E. Coli when tested in a mutagenicity bioassay. There are no known reports of carcinogenicity of sodium silicates. 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. Sodium silicate is not listed by IARC, NTP or OSHA as a carcinogen.

12. ECOLOGICAL INFORMATION

Eco toxicity:	The following data is reported for 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.
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 sodium will appreciably

bioconcentrate up the food chain. Physical/Chemical: Sinks and mixes with water. Only water will evaporate from this material.

13. DISPOSAL CONSIDERATIONS

Classification:	Disposed material is not a hazardous waste.
Disposal Method:	Dispose in accordance with federal, state and local regulations.

14. TRANSPORT INFORMATION

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

15. REGULATORY INFORMATION

CERCLA:	No CERCLA Reportable Quantity has been established for this material.
SARA TITLE III:	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.
TSCA:	All ingredients of this material are listed on the TSCA inventory.

16. OTHER INFORMATION

THE RESPONSIBILITY TO PROVIDE A SAFE WORKPLACE REMAINS WITH THE USER. THE USER SHOULD CONSIDER THE HEALTH HAZARDS AND SAFETY INFORMATION CONTAINED HEREIN AS A GUIDE AND SHOULD TAKE THOSE PRECAUTIONS REQUIRED IN AN INDIVIDUAL OPERATION TO INSTRUCT EMPLOYEES AND DEVELOP WORK PRACTICE PROCEDURES FOR A SAFE WORK ENVIRONMENT. THE INFORMATION CONTAINED HEREIN IS, TO THE BEST OF OUR KNOWLEDGE AND BELIEF, ACCURATE. HOWEVER, SINCE THE CONDITIONS OF HANDLING AND USE ARE BEYOND OUR CONTROL, WE MAKE NO GUARANTEE OF RESULTS, AND ASSUME NO LIABILITY FOR DAMAGES INCURRED BY THE USE OF THIS MATERIAL. IT IS THE RESPONSIBILITY OF THE USER TO COMPLY WITH ALL APPLICABLE LAWS AND REGULATIONS.