MATERIAL SAFETY DATA SHEET (MSDS)

Product Identification

Synonyms :	Synonyms: Caustic soda; sodium hydroxide; sodium hydrate
CAS No :	1310-73-2
Molecular Weight :	40.00
Chemical Formula: NaOH :	NaOH

Composition/Information on Ingredients

- Ingredient CAS No Percent Hazardous
- Sodium Hydroxide 1310-73-2 99 - 100% Yes

Identification Emergency Overview

CORROSIVE REACTS WITH WATER, ACIDS AND OTHER MATERIALS.	
Health Rating:	3 Severe
Flammability Rating:	0 None
Reactivity Rating:	2 Moderate
Contact Rating:	4 Extreme (Corrosive)
Lab Protective Equip:	GOGGLES; LAB COAT; VENT HOOD; PROPERGLOVES
Storage Color Code:	White Stripe (Store Separately)

Potential Health Effects Inhalation:

Severe irritant. Effects from inhalation of dust or mist vary from mild irritation to serious damage of the upper respiratory tract, depending on severity of exposure. Symptoms may include sneezing, sore throat or runny nose. Severe pneumonitis may occur.

Ingestion:

Corrosive! Swallowing may cause severe burns of mouth, throat, and stomach. Severe scarring of tissue and death may result. Symptoms may include bleeding, vomiting, diarrhea, fall in blood pressure. Damage may appear days after exposure.

Skin Contact:

Corrosive! Contact with skin can cause irritation or severe burns and scarring with greater exposures.

Eye Contact:

Corrosive! Causes irritation of eyes, and with greater exposures it can cause burns that may result in permanent impairment of vision, even blindness.

Chronic Exposure:

Prolonged contact with dilute solutions or dust has a destructive effect upon tissue.

Aggravation of Pre-existing Conditions:

esPersons with pre-existing skin disorders or eye problems or impaired rpiratory function may be more susceptible to the effects of the substance.

First Aid Measures Inhalation

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion:

DO NOT INDUCE VOMITING! Give large quantities of water or milk if available. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin Contact:

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician, immediately. Wash clothing before reuse.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Note to Physician:

Perform endoscopy in all cases of suspected sodium hydroxide ingestion. In cases of severe esophageal corrosion, the use of therapeutic doses of steroids should be considered. General supportive measures with continual monitoring of gas exchange, acid-base balance, electrolytes, and fluid intake are also required.

Fire Fighting Measures Fire

Not considered to be a fire hazard. Hot or molten material can react violently with water. Can react with certain metals, such as aluminum, to generate flammable hydrogen gas.

Explosion:

Not considered to be an explosion hazard.

Fire Extinguishing Media:

Use any means suitable for extinguishing surrounding fire. Adding water to caustic solution generates large amounts of heat.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved selfcontained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

Accidental Release Measures

Ventilate area of leak or spill. Keep unnecessary and unprotected people away from area of spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust. Do not flush caustic residues to the sewer. Residues from spills can be diluted with water, neutralized with dilute acid such as acetic, hydrochloric or sulfuric. Absorb neutralized caustic residue on clay, vermiculite or other inert substance and package in a suitable container for disposal.

Handling and Storage

Keep in a tightly closed container. Protect from physical damage. Store in a cool, dry, ventilated area away from sources of heat, moisture and incompatibilities. Always add the caustic to water while stirring; never the reverse. Observe all warnings and precautions listed for the product. Do not store with aluminum or magnesium. Do not mix with acids or organic materials.

Exposure Controls/Personal Protection Airborne Exposure Limits

- OSHA Permissible Exposure Limit (PEL): 2 mg/m3 Ceiling
- ACGIH Threshold Limit Value (TLV): 2 mg/m3 Ceiling

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded, a half-face dust/mist respirator may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece dust/mist respirator may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

In order to prevent skin contact, wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate.

Eye Protection:

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Physical and Chemical Properties

Appearance:	White, deliquescent pellets or flakes.
Odor:	Odorless.
Solubility:	111 g/100 g of water.
Specific Gravity:	2.13
pH:	13 - 14 (0.5% soln.)
% Volatiles by volume @ 21C (70F)	0
Boiling Point:	1390C (2534F)
Melting Point:	318C (604F)
Vapor Density (Air=1):	> 1.0
Vapor Pressure (mm Hg):	Negligible.
Evaporation Rate (BuAc=1):	No information found.

Stability and Reactivity Stability

Stable under ordinary conditions of use and storage. Very hygroscopic. Can slowly pick up moisture from air and react with carbon dioxide from air to form sodium carbonate.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Sodium hydroxide in contact with acids and organic halogen compounds, especially trichloroethylene, may causes violent reactions. Contact with nitromethane and other similar nitro compounds causes formation of shock-sensitive salts. Contact with metals such as aluminum, magnesium tin, and zinc cause formation of flammable hydrogen gas. Sodium hydroxide, even in fairly dilute solution, reacts readily with various sugarsto produce carbon monoxide. Precautions should be taken including monitoring the tank atmosphere for carbon monoxide to ensure safety ofpersonnel before vessel entry.

Conditions to Avoid:

Moisture, dusting and incompatibles.

Toxicological Information

Irritation data: skin, rabbit: 500 mg/24H severe; eye rabbit: 50 ug/24H severe; investigated as a mutagen.

Cancer Lists:

- NTP Carcinogen
- Ingredient Known Anticipated IARC Category
- Sodium Hydroxide (1310-73-2) No No None

Ecological Information Environmental Fate

Environmental Fate:	No information found.
Environmental Toxicity:	No information found.

Disposal Considerations>

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

Transport Information

Domestic:	(Land, D.O.T.)
Proper Shipping Name:	SODIUM HYDROXIDE PELLETS
Hazard Class:	8
UN/NA:	UN1823
Packing Group:	II
Information reported for product/size:	300LB

Regulatory Information

Chemical Inventory Status - Part 1

Ingredient TSCA EC Japan Australia Sodium Hydroxide (1310-73-2) Yes Yes Yes Yes

Chemical Inventory Status - Part 2 (Canada)

Ingredient Korea DSL NDSL Phil. Sodium Hydroxide (1310-73-2) Yes Yes No Yes -\Federal, State & International Regulations - Part 1\ -SARA 302-SARA 313 Ingredient RQ TPQ List Chemical Catg.

Sodium Hydroxide (1310-73-2) No No Yes No Federal, State & International Regulations - Part 2\ -RCRA- -TSCAIngredient CERCLA 261.33 8(d)

Sodium Hydroxide (1310-73-2) 1000 No No Chemical Weapons Convention: No TSCA 12(b): No CDTA: No SARA 311/312: Acute: Yes Chronic: No Fire: No Pressure: No Reactivity: Yes (Pure / Solid)

Other Information

NFPA Ratings:

Health: 3
Flammability: 0
Reactivity: 1

Label Warning:

CORROSIVE. HARMFUL IF INHALED OR SWALLOWED. CAUSES BURNS TO ANY AREA OF CONTACT. REACTS WITH WATER, ACIDS AND OTHER MATERIALS.

Label Precautions:

Do not get in eyes, on skin, or on clothing. Do not breathe dust. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.

Label First Aid:

If swallowed, DO NOT INDUCES VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen. In all cases get medical attention immediately.

Product Use:

Laboratory Reagent.