Safety Data Sheet

1. Product Identifier and Company Identification

Product name : **Sodium Hydroxide, 25-50%, Liquid**
HBCC SDS number : CC12000
Synonym(s) : Sodium Hydroxide; Soda Lye; Lye; Caustic Soda
Product use and Restrictions : Refer to label or call
Manufacturer Contact Address :

Corporate Headquarters
Hill Brothers Chemical Company
1675 North Main Street
Orange, California 92867
714-998-8800
800-821-7234

Corporate Safety & Compliance
Hill Brothers Chemical Company
7121 West Bell Road, Suite 250
Glendale, Arizona 85308
623-535-9955 - Office
623-535-9944 - Fax

Emergency telephone Number (Chemtrec) : 800-424-9300
Website : http://hillbrothers.com

2. Hazard Identification

Classification : Skin Corrosion/Irritation – Category 1
Serious Eye Damage/Eye Irritation – Category 1

Signal Word : DANGER

Pictogram(s) :

Hazard Statements : H314: Causes severe skin burns and eye damage.

Precautionary Statements

Response : P304+P340+P310: IF INHALED: Removed person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or physician.
P301+P310+P330+P331: IF SWALLOWED: Immediately call a POISON CENTER or doctor. Rinse mouth. Do NOT induce vomiting.
P303+P361+P353+P363+P310: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or doctor.
P305+P351+P338+P310: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continue rinsing. Immediately call a POISON CENTER of doctor.

Prevention : P280: Wear protective gloves/protective clothing/eye protection/face protection.
P264: Wash hands thoroughly after handling.

Storage : P405: Store locked up.

Disposal : P501: Dispose of contents and container in accordance with all local/regional/national/international regulation.

3. Composition / Information on Ingredients

CAS Number	Ingredient Name	Weight %
1310-73-2	Sodium Hydroxide	25-50%

4. First Aid Measures

Ingestion : Do Not Induce Vomiting. If the person is conscious, give him large quantities of water immediately to dilute the sodium hydroxide. Do not attempt to make the exposed person vomit. DO NOT INDUCE VOMITING! GET MEDICAL ATTENTION IMMEDIATELY.

Inhalation : Move the exposed person to fresh air at once. If breathing has stopped, perform artificial respiration. If breathing is difficult, give oxygen. Keep the affected person warm and at rest. GET MEDICAL ATTENTION IMMEDIATELY.

Skin : Immediately flush contaminated skin with water. If large areas of the body are contaminated or if clothing is penetrated, immediately use safety shower, removing clothing while under the shower. Flush exposed areas with large amounts of water for at least 15 minutes. GET MEDICAL ATTENTION IMMEDIATELY. Wash clothing before reuse.

Eyes : Immediately flush eyes with a directed stream of water for at least 15 minutes. Forcibly hold eyelids apart to ensure complete irrigation of all eye and lid tissue. Washing eyes within 1 minute is essential to achieve maximum effectiveness. GET MEDICAL ATTENTION IMMEDIATELY. Contact lenses should not be worn when working with this chemical.

Medical Conditions : Sodium hydroxide is a respiratory irritant. Persons with pre-existing skin disorders or eye problems or impaired pulmonary function may be at increased risk from exposure, and should have limited exposure to this material.

Effects of Overexposure : N/A

Summary of Acute Health Hazards : N/A

Ingestion : Corrosive! Swallowing sodium hydroxide may cause severe burns of the mouth, throat, esophagus, and stomach. Death may result. Severe scarring

of the throat may occur on recovery after swallowing sodium hydroxide. Symptoms may include sneezing, bleeding, vomiting, diarrhea, fall in blood pressure. Damage may appear days after exposure. An increased number of esophageal cancer cases have been reported to occur in individuals who have scarring of the esophagus from swallowing sodium hydroxide.

Inhalation : Severe Irritant. Effects from inhalation of the dusts, mists, or spray will vary from mild irritation to destructive burns depending on the severity of exposure. Symptoms may include sneezing, sore throat or runny nose. Severe pneumonitis may occur.

Skin : Corrosive! Contact of the skin may cause skin irritation and, with greater exposure, severe burns with scarring.

Eyes : Corrosive! Sodium hydroxide is destructive to eye tissues on contact, will cause severe burns that result in damage to the eyes and even blindness. Contact lenses should not be worn when working with this chemical.

Note to Physicians : Perform endoscopy in all cases of suspected sodium hydroxide ingestion. In cases of severe esophageal corrosion, the uses 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.

Summary of Chronic Health : The chronic local effect may consist of multiple areas of superficial destruction of the skin or of primary irritant dermatitis. Similarly, inhalation of dust, spray, or mist may result in varying degrees of irritation or damage to the respiratory tract tissues and an increased susceptibility to respiratory illness. Effects may be delayed.

Signs and Symptoms of Exposure : A physician should be contacted if anyone develops any signs or symptoms and suspects that they are caused by exposure to sodium hydroxide.

5. Fire Fighting Measures

Extinguishing : Foam, carbon dioxide, or dry chemicals may be used where this product is stored. Adding water to caustic solution generates large amounts of heat. Do NOT get water inside containers.

Special Exposure Hazards : Not combustible but solid form in contact with moisture or water may generate sufficient heat to ignite combustible materials. Contact with some metals can generate hydrogen gas. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Vapors may be heavier than air.

Special Protective Equipment for Firefighters : This product is not combustible. Full protective clothing and self-contained breathing apparatus should be worn in areas where product is stored.

Fire Fighting Procedures : Use only flood quantities of water as spray. DO NOT use halogenated extinguishing agents. Use carbon dioxide or suitable dry chemical extinguishers.

NFPA Rating : Health - 3
Flammability - 0
Instability - 1

0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

Uniform Fire Code Rating : N/A

6. Accidental Release Measures

Personal Precautions : Avoid runoff into storm sewers and ditches which lead to waterways.

Emergency Procedures : Leaks should be stopped.

Methods of Containment And Clean-Up : Spills should be contained and cleaned up immediately. Spills should be removed by using a vacuum truck. Neutralize remaining traces of material with any dilute inorganic acid such as hydrochloric, sulfuric, nitric, phosphoric, or acetic acid. The spill area should then be flushed with water, followed by liberal covering of sodium bicarbonate. All clean-up material should be removed and placed in approved containers, labeled and stored in a safe place to await proper treatment or disposal. Spills on areas other than pavement (dirt or sand) may be handled by removing the affected soils and placing in approved containers.

7. Handling and Storage

Safe Handling : Prevent possible eye and skin contact by wearing protective clothing and equipment. Sodium hydroxide reacts with reducing sugars such as fructose, lactose, maltose, galactose, levulose, and arabinose to form carbon monoxide. While the potential for worker exposure to carbon monoxide may be small, a potential does exist during cleaning of certain dairy and possibly other industry equipment. Carbon monoxide gas can form upon contact with food and beverage products in enclosed spaces and can cause death. Follow appropriate tank entry procedures.

Storage : Storage tanks must be vented and diked. Store drums of sodium hydroxide separate from acids, metals and explosives. Provide adequate drainage. When diluting, use agitation and add concentrated sodium hydroxide to water at a controlled rate to control heat of dilution and to avoid splattering. Do not add water to sodium hydroxide. Do not store with aluminum or magnesium. Store above 60°F (16°C) to prevent freezing.

Work/Hygienic Practices : Avoid contact with the skin and avoid breathing dust or mist. Do not eat, drink, or smoke in work area. Wash hands before eating, drinking, or using

toilet facilities. Do NOT place food, coffee or other drinks in the area where dusting or splashing of solutions is possible.

Ventilation : Ventilation is not usually required for sodium hydroxide solutions. Avoid creation of mist or spray. If present wear appropriate safety clothing and provide local exhaust systems. Where carbon monoxide may be generated, special ventilation may be required.

Special Mixing and Handling Instructions : Considerable heat is generated when water is added to sodium hydroxide; therefore, when making solutions always add the sodium hydroxide to the water with constant stirring. The water should always be lukewarm (80° - 100° F). Never start with hot or cold water. If sodium hydroxide becomes concentrated in one area, or if added too rapidly, or if added to hot or cold water, a rapid temperature increase can result in dangerous boiling and/or spattering or may cause an immediate violent eruption.

8. Exposure Controls/Personal Protection

Occupational Exposure Limits :

Chemical Name: Sodium Hydroxide Liquid				
Exposure Limits (TWAs) in Air				
CAS Number	**IDLH**	**ACGIH TLV**	**OSHA PEL**	**STEL**
1310-73-2	10mg/m^3	2 mg/m^3	2 mg/m^3	N/A

Protective Equipment : Persons not wearing protective equipment and clothing should be restricted from areas of spills until cleanup has been completed. Employees should be provided with and required to use impervious clothing, gloves, face shield (eight-inch minimum), and other appropriate protective clothing necessaryto prevent any possibility of skin contact with solutions of sodium hydroxide. Materials suggested for use are natural rubber, butyl rubber, neoprene, or vinyl. Employees should be provided with and required to use dust- and splash-proof safety goggles where there is any possibility of sodium hydroxide contacting the eyes. Contact lenses should not be worn when working with this chemical. Eyewash stations and safety showers must be available in the immediate work area for emergency use.

Eye Protection : Face shield (eight-inch minimum), and other appropriate protective clothing necessary to prevent any possibility of skin contact with solutions of sodium hydroxide. Employees should be provided with and required to use dust- and splash-proof safety goggles where there is any possibility of sodium hydroxide contacting the eyes.

Respiratory Protection : Good industrial hygiene practices recommend that engineering controls be used to reduce environmental concentrations to the permissible exposure level. However, there are some exceptions where respirators may be used to control exposure. Respirators may be used when engineering and work practice controls are not technically feasible, when such controls are in the process of being installed, or when they fail and need to be supplemented. If the use of respirators is necessary, the only respirators permitted are those that have been approved by the Mine Safety and Health Administration or by the National Institute for Occupational Safety and Health.

9. Physical and Chemical Properties

Concentration by Wt.%	25%	30%	33%	50%
Boiling Point °F (°C)	234 (112)	242 (117)	245 (118)	288 (142)
Freezing Point °F (°C)	-13.9 (-25.5)	36 (2.2)	44 (6.7)	54 (12)
Vapor Pressure mmHg@20 °C	17	14	25	76
Sp. Gravity 60°F / 15.2°C	1.2818	1.3362	1.3683	1.5372
% Volatiles	75%	70%	67%	50%

Chemical Formula: NaOH
Odor: No Odor
Appearance: Clear to slightly gray liquid
Flash Point: None
Flammability: N/A
pH: 14.0
Solubility in Water: Complete
Viscosity: N/A
Vapor Pressure mmHg@20°C: 1.5 -1.6
Molecular Weight: 40.0 (dry basis)

How to detect this Compound : Sampling and analyses may be performed by collection of sodium hydroxide in a glass bubbler containing hydrochloric acid, followed by subsequent titration. Also, detector tubes certified by NIOSH under 42 CFR Part 84 or other direct-reading devices calibrated to measure sodium hydroxide may be used.

10. Stability and Reactivity

Reactivity : Sodium hydroxide, even in fairly dilute solution, reacts readily with various sugars to produce carbon monoxide.

Chemical Stability : Stable

Possibility of Hazardous Reactions or Polymerizations : Hazardous polymerization will not occur

Conditions to Avoid : Overheating in storage accelerates corrosion.

Incompatible Materials : Contact with water, acids, flammable liquids, and organic halogen compounds, especially trichloroethylene, may cause fires and explosions. Contact with metals such as aluminum, tin, and zinc and alloys containing these metals cause formation of flammable hydrogen gas. Contact with nitromethane and other similar nitro compounds cause formation of shock -sensitive salts. Contact with water releases heat which can result in boiling and splattering.

Hazardous Decomposition Products : None

11. Toxicological Information

Acute and Chronic Effects : Sodium hydroxide is a strong alkali; the mist, dust and solutions cause severe injury to the eyes, mucous membranes, and skin. Although inhalation is usually of secondary importance in industrial exposures, the effects from the dust or mist will vary from mild irritation of the nose at 2 mg/m^3 to severe pneumonitis, depending on the severity of exposure. The greatest industrial hazard is rapid tissue destruction of eyes or skin upon contact with either the solid or with concentrated solutions. Contact with the eyes causes disintegration and sloughing of conjunctival and corneal epithelium, corneal opacification, marked edema, and ulceration; after 7 to 13 days either gradual recovery begins, or there is progression of ulceration and corneal opacification. Complications of severe eye burns are symblepharon (adhesion of the lid to the eyeball) with overgrowth of the cornea by a vascularized membrane, progressive or recurrent corneal ulceration, and permanent corneal opacification. On the skin, solutions of 25 to 50% cause the sensation of irritation within about 3 minutes; with solutions of 4%, this does not occur until after several hours. If not removed from the skin, severe burns with deep ulceration will occur; exposure to the dust or mist may cause multiple small burns, with temporary loss of hair. Ingestion produces severe pain in the esophagus and stomach, corrosion of the lips, mouth, tongue, and pharynx and the vomiting of large pieces of mucosa; cases of squamous cell carcinoma of the esophagus have occurred with latent periods of 12 to 42 years after ingestion; these cancers may have been sequelae of tissue destruction and possibly scar formation rather than from a direct carcinogenic action of sodium hydroxide itself.

Routes of Exposure

Ingestion : Yes
Inhalation : Yes
Skin : Yes
Eyes : Yes

Symptoms related to Physical, Chemical & Toxicological Characteristics : Sodium hydroxide is a strong alkali and is corrosive to any tissue with which it comes in contact.

Numerical Measures of Toxicity : Sodium hydroxide: irritation data: skin, rabbit: 500 mg/24H; severe; eye rabbit: 50 ug/24H severe. Investigated as a mutagen.

Chronic Toxicity : N/A

Carcinogenicity :

Product Name:					
ACGIH	IARC	EPA	NIOSH	NTP	OSHA
No	No	No	No	No	No

TARGET ORGANS : N/A

12. Ecological Information

Ecotoxicity : N/A

Persistence and Degradability : N/A

Bioaccumulative Potential :

Product / Ingredient	Log $_{Pow}$	BCF	Potential
-	-	-	-

Mobility in Soil : N/A

13. Disposal Considerations

Disposal of Container : Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. 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. Do not flush to sewer.

14. Transport Information

UN# : UN1824
Proper Shipping Name : Sodium Hydroxide Solution
Hazard Class / Division : 8
Packing Group : II
Marine Pollutant : No
Special Provisions : B2, IB2, N34, T7, TP2
Emergency Response Guidebook : 2012 ERG, Guide 154, pages 246-247
Placard Advisory :

15. Regulatory Information

SARA 302 Extremely Hazardous Substance (EHS) : No chemicals in this material are subject to the reporting requirements of Sara Title III, Section 302.

SARA 304 Extremely Hazardous Substance (EHS) : No chemicals in this material are subject to the reporting requirements of Sara Title III, Section 304.

SARA 311/312 Hazard Classification :

Sara 311/312 Hazards				
Acute	Chronic	Flammability	Pressure	Reactivity
Yes	No	No	No	No

SARA 313 Supplier Notification : This product does not contain any chemical components with known CAS numbers that exceed the reporting requirements of SARA Title III, Section 313.

CERCLA Hazardous Substance Notification : This product contains a CERCLA reportable hazardous chemical: CAS #1310-73-2 Sodium Hydroxide (RQ) = 1,000 lbs. (454 kgs.)

Clean Air Act (CAA) : This product is not listed as a pollutant under the US Clean Air Act, Section 12 (40 CFR 61).

California Prop 65 : This product does not contain any chemicals known to the state of California to cause cancer.

Label Warning : Corrosive

EPA Registration : None

Maximum use level for Sodium Hydroxide under NSF/ANSI Standard 60

25% Liquid Caustic Soda	Maximum use	200 mg/L
30% Liquid Caustic Soda	Maximum use	167 mg/L
33% Liquid Caustic Soda	Maximum use	152 mg/L
50% Liquid Caustic Soda	Maximum use	100 mg/L

16. Other Information

Revision date : 04/15/2015
Supersedes : 02/23/2012
First Issue : 12/12/1986

Chemical Family/Type : Alkali

Section(s) changed since last revision : MSDS to First Issue SDS Conversion

IMPORTANT! Read this SDS before use or disposal of this product. Pass along the information to employees and any other persons who could be exposed to the product to be sure that they are aware of the information before use or other exposure. This SDS has been prepared in accordance with the Globally Harmonized System of Chemical and Labeling of Chemicals (GHS) Fifth Edition and the OSHA Hazard Communication Standard [29 CFR 1910.1200]. The SDS information is based on sources believed to be reliable. Available data, safety standards, and government regulations are subject to change and the conditions of handling and use, or misuse are beyond our control; **Hill Brothers Chemical Company** makes no warranty, either expressed or implied, with respect to the completeness or continuing accuracy of the information contained herein and disclaims all liability for reliance thereon. Additional information may be necessary or helpful for specific conditions and circumstances of use. It is the user's responsibility to determine the suitability of this product and to evaluate risks and exercise appropriate precautions for protection of employees and others prior to use.