



SODIUM HYDROXIDE, 50%

SECTION 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Shintech Louisiana, LLC

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Product Name:	Sodium Hydroxide Solution, 50%
CAS#:	1310-73-2
MSDS Code:	NaOH(50)
Synonyms:	Caustic Soda Liquid 50%, Soda Lye, Lye, Liquid Caustic, Sodium Hydrate
Product Use:	Neutralizing agent, industrial cleaner, pulping and bleaching, soap manufacturing

24 – Hour Emergency Contact

For information regarding a chemical emergency involving a spill or leak, call:

U.S.: 1-800-424-9300 – CHEMTREC

SECTION 2 – COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous ingredients (specific)	Typical %	CAS Number
Water	50	7732-18-5
Sodium Hydroxide	50	1310-73-2

SECTION 3 – HAZARDS IDENTIFICATION

National Fire Protection Association (NFPA) Rating Hazardous Materials Identification System (HMIS) Rating

	NFPA	HMIS
Health	3	3
Fire	0	0
Reactivity	1	1

4 = Extreme/Severe W= water reactive
3 = High/Serious
2 = Moderate
1 = Slight
0 = Minimum

Emergency Overview

Color: Colorless

Physical State: Liquid above freezing point

Odor: Odorless

Hazards of product:

DANGER! Causes severe eye burns. Causes severe skin burns. Causes burns of the mouth and throat. Causes respiratory tract irritation. Aspiration hazard. Can enter lungs and cause damage. May react with water. Keep upwind of spill.

Potential Health Effects

Eye Contact: May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur. Mist may cause eye irritation.

Skin Contact: Brief contact may cause severe skin burns. Symptoms may include pain, severe local redness and tissue damage.

Skin Absorption: Prolonged skin contact is unlikely to result in absorption of harmful amounts.

Inhalation: Mist may cause severe irritation of upper respiratory tract (nose and throat).

Ingestion: Swallowing may result in burns of the mouth and throat. Swallowing may result in gastrointestinal irritation or ulceration. Aspiration into the lungs may occur during ingestion or vomiting, causing tissue damage or lung injury.

SECTION 4 – FIRST AID MEASURES

Eye Contact: Immediately flush eyes with water for at least 30 minutes, and up to 60 minutes if necessary. Hold eyelids open during flushing. If irritation persists, repeat flushing. Obtain medical attention IMMEDIATELY. Do not transport victim until the recommended flushing period is completed unless flushing can be continued during transport.

Skin Contact: Immediately flush skin with water for at least 30 minutes, and up to 60 minutes if necessary. Under water remove contaminated clothing, jewelry, and shoes. If irritation persists, repeat flushing. Obtain medical attention immediately. Handle contaminated clothing and shoes in a manner which limits further exposure.

Ingestion: DO NOT INDUCE VOMITING. If victim is alert and not convulsing, rinse mouth and give as much water as possible to dilute material (8 to 10 oz. or 240 to 300 mL). If spontaneous vomiting occurs, have victim lean forward with head down, rinse mouth and administer more water. IMMEDIATELY transport victim to an emergency facility. Do not give anything to an unconscious person.

Inhalation: Move victim to fresh air. If breathing is difficult, oxygen may be beneficial if administered by trained personnel, preferably on a doctor's advice. Give artificial respiration ONLY if breathing has stopped. Do not use mouth-to-mouth method if victim ingested or inhaled the substance: induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Obtain medical attention IMMEDIATELY. Symptoms of pulmonary edema can be delayed up to 48 hours after exposure.

SECTION 5 – FIRE FIGHTING MEASURES

Extinguishing Media: This material does not burn. If exposed to fire from another source, use suitable extinguishing agent for that fire. Do not use water.

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Water is not recommended, but may be applied in large quantities as a fine spray when other extinguishing agents are not available. **This material does not burn.** Fight fire for other material that is burning.

Special Protective Equipment for Firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

Unusual Fire and Explosion Hazards: Product reacts with water. Reaction may produce heat and/or gases. This reaction may be violent. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

Hazardous Combustion Products: Not applicable.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Steps to be taken if material is released or spilled: Contain spilled material if possible. Small spills: Dilute with water. Large spills: Dike the area to contain the spill. Collect in suitable and properly labeled containers. Attempt to neutralize by adding material such as Acetic acid. See Section 13, Disposal Considerations, for additional information.

Personnel Precautions: Evacuate area. Only trained and properly protected personnel must be involved in clean-up operations. Refer to Section 7, Handling, for additional precautionary measures. Keep upwind of spill. Ventilate area of leak or spill. See Section 10 for more specific information. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental Precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

SECTION 7 – HANDLING AND STORAGE

HANDLING

General Handling: Do not get in eyes. Do not get on skin or clothing. Do not swallow. Avoid breathing mist. Keep container closed. Use with adequate ventilation.

1. ALWAYS add caustic soda solution to water with constant agitation. NEVER add water to the caustic soda solution.
2. The water should be lukewarm (27°-38°C or 80°-100°F). NEVER start with hot or cold water. The addition of the caustic soda to liquid will cause a rise in temperature. If caustic soda becomes concentrated in one area, is added too rapidly, or is added to hot or cold liquid, a rapid temperature increase can result in DANGEROUS mists, boiling or spattering

which may cause an immediate VIOLENT ERUPTION. See Section 8, EXPOSURE CONTROLS / PERSONAL PROTECTION.

STORAGE

Keep container closed. Do not store in: Zinc, Aluminum, Brass, or Tin. See Section 10 for more specific information.

Storage temperature: >16°C

Shelf life: Use within 24 months

SECTION 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION

PREVENTIVE MEASURES

Recommendations listed in this section indicate the type of equipment which will provide protection against over exposure to this product. Conditions of use, adequacy of engineering or other control measures, and actual exposures will dictate the need for specific protective devices at your workplace.

Engineering Controls: Local exhaust ventilation should be applied wherever there is an incidence of point source emissions or dispersion of regulated contaminants in the work area. Ventilation control of the contaminant as close to its point of generation is both the most economical and safest method to minimize personnel exposure to airborne contaminants. The most effective measures are the total enclosure of processes and the mechanization of handling procedures to prevent all personal contact.

PERSONAL PROTECTIVE EQUIPMENT

Maintain eye wash station and safety shower facilities in work area. Detailed requirements for personal protective equipment should be established on a site-specific basis.

Eye/Face Protection: Wear full face-shield and chemical safety goggles when there is potential for contact.

Skin Protection: Wear appropriate personal protective clothing to prevent skin contact that is chemically resistant to this material. Remove contaminated clothing immediately, wash skin area with soap and water and launder clothing before reuse or dispose of properly.

Guidelines for sodium hydroxide solutions, 30-70%:

RECOMMENDED (resistance to breakthrough longer than 8 hours): Butyl rubber; natural rubber, neoprene rubber, nitrile rubber, polyethylene, polyvinyl chloride, Teflon(TM), Viton(TM), Saranex(TM), 4H(TM), Barricade(TM), CPF 3(TM), Responder(TM), Trelchem HPS(TM), Tychem 10000(TM).

NOT RECOMMENDED for use (resistance to breakthrough less than 1 hour): Polyvinyl alcohol.

Respiratory Protection:

Up to 10mg/m³: Supplied Air Respirator (SAR) operated in a continuous-flow mode, eye protection needed; or full face-piece respirator with high-efficiency particulate filter(s); or powered air-purifying respirator with dust and mist filter(s), eye protection needed; or full face-piece Self-Contained Breathing Apparatus (SCBA); or full face-piece SAR.

Emergency or Planned Entry into Unknown Concentrations of IDLH Conditions: Positive pressure, full face-piece SAR; or positive pressure, full face-piece SAR with an auxiliary positive pressure SAR.

ESCAPE: Full face-piece respirator with high-efficiency particulate filter(s); or escape-type SCBA.

EXPOSURE GUIDELINES

PRODUCT: **Sodium hydroxide**
ACGIH Ceiling Exposure Limit (TLV-C): 2mg/m³
OSHA PEL-TWA & PEL-C: 2mg/m³
NIOSH IDLH: 10mg/m³
NIOSH REL-C: 2mg/m³

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid above freezing point
Color	Colorless
Odor	Odorless
Flash Point – Closed Cup	None
Flammable Limits in Air	Lower: Not applicable Upper: Not applicable
Autoignition Temperature	Not applicable
Vapor pressure	1.5 mmHg @ 20°C <i>Literature</i>
Boiling Point (760 mmHg)	145°C (293°F) <i>Literature</i>
Vapor Density (air=1)	Not applicable
Specific Gravity (H2O=1)	1.52 <i>Literature</i>
Liquid Density	1.5 g/cm ³ @ 20°C <i>Literature</i>
Freezing Point	14°C (57°F) <i>Literature</i>
Melting Point	14°C (57°F) <i>Literature</i>
Solubility in Water (by weight)	Water solution
pH	Strong Basic
Kinematic Viscosity	0.35 St @ 25° <i>Calculated</i>

* This data is based on 50% Caustic.

SECTION 10 – STABILITY AND REACTIVITY

Stability/Instability

Stable under recommended storage conditions. See Storage, Section 7.

Conditions to avoid: Avoid moisture. Product absorbs carbon dioxide from the air.

Incompatible Materials: Heat is generated when mixed with water. Spattering and boiling can occur. Caustic soda solution reacts readily with various reducing sugars (i.e. fructose, galactose, maltose, dry whey solids) to produce CO. Take precautions including monitoring the tank atmosphere for CO to ensure safety of personnel before vessel entry. Avoid contact with: acids, glycols and halogenated organics. Organic nitro compounds. Flammable hydrogen may be generated from contact with metals such as: Zinc, Aluminum, Tin, or Brass.

Hazardous Polymerization

Will not occur.

Thermal Decomposition

Does not decompose.

SECTION 11 – TOXICOLOGICAL INFORMATION

Acute Toxicity

Ingestion: Single dose oral LD50 has not been determined.

Skin Absorption: The dermal LD50 has not been determined.

Repeated Dose Toxicity: Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.

Genetic Toxicology: For the major component(s): In vitro genetic toxicity studies were negative.

SECTION 12 – ECOLOGICAL INFORMATION

CHEMICAL FATE

Sodium hydroxide:

Movement

No bioconcentration is expected because of the relatively high water solubility. Potential for mobility in soil is very high (Koc between 0 and 50).

Persistence and Degradability

Biodegradation is not applicable.

Sodium chloride:

Movement

No bioconcentration is expected because of the relatively high water solubility. Potential for mobility in soil is very high (Koc between 0 and 50).

Persistence and Degradability

Biodegradation is not applicable.

ECOTOXICITY

Sodium hydroxide:

Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/L in the most sensitive species tested). May increase pH of aquatic systems to >pH 10 which may be toxic to aquatic organisms.

Fish Acute & Prolonged Toxicity

LC50, rainbow trout (*Oncorhynchus mykiss*), 96h: 45.5 mg/L

Aquatic Invertebrate Acute Toxicity

LC50, water flea *Daphnia magna*: 40-240 mg/L

Sodium chloride:

Material is practically non-toxic to aquatic organisms on an acute basis (IC50/EC50 > 100 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity

LC50, fathead minnow (*Pimephales promelas*): 10,610 mg/L

Aquatic Invertebrate Acute Toxicity

LC50, water flea *Daphnia magna*: 4,571 mg/L

Toxicity to Micro-organisms

IC50, OECD 209 Test; activated sludge, respiration inhibition: >1,000 mg/L

SECTION 13 – DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable Federal, State/Provincial and local laws and regulations. Waste characterization and compliance with applicable laws and regulations are the responsibility of the waste generator. Do not dispose of waste with normal garbage, or to sewer systems.

SHINTECH LOUISIANA, LLC HAS NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION.

SECTION 14 – TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:

	BULK / NON BULK
Shipping Name	SODIUM HYDROXIDE SOLUTION
Hazard Class/Division	8
Identification No.	UN1824
Packing Group	PG II

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

SECTION 15 – REGULATORY INFORMATION

USA Classification

OSHA Hazard Communication Standard: This product is a “Hazardous Chemical” as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	Yes
Delayed (Chronic) Health Hazard	No
Fire Hazard	No
Reactive Hazard	Yes
Sudden Release of Pressure Hazard	No
OSHA Process Safety (29CFR1910.119)	No
CERCLA Section 103 (40CFR302.4)	Yes
Reportable Quantity (RQ) under CERCLA	1,000 lbs. (454kg)
TSCA Inventory Status	Yes

This product does not contain nor is it manufactured with ozone depleting substances.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313:

To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:

The following product components are cited in the Pennsylvania Hazardous Substance List and/or the Pennsylvania Environmental Substance List, and are present at levels which require reporting.

Component	CAS #	Amount
Sodium Hydroxide	1310-73-2	<=51.0%

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List:

To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986):

This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

US Toxic Substances Control Act:

All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 710.30.

CEPA – Domestic Substances List (DSL):

All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

SECTION 16 – OTHER INFORMATION

IMPORTANT: The information presented herein, while not guaranteed, was prepared by competent technical personnel and is true and accurate to the best of our knowledge. NO WARRANTY OF MERCHANT ABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE, OR WARRANTY OR GUARANTY OF ANY OTHER KIND, EXPRESS OR IMPLIED, IS MADE REGARDING PERFORMANCE, SUITABILITY, STABILITY OR OTHERWISE. The information included herein is not intended to be all-inclusive as to the appropriate manner and/or conditions of use, handling and/or storage. Factors pertaining to certain conditions of storage, handling, or use of this product may involve other or additional safety or performance considerations. While our technical personnel will be happy to respond to questions regarding safe handling and use procedures, safe handling and use remains the responsibility of the customer. No suggestions for use are intended to, and nothing herein shall be construed as a recommendation to, infringe any existing patents or violate any laws, rules, regulations or ordinances of any governmental entity.

Shintech Louisiana, LLC urges each customer or recipient of this MSDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this MSDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as to the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product.

<i>MSDS Status:</i>	<i>Revision Date:</i>	<i>N/A</i>
	<i>Supersedes:</i>	<i>N/A</i>