



# Formosa Plastics Corporation , Mai-Liao Chlor-Alkali Plant

## Material Safety Data Sheet

### MANUFACTURER

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### MSDS No:

C/A004

### Preparation Date:

11/07/2000

### Supersedes Date:

08/04/97

## 1. PRODUCT IDENTIFICATION

**Product Name:** Sodium Hydroxide Solution 50%

**Product Code:** NAOH50

**Chemical Family:** Caustic

**Chemical Name:** Sodium Hydroxide Solution

**CAS No:** 1310-73-2

**Synonyms:** Caustic soda, Liquid caustic, Lye solution, Lye, Soda lye

**Formula:** NaOH

**Technical Information:** 886-5-6811076

## 2. PRODUCT INGREDIENTS

No.	Components	CAS No.	Percent (%)	OSHA PEL
P	Sodium Hydroxide	1310-73-2	50	2.0 mg/M <sup>3</sup> TWA
1	Water	7732-18-5	50	Not established

## 3. PHYSICAL/CHEMICAL PROPERTIES

**Physical Form:** Liquid

**Color:** Clear or Opaque

**Odor:** No distinct odor

**Molecular Weight:** 40.0

**Boiling Point:** 284°F (140°C)

**Melting Point:** Not applicable

**Freezing Point:** 53.6°F (12°C)

<b>Solubility in Water:</b>	100%
<b>Specific Gravity:</b>	1.53 (water = 1)
<b>Vapor Density:</b>	Not established (air = 1)
<b>Evaporation Rate:</b>	Not applicable (Butyl Acetate = 1)
<b>Vapor Pressure:</b>	13 mmHg @60 degrees F
<b>% Volatile:</b>	Not established
<b>pH:</b>	14

The physical data presented above are typical values and should not be construed as a specification.

#### 4. FIRE HAZARD DATA AND FIGHTING METHOD

<b>Flash Point:</b>	Not applicable (Nonflammable)
<b>Autoignition:</b>	Not applicable
<b>Flammable Limits</b>	Not applicable
<b>In Air (LEL, %)</b>	
<b>(UEL, %)</b>	Not applicable
<b>Extinguishing Media:</b>	Not applicable
<b>Special Fire Fighting Procedure:</b>	Not flammable. Cool exposed tanks with water to prevent rupture. Wear protective clothing including full face protection, rubber gloves, rubber boots and rubber rain gear.
<b>Unusual Fire and Explosion Hazards:</b>	Direct contact with water can cause violent exothermic reaction. It reacts violently with acids or organic halogen compounds, and metals such as zinc, tin, and aluminum giving off highly flammable and explosive hydrogen gas.

#### 5. HUMAN HEALTH DATA

<b>Emergency Overview:</b>	Corrosive to all body tissues by all routes of exposure.
<b>Primary Route(s) of Exposure:</b>	Eye, Skin Contact

#### Potential Health Effects and Symptoms of Over-Exposure

<b>Eye Contact:</b>	Causes severe burns and permanent damage to eyes
<b>Skin Contact:</b>	Causes severe burns with deep ulceration, burns.
<b>Inhalation:</b>	Breathing mist or spray may cause damage to the upper respiratory tract and lung tissue.

**Ingestion:** Causes severe burns to mucous membranes of the mouth, throat, esophagus, and stomach.

**Medical Conditions Aggravated by Overexposure:**

Human dermal exposure: regardless of concentrations, the severity of damage and extent of its irreversibility increases with length of contact time. Prolonged contact with sodium hydroxide solutions of greater than 1% can cause a high degree of tissue destruction. The latent period, following skin contact during which no sensation of irritation occurs, varies from several hours for 0.4-4% solution to 3 minutes with concentrations of 25% or greater.

<b>Carcinogenicity:</b>	<b>NPT: No IARC: No OSHA: No</b>
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**6. FIRST AID MEASURES**

**Eye Contact:** Immediately flush with copious amounts of water for at least 15 minutes. Seek medical attention.

**Skin Contact:** Immediately wash the affected area with large quantities of water while removing contaminated clothing. Call a physician.

**Inhalation:** Move to fresh air. Support respiration. Call a physician.

**Ingestion:** If person is conscious, give large amounts of water to drink. Do not induce vomiting. Call a physician.

**Notes to Physician:** Treat symptomatically and supportively.

**Other Instructions:** No additional remark.

**7. EXPOSURE CONTROLS, PERSONAL PROTECTION RECOMMENDATIONS**

**Eye Protection:** Chemical goggles, faceshield

**Skin Protection:** Neoprene, PVC or rubber gloves, boots, and rain suit

**Respiratory Protection:** Self-contained breathing apparatus (SCBA) with full face piece approved by NIOSH/MSHA

**Engineering Control:** Ventilation Requirements -  
**Local Exhaust, General**  
Adequate ventilation must be provided to maintain air concentration below the OSHA PEL of 2 mg/M3 NaOH.

**Required Work/Hygiene Procedure:** Emergency eye wash and safety showers for first aid treatment of potential chemical burns should be available in the vicinity of significant exposure from caustic release. Avoid contact with skin and avoid breathing vapor. Do not eat, drink, or smoke in work area. Wash hands thoroughly after handling, especially before eating, drinking, smoking,

chewing, or using restroom facility.

### Exposure Guidelines:

No.	Components	OSHA-PEL	ACGIH-TLV
P	Sodium Hydroxide	2 mg/M <sup>3</sup> TWA	2 mg/M <sup>3</sup> Ceiling

## 8. ACCIDENTAL RELEASE CONTROL MEASURES

**Response to Spills:** Stop the leak. Contain spilled material with dikes, sandbags, and prevent run-off into surface waters or sewers. Clean or recover as much material as possible by using a vacuum truck. Neutralize remaining traces of material with any dilute inorganic acid such as hydrochloric, sulfuric, nitric, phosphoric, and acetic acid. The spill area should then be flushed with water followed by covering of sodium bicarbonate. Spills on dirt or sandy ground may be handled by removing the affected soils and placing in approved containers. All clean-up material should be removed and placed in approved containers, labeled and stored in a safe place prior to proper treatment or disposal.

Caution: Sodium hydroxide or caustic soda may react violently with acids and water.

## 9. HANDLING AND STORAGE

**Handling:** Wear proper personal protection equipment. This product may be added slowly to water or acids with dilution and constant stirring to avoid a violent exothermic reaction. Full protective clothing should be worn. Avoid contact with aluminum, tin, zinc, and alloys containing these metals. Do not mix with strong acids without dilution and agitation to prevent violent or explosive reaction (boiling and spattering).

**Storage:** Store in closed, properly labeled tanks or containers.

**Container Use:** Do not remove or deface label or tags from the containers. Always empty and clean containers of all residues before adding product to avoid potential explosive reaction caused by product and unknown residue. Returnable containers should be shipped in accordance with supplier's recommendations and in compliance with all federal, state, and DOT regulations. All residual caustic soda should be removed from containers prior to disposal.

## 10. STABILITY AND REACTIVITY

**Stability:** Stable under normal conditions.

**Conditions to Avoid:** Avoid contact with leather, wool, acids, organic halogen compounds, nitro compounds or metals such as aluminum, tin, and zinc.

**Hazardous Decomposition:** None known

**Hazardous Polymerization:** Will not occur

## 11. DISPOSAL CONSIDERATIONS

**Disposal Method:** It must be disposed of in accordance with Federal, State and local environmental control regulations. This substance, when discarded or disposed of in its purchased form or waste will have the EPA Hazardous Waste Number of D002 due to its corrosivity.

**Recycle/Reclaim:** Recycle to process if possible.

## 12. TRANSPORT INFORMATION

**DOT Shipping Name:** Sodium Hydroxide Solution  
**DOT Label:** Corrosive  
**DOT Hazard Class:** 8  
**UN/NA Number:** UN1824  
**Hazard Label(s):** Corrosive  
**Hazard Placard(s):** Corrosive  
**Packing Group:** II  
**Bulk Packaging:** 173.242; nonbulk 173.202  
**RQ:** 1000 lbs (NaOH)  
**Emergency Response Guide (ERG) No.:** 154

## 13. TOXICOLOGICAL INFORMATION

The information provided below can be subject to misinterpretation. Therefore, it is essential the following information be interpreted by individuals trained in its evaluation.

Chemical	Toxicity Data
Sodium Hydroxide, liquid RTECS#: WB4900000	LD50 oral-rat 140 to 340 mg/kg Acute Dermal LD50 (rabbit): 1350 mg/kg

## 14. ECOLOGICAL INFORMATION

No data is available on the adverse effects of this product on the environment and eco-system. Neither COD or BOD data are available.

## 15. REGULATORY INFORMATION

### FEDERAL REGULATORY INFORMATION

Sodium Hydroxide

**OSHA Status:** PEL 2 mg/M3 TWA

**EPA Clean Air Act Status:** None

**EPA Clean Water Act Status:** Hazardous Substances listing

**TSCA Status:** TSCA Inventory listing

**CERCLA RQ:** 1000 lbs.

**SARA Title III**

Sodium Hydroxide

<b><u>Section 302*</u></b>	<b><u>Section 313**</u></b>	<b><u>Section 311/312***</u></b>
None	Yes	H1,P5

\*Reportable quantity of extremely hazardous substance, Sec. 302  
 \*Threshold planning quantity, extremely hazardous substance, Sec. 302  
 \*\*Toxic chemical. Sec. 313  
 \*\*Category as required by Sec 313 (40CFR372.65C). Must be used on Toxic Release Inventory form.  
 \*\*\*Hazard category for SARA Sec.311/312 reporting H1=acute health hazard, H2=chronic health hazard, P3=fire hazard, P4=sudden release of pressure hazard, P5=reactive hazard

**RCRA Status:** If disposed of in its purchased form, this product will have a RCRA hazardous waste code D002 by characteristic. Under RCRA, it is the responsibility of the product user to determine at the time of disposal whether a material containing the product or derived from the product should be classified as a hazardous waste (40 CFR 261.20-24).

**OTHER REGULATORY INFORMATION**

The following chemicals are specifically listed by individual states; other product-specific health and safety data in other sections of the MSDS may also be applicable for state requirements. For details on your regulatory requirements, you should contact the appropriate agency in your state.

<b><u>State</u></b>	<b><u>Chemical</u></b>	<b><u>Regulation</u></b>
CA; FL; MA; MN; NJ; PA	Sodium Hydroxide	State Right-To-Know listing

**Product Name: Sodium Hydroxide**

**International**

Canada: WHMIS: Ingredient disclosure item 1% 1442 (998)  
 Listed on Canada' DSL/NDSL List

Europe: EC Directives Hazard Symbols: C; Risk Phrases: R35 Causes severe burns.

**16. OTHER INFORMATION**

<b><u>NFPA</u></b>	<b><u>HMIS</u></b>
Fire - 0	Health - 3

Health - 3

Flammability - 0

Reactivity - 1

Reactivity - 2

Specific Hazard - None

Personal Protection Index - D

This product does not contain any PCB or Dioxins 2,3,7,8 TCDD, 2,3,7,8, TCDF.

This product is NOT listed on any of the following:

Proposition 65 - California Safe Drinking Water and Toxic Enforcement Act of 1986.

CONEG Model Toxics Legislation (Heavy Metals Content)

Clean Air Act, Section 611, Title VI Amendments to the Clean Air Act (Ozone Depleting Chemicals)

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