



# *Formosa Plastic Corporation*

## Material Safety Data Sheet

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

<b>Product name</b>	Sodium hydroxide
<b>Synonyms</b>	Caustic soda, Caustic Flake , Caustic Pearl(Prill) , Soda lye, Sodium Hydrate , white caustic, Hydroxyde de sodium (solide), sodium hydroxide
<b>Chemical formula</b>	NaOH
<b>CAS number</b>	01310-73-2
<b>Manufacturer's name</b>	Formosa Plastic Corporation



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### 2. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS No.	Wt. %
Sodium Hydroxide	1310-73-2	Approx.98

### 3. HAZARDS IDENTIFICATION

#### PRECAUTIONARY INFORMATION

Corrosive. Can cause eye, skin and respiratory tract burns. Highly toxic by ingestion. Ingestion will cause severe burns of the mouth, throat and stomach. Avoid any skin or eye contact. Avoid breathing dusts or mist

#### POTENTIAL HEALTH EFFECTS

##### Primary Routes of Entry

Inhalation, ingestion, skin, and eye contact.

##### Acute Effects

Ingestion Causes Immediate, severe pain in the mouth, throat, and stomach as well as diarrhea and vomiting, from which collapse may result. Vomitus usually contains blood and possibly tissue. All tissues which come in contact with this chemical may be damaged. Death may result from ingestion. If the patient survives, permanent damage to the gastrointestinal tract may occur and the person may have permanent difficulty in swallowing. Inhalation causes respiratory irritation which may develop into serious lung injury depending upon the degree of exposure. Serious pneumonitis may develop. Eye contact with Caustic Soda solid, dust, mist or solution usually results in immediate pain and can cause permanent eye damage including blindness. Skin contact may result in irritation which may not be immediately painful. Greater exposure results in severe burns with scarring.

##### Chronic Effects

Prolonged exposures may result in upper respiratory irritation and ulceration of the nasal passage. High levels may cause permanent lung injury.



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### 3. HAZARDS IDENTIFICATION CONTINUED

#### **Potential Adverse Chemical Interactions**

Persons with skin or lung diseases may be at an increased risk due to the toxic effects of this chemical on these organs.

#### **Carcinogen Status**

Caustic Soda is not considered carcinogenic by OSHA, NIOSH, NTP, IARC or EPA.

### 4. FIRST AID MEASURES

#### **Inhalation**

If a person breathes a large amount of this chemical, move the exposed person to fresh air at once. Provide emergency airway support. Give 100% humidified supplemental oxygen with artificial respiration, if needed. Transport to emergency medical facility without delay.

#### **Skin Contact**

If this chemical contacts the skin, immediately flush the contaminated skin thoroughly with water for at least 15 minutes. If this chemical penetrates the clothing, immediately remove the clothing and flush the skin thoroughly with water. Get medical attention promptly.

#### **Eye Contact**

If this chemical contacts the eyes, immediately flush the eyes with large amounts of room temperature water. Hold the eyelids apart during the flushing operation. Washing must be started **within 10 seconds of contact** and continued for 30 minutes to prevent permanent injury. Get medical attention immediately. Ophthalmology consultation is a must.

#### **Ingestion**

If this chemical has been swallowed and the person is conscious, give water and/or milk immediately to dilute the Caustic Soda; **no more than 8 ounces in adults and 4 ounces in children** is recommended to minimize the risk of vomiting. **Do not attempt to make the person vomit.** Get emergency medical attention immediately.



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### 5. FIRE FIGHTING MEASURES

**Flash Point** Not Applicable

**Flammable Limits (% By Vol.)**

Lower Explosive Limit (LEL) Not Applicable

Upper Explosive Limit (UEL) Not Applicable

**Autoignition Temperature** Not Applicable

**Fire Fighting Procedures/Fire Extinguishing Media**

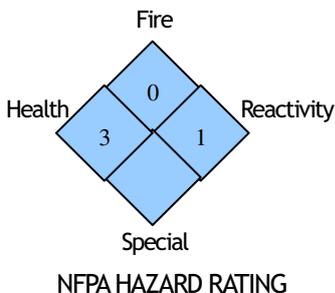
Caustic Soda is not combustible. Avoid direct contact of Caustic Soda with water, as this can produce a violent exothermic reaction. Use fighting agent suitable for surrounding fire to extinguish fire. Use carbon dioxide or suitable dry chemical extinguisher. Structural fire fighter's protective clothing is recommended for fire situations only; it is not effective in spills. Wear full protective clothing and NIOSH approved self-contained respirator, with a full face piece, in the positive pressure mode.

**Unusual Fire And Explosion Hazards**

Caustic Soda will react with metals such as aluminum, tin, and zinc to generate flammable and explosive hydrogen gas. Caustic solutions generate heat when further diluted with water. With concentrations of 40% or greater, the heat generated can result in dangerous eruptions of the solution.

**National Fire Protection Association Hazard Rating**

- 4 = Extreme
- 3 = High
- 2 = Moderate
- 1 = slight
- 0 = Insignificant





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### 6. ACCIDENTAL RELEASE MEASURES

#### **Protect People**

Evacuate area. Clear non-emergency personnel from the area. Ventilate area of spill or leak. Allow only trained personnel wearing appropriate protective gear to be in the spill response.

#### **Protect the Environment**

Contain material to prevent contamination of the soil, surface water or ground water. Dike spills immediately. Dilute acid (preferably acetic acid may be used to neutralize residual traces of caustic soda) after flushing. Small spills should be carefully flushed with water.

#### **Clean Up**

(See MSDS Section 15 for Regulatory Information)

### 7. HANDLING AND STORAGE

#### **Handling and Storage**

Do not get into eyes, on skin, or on clothing. Avoid breathing mists or spray. All personal protective equipment should be selected in accordance with the hazard assessment required by 29 CFR 1910.132 (d).

Product can react violently with water and acids. Caustic solution generate heat when further diluted with water. With concentrations greater than 40%, the heat generated can raise temperatures above the boiling point resulting in sporadic, violent eruptions or spattering. Store away from incompatible materials.

Store away from incompatible materials. (See Section 10, Stability and Reactivity of this MSDS)

Hazardous carbon monoxide gas can form upon with food and beverage products and various sugars in enclosed vessels. Precautions, including atmospheric monitoring for carbon monoxide, should be taken to ensure safety of personnel entering vessels.

Do not store in containers made from tin, aluminum, brass, zinc, and alloys containing these metals. Follow all federal, state, and local regulations as well as all insurance codes when storing and handling caustic soda.



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### 8.EXPOSURE CONTROLS/PERSONAL PROTECTION

All personal protective equipment should be selected in accordance with the hazard assessment required by 29 CFR 1910.132 (d).

#### **Respiratory Protection**

Use appropriate NIOSH approved respirator in accordance with 29 CFR 1910.132 and 1910.134, to prevent overexposure. Respirators must be selected based on the airborne levels found in the workplace and must not exceed the working limits of the respirator.

#### **Eye Protection**

Use splash proof chemical safety goggles and/or appropriate full-face shield. Follow the eye and face protection guidelines of 29 CFR 1910.132 and 1910.133. An eye wash fountain (in accordance with 29 CFR 1910.151) should be within the immediate work area for emergency use.

#### **Skin Protection**

Chemical protective clothing and gloves must be used in accordance with 29 CFR 1910.132 and 29 CFR 1910.138.

#### **Ventilation**

Provide general and/or local ventilation to control airborne levels below exposure guidelines. Local exhaust ventilation should comply with OSHA regulations and the American Conference of Industrial Hygienists, Industrial Ventilation - A Manual of Recommended Practice.

#### **Exposure Guidelines**

OSHA  
ACGIH

PEL 8hour TWA  
TLV - Ceiling

2mg/m<sup>3</sup>  
2mg/m<sup>3</sup>

#### **Other**

Where there is any possibility of exposure of an individual's body to Caustic soda solutions, facilities for quick drenching of the body should be provided (in accordance with 29 CFR 1910.151) within the immediate work area for emergency use. Such individuals should be provided with and required to use impervious clothing.



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### 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance</b>	White solid (flake, pearl, prill)
<b>Odor</b>	No distinct odor
<b>Boiling Point</b>	1390 °C
<b>Melting Point</b>	
<b>Solubility</b>	111g/10ml at 20 °C
<b>Specific Gravity (Water = 1.0)</b>	2.130
<b>Vapor Density (Air = 1.0)</b>	Not Applicable
<b>Vapor Pressure</b>	0 mm Hg at 20 °C
<b>pH</b>	> 14.0 at 20 °C

### 10. STABILITY AND REACTIVITY

#### Stability

Stable under normal conditions.

#### Polymerization

Hazardous polymerization does not occur.

#### Hazardous Decomposition Products

None known.

#### Incompatible Materials

Heat is generated when mixed with water. Spattering and boiling can occur. Flammable hydrogen may be generated from contact with metals such as: aluminum, brass, tin, zinc and alloys of these metals. Avoid contact with acids, halogenated organics, organic nitro compounds and glycols. Caustic soda solution reacts readily with various reducing sugars (i.e., fructose, galactose, maltose, dry whey solids) to produce carbon monoxide. Precautions should be taken including atmospheric monitoring of the tank to ensure of personnel.



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### 11. TOXICOLOGICAL INFORMATION

#### Animal Toxicity

**Oral:** Rabbit, LD<sub>50</sub> 500mg/kg

**Skin:** Rabbit, Adult 500mg/24 H - Severe irritation

**Eye:** Rabbit, Adult 50mg/24 H - Severe irritation

**Intra peritoneal:** Mouse, LD<sub>50</sub> 40 mg/kg

LD<sub>50</sub> = Lowest lethal dose in a given species by a given route exposure.

LD<sub>50</sub> = Dose that is lethal to 50% of a given species by a given route exposure.

### 12. ECOLOGICAL INFORMATION

**Caution:** Caustic soda flake may react violently with acids and water. Do not allow drainage into sewers, streams or storm conduits. Spills on areas other than pavement, dirt or sand may be handled by removing the affected soils and placing in approved containers.

**Environmental Fate:** The following information on sodium hydroxide is extracted from the TOXNET database maintained by the National Library of Medicine.

**Aquatic:** In the case of a solid, anhydrous sodium spill on soil, ground water pollution will occur if precipitation occurs prior to cleanup. Precipitation will dissolve some of the solid (with much heat given off) and create an aqueous solution of sodium hydroxide which then would be able to infiltrate the soil. However, prediction of the concentration and properties of the solution produced would be difficult.

**Biodegradation:** Not Applicable

**Ecotoxicity:** material is slightly toxic to aquatic organisms on an acute basis (LC50 between 10 and 100 mg/L in most sensitive species). May cause pH shifts outside the range of 5 - 10 standard units; this change may be toxic to aquatic organisms.



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### 13. DISPOSAL CONSIDERATIONS

**Waste Management Information:** Do not dump into any sewers, on the ground, or into any body of water. Any disposal practice must be in compliance with local, state and federal laws and regulations (contract local or state environmental agency for specific rules). Waste characterization and compliance with applicable laws are the responsibility of the waste generator.

### 14. TRANSPORTATION INFORMATION

**Proper Shipping Name** Sodium hydroxide

**DOT Hazard Class** 8, (Corrosive)

**DOT Shipping I.D. No.** UN 1823

**PG II**

**Labeling** Corrosive

### 15. REGULATORY INFORMATION

Regulatory information is not meant to be all inclusive. It is the user's responsibility to ensure compliance with federal, state or provincial and local laws.

#### SARA Title III

#### Section 302 and 304 of the Act; Extremely Hazardous substances (40 CFR 355)

COMPONENT

None

CAS No.

Not Applicable

TPQ (lbs)

Not Applicable

RQ (lbs)

Not Applicable

Note: TPQ - Threshold Planning Quantity

RQ - Reportable Quantity

#### Section 311 Hazard Categorization (40 CFR 370)

ACUTE

×

CHRONIC

FIRE

PRESSURE

REACTIVE

×



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### 15. REGULATORY INFORMATION CONTINUE

#### Section 313 Toxic Chemicals (40 CFR 372.65)

<u>COMPONENT</u>	<u>CAS No.</u>	<u>WT.%</u>
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None

Not Applicable

Not Applicable

#### CERCLA

##### Section 102(a) Hazardous substance (40 CFR 302.4)

<u>COMPONENT</u>	<u>CAS No.</u>	<u>WT.%</u>	<u>RQ(lbs)</u>
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Sodium hydroxide

1310-73-2

Approx.98

1,000

#### RCRA

40 CFR 261.22 Hazardous waste number:

Sodium hydroxide waste is regulated as a characteristic corrosive hazardous waste the hazardous waste number D002.

#### TSCA

Sodium hydroxide is listed on the TSCA inventory.

### 16. OTHER INFORMATION

**IMPORTANT:** The information and data herein are believed to be accurate and have been compiled from sources believed to be reliable. It is offered for your consideration, investigation and verification. Buyer assumes all risk of use, storage and handling of the product in compliance with applicable federal, state, and local laws and regulations.