

MATERIAL SAFETY DATA SHEET

CAUSTIC SODA

1. Product and Company Identification

Material name CAUSTIC SODA
Chemical name Sodium hydroxide
Applications Alkalinity Control
Supplier

2. Composition / Information on Ingredients

| Components | CAS # | Percent |
|--|-----------|---------|
| SODIUM HYDROXIDE | 1310-73-2 | > 97 |
| Non-hazardous and other components below reportable levels | | 1 - 2.5 |

Composition comments This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

3. Hazards Identification

Emergency overview May cause severe irritation or burns to the eyes, skin, gastrointestinal tract, and respiratory system. Risk of serious damage to eyes.

Potential health effects

Routes of exposure Inhalation. Skin contact. Eye contact.

Eyes Causes severe eye burns. Corrosive to the eyes and may cause severe damage including blindness.

Skin Contact causes severe skin irritation and possible burns.

Inhalation Can cause severe respiratory irritation. Inhalation of mists or vapors may produce upper airway edema, wheezing, pulmonary edema, pneumonitis and respiratory failure.

Ingestion Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus and possibly the digestive tract. Ingestion of this product may cause nausea, vomiting and diarrhea.

Target organs Eyes. Respiratory system. Skin.

Chronic effects Prolonged skin contact may defat the skin and produce dermatitis.

4. First Aid Measures

First aid procedures

Eye contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention immediately.

Skin contact Wash off immediately with plenty of water for at least 15 minutes. Wash affected area with mild soap and water. Remove and isolate contaminated clothing and shoes. Get medical attention immediately. Launder contaminated clothing before reuse.

Inhalation Move to fresh air. If breathing is difficult, give oxygen. Get medical attention immediately.

Ingestion Immediately give large quantities of water to drink. Do not induce vomiting. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Get medical attention immediately.

General advice Keep victim warm. In case of shortness of breath, give oxygen. Immediate medical attention is required. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire Fighting Measures

Flammable properties None known.

Extinguishing media

Suitable extinguishing media Do not use water. Use extinguishing agent suitable for type of surrounding fire.

Protection of firefighters

Protective equipment for firefighters

Move containers from fire area if you can do it without risk. Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.

6. Accidental Release Measures

Evacuation procedures

Ventilate closed spaces before entering. Keep unnecessary personnel away. Local authorities should be advised if significant spillages cannot be contained.

Methods for containment

Prevent entry into waterways, sewers, basements or confined areas. Stop the flow of material, if this is without risk.

Methods for cleaning up

Shovel or sweep up. Avoid dust formation.

7. Handling and Storage

Handling

Handle and open container with care. Avoid breathing dusts from this material. Do not get this material in your eyes, on your skin, or on your clothing. Wash hands after handling and before eating. Considerable heat is generated when water or acid is added, therefore when making solutions always add the caustic to the water or acid with constant stirring.

Storage

Use care in handling/storage. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep this material away from food, drink and animal feed. Keep out of the reach of children.

8. Exposure Controls / Personal Protection

Exposure guidelines

ACGIH - Threshold Limits Values - Ceilings (TLV-C)

SODIUM HYDROXIDE 1310-73-2 2 Mg/m3 Ceiling

ACGIH - Threshold Limits Values - TLV Basis - Critical Effects

SODIUM HYDROXIDE 1310-73-2 irritation

OSHA - Final PELs - Time Weighted Averages (TWAs)

SODIUM HYDROXIDE 1310-73-2 2 Mg/m3 TWA

Engineering controls

Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

Personal protective equipment

Eye / face protection

Wear chemical goggles. Face-shield. Eye wash fountain and emergency showers are recommended.

Skin protection

Use of protective coveralls and long sleeves is recommended. Use of impervious boots is recommended. Use of an impervious apron is recommended. Recommended gloves include rubber, neoprene, nitrile or viton.

Respiratory protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

General hygiene considerations

Avoid contact with the skin and the eyes. Keep away from food and drink. Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and immediately after handling the product.

9. Physical and Chemical Properties

Appearance / Color / Form

Pellets. White. Solid.

Odor

Odourless.

Clarity

Not available

Odor threshold

Not available

Physical state

Solid

pH

12, conc: 0.05% (solution); 13, conc: 1% (solution); 14, conc: 5% (solution)

Melting point

604.4 °F (318 °C) estimated

Freezing point

Not available

Boiling point

2534 °F (1390 °C) estimated

Flash point

Not available

Evaporation rate

Not available

Flammability limits in air, lower, % by volume

Not available

Flammability limits in air, upper, % by volume

Not available

Vapor pressure

0 HPa at 20 °C

Vapor density

Not available

| | |
|---------------------------|-------------------|
| Specific gravity | 2.13 @20 C |
| Relative density | 2.1322 estimated |
| Solubility | Soluble in water. |
| Octanol/H2O coeff | Not available |
| Auto-ignition temperature | Not available |
| Decomposition temperature | Not available |
| Molecular weight | 40.01 g/mol |
| Molecular formula | NaOH |

10. Chemical Stability and Reativity Information

| | |
|------------------------------------|---|
| Chemical stability | Stable at normal conditions. |
| Conditions to avoid | Avoid contact with water. Direct contact with water may cause an exothermic reaction. |
| Incompatible materials | Alkali sensitive metals or alloys including aluminum, brass, bronze, copper, lead, tin, and zinc. Acids. Halogenated compounds. |
| Hazardous decomposition products | None known. |
| Possibility of hazardous reactions | Will not occur. |

11. Toxicological Information

| | |
|--|---|
| Acute effects | Causes severe burns. |
| Component analysis - LD50 | |
| Toxicology Data - Selected LD50s and LC50s | |
| SODIUM HYDROXIDE | 1310-73-2 Dermal LD50 Rabbit: 1350 mg/kg |
| Chronic effects | Prolonged or repeated exposure may cause lung injury. Prolonged skin contact may defat the skin and produce dermatitis. |

12. Ecological Information

| | |
|--------------------------------|---|
| Ecotoxicity | Because of the high pH of this product, it would be expected to produce significant ecotoxicity upon exposure to aquatic organisms and aquatic systems. |
| Environmental effects | Harmful to aquatic life. |
| Persistence / degradability | This material is inorganic and not subject to biodegradation. |
| Bioaccumulation / accumulation | Not expected to bioaccumulate. |

13. Disposal Considerations

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|-----------------------|--|
| Disposal instructions | Dispose in accordance with all applicable regulations. |
|-----------------------|--|

14. Transport Information

Department of Transportation (DOT) Requirements

Basic shipping requirements:

| | |
|----------------------|-------------------------|
| Proper shipping name | Sodium hydroxide, solid |
| Hazard class | 8 |
| UN number | UN1823 |
| Packaging group | II |

Additional information:

| | |
|----------------------|---------------|
| Special provisions | IB8, IP2, IP4 |
| Packaging exceptions | 154 |
| Packaging non bulk | 212 |
| Packaging bulk | 240 |
| ERG number | 154 |



IATA

Basic shipping requirements:

Proper shipping name Sodium hydroxide, solid
Hazard class 8
UN number 1823
Packaging group II



IMDG

Basic shipping requirements:

Proper shipping name SODIUM HYDROXIDE, SOLID
Hazard class 8
UN number 1823
Packaging group II
Additional information:
Hazard ID 80
Item C6
Labels required 8
Transport Category 2



15. Regulatory Information

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

FDA - Direct Food Additives

SODIUM HYDROXIDE 1310-73-2 21 CFR 173.310

FDA - Food Additives Generally Recognized as Safe (GRAS)

SODIUM HYDROXIDE 1310-73-2 21 CFR 184.1763

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous chemical Yes

CERCLA (Superfund) reportable quantity SODIUM HYDROXIDE: 1000

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - Yes

Section 302 extremely hazardous substance No

Section 311 hazardous chemical Yes

Inventory status

| Country(s) or region | Inventory name | On inventory (yes/no)* |
|-----------------------------|---|------------------------|
| Australia | Australian Inventory of Chemical Substances (AICS) | Yes |
| Canada | Domestic Substances List (DSL) | Yes |
| Canada | Non-Domestic Substances List (NDSL) | No |
| China | Inventory of Existing Chemical Substances in China (CCS) | Yes |
| Europe | European Inventory of New and Existing Chemicals (EINECS) | Yes |
| Europe | European List of Notified Chemical Substances (ELINCS) | No |
| Japan | Japanese Inventory of Existing and New Chemical Substances (ENCS) | Yes |
| Korea | Korean Inventory of Chemicals (KICS) | Yes |
| New Zealand | New Zealand Inventory | No |
| Philippines | Philippine Inventory of Chemicals and Chemical Substances (PICCS) | Yes |
| United States & Puerto Rico | Toxic Substances Control Act (TSCA) Inventory | Yes |

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

International regulations

The product is classified and labelled in accordance with EC directives or respective national laws.

State regulations**Massachusetts - Right To Know List**

SODIUM HYDROXIDE 1310-73-2 Present

New Jersey - Right to Know Hazardous Substance List

SODIUM HYDROXIDE 1310-73-2 sn 1706

Pennsylvania - RTK (Right to Know) List

SODIUM HYDROXIDE 1310-73-2 Environmental hazard

16. Other Information**HMIS ratings**

Health: 3*
Flammability: 0
Physical hazard: 2
Personal protection: D

NFPA ratings

Health: 3
Flammability: 0
Instability: 2

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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