Material Safety Data Sheet

1. PRODUCT AND COMPANY IDENTIFICATION
Product name: Sodium hydroxide solution
Product Number: 415413
Brand: Sigma-Aldrich
Supplier: Sigma-Aldrich
3650 Spruce Street
SAINT LOUIS MO 63103
USA.
Telephone: +1 314-533-3300
Fax: +1 314-533-1212
Emergency Phone # (For both supplier and manufacturer): (314) 776-0202
Preparation Information: Sigma-Aldrich Corporation
Product Safety - Americas Region
1-800-521-8956

2. HAZARDS IDENTIFICATION
Emergency Overview
OSHA Hazards
Corrosive
GHS Classification
Skin corrosion (Category 1A)
Serious eye damage (Category 1)
Acute aquatic toxicity (Category 3)
GHS Label elements, including precautionary statements
Pictogram
Signal word: Danger
Hazard statement(s)
H314: Causes severe skin burns and eye damage.
H402: Harmful to aquatic life.
Precautionary statement(s)
P200: Wear protective gloves/ protective clothing/ eye protection/ face protection.
P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310: Immediately call a POISON CENTER or doctor/ physician.

3. COMPOSITION/INFORMATION ON INGREDIENTS
Potential Health Effects
Inhalation: May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
Skin: May be harmful if absorbed through skin. Causes skin burns. Causes severe eye burns.
Ingestion: May be harmful if swallowed.

Formula: HNaO
Molecular Weight: 42.00 g/mol

Component  Classification  Concentration
Sodium hydroxide  CAS-No.  1310-73-2  Skin Corr. 1A, H314  30 - 60 %
EC-No.  215-185-3
Index-No.  011-002-00-6

For the full text of the H-Statements and P-Phrases mentioned in this Section, see Section 16

4. FIRST AID MEASURES
General advice
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled:
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact:
Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician.

In case of eye contact:
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.

If swallowed:
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIREFIGHTING MEASURES
Conditions of flammability
Not flammable or combustible.

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for firefighters
Wear self-contained breathing apparatus for fire fighting if necessary.

Hazardous combustion products
Hazardous decomposition products formed under fire conditions. - Sodium oxides

6. ACCIDENTAL RELEASE MEASURES
Personal precautions
Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up
Scrub up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.
7. HANDLING AND STORAGE
Precautions for safe handling
Avoid inhalation of vapour or mist.
Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. EXPOSURE CONTROLS/PERSOAL PROTECTION
Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium</td>
<td>1310-73-2</td>
<td>2 mg/m³</td>
<td>USA, ACGIH Threshold Limit Values (TLV)</td>
<td></td>
</tr>
<tr>
<td>hydroxide</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 mg/m³</td>
<td>USA, OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000</td>
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<tr>
<td>TWA</td>
<td>2 mg/m³</td>
<td>USA, Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants</td>
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<tr>
<td></td>
<td>2 mg/m³</td>
<td>USA, ACGIH Threshold Limit Values (TLV)</td>
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<td></td>
</tr>
<tr>
<td>Remarks</td>
<td></td>
<td></td>
<td></td>
<td>Eye, skin, &amp; Upper Respiratory Tract Irritation</td>
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<tr>
<td></td>
<td></td>
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</tbody>
</table>
| Personal protective equipment
Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove’s outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection
Tightly fitting safety goggles. Face shield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection
Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES
Appearance
Form: liquid
Colour: colourless

Safety data
pH: 14.0

Melting point/freezing point
-12 - 10 °C (10 - 50 °F)
Boiling point
105 - 140 °C (221 - 294 °F)
Flash point
not applicable
Ignition temperature
no data available
Autoignition temperature
no data available
Lower explosion limit
no data available
Upper explosion limit
no data available
Vapour pressure
< 24 hPa (< 18 mmHg) at 20 °C (68 °F)
Density
1.515 g/mL at 25 °C (77 °F)
Water solubility
completely miscible, soluble
Partition coefficient:
non-octanol/water
no data available
Relative vapour density
1.28 (Ar = 1.0)
Odour
no data available
Odour threshold
no data available
Evaporation rate
no data available

10. STABILITY AND REACTIVITY
Chemical stability
Stable under recommended storage conditions.
Possibility of hazardous reactions
no data available
Conditions to avoid
no data available
Materials to avoid
Water, acids, Organic materials, Chlorinated solvents, Aluminum, Phosphorus, Tin/tin oxides, Zinc
Hazardous decomposition products
Other decomposition products - no data available
Hazardous decomposition products formed under fire conditions - Sodium oxide

11. TOXICOLOGICAL INFORMATION
Acute toxicity
Oral LD50
no data available
Inhalation LC50
no data available
Dermal LD50
no data available
Other information on acute toxicity
no data available
Skin corrosion/irritation
no data available
Serious eye damage/eye irritation
no data available
Eyes: no data available
Respiratory or skin sensitization
no data available

Germ cell mutagenicity
no data available

Carcinogenicity
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

AGGHI: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by AGGHI.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity
no data available

Teratogenicity
no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)
no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System)
no data available

Aspiration hazard
no data available

Potential health effects:

Inhalation: May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.

Ingestion: May be harmful if swallowed.

Skin: May be harmful if absorbed through skin. Causes skin burns.

Eyes: Causes eye burns. Causes severe eye burns.

Signs and Symptoms of Exposure:
Burning sensation. Cough, wheezing, laryngitis, Shortness of breath, spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin.

Synergistic effects
no data available

Additional Information
RTECS: Not available

12. ECOLOGICAL INFORMATION

Toxicity
no data available

Persistence and degradability
no data available

Bioaccumulative potential
no data available

Mobility in soil
no data available

PBT and vPvB assessment
no data available

Other adverse effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Harmful to aquatic life.

13. DISPOSAL CONSIDERATIONS

Product
Offer surplus and non-recycleable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN number: 1824 Class: 8 Packing group: II
Proper shipping name: Sodium hydroxide solution
Reportable Quantity (RQ): 2000 lbs
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG
UN number: 1824 Class: 8 Packing group: II
EMS-No: F-A, S-B
Proper shipping name: SODIUM HYDROXIDE SOLUTION Marine pollutant: No

IATA
UN number: 1824 Class: 8 Packing group: II
Proper shipping name: Sodium hydroxide solution

15. REGULATORY INFORMATION

OSHA Hazards
Corrosive

SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (see Minim) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Acute Health Hazard

Massachusetts Right To Know Components

<table>
<thead>
<tr>
<th>Chemical</th>
<th>CAS-No.</th>
<th>Revision Date</th>
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<tbody>
<tr>
<td>Sodium hydroxide</td>
<td>1510-75-2</td>
<td>2007-09-01</td>
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Pennsylvania Right To Know Components

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<th>Chemical</th>
<th>CAS-No.</th>
<th>Revision Date</th>
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<tr>
<td>Sodium hydroxide</td>
<td>1310-79-2</td>
<td>2007-03-01</td>
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New Jersey Right To Know Components

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<th>Chemical</th>
<th>CAS-No.</th>
<th>Revision Date</th>
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<tr>
<td>Water</td>
<td>7732-16-5</td>
<td></td>
</tr>
</tbody>
</table>
Sodium hydroxide

California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Text of H-code(s) and R-phrase(s) mentioned in Section 3
H314 Causes severe skin burns and eye damage.
Skin Corr. Skin corrosion

Further Information
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