**** SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION ****

MSDS Name: Sodium Hydroxide
Catalog Numbers:
  MCC-031556, NC9532183, NC9731968, NC9830469, S392-12, S392-212, S392-50,
  S399-1, XX1.5SODHYD20L, XX55254F30LB, XXS320EPB50KG, XXSS254F30LB
Synonyms:
  Caustic soda; Soda lye; Sodium hydrate; Lye.
Company Identification: Fisher Scientific
  1 Reagent Lane
  Fairlawn, NJ 07410
For information, call: 201-796-7100
Emergency Number: 201-796-7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

**** SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS ****

<table>
<thead>
<tr>
<th>CAS#</th>
<th>Chemical Name</th>
<th>%</th>
<th>EINECS#</th>
</tr>
</thead>
<tbody>
<tr>
<td>1310-73-2</td>
<td>Sodium hydroxide</td>
<td>50</td>
<td>215-185-5</td>
</tr>
<tr>
<td>7732-18-5</td>
<td>Water</td>
<td>50</td>
<td>231-791-2</td>
</tr>
</tbody>
</table>

Hazard Symbols: C
Risk Phrases: 35

**** SECTION 3 - HAZARDS IDENTIFICATION ****

EMERGENCY OVERVIEW

Appearance: clear.
Danger! Corrosive. Causes eye and skin burns. May cause severe respiratory tract irritation with possible burns. May cause severe digestive tract irritation with possible burns.
Target Organs: Eyes, skin, mucous membranes.

Potential Health Effects

Eye:
  Causes eye burns. May cause chemical conjunctivitis and corneal damage.

Skin:
  Causes skin burns. May cause deep, penetrating ulcers of the skin.
  May cause skin rash (in milder cases), and cold and clammy skin with cyanosis or pale color.

Ingestion:
  May cause severe and permanent damage to the digestive tract. Causes gastrointestinal tract burns. May cause perforation of the digestive tract. Causes severe pain, nausea, vomiting, diarrhea, and shock.
  May cause systemic effects.

Inhalation:
  Irritation may lead to chemical pneumonitis and pulmonary edema.
  Causes severe irritation of upper respiratory tract with coughing, burns, breathing difficulty, and possible coma. Causes chemical burns to the respiratory tract. Aspiration may lead to pulmonary edema. May cause systemic effects.

Chronic:
  Prolonged or repeated skin contact may cause dermatitis. Effects may
**** SECTION 4 - FIRST AID MEASURES ****

Eyes:  
In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid immediately.

Skin:  
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid immediately. Wash clothing before reuse.

Ingestion:  
If swallowed, do NOT induce vomiting. Get medical aid immediately. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person.

Inhalation:  
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician:  
Treat symptomatically and supportively.

**** SECTION 5 - FIRE FIGHTING MEASURES ****

General Information:  
As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool. Use water with caution and in flooding amounts. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. Contact with metals may evolve flammable hydrogen gas. Containers may explode when heated. Non-combustible, substance itself does not burn but may decompose upon heating to produce irritating, corrosive and/or toxic fumes.

Extinguishing Media:  
Do NOT get water inside containers. For small fires, use dry chemical, carbon dioxide, or water spray. For large fires, use dry chemical, carbon dioxide, alcohol-resistant foam, or water spray. Cool containers with flooding quantities of water until well after fire is out.

Autoignition Temperature: Not applicable.
Flash Point: Not applicable.
Explosion Limits, lower: Not available.
Explosion Limits, upper: Not available.
NFPA Rating: (estimated) Health: 3; Flammability: 0; Reactivity: 1

**** SECTION 6 - ACCIDENTAL RELEASE MEASURES ****

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:  
Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Provide ventilation.
**** SECTION 7 - HANDLING and STORAGE ****

Handling:
Wash thoroughly after handling. Use only in a well-ventilated area.
Do not breathe dust, vapor, mist, or gas. Do not get in eyes, on
skin, or on clothing. Keep container tightly closed. Do not ingest or
inhale. Discard contaminated shoes.

Storage:
Keep container closed when not in use. Store in a cool, dry,
well-ventilated area away from incompatible substances. Keep away
from strong acids. Keep away from metals. Keep away from flammable
liquids. Keep away from organic halogens.

**** SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION ****

Engineering Controls:
Facilities storing or utilizing this material should be equipped
with an eyewash facility and a safety shower. Use adequate general or
local exhaust ventilation to keep airborne concentrations below the
permissible exposure limits.

Exposure Limits

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>NIOSH</th>
<th>OSHA - Final PELs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium hydroxide</td>
<td>C 2 mg/m3</td>
<td>10 mg/m3 IDLH</td>
<td>2 mg/m3 TWA</td>
</tr>
<tr>
<td>Water</td>
<td>none listed</td>
<td>none listed</td>
<td>none listed</td>
</tr>
</tbody>
</table>

OSHA Vacated PELs:
Sodium hydroxide:
C 2 mg/m3
Water:
No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes:
Wear chemical goggles and face shield.

Skin:
Wear appropriate protective gloves to prevent skin exposure.

Clothing:
Wear appropriate protective clothing to prevent skin exposure.

Respirators:
A respiratory protection program that meets OSHA's 29
CFR :1910.134 and ANSI Z88.2 requirements or European
Standard EN 149 must be followed whenever workplace
conditions warrant a respirator's use.

**** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ****

Physical State: Liquid
Appearance: clear
Odor: none reported
pH: Alkaline
Vapor Pressure: 14 mm Hg
Vapor Density: >1.0
Evaporation Rate: Not available.
Viscosity: >1 (ether=1)
Boiling Point: 212 deg F
Freezing/Melting Point: 32 deg F
Decomposition Temperature: Not available.
Solubility in water: Completely soluble in water.
Specific Gravity/Density: 1.0
Molecular Formula: NaOH
Molecular Weight: 0

**** SECTION 10 - STABILITY AND REACTIVITY ****

Chemical Stability:
Stable at room temperature in closed containers under normal storage and handling conditions.
Conditions to Avoid:
Extreme temperatures.
Incompatibilities with Other Materials:
Metals, acids, nitro compounds, halogenated organics (e.g. dibromoethane, hexachlorobenzene, methyl chloride, trichloroethylene), nitromethane, flammable liquids.
Hazardous Decomposition Products:
Toxic fumes of sodium oxide.
Hazardous Polymerization: Has not been reported.

**** SECTION 11 - TOXICOLOGICAL INFORMATION ****

RTECS#:
CAS# 1310-73-2: WB4900000
CAS# 7732-18-5: ZC0110000
LD50/LC50:
CAS# 1310-73-2: Draize test, rabbit, eye: 400 ug Mild; Draize test, rabbit, eye: 1% Severe; Draize test, rabbit, eye: 50 ug/24H Severe; Draize test, rabbit, eye: 1 mg/24H Severe; Draize test, rabbit, skin: 500 mg/24H Severe.
CAS# 7732-18-5: Oral, rat: LD50 = >90 mL/kg.
Carcinogenicity:
Sodium hydroxide -
Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Water -
Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Epidemiology:
No information found.
Teratogenicity:
No information found.
Reproductive Effects:
No information found.
Neurotoxicity:
No information found.
Mutagenicity:
No information found.
Other Studies:
See actual entry in RTECS for complete information.

**** SECTION 12 - ECOLOGICAL INFORMATION ****
**** SECTION 13 - DISPOSAL CONSIDERATIONS ****

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.
RCRA U-Series: None listed.

**** SECTION 14 - TRANSPORT INFORMATION ****

US DOT
Shipping Name: SODIUM HYDROXIDE, SOLID
Hazard Class: 8
UN Number: UN1823
Packing Group: II
Canadian TDG
No information available.

**** SECTION 15 - REGULATORY INFORMATION ****

US FEDERAL
TSCA
CAS# 1310-73-2 is listed on the TSCA inventory.
CAS# 7732-18-5 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
SARA
Section 302 (RQ)
CAS# 1310-73-2: final RQ = 1000 pounds (454 kg)
Section 302 (TPQ)
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 1310-73-2: acute, reactive.
Section 313
No chemicals are reportable under Section 313.
Clean Air Act:
This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
CAS# 1310-73-2 is listed as a Hazardous Substance under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA:
None of the chemicals in this product are considered highly hazardous
STATE

Sodium hydroxide can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.

Water is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California No Significant Risk Level:

None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: C

Risk Phrases:

R 35 Causes severe burns.

Safety Phrases:

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S 37/39 Wear suitable gloves and eye/face protection.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

WGK (Water Danger/Protection)

CAS# 1310-73-2: 1

CAS# 7732-18-5: No information available.

United Kingdom Occupational Exposure Limits

CAS# 1310-73-2: OES-United Kingdom, STEL 2 mg/m3 STEL

CAS# 1310-73-2: OES-United Kingdom, STEL 2 mg/m3 STEL

Canada

CAS# 1310-73-2 is listed on Canada's DSL List.

CAS# 7732-18-5 is listed on Canada's DSL List.

This product has a WHMIS classification of E.

CAS# 1310-73-2 is listed on Canada's Ingredient Disclosure List.

CAS# 7732-18-5 is not listed on Canada's Ingredient Disclosure List.

Exposure Limits

CAS# 1310-73-2: OEL-AUSTRALIA:TWA 2 mg/m3

OEL-BELGIUM: STEL 2 mg/m3

OEL-DENMARK:TWA 2 mg/m3

OEL-FINLAND:TWA 2 mg/m3

OEL-FRANCE:TWA 2 mg/m3

OEL-GERMANY:TWA 2 mg/m3

OEL-JAPAN: STEL 2 mg/m3

OEL-THE NETHERLANDS:TWA 2 mg/m3

OEL-THE PHILIPPINES:TWA 2 mg/m3

OEL-SWEDEN:TWA 2 mg/m3

OEL-SWITZERLAND:TWA 2 mg/m3; STEL 4 mg/m3

OEL-THAILAND:TWA 2 mg/m3

OEL-TURKEY:TWA 2 mg/m3

OEL-UNITED KINGDOM:TWA 2 mg/m3; STEL 2 mg/m3

OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV

OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGI TLV

**** SECTION 16 - ADDITIONAL INFORMATION ****

MSDS Creation Date:  9/24/1997  Revision #4 Date:  8/06/2001

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to
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