1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MSDS NUMBER : M32415  ISSUE DATE : 07-30-01

PRODUCT NAME : CAUSTIC SODA LIQUID (ALL GRADES)

Manufacturer’s Name and Address : Occidental Chemical Corporation, Occidental Tower
5005 LBJ Freeway, P.O. Box 809050
Dallas, TX 75380 (972) 404-3800

24 HOUR EMERGENCY TELEPHONE : 1-800-733-3665 OR 972-404-3228

TO REQUEST AN MSDS : 1-800-699-4970

CUSTOMER SERVICE : 1-800-752-5151

PRODUCT USE : Metal finishing, industrial cleaners, chemical processing, petroleum industry

CHEMICAL NAME : Sodium hydroxide

CHEMICAL FORMULA : NaOH

SYNONYMS/COMMON NAMES : Sodium hydroxide solution

2. COMPOSITION/INFORMATION ON INGREDIENTS

CAS NUMBER / NAME
7732-18-5 Water

EXPOSURE LIMITS
PEL: Not Established
TLV: Not Established
PELZ2: Not Established

PERCENTAGE
VOL ND
WT 48.5-94.5

COMMON NAMES:
(MW 18.02)

Listed On (List Legend Below):
00 19 22 23 51
2. COMPOSITION/INFORMATION ON INGREDIENTS (Continued)

1310-73-2 Sodium hydroxide (Na(OH))

EXPOSURE LIMITS

PERCENTAGE
PEL: 2 MG/M3 CEIL
TLV: 2 MG/M3 CEIL
PELZ2: Not Established

VOL ND
WT 5.5-51.5

COMMON NAMES:
CAUSTIC SODA (MW 40.00)

Listed On (List Legend Below):
00 12 13 21 22 51 56 57

7647-14-5 Sodium chloride (NaCl)

EXPOSURE LIMITS

PERCENTAGE
PEL: Not Established
TLV: Not Established
PELZ2: Not Established

VOL ND
WT 0-1.3

COMMON NAMES:
Salt (MW 58.4)

Listed On (List Legend Below):
00 22 23 51

LIST LEGEND

00 TSCA INVENTORY 12 PA HAZARDOUS SUBSTANCE
13 PA ENVIRONMENTAL HAZ SUBSTANCE 19 PA REQUIREMENT- 3% OR GREATER
21 NJ SPECIAL HEALTH HAZ SUB 22 CANADIAN DOMESTIC SUB LIST
23 NJ REQUIREMENT- 1% OR GREATER 51 EINECS
56 OSHA PERMISSIBLE EXPOSURE LIM. 57 ACGIH THRESHOLD LIMIT VALUES

3. HAZARDS IDENTIFICATION

*********************** EMERGENCY OVERVIEW ***************************
* MAY CAUSE BURNS TO THE EYES, SKIN, RESPIRATORY AND *
* GASTROINTESTINAL TRACT. MAY CAUSE PERMANENT EYE DAMAGE. *
* Clear liquid with no distinct odor *

POTENTIAL HEALTH EFFECTS

 ROUTES OF ENTRY:
Inhalation, Ingestion.

TARGET ORGANS:
Eyes, Skin, Respiratory Tract, Gastrointestinal Tract.
3. HAZARDS IDENTIFICATION (Continued)

IRRITANCY:
All routes of exposure, Corrosive.

SENSITIZING CAPABILITY:
None known.

REPRODUCTIVE EFFECTS:
None known.

CANCER INFORMATION:
Not classified as carcinogenic by NTP, IARC, OSHA, ACGIH, or NIOSH.

SHORT-TERM EXPOSURE (ACUTE)

INHALATION:
Exposure can produce burns.

EYES:
Corrosive.
Contact may cause burns and tissue destruction.
The severity of the effects depend on concentration and how soon after exposure the area is washed.
MAY CAUSE PERMANENT EYE DAMAGE.

SKIN:
Corrosive.
Contact may cause burns and tissue destruction.
May cause burns that are not immediately noticed or painful.

INGESTION:
Corrosive.
Contact may cause burns and tissue destruction.

REPEATED EXPOSURE (CHRONIC)
None known.

SYNERGISTIC MATERIALS:
None known.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:
None known.
4. FIRST AID MEASURES

EYES:
Immediately flush eyes with a directed stream of water for at least 15 minutes, forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissues. Washing eyes within several seconds is essential to achieve maximum effectiveness. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN:
Immediately flush contaminated areas with water. Remove contaminated clothing and footwear. Wash contaminated areas with plenty of soap and water. Wash clothing before reuse. Discard footwear which cannot be decontaminated. GET MEDICAL ATTENTION IMMEDIATELY.

INHALATION:
Remove to fresh air if safe to transport. Otherwise attempt to provide fresh air by ventilation. If breathing is difficult, have a trained person administer oxygen. If respiration or pulse has stopped, have a trained person administer Basic Life Support (Cardio-Pulmonary Resuscitation/Automatic External Defibrillator) and CALL FOR EMERGENCY SERVICES IMMEDIATELY (911 or emergency transport services).

INGESTION:
Never give anything by mouth to an unconscious person. If swallowed, do not induces vomiting. Give large quantities of water. (If available, give several glasses of milk.) If vomiting occurs spontaneously, keep airway clear and give more water. GET MEDICAL ATTENTION IMMEDIATELY.

NOTES TO PHYSICIAN:
No specialized procedures. Treat for clinical symptoms.

5. FIRE FIGHTING MEASURES

Flash Point: Not applicable
Method: Not applicable
Autoignition Temperature: Not applicable

FLAMMABLE LIMITS IN AIR, BY % VOLUME
  Upper: Not applicable
  Lower: Not applicable

EXTINGUISHING MEDIA:
Non-flammable / Non-combustible.

Use agents appropriate for surrounding fire.
5. FIRE FIGHTING MEASURES (Continued)

FIRE FIGHTING PROCEDURES:
Wear NIOSH/MSHA approved positive pressure self-contained breathing apparatus and full protective clothing.

FIRE AND EXPLOSION HAZARD:
None known.

SENSITIVITY TO MECHANICAL IMPACT:
Not sensitive.

SENSITIVITY TO STATIC DISCHARGE:
Not sensitive.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:
Follow protective measures provided under Personal Protection in Section 8.

Evacuate unnecessary personnel and eliminate all sources of ignition.

ENVIRONMENTAL PRECAUTIONS:
Do not allow entry into sewers and waterways.

METHODS FOR CLEANING UP:
For small spills, soak up with absorbent material and place in properly labeled containers for disposal.

For large spills, dike and pump into properly labeled containers for reclamation or disposal.

7. HANDLING AND STORAGE

HANDLING:
Use with adequate ventilation.

Avoid breathing vapors.

Wear personal protective equipment as described in Exposure Controls/Personal Protection (Section 8) of the MSDS.

SPECIAL MIXING AND HANDLING INSTRUCTIONS:
Do not allow contact with materials as noted in Section 10.
7. HANDLING AND STORAGE (Continued)

STORAGE:
Keep container tightly closed and properly labeled.

Do not store in aluminum container or use aluminum fittings or transfer lines, as flammable hydrogen gas can be generated.

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

ENGINEERING CONTROLS:
Handle product in a well ventilated area.

If product is handled in an open system, the use of process enclosures, local exhaust ventilation, and/or other engineering controls should be considered to control airborne levels to below recommended exposure limits, or below acceptable levels where there are no limits.

PERSONAL PROTECTION

RESPIRATORY:
A NIOSH approved respirator with a dust, fume and mist filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits, or when symptoms have been observed that are indicative of overexposure.

A respiratory protection program that meets 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant use of a respirator.

EYE/FACE:
Wear chemical safety goggles plus full face shield to protect against contact when appropriate (ANSI Z87.1).

SKIN:
Wear protective clothing to minimize skin contact.

Wear chemical resistant gloves such as rubber, neoprene or vinyl.

OTHER:
Discard leather items that cannot be decontaminated.

Emergency shower and eyewash facility should be in close proximity (ANSI Z358.1).
9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Concentration, weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical State: Liquid:</td>
</tr>
<tr>
<td>Boiling Pt @ 760 mm Hg, °C:</td>
</tr>
<tr>
<td>Freezing Pt °C:</td>
</tr>
<tr>
<td>Vapor Press., mm Hg @ 60°C:</td>
</tr>
<tr>
<td>Spec. Grav. @ 15.6°C:</td>
</tr>
<tr>
<td>Density, lb/gal @ 15.6°C:</td>
</tr>
<tr>
<td>Sol. in H2O, % by Wt.:</td>
</tr>
<tr>
<td>Vapor Density:</td>
</tr>
<tr>
<td>Odor Threshold (ppm):</td>
</tr>
<tr>
<td>Evaporation Rate:</td>
</tr>
<tr>
<td>Coefficient Water/Oil Distribution:</td>
</tr>
<tr>
<td>pH:</td>
</tr>
</tbody>
</table>

Appearance and Odor: Clear liquid with no distinct odor

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY:

_X_ STABLE  ____ UNSTABLE

REACTS WITH:

_X_ AIR  ____ OXIDIZERS  _X_ METALS

____ WATER  _X_ ACIDS  _X_ OTHER

____ HEAT  ____ ALKALIS  ____ NONE

HAZARDOUS POLYMERIZATION:

____ OCCURS  _X_ WILL NOT OCCUR

COMMENTS:

Product is corrosive to tin, aluminum, zinc and alloys containing these metals and will react with these metals in powder form. Avoid contact with leather, wool, acids, organic halogen compounds, or organic nitro compounds. Hazardous carbon monoxide gas can form upon contact with reducing sugars, food and beverage products in enclosed spaces and can cause death. Follow appropriate tank entry procedures.

Prolonged contact with aluminum may produce flammable hydrogen gas.

HAZARDOUS DECOMPOSITION PRODUCTS:

None.
11. TOXICOLOGICAL INFORMATION

1310-73-2 Sodium hydroxide (Na(OH))

This substance is alkaline and corrosive. Minimize contact. The irritating and corrosive properties of this substance depend on its concentration. It is toxic by the oral route. It may cause burns and other effects to the mucous membranes, mouth and digestive tract. Its dermal toxicity has not been determined. It may cause burns that are not immediately noticed or painful. Inhalation of dust or vapors can cause airway effects including burns. This substance is irritating and corrosive to the eyes and skin.

The irritating and corrosive properties of this substance depend on its concentration. In general, serious injury is associated with products with a pH of 11.5 or higher.

For further information call or write the address shown on page 1 of the MSDS.

12. ECOLOGICAL INFORMATION

1310-73-2 Sodium hydroxide (Na(OH))

TOXICITY: This material is believed to be slightly toxic to aquatic life.

PERSISTENCE: This material is believed to be unlikely to persist in the environment.

BIOACCUMULATION: This material is believed to be unlikely to bioaccumulate.

For further information call or write the address shown on page 1 of the MSDS.

13. DISPOSAL CONSIDERATIONS

Dispose of all waste and contaminated equipment in accordance with all applicable federal, state and local health and environmental regulations.

14. TRANSPORT INFORMATION

DOT PROPER SHIPPING NAME: Sodium Hydroxide, Solution

DOT HAZARD CLASS: 8

DOT IDENTIFICATION NO: UN1824

DOT PACKING GROUP: II

DOT HAZARDOUS SUBSTANCE: RQ 1,000 Lbs. (Sodium Hydroxide)
14. TRANSPORT INFORMATION (Continued)

DOT MARINE POLLUTANT(S): Not Applicable

ADDITIONAL DESCRIPTION REQUIREMENT: Not Applicable

15. REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS:
OSHA Standard 29 CFR 1910.1200 requires that information be provided to employees regarding the hazards of chemicals by means of a hazard communication program including labeling, material safety data sheets, training and access to written records. We request that you, and it is your legal duty to, make all information in this Material Safety Data Sheet available to your employees.

TSCA:
All components of this product that are required to be on the TSCA inventory are listed on the inventory.

SARA/TITLE III HAZARD CATEGORIES:
If the word "YES" appears next to any category, this product may be reportable by you under the requirements of 40 CFR 370. Please consult those regulations for details.

Immediate (Acute) Health: YES Reactive Hazard: YES
Delayed (Chronic) Health: NO Sudden Release of Pressure: NO
Fire Hazard: NO

HMIS HAZARD RATINGS:
HEALTH HAZARD: 3 FIRE HAZARD: 0 REACTIVITY: 2

STATE REGULATIONS:
See Section 2. COMPOSITION/INFORMATION ON INGREDIENTS list legend for applicable state regulation.

Consult local laws for applicability.

INTERNATIONAL REGULATIONS:
Consult the regulations of the importing country.

CANADA:
WHMIS Hazard Class: D1B, D2B, E
16. OTHER INFORMATION

For additional non-emergency health, safety or environmental information telephone (972) 404-2076 or write to:

Occidental Chemical Corporation
Product Stewardship Department
5005 LBJ Freeway
P.O. Box 809050
Dallas, Texas 75380

MSDS LEGEND:

ACGIH = American Conference of Governmental Industrial Hygienists

CAS = Chemical Abstracts Service Registry Number

CEILING = Ceiling Limit (15 Minutes)

CEL = Corporate Exposure Limit

OSHA = Occupational Safety and Health Administration

PEL = Permissible Exposure Limit (OSHA)

STEL = Short Term Exposure Limit (15 Minutes)

TDG = Transportation of Dangerous Goods (Canada)

TLV = Threshold Limit Value (ACGIH)

TWA = Time Weighted Average (8 Hours)

WHMIS = Worker Hazardous Materials Information System (Canada)

* = See Section 3 Hazards Identification – Repeated Exposure (Chronic) Information

IMPORTANT: The information presented herein, while not guaranteed, was prepared by competent technical personnel and is true and accurate to the best of our knowledge. NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR PURPOSE, OR OF ANY OTHER KIND, EXPRESS OR IMPLIED, IS MADE REGARDING PERFORMANCE, STABILITY OR OTHERWISE. This information is not intended to be all-inclusive as to the manner and conditions of use, handling and storage. Other factors may involve other or additional safety or performance considerations. While our technical personnel will be happy to respond to questions regarding safe handling and use procedures, safe handling and use remains the responsibility of the customer. No suggestions for use are intended as, and nothing herein shall be construed as a recommendation to infringe any existing patents or violate any federal, state or local laws, rules, regulations or ordinances.

This Material Safety Data Sheet (MSDS) covers the following materials:

- CAUSTIC SODA LIQUID (ALL GRADES)
- 50% CAUSTIC SODA DIAPHRAGM GRADE
- 18% CAUSTIC SODA RAYON GRADE
- 20% CAUSTIC SODA RAYON GRADE
- 25% CAUSTIC SODA RAYON GRADE
- 30% CAUSTIC SODA RAYON GRADE
- 50% CAUSTIC SODA RAYON GRADE
- 50% CAUSTIC SODA RAYON GRADE OS
16. OTHER INFORMATION (Continued)

- 50% CAUSTIC SODA MEMBRANE GRADE
- 18% CAUSTIC SODA - DIAPHRAGM
- 15% CAUSTIC SODA - DIAPHRAGM
- 30% CAUSTIC SODA - DIAPHRAGM
- 25% CAUSTIC SODA - DIAPHRAGM
- 20% CAUSTIC SODA - DIAPHRAGM
- 35% CAUSTIC SODA - DIAPHRAGM
- 50% CAUSTIC SODA - DIAPHRAGM
- 50% CAUSTIC SODA - DIAPHRAGM OS
- 50% CAUSTIC SODA - PURIFIED
- 50% CAUSTIC SODA - PURIFIED OS
- 18% CAUSTIC SODA - MEMBRANE
- CAUSTIC SODA LIQUID 70/30
- 50% CAUSTIC SODA - MEMBRANE
- 50% CAUSTIC SODA - MEMBRANE OS
- 25% CAUSTIC SODA - MEMBRANE
- 20% CAUSTIC SODA - MEMBRANE
- 40% CAUSTIC SODA - DIAPHRAGM
- 25% CAUSTIC SODA - MEMBRANE
- 6% CAUSTIC SODA-MEMBRANE
- 10% CAUSTIC SODA-DIAPHRAGM
- 25% CAUSTIC SODA-DIAPHRAGM
- MEMBRANE BLENDED
- 48% CAUSTIC SODA-MEMBRANE

17. WARNING LABEL INFORMATION

SIGNAL WORD:
DANGER

HAZARD WARNINGS:
MAY CAUSE BURNS TO THE EYES, SKIN, RESPIRATORY AND GASTROINTESTINAL TRACT.
MAY CAUSE PERMANENT EYE DAMAGE.

PRECAUTIONS:
Avoid contact with eyes, skin and clothing.
Avoid breathing dust, vapors or mist.
Use with adequate ventilation.
Wash thoroughly after handling; exposure can cause burns which are not immediately painful or visible.
Keep container tightly closed and properly labeled.
17. WARNING LABEL INFORMATION (Continued)

FIRST AID

EYES:
Immediately flush eyes with a directed stream of water for at least 15 minutes, forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissues. Washing eyes within several seconds is essential to achieve maximum effectiveness. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN:
Immediately flush contaminated areas with water. Remove contaminated clothing and footwear. Wash contaminated areas with plenty of soap and water. Wash clothing before reuse. Discard footwear which cannot be decontaminated. GET MEDICAL ATTENTION IMMEDIATELY.

INHALATION:
Remove to fresh air if safe to transport. Otherwise attempt to provide fresh air by ventilation. If breathing is difficult, have a trained person administer oxygen. If respiration or pulse has stopped, have a trained person administer Basic Life Support (Cardio-Pulmonary Resuscitation/Automatic External Defibrillator) and CALL FOR EMERGENCY SERVICES IMMEDIATELY (911 or emergency transport services).

INGESTION:
Never give anything by mouth to an unconscious person. If swallowed, do not induce vomiting. Give large quantities of water. (If available, give several glasses of milk.) If vomiting occurs spontaneously, keep airway clear and give more water. GET MEDICAL ATTENTION IMMEDIATELY.

IN CASE OF SPILL OR LEAK:
Do not allow entry into sewers and waterways.

For small spills, soak up with absorbent material and place in properly labeled containers for disposal.

For large spills, dike and pump into properly labeled containers for reclamation or disposal.

FIRE:
Non-flammable / Non-combustible.

Use agents appropriate for surrounding fire.

HANDLING AND STORAGE:
Store in a cool, ventilated area away from incompatible materials (see Section 10).

DISPOSAL:
Dispose of all waste and contaminated equipment in accordance with all applicable federal, state and local health and environmental regulations.
17. WARNING LABEL INFORMATION (Continued)

INFORMATION REQUIRED BY FEDERAL, STATE OR LOCAL REGULATIONS:

This Product Contains:

<table>
<thead>
<tr>
<th>CAS#</th>
<th>NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>7732-18-5</td>
<td>Water</td>
</tr>
<tr>
<td>1310-73-2</td>
<td>Sodium hydroxide (Na(OH))</td>
</tr>
<tr>
<td>7647-14-5</td>
<td>Sodium chloride (NaCl)</td>
</tr>
</tbody>
</table>

HMIS RATING: HEALTH  3  FLAMMABILITY  0  REACTIVITY  2

LABEL NUMBER: 0701M32415

For Industrial Use Only