MATERIAL SAFETY DATA SHEET REGULATORY DATA

FILE UPDATE: 12/02/2011
PRODUCT CODE: 100167
DESCRIPTION: Sodium Hypochlorite 12.5%

CAS Number and Names of Primary Chemical and/or its Components

1310-73-2 Sodium Hydroxide Solution 5.00
7681-52-9 Sodium Hypochlorite 12.50

Section 313 Regulated Substances

Section 313 Regulated Substances

Regulating Authority

Extremely Hazardous Substance subject to section 302 emergency planning and notification requirements (EHS) NO
Hazardous chemical and/or components subject to section 311 and 312 MSDS and inventory requirements (OSH) Yes
Toxic chemical and/or components subject to toxic chemical release reporting under Section 313 (TOXIC) NO
Hazardous contents subject to section 304 spill reporting of Comprehensive Environmental Liability Act (CERCLA) YES
Subject to the reporting requirements of the EPA Toxicity Characteristic Leaching Process (CFR40 261.24) NO
This product, or its components, are listed on or are exempt from the Toxic Substance Control Act (TSCA) YES
Contains a Toxic Air Pollutant listed under the 1990 Clean Air Act Amendments [42 USC sec 7412(b)(1)] NO
Subject to the EPA Risk Management Program under Section 112(r) of the Clean Air Act and 40 CFR Part 68 NO

SARA Title III Hazard Categories

<table>
<thead>
<tr>
<th>Hazard Category</th>
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<tr>
<td>Reactivity Hazard</td>
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<td>Sudden Release of Pressure</td>
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<td>Acute (immediate health hazard)</td>
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<td>Chronic (delayed health hazard)</td>
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<td>Extremely Hazardous Substance</td>
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Department of Transportation Data

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<td>ERG Guide #</td>
<td>154</td>
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<td>Packing Group</td>
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<td>RQ Pounds</td>
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HMIS & NFPA Hazard Ratings

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<table>
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<tr>
<td>AA</td>
<td>Special</td>
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</tbody>
</table>
2008 EMERGENCY RESPONSE GUIDE SHEET

POTENTIAL HAZARDS

HEALTH

● TOXIC; inhalation, ingestion or skin contact with material may cause severe injury or death.
● Contact with molten substance may cause severe burns to skin and eyes.
● Avoid any skin contact.
● Effects of contact or inhalation may be delayed.
● Fire may produce irritating, corrosive and/or toxic gases.
● Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

FIRE OR EXPLOSION

● Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
● Some are oxidizers and may ignite combustibles (wood, paper, oil, clothing, etc.).
● Contact with metals may evolve flammable hydrogen gas.
● Containers may explode when heated.

PUBLIC SAFETY

● CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.
● As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
● Keep unauthorized personnel away.
● Stay upwind.
● Keep out of low areas.
● Ventilate enclosed areas.

PROTECTIVE CLOTHING

● Wear positive pressure self-contained breathing apparatus (SCBA).
● Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
● Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill
● See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire
● If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fire
● Dry chemical, CO2 or water spray.

Large Fire
● Dry chemical, CO2, alcohol-resistant foam or water spray.
2008 EMERGENCY RESPONSE GUIDE SHEET

• Move containers from fire area if you can do it without risk.
• Dike fire-control water for later disposal; do not scatter the material.

Fire involving Tanks or Car/Trailer Loads
• Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
• Do not get water inside containers.
• Cool containers with flooding quantities of water until well after fire is out.
• Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
• ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK
• ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
• Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
• Stop leak if you can do it without risk.
• Prevent entry into waterways, sewers, basements or confined areas.
• Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
• DO NOT GET WATER INSIDE CONTAINERS.

FIRST AID
• Move victim to fresh air.
• Call 911 or emergency medical service.
• Give artificial respiration if victim is not breathing.
• Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
• Administer oxygen if breathing is difficult.
• Remove and isolate contaminated clothing and shoes.
• In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
• For minor skin contact, avoid spreading material on unaffected skin.
• Keep victim warm and quiet.
• Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
• Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Sodium Hypochlorite, 10-20%
Product code: 10000032
MSDS Number: 10000032
Synonyms: Sodium Hypochlorite - 18, Hypo, Liquid Bleach, Bleach, Hypochlorite, Liquid Chlorine Solution, Javel Water
Chemical Family: Hypochlorite
Molecular formula: NaOCl
Product Use Description: Swimming pool chlorinator, hard surface cleaner, milicide, Water treatment chemical, Biocides, bleach solutions and bleach fixer solutions

Company

Olin Chlor Alkali Products
490 Stuart Road, NE
Cleveland, Tennessee 37312

Pioneer Americas, LLC
d/b/a Olin Chlor Alkali Products
490 Stuart Road, NE
Cleveland, Tennessee 37312

Olin Canada ULC
d/b/a Olin Chlor Alkali Products
2020 University, Suite 2190
Montreal, Quebec H3A 2A5

Emergency Phone Number: US: 1-800-424-9300 - CHEMTREC
CANADA: 1-800-567-7455

SECTION 2. HAZARDS IDENTIFICATION

HMIS Classification: Health Hazard: 3
Flammability: 0
Physical hazards: 2

NFPA Classification: Health Hazard: 3
Fire Hazard: 0
Reactivity Hazard: 1

Emergency Overview

OSHA Hazards: OXIDIZER, UNSTABLE (REACTIVE), CORROSIVE
Immediately Dangerous to Life or Health: Not established for the product.

Potential Health Effects

Primary Routes of Entry: Ingestion, Eyes, Inhalation, Skin Absorption
Agravated Medical Condition: Asthma, Heart disease, Respiratory disorder
Inhalation of vapors is irritating to the respiratory system, may cause throat pain and cough.
Inhalation of aerosol may cause irritation to the upper respiratory tract.
Higher exposure may cause lung edema, circulatory collapse and unconsciousness.
Material Safety Data Sheet

Sodium Hypochlorite, 10-20%

Version 6 Revision Date 02/15/2011 Print Date 02/15/2011

Skin: May cause skin irritation and/or dermatitis. Prolonged skin exposure may cause destruction of the dermis with impairment of the skin to regenerate at site of contact.

Eyes: Causes serious eye irritation. Blurred vision. May cause impairment of vision and corneal damage.

Ingestion: Ingestion or inhalation of high concentrations may cause injuries to gastrointestinal tract, liver, kidneys and central nervous system. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Chronic Exposure: Repeated inhalation exposure may cause impairment of lung function and permanent lung damage. Effects from chronic skin exposure would be similar to those from single exposure except for effects secondary to tissue destruction.

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.

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.

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.

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

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous components

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>sodium hypochlorite</td>
<td>7681-52-9</td>
<td>10.00 - 20.00</td>
</tr>
<tr>
<td>sodium hydroxide</td>
<td>1310-73-2</td>
<td>1.00 - 5.00</td>
</tr>
</tbody>
</table>

SECTION 4. FIRST AID MEASURES

First aid procedures

Eye contact: • IMMEDIATELY flush eyes with plenty of water holding eyelids apart for at least 15-20 minutes • Get medical attention IMMEDIATELY.

Skin contact: • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.

Ingestion: • Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by the poison control center or doctor. • Do not give anything by mouth to an unconscious person.

Inhalation: • Move person to fresh air.
Material Safety Data Sheet

Sodium Hypochlorite, 10-20%
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Print Date 02/15/2011

Version 6

- If breathing is difficult oxygen may be beneficial if administered by trained personnel.
- If breathing has stopped, apply artificial respiration.
- Call a physician or poison control center IMMEDIATELY.

General advice

- Have the product container or label with you when calling a poison control center or doctor or going for treatment.
- Show this safety data sheet to the doctor in attendance.

Notes to physician

Comments

- Probable mucosal damage may contraindicate the use of gastric lavage.

SECTION 5. FIRE-FIGHTING MEASURES

Flammable properties

Flash point : not applicable
Lower explosion limit : not applicable
Upper explosion limit : not applicable

Fire fighting

Suitable extinguishing media

- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- On small fire, use dry chemical, carbon dioxide or water spray.
- On large fires, use water in flooding quantities as fog.

Unsuitable extinguishing media

- Do not use Mono Ammonium Phosphate (MAP) type extinguishers directly on this product.

Further information

- Cool containers / tanks with water spray.

Protective equipment and precautions for firefighters

Specific hazards during fire fighting

- Corrosive

Special protective equipment for fire-fighters

- Additional protective clothing must be worn to prevent personal contact with this material. Those items include but are not limited to: boots gloves, hard hat, splash-proof goggles, full face shield and impervious clothing, i.e. chemically impermeable suit.
- Compatible materials for response to this material are neoprene and butyl rubber.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions

- Restrict access to affected area.
- Use personal protective equipment.
- Use NIOSH approved respiratory protection.
- Keep people away from and upwind of spill/leak.

Methods for containment / Methods for cleaning up

- Try to prevent the material from entering drains or water courses.
- Prevent further leakage or spillage if safe to do so.
Inform the responsible authorities in case of gas leakage, or of entry into waterways, soil or drains. Will form hazardous reaction products. Suppress (knock down) gases/vapours/mists with a water spray jet. Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a suitable container for disposal according to local / state / province/national regulations (see section 13).

Additional advice:

- Dispose of as hazardous waste in compliance with local, province, state and federal regulations.
- You are requested to contact the emergency numbers listed below before beginning any such operation.

FOR ALL ACCIDENTS, CALL CHEMTREC AT 800-424-9300 OR CANADA AT 1-800-567-7455.

SECTION 7. HANDLING AND STORAGE

Handling

Handling:
- Personnel working with this chemical should be trained on its hazards.
- Avoid contact with skin and eyes.
- Do not ingest.
- Avoid inhalation of vapor or mist.
- Wear personal protective equipment.
- For personal protection see section 8.

Advice on protection against fire and explosion:
- Normal measures for preventive fire protection.

Storage

Requirements for storage areas and containers:
- Do not freeze.
- Store in a cool and shaded area.
- Keep in a well-ventilated place.
- To maintain product quality, do not store in heat or direct sunlight.
- Decomposition rate increases as it is heated.
- Keep in properly labeled containers.
- Keep container closed when not in use.

Store at temperatures not exceeding:
- 86 F (30 C)

SECTION 8. EXPOSURE CONTROLS/PERSOINAL PROTECTION

Exposure Guidelines

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Update</th>
<th>Basis</th>
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<td>1310-73-2</td>
<td>CEIL</td>
<td>2 mg/m3</td>
<td>1994-09-01</td>
<td>ACGIH</td>
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<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>2 mg/m3</td>
<td>1993-06-30</td>
<td>OSHA P1</td>
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</table>
Material Safety Data Sheet

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Engineering measures

Engineering measures : Use local exhaust ventilation to maintain levels to below the PEL.

Personal protective equipment

Eye protection : Ensure that eyewash stations and safety showers are close to the workstation location. Chemical resistant goggles must be worn.

Skin and body protection : Boots. Full protective suit. Wear protective gloves.

Respiratory protection : Sudden release of chlorine hazard. If air concentrations above the PEL are possible, wear a NIOSH approved respirator. Wear respiratory equipment when entering the spray area.

Hygiene measures : General industrial hygiene practice.

Suitable material

Boots. Neoprene butyl-rubber PVC Viton® Saranex®

Gloves Neoprene butyl-rubber PVC Viton® Saranex®

Protective suit Neoprene butyl-rubber PVC Viton® Saranex®

The listed materials are guidelines only and there are numerous PPE alternatives depending on the site specifics of where the chemical is used. You should always consult with your PPE supplier for the correct tested material.

Before using this chemical you should be aware of its hazards and be knowledgeable of emergency procedures in the event of a spill.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form : liquid
Color : yellow to yellowish green
Odor : pungent

Safety data

Flash point : not applicable
Lower explosion limit : not applicable
Upper explosion limit : not applicable
Autoignition temperature : not applicable
Molecular Weight : 74.5 g/mol
pH : 12 - 14 at 77 F (25 C)
Freezing point : -17 F (-27 C) 16% Solution
Boiling point/boiling range : Decomposes on heating.
Vapor pressure : 12 mmHg at 68 F (20 C) 12.5% Solution
Bulk density : not applicable
Water solubility : completely miscible
Evaporation rate : no data available

SECTION 10. STABILITY AND REACTIVITY

Conditions to avoid : High heat, sunlight and ultra-violet light

Materials to avoid : Oxidizing agents, Acids, Nitrogen containing organics, Metals, Iron, Copper, Nickel, Cobalt, Organic materials, Ammonia
Hazardous decomposition products: Decomposition will result in the formation of oxygen from contact with copper, nickel, cobalt and iron solids such as rust. Decomposition rate increases as it is heated. May develop chlorine if mixed with acidic solutions.

Thermal decomposition: Decomposition rate increases as it is heated.

Hazardous polymerization: Does not occur.

SECTION 11. TOXICOLOGICAL INFORMATION

Human Threshold Response
Odor threshold: approximately 0.9 mg/m3 (0.3 ppm)pungent
Irritation Threshold: no data available
Immediately Dangerous to Life or Health: Not established for the product.

Animal Toxicology
Acute oral toxicity: LD50 rat
Dose: 3 - 5 g/kg
Acute dermal toxicity: LD50 rabbit
Dose: > 2 g/kg
Acute inhalation toxicity: LC50
no data available

SECTION 12. ECOLOGICAL INFORMATION

Acute Fish toxicity: LC50 Bluegill sunfish: 2.90 mg/L
Exposure time: 96 Hour
LC50 Pimephales promelas (fathead minnow): 1.40 mg/L
Exposure time: 96 Hour
LC50 Oncorhynchus mykiss (rainbow trout): 0.90 mg/L
Exposure time: 0.5 Hour

SECTION 13. DISPOSAL CONSIDERATIONS

Waste Classification: If this product becomes a waste, it meets the criteria of a hazardous waste as defined under 40 CFR 261 and would have the following: D002

Further Information:
- If this product becomes a hazardous waste, it will be a hazardous waste which is subject to the Land Disposal Restrictions under 40 CFR 268 and must be managed accordingly.
- Dispose of as hazardous waste in compliance with local, province, state and federal regulations.

CARE MUST BE TAKEN TO PREVENT ENVIRONMENTAL CONTAMINATION FROM THE USE OF THIS MATERIAL. THE USER OF THIS MATERIAL HAS THE RESPONSIBILITY TO DISPOSE OF UNUSED MATERIAL,
Material Safety Data Sheet

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RESIDUES AND CONTAINERS IN COMPLIANCE WITH ALL RELEVANT LOCAL, PROVINCE, STATE AND FEDERAL LAWS AND REGULATIONS REGARDING TREATMENT, STORAGE AND DISPOSAL FOR HAZARDOUS AND NON HAZARDOUS WASTES.

SECTION 14. TRANSPORT INFORMATION

DOT
Proper shipping name : Hypochlorite Solutions
UN-Number : UN1791
Class : 8
Packing group : III
Hazard Labels/Placard : 8
Emergency Response : 154
Guidebook Number : 
Reportable Quantity : 100 LB
(Per 49 CFR 172.101, Appendix)

TDG CLR
Proper shipping name : Hypochlorite Solutions
UN-Number : UN1791
Class : 8
Packing group : III
Hazard Labels/Placard : 8

IATA
UN-Number : UN1791
Description of the goods : Hypochlorite Solutions
Class : 8
Packaging group : III
ICAO-Labels : 8

IMDG
UN-Number : UN1791
Description of the goods : Hypochlorite Solutions
Class : 8
Packaging group : III
IMDG-Labels : 8
Marine pollutant : no
See regulations for further information.

FOR ALL ACCIDENTS, CALL CHEMTREC AT 800-424-9300 OR CANADA AT 1-800-567-7455.

SECTION 15. REGULATORY INFORMATION

CANADIAN CLASSIFICATION

WHMIS Classification : E Corrosive Material

NPRI Components : Hypochlorous acid, sodium salt 7681-52-9
Sodium hydroxide (Na(OH)) 1310-73-2

Canadian National Pollutant Release Inventory (NPRI): No component is listed on NPRI.

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

IJS CLASSIFICATION

OSHA Hazards : Oxidizer, Unstable (reactive), Corrosive
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CERCLA
100 lbs

SARA 311/312 Hazards
Acute Health Hazard
Chronic Health Hazard
Reactivity Hazard

EPCRA - Emergency Planning and Community Right-to-Know Act
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

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

US STATE REGULATIONS
Massachusetts Right To Know Components
Hypochlorous acid, sodium salt 7681-52-9
1991-07-01
Sodium hydroxide (Na(OH)) 1310-73-2
1991-07-01

Pennsylvania Right To Know Components
Hypochlorous acid, sodium salt 7681-52-9
1991-07-01
Sodium hydroxide (Na(OH)) 1310-73-2
1991-07-01
Sodium chloride (NaCl) 7647-14-5
Water 7732-18-5
Carbonic acid disodium salt 497-19-8

New Jersey Right To Know Components
Water 7732-18-5
Hypochlorous acid, sodium salt 7681-52-9
1991-07-01
Sodium chloride (NaCl) 7647-14-5
Sodium hydroxide (Na(OH)) 1310-73-2
1991-07-01

California Prop 65 Components
This product is not listed, but it may contain elements known to the State of California to cause cancer or reproductive toxicity as listed under Proposition 65 State Drinking Water and Toxic Enforcement Act. For additional information, contact Olin Technical Services (800-299-6546).

GLOBAL INVENTORIES

The components of this product are reported in the following inventories:
INECS On the inventory, or in compliance with the inventory
SECTION 16. OTHER INFORMATION

Further information

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.

Prepared by: ORC MSDS Control Group
Olin Chlor Alkali Products
1186 Lower River Rd.
P.O. Box 248
Charleston, TN 37310
Phone Number: (888) 658-MSDS (6737)