SAFETY DATA SHEET

1. Identification

Product identifier Sodium Hydroxide Solution, 30-52%
Other means of identification
- SDS number: 503-USA-OLN
- Synonyms: Caustic, Caustic Soda 50%, Soda lye, Lye, Liquid caustic, Sodium hydrate
Recommended restrictions: None known.

Manufacturer/Importer/Supplier/Distributor information

- Company name: Oltrin Solutions, LLC
- Address: PO Box 1195, 11 E.V. Hogan Drive
- Hamlet, NC 28345-1195, USA
- Telephone: 910-410-1180
- E-mail: oltrincs@trinitymfg.com
- Emergency phone number: CHEMTREC (US/Canada) 1-800-424-9300
- CHEMTREC (International) +1 703-527-3887 (collect calls accepted)

2. Hazard(s) identification

Physical hazards: Corrosive to metals
Health hazards: Acute toxicity, oral Category 4
- Skin corrosion/irritation: Category 1
- Serious eye damage/eye irritation: Category 1
Environmental hazards: Hazardous to the aquatic environment, acute hazard Category 3
OSHA defined hazards: Not classified.

Label elements

- Signal word: Danger
- Hazard statements: Harmful if swallowed. May be corrosive to metals. Causes severe skin burns and eye damage. Harmful to aquatic life.
- Precautionary statements:
  - Prevention: Keep only in original container. Wear protective gloves/protective clothing/eye protection/face protection. Do not eat, drink or smoke when using this product. Do not breathe mist or vapor. Wash thoroughly after handling. Avoid release to the environment.
  - Response: If swallowed: Rinse mouth. Do NOT induce vomiting. If inhaled: Remove person to fresh air and keep comfortable for breathing. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. Wash contaminated clothing before reuse. Absorb spillage to prevent material damage.
  - Storage: Store locked up. Store in corrosive resistant container with a resistant inner liner.
  - Disposal: Dispose of contents/container in accordance with local/regional/national/international regulations.
- Hazard(s) not otherwise classified (HNOC): Not classified.
3. Composition/information on ingredients

<table>
<thead>
<tr>
<th>Mixtures</th>
<th>CAS Number</th>
<th>% by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium hydroxide</td>
<td>1310-73-2</td>
<td>30-52</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>Balance</td>
</tr>
</tbody>
</table>

4. First-aid measures

Inhalation
Move to fresh air. If breathing is difficult, give oxygen. If breathing stops, provide artificial respiration. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a physician or poison control center immediately.

Skin contact
Take off immediately all contaminated clothing. Wash off IMMEDIATELY with plenty of water for at least 15-20 minutes. Get medical attention immediately. Wash clothing separately before reuse. Destroy or thoroughly clean contaminated shoes.

Eye contact
Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.

Ingestion
Call a physician or poison control center immediately. Do not induce vomiting. Immediately rinse mouth and drink plenty of water. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Never give anything by mouth to an unconscious person. Do not use mouth-to-mouth method if victim ingested the substance.

Most important symptoms/effects, acute and delayed
Burning pain and severe corrosive skin damage. Permanent eye damage including blindness could result. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Shortness of breath.

Indication of immediate medical attention and special treatment needed
Provide general supportive measures and treat symptomatically. Symptoms may be delayed. Keep victim under observation.

General information
In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media

Unsuitable extinguishing media
Do not use a solid water stream as it may scatter and spread fire. Do not use halogenated extinguishing agents.

Specific hazards arising from the chemical
The product itself does not burn. May decompose upon heating to produce corrosive and/or toxic fumes. Contact with metal may release flammable hydrogen gas.

Special protective equipment and precautions for firefighters
Fire fighters should enter the area only if they are protected from all contact with the material. Full protective clothing, including self-contained breathing apparatus, coat, pants, gloves, boots and bands around legs, arms, and waist, should be worn. No skin surface should be exposed.

Fire fighting equipment/instructions
In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk. Use water spray to cool unopened containers.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Keep unnecessary personnel away. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Local authorities should be advised if significant spillages cannot be contained.

Methods and materials for containment and cleaning up
Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb spill with inert material (e.g., dry sand or earth), then place in a chemical waste container. Following product recovery, flush area with water.

Small Spills: Absorb spill with vermiculite or other inert material. Clean surface thoroughly to remove residual contamination.

Environmental precautions
Avoid discharge into drains, water courses or onto the ground.
7. Handling and storage

Precautions for safe handling
Use caution when combining with water; DO NOT add water to caustic; ALWAYS add caustic to water while stirring to minimize heat generation. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Do not breathe mist or vapor. Use only with adequate ventilation. Wear appropriate personal protective equipment. Transfer and storage systems should be compatible and corrosion resistant. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities
Keep container tightly closed. Store in a cool, dry, well-ventilated place. Store in corrosive resistant container with a resistant inner liner. Store away from incompatible materials (See Section 10). Store at temperatures not exceeding 40°C/104°F. Compatible storage materials may include, but not be limited to, the following: nickel and nickel alloys, steel, plastics, plastic or rubber-lined steel, FRP, or Derakane vinyl ester resin. Do not allow material to freeze.

8. Exposure controls/personal protection

Occupational exposure limits

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sodium hydroxide (CAS 1310-73-2)</td>
<td>PEL</td>
<td>2 mg/m3</td>
</tr>
<tr>
<td>US. ACGIH Threshold Limit Values</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sodium hydroxide (CAS 1310-73-2)</td>
<td>Ceiling</td>
<td>2 mg/m3</td>
</tr>
<tr>
<td>US. NIOSH: Pocket Guide to Chemical Hazards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sodium hydroxide (CAS 1310-73-2)</td>
<td>Ceiling</td>
<td>2 mg/m3</td>
</tr>
<tr>
<td>US. Workplace Environmental Exposure Level (WEEL) Guides</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sodium hydroxide (CAS 7681-52-9)</td>
<td>STEL</td>
<td>2 mg/m3</td>
</tr>
</tbody>
</table>

Biological limit values
No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls
Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment:

Eye/face protection
Wear chemical goggles and face shield.

Skin protection
Hand protection
Wear appropriate chemical resistant gloves.

Other
Wear appropriate chemical resistant clothing.

Respiratory protection
If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Respirator type: Chemical respirator with organic vapor cartridge and full facepiece.

Thermal hazards
Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations
When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

| Physical state | Liquid |
| Form          | Viscous liquid |
| Color         | Clear |
| Odor          | Odorless |

Odor threshold
Not available.

pH
14

Melting point/freezing point
41 °F (5 °C) (32% solution)
53.01 °F (11.67 °C) (50% solution)
Initial boiling point and boiling range
- 287.6 °F (142 °C) (50% solution)
- 244.4 °F (118 °C) (32% solution)

Flash point
Not relevant.

Evaporation rate
Not available.

Flammability (solid, gas)
Not available.

Upper/lower flammability or explosive limits
- Flammability limit – lower (%)
  Not relevant.
- Flammability limit – upper (%)
  Not relevant.
- Explosive limit - lower (%)
  Not relevant.
- Explosive limit - upper (%)
  Not relevant.

Vapor pressure
23.76 mm Hg (approximately) (77 °F (25 °C))

Vapor density
Not available.

Relative density
- 1.353 @ 15.5 °C (60 °F) (32% Solution)
- 1.53 @ 20 °C (68 °F) (50% Solution)

Relative density temperature
68 °F (20 °C)

Solubility(ies)
- Solubility (water) 100 %
- Partition coefficient (n-octanol/water)
  Not available.

Auto-ignition temperature
Not available.

Decomposition temperature
Not available.

Viscosity
Not available.

Other information
- Bulk density
  - 11.28 @ 15.5 °C (32% Solution)
  - 12.74 @ 20 °C (50% Solution)
- Molecular formula NaOH
- Molecular weight 40.1 g/mol

10. Stability and reactivity

Reactivity
Contact with metal may release flammable hydrogen gas.

Chemical stability
Material is stable under normal conditions.

Possibility of hazardous reactions
Hazardous polymerization does not occur.

Conditions to avoid
Reacts violently with strong acids. This product may react with oxidizing agents. Do not mix with other chemicals. Corrosive to aluminum, tin, zinc, copper and most alloys in which they are present including brass and bronze. Corrosive to steels at elevated temperatures above 40°C (104°F).

Incompatible materials

Hazardous decomposition products
Contact with metals (aluminum, zinc, tin) and sodium tetrahydroborate liberates hydrogen gas.

11. Toxicological information

Information on likely routes of exposure
- Inhalation
  - May cause irritation to the respiratory system.
- Skin contact
  - Causes severe skin burns.
- Eye contact
  - Causes severe eye burns. Causes serious eye damage.
- Ingestion
  - Causes digestive tract burns. Harmful if swallowed.
- Symptoms related to the physical, chemical and toxicological characteristics
  - Burning pain and severe corrosive skin damage. Permanent eye damage including blindness could result.
Information on toxicological effects

Acute toxicity

Harmful if swallowed.

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium hydroxide (CAS 1310-73-2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dermal LD50</td>
<td>Rabbit</td>
<td>1350 mg/kg</td>
</tr>
<tr>
<td>Oral LD50</td>
<td>Rat</td>
<td>140 - 340 mg/kg</td>
</tr>
<tr>
<td>Oral LD50</td>
<td>Mouse</td>
<td>40 mg/kg</td>
</tr>
</tbody>
</table>

Skin corrosion/irritation

Causes severe skin burns and eye damage.

Standard Draize Test: 500 mg/24 hour(s) skin - rabbit severe.

Serious eye damage/eye irritation

Causes severe eye burns. Causes serious eye damage.

Standard Draize Test: 400 μg eyes - rabbit mild; 1 percent eyes - rabbit severe.

Respiratory or skin sensitization

**Respiratory sensitization**

Not classified.

**Skin sensitization**

Not a skin sensitizer.

Germ cell mutagenicity

No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity

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


Not listed.

Reproductive toxicity

Not classified.

Specific target organ toxicity - single exposure

Not classified.

Specific target organ toxicity - repeated exposure

Not classified.

Aspiration hazard

Droplets of the product aspirated into the lungs through ingestion or vomiting may cause a serious chemical pneumonia.

12. Ecological information

Ecotoxicity

Harmful to aquatic life.

<table>
<thead>
<tr>
<th>Product</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium Hydroxide Solution, 30-52%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Aquatic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crustacea</td>
<td>EC50</td>
<td>Ceriodaphnia</td>
</tr>
<tr>
<td>Fish</td>
<td>LC50</td>
<td>Carassius auratus</td>
</tr>
</tbody>
</table>

Persistence and degradability

Expected to degrade rapidly in air.

Bioaccumulative potential

The product is not expected to bioaccumulate.

Mobility in soil

No data available.

Other adverse effects

Not available.

13. Disposal considerations

Disposal instructions

Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazardous waste code

D002: Waste Corrosive material [pH <=2 or =>12.5, or corrosive to steel]

The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
14. Transport information

**DOT**

- **UN number**: UN1824
- **UN proper shipping name**: Sodium hydroxide solution
- **Transport hazard class(es)**
  - **Class**: 8
  - **Subsidiary risk**: -
  - **Label(s)**: 8
  - **Packing group**: II
  - **ERG**: 154
- **Special precautions for user**: Read safety instructions, SDS and emergency procedures before handling.
- **Special provisions**: B2, IB2, N34, T7, TP2
- **Packaging exceptions**: 154
- **Packaging non bulk**: 202
- **Packaging bulk**: 242
- **Reportable quantity (RQ)**: 1000 pounds (454 kilograms) for Sodium Hydroxide.

**IATA**

- **UN number**: UN1824
- **UN proper shipping name**: Sodium hydroxide solution
- **Transport hazard class(es)**
  - **Class**: 8
  - **Subsidiary risk**: -
  - **Label(s)**: 8
  - **Packing group**: II
- **Environmental hazards**: No
- **ERG Code**: 8L
- **Special precautions for user**: Read safety instructions, SDS and emergency procedures before handling.

**IMDG**

- **UN number**: UN1824
- **UN proper shipping name**: SODIUM HYDROXIDE SOLUTION
- **Transport hazard class(es)**
  - **Class**: 8
  - **Subsidiary risk**: -
  - **Label(s)**: 8
  - **Packing group**: II
- **Marine pollutant**: No
- **EmS**: F-A, S-B
- **Special precautions for user**: Read safety instructions, SDS and emergency procedures before handling.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

- **Not applicable.**

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.
  - Not listed.
- **TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**
  - Not regulated.
- **CERCLA Hazardous Substance List (40 CFR 302.4)**
  - Sodium hydroxide (CAS 1310-73-2) L1STED
Superfund Amendments and Reauthorization Act of 1986 (SARA):

SARA 302 Extremely hazardous substance
Not listed.

SARA 311/312 Hazardous chemical
Yes

SARA Hazard categories
For Tier II reporting, see Physical and Health hazards in Section 2 of this SDS.

SARA 313 (TRI reporting)
Not regulated.

Other federal regulations:

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.

Safe Drinking Water Act (SDWA)
Not regulated.

US state regulations:

US. Massachusetts RTK - Substance List
Sodium hydroxide (CAS 1310-73-2)

US. New Jersey Worker and Community Right-to-Know Act
Sodium hydroxide (CAS 1310-73-2)

US. Pennsylvania Worker and Community Right-to-Know Law
Sodium hydroxide (CAS 1310-73-2)

US. Rhode Island RTK
Sodium hydroxide (CAS 1310-73-2)

US. California Proposition 65
California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>No</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>No</td>
</tr>
<tr>
<td>Japan</td>
<td>No Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Mexico</td>
<td>National Inventory of Chemical Substances (INSQ)</td>
<td>Yes</td>
</tr>
<tr>
<td>New Zealand</td>
<td>New Zealand Inventory</td>
<td>Yes</td>
</tr>
<tr>
<td>Philippines</td>
<td>Philippine Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Taiwan</td>
<td>Chemical Substance Inventory</td>
<td>Yes</td>
</tr>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>

* A “Yes” indicates this product complies with the inventory requirements administered by the governing country(s).
A “No” indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).
16. Other information, including date of preparation or last revision

Version 3 date: February 19, 2018

Revision history:
- 12-08-14: Initial GHS Version
- 01-31-17: Section 1: Revised Company Contact Information
- 02-19-18: Section 15: Revised SARA Hazard Categories; Updated International Inventories

NFPA ratings:
NFPA Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

List of abbreviations:
- LD50: Lethal Dose, 50%.
- LC50: Lethal Concentration, 50%.
- EC50: Effective concentration, 50%.
- TWA: Time weighted average.

References:
- EPA: AQUIRE database
- US. IARC Monographs on Occupational Exposures to Chemical Agents
- HSDB® - Hazardous Substances Data Bank
- IARC Monographs. Overall Evaluation of Carcinogenicity
- ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices

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