

Sodium Hydroxide

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## SAFETY DATA SHEET

### SECTION 1. IDENTIFICATION

Product identifier used on the label

: **Sodium Hydroxide**

Other means of identification : Caustic soda, Lye, Soda lye, Sodium hydrate

Recommended use of the chemical and restrictions on use

: Reagent; Chemical intermediate. Electroplating; Metal processing  
Maximum Use Level for Potable Water  
Sodium Hydroxide 25, 32, 50%: 100 mg/l

Chemical family

: Alkaline mixture.

Name, address, and telephone number  
of the supplier:

**Carbonfree Chemicals**

11503 Bulverde Rd  
San Antonio, TX, USA  
78217

Supplier's Telephone #

: (210) 476 5906

**24 Hr. Emergency Tel #**

: Chemtrec 1-800-424-9300 (Within Continental U.S.); Chemtrec 703-527-3887  
(Outside U.S.).

Name, address, and telephone number of  
the manufacturer:

Refer to supplier

### SECTION 2. HAZARDS IDENTIFICATION

Classification of the chemical

Clear, water-white liquid. Odorless.

This material is classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015).

Most important hazards: May be corrosive to metals. Causes severe skin burns and eye damage. May cause respiratory irritation. Occupational exposure to the substance or mixture may cause adverse effects. Refer also to TOXICOLOGICAL INFORMATION (Section 11).

Hazard classification:

Corrosive to Metals - Category 1

Skin Corrosion/Irritation - Category 1

Eye Damage/Irritation - Category 1

Specific target organ toxicity, single exposure - Category 3 (respiratory)

Label elements

Hazard pictogram(s)



Signal Word

DANGER!



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*Hazard statement(s)*

May be corrosive to metals.  
Causes severe skin burns and eye damage.  
May cause respiratory irritation.

*Precautionary statement(s)*

Keep only in original packaging.  
Do not breathe mist or vapor.  
Use only outdoors or in a well-ventilated area.  
Wash thoroughly after handling.  
Wear protective gloves/clothing and eye/face protection.

Immediately call a POISON CENTER or doctor/physician.  
IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
Absorb spillage to prevent material damage.

Store in corrosive resistant container with a resistant inner liner.  
Store in a well-ventilated place. Keep container tightly closed. Store locked up.

Dispose of contents/container in accordance with local regulation.

**Other hazards**

Other hazards which do not result in classification:

Contact with most metals will generate flammable hydrogen gas. Contact with water gives off heat.  
Burning produces obnoxious and toxic fumes.  
Chronic skin contact with low concentrations may cause dermatitis.

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Solution

<u>Chemical name</u>	<u>Common name and synonyms</u>	<u>CAS #</u>	<u>Concentration (% by weight)</u>
Sodium Hydroxide	Caustic soda Sodium hydrate soda lye	1310-73-2	25.0 - 50.0

The exact concentrations of the above listed chemicals are being withheld as a trade secret.

**SECTION 4. FIRST-AID MEASURES**

**Description of first aid measures**

- Ingestion* : Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Have victim rinse mouth with water, then give one to two glasses of water to drink. Seek immediate medical attention/advice.
- Inhalation* : Immediately remove person to fresh air. If breathing is difficult, give oxygen by qualified medical personnel only. If breathing has stopped, give artificial respiration. Seek immediate medical attention/advice.

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- Skin contact* : Wear appropriate protective equipment. Remove/Take off immediately all contaminated clothing. Immediately flush skin with gently flowing, running water for at least 20 minutes. Do not rub area of contact. Obtain medical attention immediately. Wash contaminated clothing before reuse. Contaminated leather may require disposal.
- Eye contact* : Wear appropriate protective equipment. Protect unharmed eye. If in contact with eyes, immediately flush eyes with running water for at least 20 minutes. If contact lens is present, DO NOT delay flushing or attempt to remove the lens until flushing is done. Obtain medical attention immediately.

### Most important symptoms and effects, both acute and delayed

- : Causes skin burns. Direct skin contact may cause corrosive skin burns, deep ulcerations and possibly permanent scarring. Causes serious eye damage. Symptoms may include severe pain, blurred vision, redness and corrosive damage. Inhalation of high concentrations of fumes or mists may cause severe irritation and corrosive damage to the nose, throat and upper respiratory tract. Symptoms may include coughing, choking and wheezing. Could result in pulmonary edema (fluid accumulation). Symptoms of pulmonary edema (chest pain, shortness of breath) may be delayed. Ingestion may cause severe burns to the mucous membranes of the digestive tract. Symptoms may include abdominal pain, vomiting, burns, perforations and bleeding.

### Indication of any immediate medical attention and special treatment needed

- : Immediate medical attention is required. Causes severe skin burns and eye damage.

## SECTION 5. FIRE-FIGHTING MEASURES

### Extinguishing media

#### *Suitable extinguishing media*

- : Use media suitable to the surrounding fire such as water fog or fine spray, alcohol foams, carbon dioxide and dry chemical.  
May react with water.  
Use water spray with caution.

#### *Unsuitable extinguishing media*

- : Use water spray with caution.  
Do not use a solid water stream as it may scatter and spread fire.

### Special hazards arising from the substance or mixture / Conditions of flammability

- : Not considered flammable.  
Closed containers may rupture if exposed to excess heat or flame due to a build-up of internal pressure. Contact with water will generate considerable heat. Contact with most metals will generate flammable hydrogen gas.

### Flammability classification (OSHA 29 CFR 1910.106)

- : Not flammable.

### Hazardous combustion products

- : Sodium oxides.

### Special protective equipment and precautions for firefighters

#### *Protective equipment for fire-fighters*

- : Do not enter without wearing specialized protective equipment suitable for the situation. Firefighter's normal protective clothing (Bunker Gear) will not provide adequate protection. A full-body encapsulating chemical protective suit with positive pressure self-contained breathing apparatus (NIOSH approved or equivalent) may be necessary. Firefighters should wear proper protective equipment and self-contained breathing apparatus with full face piece operated in positive pressure mode.

#### *Special fire-fighting procedures*

- : Move containers from fire area if safe to do so. Cool closed containers exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water courses. Dike for water control.



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### SECTION 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions, protective equipment and emergency procedures**

- : Restrict access to area until completion of clean-up. Ensure clean-up is conducted by trained personnel only. All persons dealing with clean-up should wear the appropriate protective equipment including self-contained breathing apparatus. Refer to Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION, for additional information on acceptable personal protective equipment.

- Environmental precautions** : Ensure spilled product does not enter drains, sewers, waterways, or confined spaces. If necessary, dike well ahead of the spill to prevent runoff into drains, sewers, or any natural waterway or drinking supply.

**Methods and material for containment and cleaning up**

- : Remove all sources of ignition. Ventilate area of release. Stop the spill at source if it is safe to do so. Dike for water control. Dilute acid with water and neutralize with Sodium Carbonate (soda ash) or lime. Contain and absorb spilled liquid with non-combustible, inert absorbent material (e.g. sand), then place absorbent material into a container for later disposal (see Section 13). Notify the appropriate authorities as required.

**Special spill response procedures**

- : If a spill/release in excess of the EPA reportable quantity is made into the environment, immediately notify the National Response Center in the United States (phone: 1-800-424-8802).  
 US CERCLA Reportable quantity (RQ): sodium hydroxide (1000 lbs / 454 kg)  
 In Canada: (613) 996-6666 (CANUTEC)

### SECTION 7. HANDLING AND STORAGE

**Precautions for safe handling**

- : Wear protective gloves/clothing and eye/face protection. Use only in well-ventilated areas. Do not breathe fumes or mists. Avoid contact with skin, eyes and clothing. Wash thoroughly after handling. Keep away from heat and flame. Keep away from incompatibles. May react with water, generating heat. When diluting, always add the product to water. Never add water to the product. When mixing with water, stir small amounts in slowly. Keep containers tightly closed when not in use.

- Conditions for safe storage** : Store in a well-ventilated place. Keep container tightly closed. Store locked up. Keep away from incompatibles. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Inspect periodically for damage or leaks. Store in corrosion-resistant containers. Avoid contact with aluminum. Store locked up.

- Incompatible materials** : Acids; Water; Metals (e.g. tin, aluminum, zinc and alloys containing these metals); Halogenated compounds; Nitrogen compounds ;Phosphorous.

### SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<u>Exposure Limits:</u>				
<u>Chemical Name</u>	<u>ACGIH TLV</u>		<u>OSHA PEL</u>	
	<u>TWA</u>	<u>STEL</u>	<u>PEL</u>	<u>STEL</u>
Sodium Hydroxide	2 mg/m <sup>3</sup> (Ceiling)	N/Av	2 mg/m <sup>3</sup>	N/Av

**Exposure controls**

**Ventilation and engineering measures**

- : Use only in well-ventilated areas. Use general or local exhaust ventilation to maintain air concentrations below recommended exposure limits.



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- Respiratory protection** : Respiratory protection is required if the concentrations exceed the TLV. NIOSH-approved respirators are recommended. A self contained breathing apparatus should be used in emergency situations or instances where exposure levels are not known. Seek advice from respiratory protection specialists. Respirators should be selected based on the form and concentration of contaminants in air, and in accordance with OSHA (29 CFR 1910.134) or CSA Z94.4-02.
- Skin protection** : Wear protective gloves/clothing. Advice should be sought from glove suppliers. Wear appropriate protective clothing to prevent skin contact, such as coveralls or long sleeved shirt, long pants, and shoes and socks.
- Eye / face protection** : Chemical splash goggles must be worn when handling this material. A full face shield may also be necessary.
- Other protective equipment** : An eyewash station and safety shower should be made available in the immediate working area. Other equipment may be required depending on workplace standards.
- General hygiene considerations** : Do not breathe fumes or mists. Do not ingest. Avoid contact with skin, eyes and clothing. Do not eat, drink, smoke or use cosmetics while working with this product. Upon completion of work, wash hands before eating, drinking, smoking or use of toilet facilities. Remove soiled clothing and wash it thoroughly before reuse.

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Physical State** : Liquid.
- Colour** : Clear, colorless.
- Odour** : None.
- Odour threshold** : Not applicable.
- pH** : 14
- Melting Point/Freezing point** : 12.2°C (54°F) (20%)
- Initial boiling point and boiling range** : 142°C (290°F)
- Flash point** : Not applicable.
- Flashpoint (Method)** : Not applicable.
- Evaporation rate (BuAe = 1)** : Not available.
- Flammability** : Not applicable.
- Lower explosion or flammability limit (% by vol.)** : Not applicable.
- Upper explosion or flammability limit (% by vol.)** : Not applicable.
- Oxidizing properties** : None.
- Explosive properties** : Not explosive
- Vapour pressure** : 1.5 mmHg
- Relative vapour density** : Not available.
- Relative density / Specific gravity** : 1.52
- Solubility in water** : Very soluble
- Other solubility(ies)** : Not available.
- Partition coefficient: n-octanol/water or Coefficient of water/oil distribution** : N/Ap (dissociates)
- Auto-ignition temperature** : Not applicable.
- Decomposition temperature** : Not available.
- Viscosity** : 79 mPa.s @ 68°F
- Particle characteristics** : Not applicable.
- Volatiles (% by weight)** : Not applicable.



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### Volatile organic Compounds (VOC's)

: Not applicable.

### Absolute pressure of container

: Not applicable.

### Flame projection length

: Not applicable.

### Other physical/chemical comments

: None known or reported by the manufacturer.

## SECTION 10. STABILITY AND REACTIVITY

**Reactivity** : Not normally reactive. May be corrosive to metals. Contact with most metals will generate flammable hydrogen gas. Contact with water will generate considerable heat.

**Chemical stability** : Material is stable under normal conditions.

### Possibility of hazardous reactions

: Hazardous polymerization does not occur.

### Conditions to avoid

: Avoid heat and open flame. Keep away from incompatibles. Keep container tightly closed when not in use. Avoid contact with water.

### Incompatible materials

: Acids Water Metals. Halogens. Nitrogen compounds. Phosphorous

### Hazardous decomposition products

: None known, refer to hazardous combustion products in Section 5.

## SECTION 11. TOXICOLOGICAL INFORMATION

### Information on likely routes of exposure:

**Routes of entry inhalation** : YES

**Routes of entry skin & eye** : YES

**Routes of entry Ingestion** : YES

**Routes of exposure skin absorption**

: NO

### Potential Health Effects:

#### Signs and symptoms of short-term (acute) exposure

##### *Sign and symptoms Inhalation*

: May cause severe irritation to the nose, throat and respiratory tract. Inhalation of high concentrations of fumes or mists may cause severe irritation and corrosive damage to the nose, throat and upper respiratory tract. Symptoms may include coughing, choking and wheezing. Could result in pulmonary edema (fluid accumulation). Symptoms of pulmonary edema (chest pain, shortness of breath) may be delayed.

##### *Sign and symptoms ingestion*

: May cause severe irritation and corrosive damage in the mouth, throat and stomach. Symptoms may include abdominal pain, vomiting, burns, perforations, bleeding and eventually death.

##### *Sign and symptoms skin*

: Causes skin burns. Direct skin contact may cause corrosive skin burns, deep ulcerations and possibly permanent scarring.

##### *Sign and symptoms eyes*

: Causes serious eye damage. Symptoms may include severe pain, blurred vision, redness and corrosive damage.

#### Potential Chronic Health Effects

: Chronic skin contact with low concentrations may cause dermatitis.

#### Mutagenicity

: Not expected to be mutagenic in humans.

#### Carcinogenicity

: No components are listed as carcinogens by ACGIH, IARC, OSHA or NTP.



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### Reproductive effects & Teratogenicity

: Not expected to have other reproductive effects.

**Sensitization to material** : Not expected to be a skin or respiratory sensitizer.

**Specific target organ effects** : Target Organs: Eyes, skin, respiratory system and digestive system.

This material is classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015).

Classification:

Specific target organ toxicity, single exposure - Category 3 (respiratory)  
 May cause respiratory irritation.

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

### Medical conditions aggravated by overexposure

: Pre-existing skin, eye and respiratory disorders.

**Synergistic materials** : Not available.

**Toxicological data** : There is no data available for this product.

<u>Chemical name</u>	<u>LC<sub>50</sub>(4hr)</u>	<u>LD<sub>50</sub></u>	
	<u>inh, rat</u>	<u>(Oral, rat)</u>	<u>(Rabbit, dermal)</u>
Sodium Hydroxide	N/Av	N/Av	N/Av

### Other important toxicological hazards

: None known or reported by the manufacturer.

## SECTION 12. ECOLOGICAL INFORMATION

### Ecotoxicity

: The ecological characteristics of this product have not been fully investigated. The product should not be allowed to enter drains or water courses, or be deposited where it can affect ground or surface waters. Toxicity is primarily associated with pH.

#### Ecotoxicity data:

<u>Ingredients</u>	<u>CAS #</u>	<u>Toxicity to Fish</u>		
		<u>LC50 / 96h</u>	<u>NOEC / 21 day</u>	<u>M Factor</u>
Sodium Hydroxide	1310-73-2	125 mg/L (Mosquito fish)	N/Av	None.

<u>Ingredients</u>	<u>CAS #</u>	<u>Toxicity to Daphnia</u>		
		<u>EC50 / 48h</u>	<u>NOEC / 21 day</u>	<u>M Factor</u>
Sodium Hydroxide	1310-73-2	40 mg/L Water flea	N/Av	None.



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<u>Ingredients</u>	<u>CAS #</u>	<u>Toxicity to Algae</u>		
		<u>EC50 / 96h or 72h</u>	<u>NOEC / 96h or 72h</u>	<u>M Factor</u>
Sodium Hydroxide	1310-73-2	N/Av	N/Av	None.

**Persistence and degradability**

: The methods for determining biodegradability are not applicable to inorganic substances.

**Bioaccumulation potential**

: No data is available on the product itself.

<u>Components</u>	<u>Partition coefficient n-octanol/water (log Kow)</u>	<u>Bioconcentration factor (BCF)</u>
Sodium Hydroxide (CAS 1310-73-2)	N/Av	N/Av

**Mobility in soil**

: No data is available on the product itself.

**Other Adverse Environmental effects**

: No data is available on the product itself.

### SECTION 13. DISPOSAL CONSIDERATIONS

**Handling for Disposal**

: Handle waste according to recommendations in Section 7.

**Methods of Disposal**

: Dispose in accordance with all applicable federal, state, provincial and local regulations.

**RCRA**

: If this product, as supplied, becomes a waste in the United States, it may meet the criteria of a hazardous waste as defined under RCRA, Title 40 CFR 261. It is the responsibility of the waste generator to determine the proper waste identification and disposal method. For disposal of unused or waste material, check with local, state and federal environmental agencies.







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### SECTION 14. TRANSPORT INFORMATION

Regulatory Information	UN Number	UN proper shipping name	Transport hazard class(es)	Packing Group	Label
TDG	UN1824	SODIUM HYDROXIDE SOLUTION	8	II	
<b>TDG Additional information</b>	May be shipped as LIMITED QUANTITY when transported in containers no larger than 1.0 Litre, in packages not exceeding 30 kg gross mass. Under the TDGR, refer to Section 1.17 for additional exemption information, if shipping under this exemption.				
49CFR/DOT	UN1824	Sodium hydroxide solution	8	II	
<b>49CFR/DOT Additional information</b>	May be shipped as LIMITED QUANTITY when transported in containers no larger than 1.0 Litre, in packages not exceeding 30 kg gross mass. Refer to 49 CFR Section 173.154.				
IMDG	UN1824	SODIUM HYDROXIDE SOLUTION	8	II	
<b>IMDG Additional information</b>	Consult the IMDG regulations for exceptions.				
ICAO/IATA	UN1824	Sodium hydroxide solution	8	II	
<b>ICAO/IATA Additional information</b>	Refer to ICAO/IATA Packing Instruction				

**Special precautions for user** : None reported by the manufacturer.

**Environmental hazards** : This product does not meet the criteria for an environmentally hazardous mixture, according to the IMDG Code. See ECOLOGICAL INFORMATION, Section 12.

### SECTION 15 - REGULATORY INFORMATION

**US Federal Information:**

Components listed below are present on the following U.S. Federal chemical lists:

Ingredients	CAS #	TSCA Inventory	CERCLA Reportable Quantity(RQ) (40 CFR 117.302):	SARA TITLE III: Sec. 302, Extremely Hazardous Substance, 40 CFR 355:	SARA TITLE III: Sec. 313, 40 CFR 372, Specific Toxic Chemical	
					Toxic Chemical	de Minimis Concentration
Sodium Hydroxide	1310-73-2	Yes	1000 lb/ 454 kg	None.	No	N/Ap

SARA TITLE III: Sec. 311 and 312, SDS Requirements, 40 CFR 370 Hazard Classes: Physical hazards (Corrosive to metals )Health hazards (Eye Damage ;Skin corrosion ;Specific target organ toxicity, single exposure).



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### US State Right to Know Laws:

The following chemicals are specifically listed by individual States:

<u>Ingredients</u>	CAS #	California Proposition 65		State "Right to Know" Lists					
		Listed	Type of Toxicity	CA	MA	MN	NJ	PA	RI
Sodium Hydroxide	1310-73-2	No	N/Ap	Yes	Yes	Yes	Yes	Yes	Yes

### Canadian Information:

Canadian Environmental Protection Act (CEPA) information: All ingredients listed appear on the Domestic Substances List (DSL).

### International Information:

Components listed below are present on the following International Inventory list:

<u>Ingredients</u>	CAS #	European EINECs	Australia AICS	Philippines PICCS	Japan ENCS	Korea KECI/KECL	China IECSC	NewZealand IOC
Sodium Hydroxide	1310-73-2	215-185-5	Present	Present	(2)-1972; (1)-410	KE-31487	Present	HSR001547

## SECTION 16. OTHER INFORMATION

### Legend

- : ACGIH: American Conference of Governmental Industrial Hygienists
- CAS: Chemical Abstract Services
- CFR: Code of Federal Regulations
- CSA: Canadian Standards Association
- DOT: Department of Transportation
- EPA: Environmental Protection Agency
- IARC: International Agency for Research on Cancer
- IATA: International Air Transport Association
- ICAO: International Civil Aviation Organisation
- IMDG: International Maritime Dangerous Goods
- LC: Lethal Concentration
- LD: Lethal Dose
- N/Ap: Not Applicable
- N/Av: Not Available
- NFPA: National Fire Protection Association
- NTP: National Toxicology Program
- OSHA: Occupational Safety and Health Administration
- PEL: Permissible exposure limit
- SARA: Superfund Amendments and Reauthorization Act
- STEL: Short Term Exposure Limit
- TDG: Canadian Transportation of Dangerous Goods Act & Regulations
- TLV: Threshold Limit Values
- TWA: Time Weighted Average



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- References** :
1. ACGIH, Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices
  2. ECHA - European Chemical Agency
  3. Canadian Centre for Occupational Health and Safety, CCInfoWeb databases
  4. Safety Data Sheets from manufacturer.
  5. US EPA Title III List of Lists
  6. California Proposition 65 List
  7. OECD - The Global Portal to Information on Chemical Substances - eChemPortal

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**Other special considerations for handling**

: Provide adequate information, instruction and training for operators.

<p><b>Prepared for:</b> Carbonfree Chemicals 11503 Bulverde Rd San Antonio, TX 78217 Telephone: (210) 476 5906 info@carbonfreechem.com</p>	
<p><b>Prepared by:</b> ICC The Compliance Center Inc. Telephone: (888) 442-9628 (U.S.); (888) 977-4834 (Canada) <a href="http://www.thecompliancecenter.com">http://www.thecompliancecenter.com</a></p>	

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