

Material Safety Data Sheet

NTPA	HMS	Personal Protective Equipment
		See Section 15.

Section 1 Chemical Product and Company Identification

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Common Name/ Trade Name	Sodium Hydroxide, Solid		Catalog Number(s).	
Manufacturer	CONNELL BROS. COMPANY, LTD. 345 CALIFORNIA STREET, 27TH FLOOR SAN FRANCISCO, CA 94104		CAS#	1310-73-2
Commercial Name(s)	Not available.	Synonym	RIECS	WB4900000
Synonym	Caustic Soda	Chemical Name	TSCA	TSCA 8(b) Inventory: Sodium hydroxide
Chemical Name	Sodium Hydroxide	Chemical Family	CI#	Not available.
Chemical Formula	NaOH	Chemical Formula	IN CASE OF EMERGENCY CHEMTREC (24hr) 800-424-9300	
Supplier	Connell Bros. Company, Ltd. a Div. of Wilbur-Ells Company 345 California Street, 27th Floor San Francisco, CA 94104 Phone: (415) 772-4000			

Section 2 Composition and Information on Ingredients

Name	CAS #	TWA (mg/m ³)	Exposure Limits		
			STEL (mg/m ³)	CEIL (mg/m ³)	% by Weight
1) Sodium Hydroxide	1310-73-2	2		2	100

Toxicological Data on Ingredients

Sodium hydroxide
LD50: Not available.
LC50: Not available.

Section 3 Hazards Identification

Potential Acute Health Effects

Very hazardous in cases of skin contact (corrosive, irritant, permator), of eye contact (irritant, corrosive), of ingestion, of inhalation. The amount of tissue damage depends on length of contact. Eye contact can result in corneal damage or blindness. Skin contact can produce inflammation and blistering. Inhalation of dust will produce irritation to gastro-intestinal or respiratory tract, characterized by burning, sneezing and coughing. Severe over-exposure can produce lung damage, choking, unconsciousness or death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects

CARCINOGENIC EFFECTS: Not available.
MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells
TERATOGENIC EFFECTS: Not available.
DEVELOPMENTAL TOXICITY: Not available.
 The substance may be toxic to mucous membranes, upper respiratory tract, skin, eyes. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure of the eyes to a low level of dust can produce eye irritation. Repeated skin exposure can produce local skin destruction, or dermatitis. Repeated inhalation of dust can produce varying degree of respiratory irritation or lung damage.

Section 4 First Aid Measures

Eye Contact

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

Skin Contact

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Serious Skin Contact

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

Inhalation

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. **WARNING:** It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion

Not available.

Section 5 Fire and Explosion Data

Flammability of the Product Non-flammable.

Auto-ignition Temperature Not applicable.

Flash Points Not applicable.

Flammable Limits Not applicable.

Products of Combustion Not available.

Fire Hazards in Presence of Various Substances metals

Explosion Hazards in Presence of Various Substances Rates of explosion of the product in presence of mechanical impact: Not available. Rates of explosion of the product in presence of static discharge: Not available. Slightly explosive in presence of heat.

Fire Fighting Media and Instructions Not available

Special Remarks on Fire Hazards

sodium hydroxide + zinc metal dust causes ignition of the latter.
 Under proper conditions of temperature, pressure and state of division, it can ignite or react violently with acetaldehyde, allyl alcohol, allyl chloride, benzene-1,4-diol, chlorine trifluoride, 1,2 dichloroethylene, nitroethane, nitromethane, nitroparaffins, nitropropane, dimethylaldehyde, 2,2-dichloro-3,3-dimethylbutane.
 Sodium hydroxide in contact with water may generate enough heat to ignite adjacent combustible materials
 Phosphorus boiled with NaOH yields mixed phosphines which may ignite spontaneously in air.
 sodium hydroxide and dimethylaldehyde + heat may cause ignition.
 Reaction with certain metals releases flammable and explosive hydrogen gas

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Special Remarks on Explosion Hazards

Sodium hydroxide reacts to form explosive products with ammonia + silver nitrate. Benzene extract of allyl benzenesulfonate prepared from allyl alcohol, and benzene sulfonyl chloride in presence of aqueous sodium hydroxide, under vacuum distillation, residue darkened and exploded. Sodium Hydroxide + impure tetrahydrofuran, which can contain peroxides, can cause serious explosions. Dry mixtures of sodium hydroxide and sodium tetrahydroborate liberate hydrogen explosively at 230-270 deg. C. Sodium Hydroxide reacts with sodium salt of trichlorophenol + methyl alcohol + trichlorobenzene + heat to cause an explosion.

Section 6. Accidental Release Measures

Small Spill Use appropriate tools to put the spilled solid in a convenient waste disposal container. If necessary, Neutralize the residue with a dilute solution of acetic acid.

Large Spill Corrosive solid. Stop leak if without risk. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas if needed. Call for assistance on disposal. Neutralize the residue with a dilute solution of acetic acid. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7. Handling and Storage

Precautions Keep container dry. Do not breathe dust. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If you feel unwell, seek medical attention and show the label when possible. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, reducing agents, metals, acids, alllals, moisture.

Storage Keep container tightly closed. Keep container in a cool, well-ventilated area. Hygroscopic. Deliquescent.

Section 8. Exposure Controls/Personal Protection

Engineering Controls Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operators generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection Splash goggles. Synthetic apron. Vapor and dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill Splash goggles. Full suit. Vapor and dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits STEL: 2 (mg/m³) from ACGIH (TLV) [United States]
TWA: 2 CELL: 2 (mg/m³) from OSHA (PEL) [United States]
CELL: 2 (mg/m³) from NIOSH

Consult local authorities for acceptable exposure limits

Section 9. Physical and Chemical Properties

Physical state and appearance	Solid. (Deliquescent solid. Solid pellets)	Odor	Odorless.
	Molecular Weight	40 g/mole	Taste
pH (1% soln./water)	13.5 [Basic.]	Color	White.

Boiling Point 1388°C (2530.4°F)

Melting Point 323°C (613.4°F)

Critical Temperature Not available.

Specific Gravity 2.13 (Water = 1)

Vapor Pressure Not applicable.

Vapor Density Not available.

Volatility Not available.

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Odor Threshold	Not available.
Water/Oil Dist. Coeff.	Not available.
Ionizity (in Water)	Not available.
Dispersion Properties	See solubility in water.
Solubility	Easily soluble in cold water.

Section 10. Stability and Reactivity Data

Stability	The product is stable.
Instability Temperature	Not available.
Conditions of Instability	Incompatible materials, moisture, moist air.
Incompatibility with various substances	Highly reactive with metals. Reactive with oxidizing agents, reducing agents, acids, alkalis, moisture.
Corrosivity	Not available.

Special Remarks on Reactivity

Hygroscopic. Much heat is evolved when solid material is dissolved in water. Therefore cold water and caution must be used for this process.

Sodium hydroxide solution and octanol + diborane during a work-up of a reaction mixture of oxime and diborane in tetrahydrofuran is very exothermic, a mild explosion being noted on one occasion.

Reactive with water, acids (nitric, non-oxidizing, e.g. hydrochloric, hydrofluoric acid, muriatic acid, phosphoric acid, mineral, oxidizing e.g. chromic acid, hypochlorous acid, nitric acid, sulfuric acid), acids (organic e.g. acetic acid, benzoic acid, formic acid, methanoic acid, oxalic acid), aldehydes (e.g. acetaldehyde, acetoin, chloral hydrate, formaldehyde), carbamates (e.g. carbamate, carbofuran), esters (e.g. butyl acetate, ethyl acetate, propyl formate), halogenated organics (dibromomethane, hexachlorobenzene, methyl chloride, trichloroethylene), isocyanates (e.g. methyl isocyanate), ketones (acetone, acetophenone, MEK, MIBK), acid chlorides, strong bases, strong oxidizing agents, strong reducing agents, flammable liquids, powdered metals and metals (i.e. aluminum, tin, zinc, hafnium, raney nickel), metals (alkali and alkaline e.g. cesium, potassium, sodium), metal compounds (toxic e.g. beryllium, lead acetate, nickel carbonyl, tetraethyl lead), nitrides (e.g. potassium nitride, sodium nitride), nitrites (e.g. acetonitrite, methyl cyanide), nitro compounds (organic e.g. nitrobenzene, nitromethane), acetic anhydride, chlorohydrin, chlorosulfonic acid, ethylene cyanohydrin, glyoxal, hydrosulfuric acid, oleum, propylalane, acrylonitrile, phosphorus pentoxide, chloroethanol, chloroform-methanol, tetrahydroborate, cyanogen azide, 1,2,4,5 tetrachlorobenzene, dimethylaldehyde.

Reacts with formaldehyde hydroxide to yield formic acid, and hydrogen.

Special Remarks on Corrosivity

Very caustic to aluminum and other metals in presence of moisture.

Polymerization

Will not occur.

Section 11. Toxicological Information

Routes of Entry	Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.
Toxicity to Animals	LD50: Not available. LC50: Not available.
Chronic Effects on Humans	MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. May cause damage to the following organs: mucous membranes, upper respiratory tract, skin, eyes.
Other Toxic Effects on Humans	Extremely hazardous in case of inhalation (lung corrosive). Very hazardous in case of skin contact (corrosive, irritant, permeator), of eye contact (corrosive), of ingestion.
Special Remarks on Toxicity to Animals	Lowest Published Lethal Dose: LD ₁ [Rabbit] - Route: Oral; Dose: 500 mg/kg
Special Remarks on Chronic Effects on Humans	May affect genetic material. Investigation as a mutagen (cytogenetic analysis)
Special Remarks on other Toxic Effects on Humans	

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Acute Potential Health Effects:
Skin: May be harmful if absorbed through skin. Causes severe skin irritation and burns. May cause deep penetrating ulcers of the skin.
Eyes: Causes severe eye irritation and burns. May cause chemical conjunctivitis and corneal damage.
Inhalation: Harmful if inhaled. Causes severe irritation of the respiratory tract and mucous membranes with coughing, burns, breathing difficulty, and possible coma. Irritation may lead to chemical pneumonitis and pulmonary edema. Causes chemical burns to the respiratory tract and mucous membranes.
Ingestion: May be fatal if swallowed. May cause severe and permanent damage to the digestive tract. Causes severe gastrointestinal tract irritation and burns. May cause perforation of the digestive tract. Causes severe pain, nausea, vomiting, diarrhea, and shock. May cause corrosion and permanent destruction of the esophagus and digestive tract.

Section 12. Ecological Information

Ecotoxicity	Not available.
BOD5 and COD	Not available.
Products of Biodegradation	Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.
Toxicity of the Products of Biodegradation	The product itself and its products of degradation are not toxic.
Special Remarks on the Products of Biodegradation	Not available.

Section 13. Disposal Considerations

Waste Disposal Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14. Transport Information

DOT Classification	Class 8: Corrosive material
Identification	UN#: 1823 : Sodium hydroxide, solid PG: II
Special Provisions for Transport	Not available.
DOT (Pictograms)	



Section 15. Other Regulatory Information and Programs

Federal and State Regulations
Illinois toxic substances disclosure to employee act: Sodium hydroxide
Illinois chemical safety act: Sodium hydroxide
New York release reporting list: Sodium hydroxide
Rhode Island RTK hazardous substances: Sodium hydroxide
Pennsylvania RTK: Sodium hydroxide
Minnesota: Sodium hydroxide
Massachusetts RTK: Sodium hydroxide
New Jersey: Sodium hydroxide
Louisiana spill reporting: Sodium hydroxide
California Director's List of Hazardous Substances: Sodium hydroxide
TSCA 8(b) inventory: Sodium hydroxide
CERCLA: Hazardous substances: Sodium hydroxide: 1000 lbs (453.6 kg)

California Proposition 65 Warnings California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: No products were found.

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California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found.

Other Regulations
 OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).
 EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances (EINECS No. 215-185-6).
 Canada: Listed on Canadian Domestic Substance List (DSL).
 China: Listed on National Inventory.
 Japan: Listed on National Inventory (ENCS).
 Korea: Listed on National Inventory (KECI).
 Philippines: Listed on National Inventory (PICCS).
 Australia: Listed on AICS.

Other Classifications WHMIS (Canada) CLASS E: Corrosive solid.

DSCL (BBC) R35- Causes severe burns.

S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
 S37/39- Wear suitable gloves and eye/face protection.
 S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

National Fire Protection Association (U.S.A.)
 Health: 3
 Reactivity: 0
 Specific hazard: 2
 Personal Protection: 1

Health
 Reactivity
 Specific hazard

WHMIS (Canada)
 (Pictograms)



DSCL (Europe)
 (Pictograms)



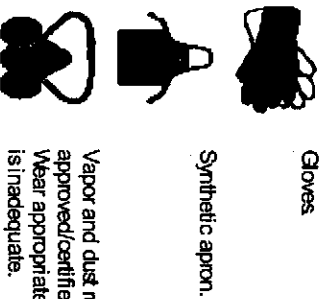
TDC (Canada)
 (Pictograms)



ADR (Europe)
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Protective Equipment



Gloves

Synthetic apron.

Vapor and dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.



Splash goggles

Section 16. Other Information

MSDS Code S4100

References Not available.

Other Special Considerations Not available.

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CALL (415) 772-4000

Notice to Reader

All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If the product is combined with other materials, derivatives, or becomes contaminated it may pose hazards not mentioned in this MSDS. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Corning Bros. Company, Ltd. assumes no responsibility for the completeness or accuracy of the information contained herein.