Safety Data Sheet

Section 01 - Identification

Product Identifier	Sodium Hydroxide Solution [1-50%]
Other Means of Identification	Caustic soda, sodium hydrate, lye, liquid caustic, caustic
Product Use and Restrictions on Use	Acid neutralization, petroleum refining, manufacture of paper products, metal cleaning, regeneration of ion exchange resins.
Initial Supplier Identifier	ClearTech Industries Inc. 1500 Quebec Avenue Saskatoon, SK. Canada S7K 1V7
Prepared By	ClearTech Industries Inc. Technical Writer Phone: 1 (800) 387-7503
24-Hour Emergency Phone	Phone: 1 (306) 664 – 2522

Section 02 - Hazard Identification

GHS-Classification

Skin Corrosion/Irritation Category 1A

Physical Hazards

Corrosive to Metals Category 1

Danger

Hazard Statement
H290 – May be corrosive to metals.
H314 – Causes severe skin burns and eye damage.

Pictograms

Precautionary Statements
P234 – Keep only in original container.
P260 – Do not breathe mist, vapors or spray.
P264 – Wash affected body parts thoroughly after handling.
P280 – Wear protective gloves, protective clothing, eye protection, and face protection.
P301 + P330 + P331 – IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 – IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin.
P363 – Wash contaminated clothing before reuse.
P304 + P340 – IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P310 – Immediately call a POISON CENTER or doctor/physician.
P305 + P351 + P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.P390 – Absorb spillage to prevent material damage.
P405 – Store locked up.
P501 – Dispose of contents/container in accordance with all federal, provincial, and/or local regulations including the Canadian Environmental Protection Act.

Section 03 - Composition / Information on Ingredients

Chemical Name	CAS Number	Weight %	Unique Identifiers
Sodium Hydroxide	1310-73-2	≤ 50%	Not Available
Water	7732-18-5	to 100%	

Section 04 - First Aid Measures

Inhalation

If symptoms are experienced, remove source of contamination or move victim to fresh air. Seek immediate medical attention.

Skin Contact / Absorption

Avoid direct contact. Remove contaminated clothing. Rinse skin with lukewarm, gently flowing water for at least 60 minutes. DO NOT INTERRUPT FLUSHING. Seek immediate medical attention. Completely decontaminate clothing, shoes and leather goods before re-use or discard.

Eye Contact

Contact lenses should never be worn when working with this product. Flush immediately with water for at least 30 minutes. Forcibly hold eyelids apart to ensure complete irrigation of eye tissue. Seek immediate medical attention.

Ingestion

NEVER give anything by mouth if victim is rapidly losing consciousness, is unconscious or convulsing. Have victim rinse mouth thoroughly with water. DO NOT INDUCE VOMITING. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Have victim rinse mouth with water again. Seek medical attention.

Additional Information

Not Available

Most Important Symptoms, both Acute and Delayed

Will cause permanent skin and eye damage upon contact if left untreated.

Section 05 - Fire Fighting Measures

Suitable Extinguishing Media

Product does not burn. Use extinguishing media compatible with sodium hydroxide and appropriate for surrounding fire.

Unsuitable Extinguishing Media

Carbon dioxide.

Specific Hazards Arising From the Chemical

Solid sodium hydroxide in contact with moisture or water may generate sufficient heat to ignite nearby combustible materials. When moist, sodium hydroxide can react with metals, such as aluminum, tin and zinc, to form flammable and explosive hydrogen gas. Sodium hydroxide can react with a number of commonly encountered materials, such as acids, releasing enough heat to ignite nearby combustible materials. When heated to temperatures greater than 318-323°C (e.g. in a fire), solid sodium hydroxide will flow to low ground. When hot or in the molten state, it can react violently with water causing spattering and releasing an irritating mist. Toxic sodium oxide fumes can be generated by thermal decomposition at elevated temperatures. Closed containers may rupture violently when heated.

Special Protective Equipment for Fire-Fighters

Sodium hydroxide solid and solutions are very corrosive and at high temperatures, decomposition occurs giving off strong, corrosive fumes of sodium oxide. Do not enter without wearing NIOSH-approved self-contained breathing apparatus and clothing.

Further Information	Not Available

Section 06 - Accidental Release Measures

Personal Precautions / Protective Equipment / Emergency Procedures	Wear appropriate personal protective equipment. Ventilate area. Only enter area with PPE. Stop or reduce leak if safe to do so. Flush with water to remove any residue.
Environmental Precautions	Prevent material from entering sewers and waterways.
Methods and Materials for Containment and Cleaning Up	Solutions should be contained by diking with inert material, such as sand or earth. Solutions can be recovered or carefully diluted with water and cautiously neutralized with acids such as acetic acid or hydrochloric acid. LARGE SPILLS: Contact fire and emergency services and supplier for advice.

Section 07 - Handling and Storage

Precautions for Safe Handling	This material is EXTREMELY CORROSIVE and HIGHLY REACTIVE. Use proper equipment for lifting and transporting all containers. Use sensible industrial hygiene and housekeeping practices. Wash thoroughly after handling. Avoid all situations that could lead to harmful exposure.
Conditions for Safe Storage	Store in a cool, dry, well-ventilated place. Keep container tightly closed, and away from incompatible materials.
Incompatibilities	Water, aluminum, tin, zinc, tetrahydrofuran, 1,2,4,5-tetrachlorobenzene, 2,2,2-trichloroethanol, chloronitrotoluenes, nitrobenzene, maleic anhydride, cyanogen azide, nitroalkanes, silver nitrate, ammonia, zirconium, acetaldehyde, acrolein, acrylonitrile, allyl alcohol, allyl chloride, zinc dust, 1,2-dichloroethylene, trichloroethylene, tetrachloroethane, phosphorus, hydroquinone, cinnamaldehyde, mineral acids, chlorine trifluoride, phosphorous pentoxide, trichloronitromethane, sugars, chloroform, methanol.

Section 08 - Exposure Controls and Personal Protection

Exposure Limit(s)

Component	Regulation	Type of Listing	Value
Sodium Hydroxide	ACGIH	TLV-C	2mg/m^3
	OSHA	PEL-T-TWA	2mg/m^3

Engineering Control(s)

Ventilation Requirements	Mechanical ventilation (dilution or local exhaust), process or personnel enclosure and control of process conditions must be provided in accordance with all fire codes and regulatory requirements. Supply sufficient replacement air to make up for air removed by exhaust systems.
Other	Emergency shower and eyewash must be available and tested in accordance with regulations and be in close proximity.

Protective Equipment

Eyes/Face	Chemical goggles, full-face shield, or a full-face respirator should be worn at all times when product is handled. Contact lenses should not be worn; they may contribute to severe eye injury.
Hand Protection	Impervious gloves of chemically resistant material (rubber or PVC) should be worn at all times. Wash contaminated clothing and dry thoroughly before reuse.

Skin and Body Protection	Body suite, aprons, and/or coveralls of chemical resistant material should be worn at all times. Wash contaminated clothing and dry thoroughly before reuse. Impervious boots of chemically resistant material should be worn at all times. No special footwear is required other than what is mandated at place of work.
Respiratory Protection	NIOSH RECOMMENDATIONS FOR SODIUM HYDROXIDE CONCENTRATIONS IN AIR (3): Up to 10 mg/m3: (APF = 25) Any supplied-air respirator operated in a continuous-flow mode. Any powered air-purifying respirator with a high-efficiency particulate filter. (APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter. Any self-contained breathing apparatus with a full facepiece. Any supplied-air respirator with a full facepiece.
Thermal Hazards	Not Available

Section 09 - Physical and Chemical Properties

Appearance

Physical State	Viscous liquid
Colour	Clear to slightly turbid
Odour	Odourless
Odour Threshold	Not Applicable

Property

pH	13-14
Melting Point/Freezing Point	≤12°C
Initial Boiling Point and Boiling Range	<145°C
Flash Point	Not Applicable
Evaporation Rate	The only evaporation that occurs is water.
Flammability	Non-Flammable
Upper Flammable Limit	Not Applicable
Lower Flammable Limit	Not Applicable
Vapour Pressure (mm Hg, 20^{o}C)	~0
Vapour Density (Air=1)	Not Applicable
Relative Density	Not Available
Solubility(ies)	Very soluble in water. Soluble in absolute alcohol, methanol and glycerol; moderately soluble in ethanol; insoluble in acetone and diethyl ether.
Partition Coefficient: n-octanol/water	Not Applicable (dissociates)
Auto-ignition Temperature	Not Applicable
Decomposition Temperature	Not Available

Viscosity	36.31cP (40% solution)
Explosive Properties	Not Available
Specific Gravity (Water=1)	1.22-1.53
% Volatiles by Volume	Not Available
Formula	NaOH
Molecular Weight	40.00

Section 10 - Stability and Reactivity

Reactivity	Not Available
Stability	Normally stable if kept dry. Rapidly absorbs carbon dioxide and water from the air forming sodium carbonate.
Possibility of Hazardous Reactions	Polymerization will not occur.
Conditions to Avoid	Water, generation of dust.
Incompatible Materials	Water, aluminum, tin, zinc, tetrahydrofuran, 1,2,4,5-tetrachlorobenzene, 2,2,2-trichloroethanol, chloronitrotoluenes, nitrobenzene, maleic anhydride, cyanogen azide, nitroalkanes, silver nitrate, ammonia, zirconium, acetaldehyde, acrolein, acrylonitrile, allyl alcohol, allyl chloride, zinc dust, 1,2-dichloroethylene, trichloroethylene, tetrachloroethane, phosphorus, hydroquinone, cinnamaldehyde, mineral acids, chlorine trifluoride, phosphorous pentoxide, trichloronitromethane, sugars, chloroform, methanol.
Hazardous Decomposition Products	Sodium oxide fumes may be generated by thermal decomposition at high temperatures.

Section 11 - Toxicological Information

Acute Toxicity

Component	Oral LD_{50}	Dermal LD_{50}	LC_{50}
Sodium Hydroxide (50%)	280-680 mg/kg (rat)	2700 mg/kg (rabbit)	Not Available

Chronic Toxicity – Carcinogenicity

Component	IARC
Sodium Hydroxide	Not considered to be carcinogenic by ACGIH and IARC.

Skin Corrosion/Irritation	Corrosive to skin.
Ingestion	Ingestion can result in burns to the lips, tongue, throat, esophagus and stomach; abdominal pain; nausea; vomiting; diarrhea and death.
Inhalation	Inhalation is only likely to occur if an aerosol is formed as sodium hydroxide does not readily form a vapour. Exposure to aerosol may lead to irritation of respiratory tract, inflammation of lungs, difficulty breathing. May cause pulmonary edema.
Serious Eye Damage/Irritation	Corrosive. Capable of producing severe eye burns and permanent injury.
Respiratory or Skin Sensitization	Sodium hydroxide is not known to be a skin sensitizer.
Germ Cell Mutagenicity	The available evidence does not suggest that sodium hydroxide is a mutagen.
Reproductive Toxicity	Sodium hydroxide is not known to cause reproductive toxicity.
SINGLE TARGET ORGAN TOXICITY-Single Exposure	Breathing may result in respiratory irritation.

SINGLE TARGET ORGAN TOXICITY-Repeated Exposure	Not Applicable
Aspiration Hazard	Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract. May cause severe pneumonitis and destruction of lung tissue. May cause pulmonary edema.
Synergistic Materials	Not Available

Section 12 - Ecological Information

Ecotoxicity

Component	Toxicity to Algae	Toxicity to Fish	Toxicity to Daphnia and Other Aquatic Invertebrates
Sodium Hydroxide	Not Available	LC_{50}(Gambusia affinis, 96hr): 125mg/L	EC_{50}(Ceriodaphnia dubia, 48hr): 40.38mg/L

Biodegradability	Not biodegradable.
Bioaccumulation	Does not bioaccumulate.
Mobility	Very mobile in soil and very soluble in water.
Other Adverse Effects	Toxic to aquatic life through an immediate raise in pH to toxic levels.

Section 13 - Disposal Considerations

Waste From Residues/Unused Products	Dispose in accordance with all federal, provincial, and/or local regulations including the Canadian Environmental Protection Act.
Contaminated Packaging	Dispose in accordance with all federal, provincial, and/or local regulations including the Canadian Environmental Protection Act.

Section 14 - Transport Information

UN Number	UN 1824
UN Proper Shipping Name	SODIUM HYDROXIDE SOLUTION
Transport Hazard Class(es)	8
Packaging Group	II
Environmental Hazards	Not listed as a marine pollutant under Canadian TDG Regulations, schedule III.
Special Precautions	Not Available
Transport in Bulk	Not Available

Additional Information

Packing Group	Limited Quantity Index
II	1 L
III	5 L

TDG

Other	Secure containers (full and/or empty) with suitable hold down devises during shipment and ensure all caps, valves, or closures are secured in the closed position.

TDG PRODUCT CLASSIFICATION: This product has been classified on the preparation date specified at section 14 of this MSDS / SDS, for transportation in accordance with the requirements of part 2 of the Transportation of Dangerous Goods Regulations. If applicable, testing and/or published test data regarding the classification of this product are listed in the references at section 16 of this MSDS / SDS.

Section 15 - Regulatory Information

NOTE: THE PRODUCT LISTED ON THIS SDS HAS BEEN CLASSIFIED IN ACCORDANCE WITH THE HAZARD CRITERIA OF THE CANADIAN CONTROLLED PRODUCTS REGULATIONS. THIS SDS CONTAINS ALL INFORMATION REQUIRED BY THOSE REGULATIONS.

NSF Certification……Product is certified under NSF/ANSI Standard 60 for corrosion and scale control, and pH adjustment at a maximum dosage for the following:

sodium hydroxide 10%: 500mg/L	sodium hydroxide 24%: 208mg/L	sodium hydroxide 38%: 131mg/L
sodium hydroxide 11%: 454mg/L	sodium hydroxide 25%: 200mg/L	sodium hydroxide 39%: 128mg/L
sodium hydroxide 12%: 416mg/L	sodium hydroxide 26%: 192mg/L	sodium hydroxide 40%: 125mg/L
sodium hydroxide 13%: 384mg/L	sodium hydroxide 27%: 185mg/L	sodium hydroxide 41%: 122mg/L
sodium hydroxide 14%: 357mg/L	sodium hydroxide 28%: 178mg/L	sodium hydroxide 42%: 119mg/L
sodium hydroxide 15%: 333mg/L	sodium hydroxide 29%: 172mg/L	sodium hydroxide 43%: 116mg/L
sodium hydroxide 16%: 312mg/L	sodium hydroxide 30%: 167mg/L	sodium hydroxide 44%: 114mg/L
sodium hydroxide 17%: 294mg/L	sodium hydroxide 31%: 161mg/L	sodium hydroxide 45%: 111mg/L
sodium hydroxide 18%: 277mg/L	sodium hydroxide 32%: 156mg/L	sodium hydroxide 46%: 108mg/L
sodium hydroxide 19%: 263mg/L	sodium hydroxide 33%: 151mg/L	sodium hydroxide 47%: 106mg/L
sodium hydroxide 20%: 250mg/L	sodium hydroxide 34%: 147mg/L	sodium hydroxide 48%: 104mg/L
sodium hydroxide 21%: 238mg/L	sodium hydroxide 35%: 143mg/L	sodium hydroxide 49%: 102mg/L
sodium hydroxide 22%: 227mg/L	sodium hydroxide 36%: 138mg/L	sodium hydroxide 50%: 100mg/L
sodium hydroxide 23%: 217mg/L	sodium hydroxide 37%: 135mg/L	

NSF product use restrictions based on requirements obtained from the NSF website for current requirements.

Section 16 - Other Information

Preparation Date	July 31, 2015
Revsion Date	March 3 2018

Note: The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material. It is the responsibility of the user to comply with all applicable laws and regulations.

Attention: Receiver of the chemical goods / SDS coordinator

As part of our commitment to the Canadian Association of Chemical Distributors (CACD) Responsible Distribution® initiative, ClearTech Industries Inc. and its associated companies require, as a condition of sale, that you forward the attached Safety Data Sheet(s) to all affected employees, customers, and end-users. ClearTech will send any available supplementary handling, health, and safety information to you at your request.

If you have any questions or concerns please call our customer service center.

References:

1) CHEMINFO
2) eChemPortal
3) TOXNET
4) Transportation of Dangerous Goods Canada
5) CHRIS
6) HSDB
7) ECHA

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