

Product Name: Free Zone

BICI Chemicals

1200 N Peoria
Tulsa, OK 74106
1-918-625-8811



Safety Data Sheet

1 PRODUCT IDENTIFICATION

Product Name **Free Zone**
Synonyms sodium hydroxide solution
Material Use sewage treatment, pH adjuster

Emergency: 1-800-535-5053

2 HAZARD SUMMARY

GHS Class skin corrosive
(Category) (1A)
Signal Words DANGER
Hazard Statements causes severe skin burns & eye damage (H314)



GHS Precautionary Statements for Labelling

P262, P264 Do not get in eyes, on skin or on clothing. Wash thoroughly after handling.
P280 Wear eye protection, and protective gloves of butyl, neoprene, nitrile, or PVC.
P303, P361, P353 If on skin or hair, take off immediately all contaminated clothing. Rinse skin with water/shower.
P301, P330, P331 If swallowed, rinse mouth. Do not induce vomiting
P313 & P333 If skin irritation or rash occurs, get medical advice/attention.
P305, P351, P338 If in eyes, rinse continuously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.

3 COMPONENTS

	%	TLV ppm / mg/m ³	LD ₅₀ (mg/kg) ORAL	LD ₅₀ (mg/kg) SKIN	LC ₅₀ (ppm) INHALATION
Sodium Hydroxide	30-50%	2	over 500	1350	not known
Water	50-70%	not toxic	90,000	not toxic	not toxic

4 FIRST AID

SKIN: **Wash Immediately** with plenty of water. Remove contaminated clothing and do not reuse until laundered.
EYES: **Wash eyes immediately** with plenty of water, holding eyelids open. **Seek medical assistance promptly.**
INHALATION: Remove from contaminated area promptly. **CAUTION: Rescuer must not endanger himself!** If breathing stops, administer artificial respiration and seek medical aid promptly.
INGESTION: **Immediately, rinse mouth several times.** Then, give plenty of water to dilute product. Do not induce vomiting (NOTE below). Keep victim quiet. If vomiting occurs, lower victim's head below hips to prevent inhalation of vomited material. Seek medical help promptly.

NOTE: Corrosive Substance; apply first aid immediately! Inadvertent inhalation of vomited material may seriously damage the lungs. The stomach should only be emptied under medical supervision, and after the installation of an airway to protect the lungs.

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5 FLAMMABILITY & FIREFIGHTING

Flash Point	cannot burn
Autoignition Temperature	cannot burn
Flammable Limits	cannot burn
Combustion Products	sodium oxide
Firefighting Precautions	as for materials sustaining fire; compatible with water; firefighters must wear SCBA
Static Charge Accumulation	cannot accumulate a static charge on agitation or pumping

6 ACCIDENTAL RELEASE MEASURES

Leak Precaution	dyke to control spillage and prevent environmental contamination
Handling Spill	recover free liquid with suitable pumps; neutralise (<i>cautiously, due to heat generation</i>) with dilute acetic or hydrochloric acids; absorb residue on an inert sorbent; sweep, shovel & store in closed containers for disposal

7 STORAGE & HANDLING

Caustic soda reacts (gradually) with atmospheric carbon dioxide, partially neutralizing itself. Also, keep away from substances named in Part 10. **Ensure that containers are intact and tightly sealed.**

If diluting with water, add caustic soda **gradually** to the water, stirring continuously. **Dilution generates heat.** If using a plastic container, ensure the solution never becomes so hot that the container begins to soften!

Avoid **ALL** contact with skin & eyes and wash work clothes frequently. An eye bath & safety shower must be available near the workplace. *Note that caustic soda destroys (dissolves) leather, wool and silk!*

8 EXPOSURE CONTROL & PERSONAL PROTECTION

ACGIH TLV-C	2mg/m ³	ACGIH STEL	not listed
OSHA PEL-C (T)	2mg/m ³	OSHA STEL	not listed
Ventilation	no special mechanical ventilation required		
Hands	butyl, neoprene, nitrile, or PVC "gauntlet-style" gloves – <i>always confirm suitability with supplier</i>		
Eyes	safety glasses with side shields – <i>always protect the eyes</i>		
Clothing	wear appropriate (apron, boots, hat, face shield, etc) protective clothing (materials above) if there is any possibility of splashing; <u>never tuck cuffs of protective trousers into boots</u>		

9 PHYSICAL CHARACTERISTICS

NOTE: for Flash Point, Autoignition Temperature & Flammable Limits see Part 5.

Odor & Appearance	clear but opalescent, slightly syrupy, colorless, odorless liquid
Odor Threshold	not known
Vapor Pressure	2mmHg / 0.27kPa (20°C / 68°F)
Evaporation Rate (<i>Butyl Acetate = 1</i>)	not known – <i>deliquescent substance will not evaporate to dryness without heating</i>
Vapor Density (air = 1)	0.6 – <i>only water vapor present</i>
Boiling Range	125-130°C / 257-266°F – <i>boiling raises concentration, and boiling point rises as well</i>
Freezing Point	approx. 10°C / 50°F
Decomposition Temperature	not known – <i>this material is not susceptible to thermal decomposition</i>
Specific Gravity	1.36-1.42 (20/20°C)
Water Solubility	complete
Also soluble in	methanol, ethanol, ethylene glycol, glycerol
Log P _{o/w} (Octanol/H ₂ O partition)	not known – <i>dissociates (ionizes); hard to measure</i>
Viscosity	~20centipoise (20°C / 68°F) – <i>somewhat viscous</i>

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pH 14 (5% solution) – *highly alkaline; aggressive alkali*
Molecular Weight 40grams/mole (NaOH), 18grams/mole (water)

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10 REACTIVITY

Dangerously Reactive With	strong acids, acid anhydrides, acid chlorides, ketones, glycols and organic peroxides;
Also Reactive With	a wide range of chlorinated organic compounds; nitrated substances & ammonia react to produce explosive compounds; aluminium, zinc, tin or sodium borohydride react releasing flammable hydrogen; reaction with phosphorus creates toxic phosphine;
Chemical Stability	stable; will not polymerize – however sodium hydroxide is a highly reactive substance
NOTE: It is prudent to check other substances in the workplace for compatibility with sodium hydroxide/caustic soda.	
Decomposes in Presence of	gradually neutralises with atmospheric CO ₂
Decomposition Products	sodium carbonate (<i>also corrosive, but less so</i>) forms after reaction with CO ₂
Mechanical Impact	not sensitive

11 TOXICITY

i. EFFECTS OF ACUTE EXPOSURE

Skin Contact	corrosive to skin causing severe burns, blisters, ulceration & permanent scarring; burns may be painless, which may lead to greater damage through lack of awareness . . .
Skin Absorption	slight; no toxic effects likely by this route
Eye Contact	corrosive to eyes leading to severe damage & possible blindness
Inhalation	does not produce vapor & dust is unlikely due to product's affinity for moisture; aerosols are corrosive to respiratory tract, causing pulmonary oedema (fluid in lungs) & difficult breathing
Ingestion	severely corrosive to mouth, throat & stomach – <i>not a route of industrial exposure</i>
Calculated LD ₅₀ (oral)	above 1430mg/kg (rabbit)
Calculated LD ₅₀ (skin)	3860mg/kg (rabbit)
LC ₅₀ (inhalation)	not known

ii. EFFECTS OF CHRONIC EXPOSURE

General	severe initial effect makes prolonged or repeat exposure unlikely; prolonged or repeated exposure to dilute solutions may cause dermatitis due to saponification of skin oils & subsequent drying
Sensitising	not a sensitiser in humans or animals
Carcinogen/Tumorigen	not considered a tumorigen or a carcinogen in humans or animals
Reproductive Effect	no known effect in humans or animals
Mutagen	no known effect on humans or animals
Synergistic With	not known

12 ENVIRONMENTAL INFORMATION

Bioaccumulation	not a bioaccumulator
Biodegradation	inorganic product – cannot biodegrade
Abiotic Degradation	neutralises with CO ₂ in air to sodium carbonate; dilutes readily in surface water & reacts with dissolved CO ₂ to sodium carbonate; if calcium is present, insoluble calcium carbonate precipitates
Mobility in soil, water	water soluble & moves readily in soil and water
Aquatic Toxicity	
LC ₅₀ (Fish 96 hr)	125mg/litre (Gambusia affinis), 45mg/litre (Oncorhynchus mykiss) – <i>mortality caused by alkalinity</i>
LC ₁₀₀ (Crustacea, 48hr)	100-150mg/litre (Daphnia magna); 125-1000mg/litre (freshwater insect larvae)
EC ₅₀ (Algae)	<i>no information</i>
EC ₅₀ (Bacteria)	22mg/litre (Photobacterium phosphoreum)

NOTE: Much of the available aquatic toxicity data is either not reliable or of unknown reliability.

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13 DISPOSAL / CONTAINERS

Waste Disposal **do not flush to sewer**, neutralize waste caustic soda with an acidic waste material; *neutralization with hydrochloric acid or acetic acid yields harmless salts (sodium chloride or sodium acetate)*

Containers **Drums** should be reused. Recondition and pressure test by a licensed reconditioner prior to re-use.
Pails must be vented and thoroughly dried prior to crushing and recycling.
IBCs (intermediate bulk containers): polyethylene bottle must be pressure tested & recertified at 30 months. Replace at 60 months (5 yrs). Steel containers must be inspected, pressure tested & recertified every 5 yrs.
Warning: never cut, drill, weld or grind on or near this container, even if empty.

14 TRANSPORTATION CLASSIFICATION

USA 49 CFR & Canada TDG

Canada TDG	PIN	UN3266, Corrosive Liquid, Basic, Inorganic, N.O.S (Caustic Soda Ash)
AND	Shipping Name	sodium hydroxide, solution
U.S.A. 49 CFR	Class	8
	Packing Group	II
Marine Pollutant		not a marine pollutant
Reportable Quantity (RQ)		2850lbs



15 REGULATIONS

Canada DSL **on inventory**

U.S.A. TSCA **on inventory**

Europe EINECS **on inventory**

This very common substance is present on most national chemicals inventories.

U.S.A. Regulations:

Immediately Dangerous to Life or Health: 10 mg/cu m

Allowable Tolerances: Residues of sodium hydroxide are exempted from the requirement of a tolerance when used in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops or to raw agricultural commodities after harvest. Use: neutralizer. Limit: none. Residues of sodium hydroxide are exempted from the requirement of a tolerance when used in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to animals. Use: neutralizer. Limit: none.

OSHA Standards: Permissible Exposure Limit: Table Z-1 8-hr Time Weighted Avg: 2 mg/cu m. Vacated 1989 OSHA PEL Ceiling limit 2 mg/cu m is still enforced in some states.

NIOSH Recommendations: Recommended Exposure Limit: 15 Minute Ceiling Value: 2 mg/cu m.

Threshold Limit Values: Ceiling Limit: 2 mg/cu m.

Clean Water Act Requirements: Sodium hydroxide is designated as a hazardous substance under section 311(b)(2)(A) of the Federal Water Pollution Control Act and further regulated by the Clean Water Act Amendments of 1977 and 1978. These regulations apply to discharges of this substance. This designation includes any isomers and hydrates, as well as any solutions and mixtures containing this substance.

CERCLA Reportable Quantities: Persons in charge of vessels or facilities are required to notify the National Response Center (NRC) immediately, when there is a release of this designated hazardous substance, in an amount equal to or greater than its reportable quantity of 1000 lb or 454 kg. The toll free number of the NRC is (800) 424-8802. The rule for determining when notification is required is stated in 40 CFR 302.4 (section IV.D.3.b).

FIFRA Requirements: Residues of sodium hydroxide are exempted from the requirement of a tolerance when used in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops or to raw agricultural commodities after harvest. Use: neutralizer. Limit: none. Residues of sodium hydroxide are exempted from the requirement of a tolerance when used in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to animals. Use: neutralizer. Limit: none. The Agency has completed its review of all available information, and has determined that the data are sufficient to support reregistration of products containing sodium hydroxide. ... The Agency therefore finds that products containing sodium hydroxide as an active ingredient are eligible for reregistration. ... Although the Agency has found that certain products containing sodium hydroxide are eligible for registration, it should be understood that the Agency may take appropriate regulatory action, and/or require the submission of additional data to support the registration of products containing sodium hydroxide, if new information comes to the Agency's attention or if the data requirements for reregistration (or the guidelines for generating such data) change. As the federal pesticide law FIFRA directs, EPA is conducting a comprehensive review of older pesticides to consider their health and environmental effects and make decisions about their continued use. Under this pesticide reregistration program, EPA examines newer health and safety data for pesticide active ingredients initially registered before November 1, 1984, and determines whether the use of the pesticide does not pose unreasonable risk in accordance to newer safety standards, such as those described in the Food Quality Protection Act of 1996. Pesticides for which EPA had not issued Registration Standards prior to the effective date of FIFRA '88 were divided into three lists based upon their potential for human exposure and other factors, with List B containing pesticides of greater concern than those on List C, and with List C containing pesticides of greater concern than those on List D. Sodium hydroxide is found on List D. Case No: 4065; Pesticide type: fungicide, herbicide, antimicrobial; Case Status: RED Approved 09/92; OPP has made a decision that some/all uses of the pesticide are eligible for reregistration, as reflected in a Reregistration Eligibility Decision (RED) document. ; Active ingredient (AI): sodium hydroxide; Data Call-in (DCI) Date(s): 09/30/92; AI Status: OPP has completed a Reregistration Eligibility Decision (RED) document for the case/AI.

FDA Requirements: Substance added directly to human food affirmed as generally recognized as safe. Sodium hydroxide used as a general purpose food additive in animal drugs, feeds, and related products is generally recognized as safe when used in accordance with good manufacturing or feeding practice.

16 OTHER INFORMATION

Date of Preparation **June 2015**

Date of Revision **-**

Prepared for BICI Chemicals, by Peter Bursztyn

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Resources: CHEMINFO (Canadian Center for Occupational Health & Safety), Hazardous Substances Data Bank (US National Library of Science), EChA Dossiers (European Union), ESIS European Chemical Substances Information System (European Union), OSHA Database (US Dept. of Labor), and RTECS Database Registry of Toxic Effects of Chemical Substances.

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