Safety Data Sheet

Sodium Hydroxide

Revision Date: September 20, 2024

Supersedes: May 3, 2023

Document No.: MRK-SDS-004-005

Section 1: Identification of the substance/mixture and of the supplier

1.1 Product identifier

Product name: Sodium Hydroxide, 48% min.

CAS registry no.: 1310-73-2

1.2 Relevant identified uses of the substance/mixture and uses advised against

Identified uses: Textile bleaching, dyeing and finishing; pulp and paper, neutralizing agent, water softening, process cleaning, petroleum refining,electroplating, rubber reclaiming, detergent, food processing

1.3 Details of the supplier of the safety data sheet

Company: International Chemical Industries, Inc.
KM 32 McArthur Highway, Tuktukan
Guiguinto, Bulacan 3015

Telephone: +6344-794-0444/45

Fax: +6344-794-4104

Toll free: 1-800-1888-6800

1.4 Emergency telephone number

Emergency: +6344-794-0444/45

Section 2: Hazards identification

2.1 Classification of the substance/mixture

Classification according to GHS:

Skin corrosion: category 1A-H314
Serious eye damage: Category 1- H314
Corrosive to metals: Category 1-H290
Acute toxicity (inhalation): Category 4-H302

2.2 Label elements

Labelling according to GHS:

Pictograms:

GHS07

GHS05

GHS09

Signal Word: Danger!

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

H302 Harmful if swallowed
H335 May cause respiratory irritation.
H400 Very toxic to aquatic life

Precautionary Statements:

P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P264 Wash hands thoroughly after handling.
P273 Avoid release to the environment
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER or doctor/physician
P405 Store locked up
P406 Store in corrosive resistant container with a resistant inner liner.
P501 Dispose of contents/container in accordance to applicable local, regional, national, and/or international regulations

Section 3: Composition/information on ingredients

3.1 Substances

Not Applicable.

3.2 Mixtures

Trade Names/ Synonyms: Caustic Soda, lye, soda lye, Sodium Hydroxide
Chemical Formula: NaOH
Molecular Weight: 40 g/mole

Component	Chemical Formula	CAS Registry No.	Concentration
Water	H2O	7732-18-5	52% max by weight
Sodium Hydroxide	NaOH	1310-73-2	48% min by weight

Section 4: First aid measures

4.1 Description of first aid measures

General Advice:	Show this data sheet to the doctor in attendance.
Inhalation:	Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.
Skin Contact:	In case of contact, immediately flush skin with plenty of water, avoiding hot water or hard scrubbing, for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse.
Eye Contact:	Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally to ensure thorough rinsing; delay can result to permanent injury.
Ingestion:	DO NOT INDUCE VOMITING! Rinse mouth with water.If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in section 2.2 and section 11.

4.3 Indication of any immediate medical attention and special treatment needed.

Treat symptomatically as for strong alkalis. Monitor arterial blood gases, chest x-ray, and pulmonary function tests if respiratory tract irritation or respiratory depression is evident. Treat dermal irritation or burns with standard topical therapy. Burns are not immediately painful; onset of pain may be minutes to hours. Symptoms of pulmonary edema can be delayed up to 48 hours after exposure. For inhalation, consider oxygen, and avoid gastric lavage or emesis. For cases of suspected ingestion, perform endoscopy. In cases of severe esophageal corrosion, the use of therapeutic doses of steroids should be considered. General supportive measures with continual monitoring of gas exchange, acid-base balance, electrolytes, and fluid intake are also required.

Section 5: Fire fighting measures

5.1 Extinguishing media

Suitable extinguisting media

Use dry chemical or carbon dioxide, water, and regular foam extinguishers. Use water spray to cool fire-exposed containers.

5.2 Special hazards arising from the substance or mixture

Not combustible, but contact with moisture or water may generate sufficient heat to ignite combustible materials. Forms flammable and explosive hydrogen through corrosion of metals. Generates dense black smoke and may form toxic fumes of carbon monoxide (CO), carbon dioxide (CO2) and sodium oxide (Na2O).

5.3 Advice for firefighters

Do not breathe fumes. Respirator with independent air-supply and airtight garment is required. Fight fire in early stages if safe to do so. Containers close to fire should be removed immediately or cooled with water. Do not allow contaminated extinguishing water to enter the soil, groundwater or surface waters

5.4 Further information

No data available.

Section 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Wear protective equipment to prevent skin and eye contamination. Avoid inhalation of vapours or dust. Work up wind or increase ventilation.

6.2 Environmental precautions

Prevent run off into into drains, sewers, surface/ground water system or soil.

6.3 Methods and materials for containment and cleaning up

Completely contain spilled material with dikes, sandbags, and prevent run off into the ground or surface waters or sewers. Recover as much caustic material as possible into containers for disposal. Add water and neutralize remaining caustic material with dilute hydrochloric acid, citric acid or another solid acidic material. Collect neutralized caustic with a dry sorbent. Flush residual neutralized waste to the drain with excess water.

6.3 Reference to other sections

For personal protection, see section 8.
For disposal, see section 13.

Section 7: Handling and storage

7.1 Precautions for safe handling

Avoid skin and eye contact and breathing in vapour, mists and aerosols. Use smallest possible amounts in designated areas with adequate ventilation. Keep containers closed when not in use. Considerable heat is generated when diluted with water. Proper handling procedures must be followed to prevent vigorous boiling, splattering or violent eruption of the diluted solution. Never add water to caustic. ALWAYS ADD CAUSTIC TO WATER and provide agitation. When mixing with water, stir small amounts in slowly

7.2 Conditions for handling, including any incompatibilities

Store in a cool, dry, well ventilated place. Store away from incompatible materials described in Section 10. Use corrosion-resistant structural materials. Store in stainless steel –nickel, polyethylene –polypropylene, glass -stoneware/porcelain packaging material.

Non suitable packaging materials are zinc, tin, copper, brass, bronze, aluminum, lead. At temperatures greater than 40^{o}C, tanks must be stress relieved.

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

Section 8: Exposure controls/personal protection

8.1 Control parameters

Exposure limits

USA-ACGIH 2007 : Ceiling = 2 mg/m3 (maximum value)
EH40 WEL 2007; STEL 2 mg/m3

8.2 Exposure controls

Appropriate engineering controls

Provide local exhaust ventilation where dust or mist may be generated. Ensurecompliance with applicable exposure limits.

Personal protective equipment

Eye/face protection

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Skin protection

Rubber or neoprene gloves and additional protection including impervious boots, apron, or coveralls, as needed in areas of unusual exposure to prevent skin contact.

Respiratory protection

NIOSH-approved full- or half facepiece respiratory equipment with cartridge(s) providing protection against the compound of concern.

Environmental exposure controls

Do not allow entry to drainage canals, water systems and soil.

Section 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance:	Form: Liquid Color: colorless to slightly grayish
Odor:	odorless
Odor threshold:	No information available.
pH:	>14 (Strong Base)
Melting point/range:	No data available.
Boiling point/range:	145 degrees Centigrade for 50% NaOH solution

Flash point:	No data available.
Evaporation rate:	No data available.
Flammability:	No data available.
Freezing point	12°C
Upper/lower explosive limits:	No data available.
Vapor pressure:	2 hPA (mbar) @ 20 C
Vapor density:	No data available.
Specific gravity (30°C) min:	1.504
Water Solubility:	Soluble @ 25°C
Partition coefficient:	No data available.
Auto-ignition temperatur	No data available.
Decomposition temperature:	No data available.
Viscosity:	78 mPA-s at 20°C

9.2 Other information

No data available.

Section 10: Stability and reactivity

10.1 Reactivity

Reacts violently with acids. Reacts exothermically on dilution with water.

10.2 Chemical stability

Stable under normal handling conditions. Rapidly absorbs carbon dioxide from the air, forming sodium carbonate. Slowly absorbs moisture from the air

10.3 Possibility of hazardous reactions

Reacts with ammonium salts, evolving ammonia gas. Forms flammable hydrogen gas with zinc and aluminum. May ignite or explode on contact with combustible materials. Reacts readily with various reducing sugars (i.e. fructose, galactose, maltose, dry whey solids) to produce carbon monoxide. Take precautions including monitoring the tank atmosphere for carbon monoxide to ensure safety of personnel before vessel entry.

10.4 Conditions to avoid

Extremes of temperature and direct sunlight, heat, moisture, light metals, exposure to air or carbon dioxide and incompatibles

10.5 Incompatible materials

Chlorinated hydrocarbons, combustible materials, acids, halo carbons, metals/aloys (zinc, aluminum, copper, lead, tin, brass, bronze), halogens, oxidizing materials, peroxides, metal salts, acetaldehyde, acid anhydrides, ketones, glycols, acrolein,

acrylonitrile, allyl alcohol, nitroaromatics, organic peroxides, oxidizing materials, aluminum, chlorine triflouride, hydroquinone, maleic anhydride, and phosphorous pentoxide. Dilution with water evolves large quantity of heat.

10.5 Hazardous decomposition products

Hydrogen gas, carbon monoxide, carbon dioxide, sodium oxide. Can induce hazardous polymerization of acetaldehyde, acrolein, and acrylonitrile.

Section 11: Toxicological information

11.1 Information on toxicological effects

No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms or effects that may arise if the product is mishandled and overexposure occurs are

Ingestion

Swallowing can result in nausea, vomiting, diarrhoea, abdominal pain and chemical burns to the gastrointestinal tract.

Inhalation

Breathing in mists or aerosols may produce respiratory irritation.

Skin corrosion/irriation

Contact with skin will result in severe irritation. Corrosive to skin - may cause skinburns.

Serious eye damage/eye irriation.

A severe eye irritant. Corrosive to eyes; contact can cause corneal burns. Contamination of eyes can result in permanent injury. May cause blindness

Specific target organ toxicity (STOT) - Single Exposure

May cause respiratory irritation.

Toxicity data

1350 mg/kg skin-rabbit LD50; 104-340 mg/kg oral-rat LD50; 40 mg/kg intra peritoneal-mouse LD50; 500 mg/kg oral-rabbit LDLo

11.2 Further information

No data available.

Section 12: Ecological information

12.1 Ecotoxicity

Fish Toxicity: 240 ug/L 96 hour(s) LC50 (Mortality) Bluegill (Lepomismacrochirus)
Invertebrate Toxicity: 330000-1000000 ug/L 48 hour(s) LC50 (Mortality) Cockle (Cerastoderma edule) Algal
Toxicity: 765 ug/L 30 day(s) (Biomass) Algae,phytoplankton,algal mat (Algae)
Phytotoxicity: 230 ug/L 21 week(s) (Biomass) Waterweed (Elodea canadensis)

12.2 Persistence and degradability

Biodegradation is not an applicable endpoint since the product is an inorganicchemical.

12.3 Bioaccumulative potential

An accumulation in aquatic organisms is not to be expected

12.4 Mobility in soil

An accumulation in aquatic organisms is not to be expected

12.4 Other adverse effects

Toxic effect on fish, plankton and on sedentary organisms. The toxicity to aquatic life will be influenced be the hardness and alkalinity of the receiving water. The upper pH limit tolerated by most freshwater fish is 8.4; the pH must generally be greater than 9 before the aqueous environment becomes lethal for fully developed fish. Freshwater algae are destroyed above pH 8.5.

Section 13: Disposal considerations

13.1 Waste treatment methods

Product

The generation of waste should be avoided or minimized wherever possible. Reuse or reprocess, if possible. Can be dissolved carefully in water and greatly diluted or carefully neutralized with dilute acid and flushed to drain with copious amounts of water

Contaminated packaging

Empty containers must be decontaminated. Dispose of in accordance with all Government and Local regulations.

Section 14: Transport information

14.1 UN number

DOT 1824

14.2 UN proper shipping name

DOT Sodium Hydroxide Solution

14.3 Transport hazard class(es)

DOT Class 8

14.4 Packing group

DOT Group II

14.5 Environmental hazards

Marine Pollutant: No

Environmentally Hazardous : No

14.6 Transport in bulk

Do not ship by air.

14.7 Special precautions for user

No data available.

Section 15: Transport information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

U.S. Regulations:

CERCLA Sections 102a/103 Hazardous Substances (40 Cfr 302.4): 1000 Lbs Rq

SARA Title Iii Section 302 Extremely Hazardous Substances (40 Cfr 355.30): Not Regulated.

SARA Title Iii Section 304 Extremely Hazardous Substances (40 Cfr 355.40): Not Regulated

SARA Title Iii Sara Sections 311/312 Hazardous Categories (40 Cfr 370.21):

Acute: Yes

Chronic: No

Fire: No

Reactive: Yes

Sudden Release: No

SARA Title Iii Section 313 (40 Cfr 372.65): Not Regulated.

OSHA Process Safety (29cfr1910.119): Not Regulated

Section 16: Other information

NFPA rating

Health:	3
Flammability:	0
Reactivity:	1
Specific Hazard	Corrosive