

Sodium Hydroxide Solution

Date of Preparation: February 2004

Revision: 2

Section 1 - Chemical Product and Company Identification

Chemical Name: Sodium Hydroxide Solution

Chemical Formula: NaOH

Other Designations: Caustic soda; Soda lye; Sodium hydrate; White caustic.

General Use: Metal cleaning and etching, electroplating, oxide coating, and electrolytic extracting.

Manufacturer: Kanto Corporation, 13424 N. Woodrush Way, Portland, OR 97203

Non-Emergency Contact: Kanto Customer Service, Phone (503) 283-0405, FAX (503) 240-0409

For All Transportation Emergencies Call CHEMTREC at 1-800-424-9300

Section 2 - Composition/ Information on Ingredients

Ingredient Name	CAS Number	% w/w
Sodium Hydroxide	1310-73-2	10-51
Water	7732-18-5	49-90

Ingredient	OSHA PEL		ACGIH TLV		NIOSH REL		NIOSH
	TWA	STEL	TWA	STEL	TWA	STEL	IDLH
Sodium Hydroxide	2 mg/m ³	None established	2 mg/m ³ (Ceiling)	None established	2 mg/m ³ (Ceiling)	None established	10 mg/m ³

Section 3 - Hazards Identification

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Corrosive! Causes eye and skin burns which may not be immediately apparent. May be fatal if swallowed. Reactive with metals, acids, organics, and other products. May release toxic fumes under fire conditions.

HMIS
H 3
F 0
R 1
PPE †
†Sec. 8

Potential Health Effects

Primary Entry Routes: Inhalation, ingestion, skin and eye contact.

Target Organs: Eyes, skin, respiratory system.

Acute Effects

Inhalation: Irritation of mucous membranes of the nose, throat, and respiratory tract. High doses can result in spasms in the larynx resulting in upper-airway obstruction and asphyxiation. May cause pulmonary edema to occur.

Eye: Severe eye hazard such as ulceration, softening, and sloughing of the cornea over several days. May lead to limited vision or blindness. Can result in localized blood vessel clots and accumulation of fluid in the eye.

Skin: Severe burns and deep ulcerations that can cause the skin to appear to be soft and moist. Symptoms may be delayed with dilute solutions.

Ingestion: Abdominal and chest pain, difficulty swallowing; vomiting resulting in corrosive injury to the stomach, throat, esophagus, and mouth. The corrosiveness of the chemical can cause secondary damage to the soft tissues.

Carcinogenicity: Not listed

Medical Conditions Aggravated by Long-Term Exposure: Asthma and emphysema

Chronic Effects: Ulceration of the nasal passages and dermatitis.

Section 4 - First Aid Measures

Eye Contact: Gently lift eyelids and flush immediately and continuously with copious amounts of water for at least 15 minutes. Do not allow the victim to rub or keep eyes tightly shut. Consult an ophthalmologist immediately.

Skin Contact: Rinse with flooding amounts of water, while removing contaminated clothing, for at least 15 minutes. Wash with soap and water. Seek medical attention immediately. Symptoms may be delayed in onset. Wash clothing before reuse.

Ingestion: If the victim is conscious, give large amounts of water. Seek medical attention immediately. Never give anything by mouth to an unconscious or convulsing person.

Inhalation: Remove exposed person to an uncontaminated atmosphere and support breathing. If not breathing, give artificial respiration. Seek medical attention immediately.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Section 5 - Fire-Fighting Measures

Flash Point: N/A

Auto ignition Temperature: N/A

LEL: N/A

UEL: N/A

Flammability Classification: Non flammable

Extinguishing Media: Water fog, dry chemical, or carbon dioxide.

Unusual Fire or Explosion Hazards: Can release flammable hydrogen gas.

Hazardous Combustion Products: Can release flammable hydrogen gas and sodium oxide fumes.

Fire-Fighting Instructions: Do not release runoff from fire control methods to sewers or waterways.

Fire-Fighting Equipment: Because fire produces toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full-face piece operated in pressure-demand or positive-pressure mode.



Section 6 - Accidental Release Measures

Small Spills: Restrict access to area. Do not touch the spill material. Clean up spills immediately. Avoid breathing vapors and contact with skin and eyes. Wear fully protective clothing and respiratory or breathing apparatus. Dike to contain the spill then carefully dilute with water and neutralize with dilute hydrochloric acid.

Large Spills: Restrict access to the area. Provide adequate ventilation and protective equipment. Clear area of personnel and move upwind. Dike far ahead of liquid spill. Do not release into sewers or waterways. Contact fire department and tell them location and nature of hazard. Wear full body protective clothing with breathing apparatus. Do not use water or neutralizing agents indiscriminately on large spills. Contain material and have trained personnel carefully neutralize with dilute hydrochloric acid. Wash area down with large quantity of water and prevent runoff into drains. After cleanup operations, decontaminate and launder all protective clothing and equipment before storing and reusing. If contamination of drains or waterways occurs, advise emergency services.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120) in addition to any state or federal guidelines.

Section 7 - Handling and Storage

Handling Precautions: Avoid generating and breathing mist and vapor. Observe manufacturer's storing and handling recommendations. Wear protective clothing when risk of exposure occurs. Avoid contact with incompatible materials. When handling, do not eat, drink or smoke. Keep containers securely sealed when not in use. Avoid physical damage to containers. Work clothes should be laundered separately.

Recommended Storage Methods: Keep warmer than 50°F for 30% solution and warmer than 60°F for 51% solution. Freezing temperature is directly proportional to the percentage of sodium hydroxide in the solution. Do not store in metal containers due to corrosivity of material.

Regulatory Requirements: Follow applicable federal, state and local regulations and guidelines.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls

Ventilation: Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA PELs (Sec. 2). Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

Administrative Controls

Respiratory Protection: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or non-routine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA.

Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres. If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

Protective Clothing/Equipment: Wear chemically protective gloves, boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.

Safety Stations: Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

Contaminated Equipment: Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment.

Comments: Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

Section 9 - Physical and Chemical Properties

Physical State: Liquid
Appearance and Odor: Clear, colorless, odorless.
Vapor Pressure: 1.5-1.6 @ 20°C
Vapor Density (Air=1): N/A
Formula Weight: 40
Specific Gravity (H₂O=1, at 4 °C): >1
pH: 14

Water Solubility: 100%
Boiling Point: Concentration dependent.
Melting Point: Concentration dependent.
Viscosity: Concentration dependent.
% Volatile: N/A
Evaporation Rate: N/A
Density: Mixture varies by concentration.

Section 10 - Stability and Reactivity

Stability: Stable under normal storage and handling conditions.

Polymerization: Hazardous polymerization will not occur.

Chemical Incompatibilities: Acids, organic material, organic halogens, flammable liquids, chlorinated solvents, nitromethane, aluminum, phosphorus, tin and tin oxides, and zinc.

Conditions to Avoid: Direct heat and sunlight which can cause partial decomposition.

Hazardous Decomposition Products: Thermal oxidative decomposition of mixture can produce sodium and sodium oxides.

Section 11- Toxicological Information*

Human, oral, TC_{LO}: 1.57mg/kg
 Rabbit, oral, LD₅₀: 500mg/kg
 Mouse, intraperitoneal, LD₅₀: 40mg/kg
 Rabbit, eye, 1mg/30sec rinse: Severe
 Rabbit, skin, 500mg/24hr: Severe

Chronic Effects: Ulceration of the nasal passages and dermatitis.
Carcinogenicity: None listed
Mutagenicity: None listed
Teratogenicity: None listed

* See NIOSH, *RTECS* (WB4900000), for additional toxicity data.

Section 12 - Ecological Information

Ecotoxicity: Release of sodium hydroxide into a body of water will lower the pH possibly causing aquatic organisms to die off in the immediate area.

Environmental Fate: Sodium hydroxide breaks down by reacting with other chemicals decreasing the pH of water. In the soil, sodium hydroxide breaks down into its components.

Section 13 - Disposal Considerations

Disposal: Contact your supplier or a licensed contractor for detailed recommendations. May be possible to neutralize with hydrochloric acid, and dilute with water before flushing to waste water treatment system. Follow applicable Federal, state, and local regulations.

Disposal Regulatory Requirements: See Federal, state, and local requirements for disposal.

Section 14 - Transport Information**DOT Transportation Data (49 CFR 172.101):**

Shipping Name: Sodium hydroxide, solution

Hazard Class: 8

ID No.: UN1824

Packing Group: II

Label: 8

Special Provisions (172.102):
 B2, IB2, N34, T7, TP2

Packaging Authorizations

a) **Exceptions:** 173.154

b) **Non-bulk Packaging:** 173.202

c) **Bulk Packaging:** 173.242

Quantity Limitations

a) **Passenger, Aircraft, or Railcar:** 1L

b) **Cargo Aircraft Only:** 30L

Vessel Stowage Requirements

a) **Vessel Stowage:** A

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Section 15 - Regulatory Information**EPA Regulations:**

RCRA Hazardous Waste Number (40 CFR 261.22): D002

RCRA Hazardous Waste Classification (40 CFR 261.22): Corrosive

CERCLA Hazardous Substance (40 CFR 302.4) listed specific per RCRA, Sec. 3001; CWA, Sec. 311 (b)(4); CWA, Sec. 307(a), CAA, Sec. 112

CERCLA Reportable Quantity (RQ): 1000 lb (454 kg)

SARA 311/312 Codes: Acute Health

SARA Toxic Chemical (40 CFR 372.65): Not listed
SARA EHS (Extremely Hazardous Substance) (40 CFR 355): Not listed
TSCA: Listed

OSHA Regulations:

Air Contaminant (29 CFR 1910.1000, Table Z-1, Z-1-A): 2 mg/m³

Section 16 - Other Information

Revision Notes: Rev 1 - Revised to 16 sections.

Rev 2 – Revision of percentage composition, physical properties, and storage information

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