

SAFETY DATA SHEET

1. Product and company identification

Name of product: Liquid caustic soda
 Manufacturer: KANEKA CORPORATION
 Address: 2-3-18, Nakanoshima, Kita-ku, Osaka, Japan
 Division: Osaka head office, Vinyls and Chlor-Alkali Solutions Vehicle
 R&B· Technology group
 Person in charge: Head of Technology Team
 Telephone: +81-6-6226-5356
 Fax: +81-6-6226-5345
 e-mail: kasei-hinshitsu@kaneka.co.jp
 Emergency telephone number: Takasago manufacturing site, Chemicals Manufacturing Division, Chlorine & Caustic Soda Team
 +81-50-3181-4500
 Recommended use and restrictions: Manufacturing of rayon, staple fibers, cellophane, synthetic fibers, intermediates of dye, perfumes, pharmaceuticals, oils, fats, soaps, various salts of soda, softening of water, electrolyte of alkaline storage batteries, ingredients of cosmetics, etc.

2. Hazards Identification

GHS classification:

Physical hazards	Explosives	Not Classified
	Flammable gases	Not Classified
	Aerosols	Not Classified
	Oxidizing gases	Not Classified
	Gases under pressure	Not Classified
	Flammable liquids	Not Classified
	Flammable solids	Not Classified
	Self-reactive substances and mixtures	Not Classified
	Pyrophoric liquids	Not Classified
	Pyrophoric solids	Not Classified
	Self-heating substances	Not Classified
	Substances which, in contact with water, emit flammable gases	Not Classified
	Oxidizing liquids	Not Classified
	Oxidizing solids	Not Classified
Organic peroxides	Not Classified	
Health hazards	Corrosive to metals	Category 1
	Desensitized explosives	Not Classified
	Acute toxicity, oral	Category 3
	Acute toxicity, dermal	Classification not possible.
	Acute toxicity, inhalation, gases	Not Classified
	Acute toxicity, inhalation, vapors	Classification not possible.
	Acute toxicity, inhalation, dusts or mists	Classification not possible.
	Skin Corrosion/irritation	Category 1
	Serious eye damage/eye irritation	Category 1
	Respiratory sensitization	Classification not possible.
	Skin sensitization	Not Classified
Germ cell mutagenicity	Not Classified	

	Carcinogenicity	Classification not possible.
	Reproductive toxicity	Classification not possible.
	Specific target organ toxicity - single exposure	Category 1 (respiratory organs)
	Specific target organ toxicity - repeated exposure	Classification not possible.
Environmental hazards	Aspiration hazard	Classification not possible.
	Acute aquatic toxicity	Category 3
	Chronic aquatic toxicity	Not Classified
	Hazardous to the ozone layer	Classification not possible.

Label elements

Hazard pictograms:



Signal word:	Danger
Hazard statement:	May be corrosive to metals. Toxic if swallowed. Causes severe skin burns and eye damages. Causes damage to organs; respiratory organ. Harmful to aquatic life.

Precautionary statement:

Prevention	Do not handle until all safety precautions have been read and understood. Keep only in original container. Do not breathe mist/vapor/spray. Avoid release to the environment. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection.
Response	IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF IN EYES: Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. IF EXPOSED or CONCERNED: call a doctor/physician Absorb spillage to prevent material damage.
Storage	Store in corrosive resistant container with a resistant inner liner. Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified : No information.

Main symptoms and emergency overview:

Highly corrosive to tissues such as eyes and skin.
Decomposes protein. May cause decomposition in deeper parts of tissues by degrees unless removed thoroughly. Particularly may weaken eyesight or cause loss of eyesight if in eyes.
Repeated contact with diluted solutions causes corrosion of tissues on skin surface and direct irritative dermatitis or chronic rashes. **Exposure at high concentration causes rapid corrosion.**
Irritate respiratory tract if inhale mist.
Causes inflammation in oral cavity, throat, gullet and gaster if swallowed accidentally.

3. Composition/information on ingredients

Substance or mixture:	Mixture	
Chemical name or common name:	Sodium hydroxide	Water
Synonyms:	Caustic soda	—
Chemical property (chemical formula):	NaOH	H ₂ O
CAS number:	1310-73-2	7732-18-5
Concentration or concentration range:	5%~50%	95%~50%
Gazette notification number (ENCS No., ISHA No.):	(1)-410	Not applicable.

Impurities or stabilizing additives which are contribute to the classification: No information.

4. First aid measures

If inhaled:	Remove casualty to fresh air and keep at rest. Immediately call a POISON CENTER doctor.
If on skin:	Take off immediately contaminated clothing and shoes. Cut off clothing if necessary. Wash contaminated body parts with running cool water or lukewarm water. Remove well with soap. Get medical attention immediately if appearance changes or irritation persists. Do not apply oils or other ointment without instructions by a doctor/physician.
If in eyes:	Immediately flush eyes with plenty of water for at least 15 minutes, opening eyes to rinse whole surfaces of eyes. Do not rub eyes or close eyes tightly to avoid damage of eyes. Get medical attention immediately. Remove contact lenses and flush eyes unless contact lenses are fixed.
If swallowed:	Call a doctor/physician immediately. Rinse mouth. Do not induce vomiting. Never give anything by mouth to an unconscious person.
Most important symptoms/effects, acute and delayed:	Corrosion occurs more rapidly as this product is inhaled or contacted with in larger quantity. Pulmonary edema may occur belatedly.
Protection of first-aid responders:	Remove contaminated clothing and protective equipment. Wear protective gloves and avoid contact with the hazardous material. Do not give direct mouth-to-mouth resuscitation if swallowed or inhaled. Induce artificial respiration with aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
Notes to doctor/physician:	See “main symptoms and emergency overview” in section 2.

5. Fire-fighting measures

Suitable extinguishing media:	This product is incombustible. Use powder fire extinguishing agent, foam fire extinguishing agent, carbon dioxide (CO ₂), and sand depending on the surrounding fire.
Unsuitable extinguishing media:	Non.
Special danger hazardousness at the time of the firefighting measures:	This product may form corrosive and toxic fumes when heated although the product is incombustible. This product generates heat enough to ignite combustible materials when contacting with water.
Special fire extinguishing method:	Keep upwind. Move containers immediately from fire area. Cool containers with water spray to avoid burst of containers when containers cannot be moved.
Special protective actions for fire-fighters:	Wear appropriate protective equipment such as clothing, heat-resistant gloves, goggles and air-supplied respirator.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Wear rubber gloves, glasses, protective surface and protective clothing.

Rope off area to keep unnecessary personnel away.

Keep upwind. Wear protective equipment.

Environmental precautions: Do not discharge into water courses to avoid effect to the environment.

Methods or materials for containment and cleaning up:

In case of small spills, collect spillage in airtight containers with dry sand, earth, sawdust and cloths.

Dike spillage to guide to safe area for later disposal because of strong alkalinity. Neutralize with dilute hydrochloric acid or dilute sulfuric acid if necessary. Contract for disposal of absorbents with industrial waste disposer licensed by local authority.

Secondary accident prevention measures:

Prevent discharging into drainage, sewage, underground areas or enclosed areas.

Pay attention to bumping when adding a lot of water or acids for neutralization.

7. Handling and storage

Handling

Technical measures : Install equipment for eye washing and body washing in an emergency near the handling area.

After handling, wash your hands and face thoroughly and gargle.

When handling, handle in the local exhaust or in a place with general ventilation equipment.

Safe handling advice: Treat cautiously to avoid spillage or dispersing.

If a large amount of water or acid is added to the caustic soda solution, there is a risk of Sudden boiling, so be careful.

Contact avoidance measures: Keep away from acids because this product is strong alkali.

This product corrodes metals such as aluminum, tin, zinc, chrome, generating hydrogen gas.

Hygiene measures: Wash hands and face, and rinse mouth after working.

Storage

Safe storage conditions: This product may be solidified at low temperature.

Store according to standards of construction and facilities of poisonous and deleterious substances, based on Poisonous and Deleterious Substances Control Act.

Ventilate well to avoid stagnating vapor.

Store away from acid products because this product is strong alkali.

Safe packaging materials: Store in stainless or polyethylene containers because this product is corrosive to soft steel, copper, aluminum and zinc.

8. Exposure controls/personal protection

Allowable concentration

Administrative levels: Not set.¹⁾

Occupational exposure limits (Limit in the air of the workplace or biological limit values)

Japan Society of Occupational Health (2020): Maximum 2 mg/m³²⁾

ACGIH (2021): STEL 2 mg/m³, Ceiling³⁾

Engineering measures: Provide eye wash facilities and emergency shower near workplace and indicate locations of these facilities.

Treat in well-ventilated area.

Personal protective equipment

Respiratory protection: Protective mask, air-supplied respirator

Hand protection: Rubber protective gloves

Eye protection: Protective goggles

Skin and body protection: Protective vinyl clothing, protective rubber boots

Special notes: Wash hands thoroughly and rinse mouth before eating.

9. Physical and chemical properties⁴⁾

Physical state:	Liquid
Color:	Colorless or grey
Odor:	Odorless
Melting point/Freezing point:	8°C (48% liquid)
Boiling point, initial boiling point, and boiling range:	138°C (48% liquid)
Flammability:	Incombustible
Upper/lower flammability or explosive limits:	Incombustible
Flash point:	None
Auto-ignition temperature:	None
Decomposition temperature:	No data
pH:	14 (1mol/L)
Kinematic viscosity	47mm ² /s (45% liquid /20°C)
Solubility:	42 g/100 g (0°C), 109 g/100 g (20°C) as solid caustic soda
Partition coefficient (n-octanol/water):	No information.
Vapor pressure:	432 Pa (20°C, 45% liquid)
Density and/or relative density:	1.50 (48% liquid), 1.48 (45% liquid)
Relative vapor density:	No data
Particle characteristics:	No data
Other information:	This liquid may be solidified depending on concentration or temperature.

10. Stability and reactivity

Reactivity:	Stable under normal conditions.
Chemical stability:	May absorb carbon dioxide gas in air and generate sodium carbonate.
Possibility of hazardous reactions:	Reacts with acids and generates heat because of alkalinity. Generates heat when diluted with water. Corrodes metals such as aluminum, tin, zinc, generating hydrogen gas. Mixed gas of hydrogen gas and air may occur explosion when ignited.
Conditions to avoid:	Contact with water, humid air and incompatible materials.
Incompatible materials:	Oxidizing agents, strong acids, tin, zinc, aluminum and alloy of these materials.
Hazardous decomposition products:	No information.
Other information:	There is a possibility of heat generation due to the reaction with a large amount of water or acid.

11. Toxicological information

Acute toxicity

Oral:	Rabbit LD ₅₀ 325 mg/kg (solid caustic soda) ⁵⁾ Solid caustic soda is classified as category 3 because lethal dose is 80-167 mg/kg, assuming body weight of human as 60 kg according to poisoning cases for human. ⁵⁾ This product is classified as category 3 as well as solid caustic soda, applying bridging principle (UN GHS 3.1.3.5) because this product is solution.
Dermal:	No information
Inhalation, gases:	No information
Inhalation, vapors:	No information
Inhalation, dust:	No information
Inhalation, mists:	No information
Skin Corrosion/irritation:	Irritative to human skin at 0.5% or more of concentration. ⁵⁾ Corrosive to pig skin at 8% or more of concentration. ⁵⁾ Causes severe necrosis of rabbit skin at 5% concentration for 4 hours exposure. ⁶⁾

Classified as category 1 based on knowledge above.

Serious eye damage/eye irritation: Causes serious damage in human eye⁶⁾

Corrosive to rabbit eye at 1.2% or more of concentration.⁵⁾

Classified as category 1 based on knowledge above.

Respiratory or skin sensitization:

Respiratory sensitization; No information.

Skin sensitization; No skin sensitization was observed in sensitivity test on the human skin.⁵⁾

Carcinogenicity: No information.

Reproductive toxicity: No information.

Germ cell mutagenicity: Negative, in vivo mouse bone-marrow micronucleus test⁵⁾

Negative, AMES test⁵⁾

Specific target organ toxicity - single exposure:

Irritates human respiratory organs and respiratory tract, and causes pulmonary edema.⁵⁾

Damages respiratory organs.

Classified as category 1 based on knowledge above.

Specific target organ toxicity - repeated exposure: No information.

Aspiration hazard: No information.

Other information: None.

12. Ecological information

Ecotoxicity

Acute aquatic toxicity: Fish; LC₅₀ 125 mg/L, *Gambusia affinis*, 96 hours⁵⁾

Crustacea; LC₅₀ 40.4 mg/L, *Ceriodaphnia*, 48 hours⁵⁾

Classified as category 3 of acute aquatic toxicity based on knowledge above.

Chronic aquatic toxicity: It is considered that the cause of toxicity is that the aqueous solution becomes a strong base, but since the toxic effect is alleviated by the buffering action in environmental water, it is not classified as a category.

Persistence and degradability: No information.

Bio accumulative potential: No information.

Mobility in soil: No information.

Hazardous to the ozone layer: Not listed in annexes to the Montreal Protocol.

Other hazardous effects: Accidental release may affect environment such as increasing pH because of strong alkalinity.

13. Disposal considerations

Information on safe and environmentally desirable disposal or recycling of chemicals (residual waste), contaminated containers and packaging

Chemicals (Residual waste): In addition to the section "7 Handling and Storage", it falls under the "Hazardous Substances" of the Water Pollution Control Law and the "Specially Controlled Industrial Waste" of the Waste Disposal and Public Cleansing Law, Handle properly. In addition, if there are provisions regarding disposal in the ordinances of each region, follow them.

It is illegal to discharge wastewater containing this product and cleaning wastewater directly into rivers, etc., or to landfill or dump them as they are, and never do so.

Contract for disposal with industrial waste disposer licensed by local authority.

When outsourcing the treatment to an outside contractor, the industrial waste disposal contractor licensed by the local government, etc. should be fully informed of the danger and harmfulness, and the waste should be treated properly in compliance with relevant laws and regulations. Waste alkali is designated as specially controlled industrial waste, and collection, transportation, and disposal are treated according to established standards.

Contaminated containers and packaging:

Remove thoroughly contents from used containers and contract for disposal with industrial waste disposer licensed by local authority.

14. Transport information

International regulation

Marine transport (IMO)

UN No.: UN1824
 Proper Shipping Name: SODIUM HYDROXIDE SOLUTION
 Class: 8
 Packing group: II
 Marine pollutant: Not applicable.
 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Applicable. (Y)

Air transport (ICAO/IATA)

UN No.: UN1824
 Proper Shipping Name: SODIUM HYDROXIDE SOLUTION
 Class: 8
 Packing group: II

Regulation in Japan

Road transport: Follow Poisonous and Deleterious Substances Control Act.
 Follow Road Act.

Marine transport: Follow Ship Safety Act.

UN No.: UN1824
 Proper Shipping Name: SODIUM HYDROXIDE SOLUTION
 Class: 8 (corrosive substances)
 Packing group: II
 Marine pollutant: Not applicable.

Air transport: Follow Civil Aeronautics Act.

UN No.: UN1824
 Proper Shipping Name: SODIUM HYDROXIDE SOLUTION
 Class: 8 (corrosive substances)
 Packing group: II

Special precautions related to transportation:

Carry with Japanese emergency response cards called yellow cards in road transportation.
 Transport according to section 7, "handling and storage."
 Follow Poisonous and Deleterious Substances Control Act.

Emergency response guidebook number:

154, Toxic/corrosive substance, noncombustible⁷⁾

15. Regulatory information

Poisonous and Deleterious Substances Control Act:

Deleterious substances (article 2, appended table 2)
 "Sodium hydroxide and preparations containing it (excluding those containing 5% or less of sodium hydroxide) in liquid form."

Act on Prevention of Marine Pollution and Maritime Disaster: Noxious liquid substance, category Y, solution (Order for Enforcement, appended table 1)

Ship Safety Act: Corrosive substance (dangerous goods of article 2 and 3 of Regulations for the Carriage and Storage of Dangerous Goods in Ship, Public notice, appended table 1)

Act on Port Regulations: Corrosive substance (Ordinance for Enforcement, article 12. Public notice for determination of the type of dangerous goods, appended table)

Follow Civil Aeronautics Act: Corrosive substance (Ordinance for Enforcement, article 194, Public notice, appended table 1)

Road Act: Vehicle traffic restrictions (Order for Enforcement, article 19-3)

Waste Management and Public Cleansing Law: Specially Controlled Industrial Waste (Order for Enforcement, article 2-4)

Act on Control of Household Products Containing Harmful Substances: Harmful substance (Ordinance for Enforcement, article 2)

Labor Standards Act: Substance causing disease (article 75-2. Ordinance for Enforcement, article 35, appended table 1-2-4-1)

Water Pollution Prevention Act: Designated substance (article 2-4. Order for Enforcement 3-3)

Industrial Safety and Health Act:

Labeling substances (article 57) Ordinance No. 319 “Sodium hydroxide”

Notifiable substances (article 57-2) Ordinance No. 319 “Sodium hydroxide”

Investigation of danger or hazard of chemical substances, implementation of risk assessment (article 57-3) Ordinance No. 319 “Sodium hydroxide”

Corrosive liquid (Ordinance for Enforcement, article 326)

Water Supply Act: Harmful substance (article 4-2. Ministry Order of Water-quality Standard, Heisei 15, 101)

Food Sanitation Act: Additives not harmful to human health (Ordinance for Enforcement, appended table 1)

Designated additives, used for manufacturing agent (applicable to food additives)

Act on Securing Quality, Efficacy and Safety of Products Including Pharmaceuticals and Medical Devices

Deleterious drug (applicable to products of the Japanese Pharmacopoeia) (article 44-2. Ordinance for Enforcement, article 204, table 3)

Foreign Exchange and Foreign Trade Act: Catch-All Controls (Export Trade Control Order, appended table 1-16)

Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof: Not designated substance

16. Other information

Bibliography

- 1) Working environment assessment standard (Showa 63, Notification of Ministry of Health, Labor and Welfare No. 79) revised Oct. 1, 2004.
- 2) Journal of Occupational Health, vol.57 (2015)
- 3) ACGIH, TLVs and BEIs Based on the Documentation of the Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices (2015)
- 4) Inorganic Chemistry Handbook (Gihodo), Handbook of Chemistry (The Chemical Society of Japan)
- 5) Screening Information Data Set (2009)
- 6) PATTY's Toxicology 5th (2001)
- 7) Emergency Response Guidebook [rev. 4] Japan Chemical Industry Association (2012) (Original: 2012 Emergency Response Guidebook, US)

Other bibliography

SDS of Japan Soda Industry Association, No.1, liquid caustic soda

No guarantee is given for accuracy of information of this SDS such as values of content and values of physical and chemical properties. This SDS is issued based on the latest reference, information and data, but not all reference has been covered. It is the user's responsibility to handle cautiously, taking appropriate safety measures.

Contact for inquiries: Division above mentioned.

Revision date

Original version: Mar 31, 1993

Rev.1: Jun 26, 1995

Rev.2: Aug 1, 1998

Rev.3: Feb 25, 2000

Rev.4-1: Apr 25, 2000

Rev.4-2: Jan 25, 2002

Rev.5: Nov 20, 2003

Rev.6: Sep 1, 2004

Rev.7: May 16, 2007

Rev.8: Mar 31, 2008

Rev.9: Aug 5, 2011

Rev.10: Jan 7, 2013

Rev.11: Sep 12, 2017

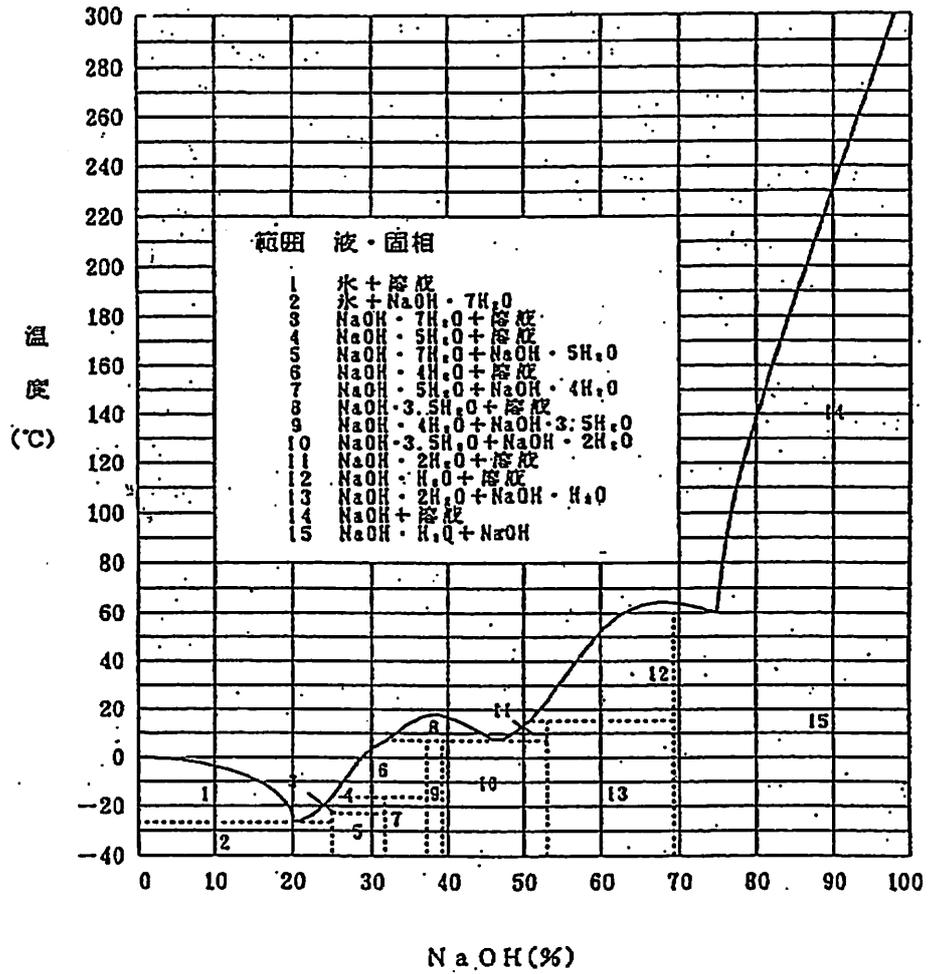
Rev.12: Jul 3, 2018

Rev.13: Apr 1, 2019

Rev.14: Jun 1, 2022

凝固点添付図

カセインソーダの状態図



※実線以下の温度では凝固する

出典 Pittsburg Plate Glass Company, Columbia Chemical Division
 Columbia Caustic soda (NaOH), p. 52 (1950入手)
 International Critical Table, 4, p. 235