

Safety Data Sheet SODIUM HYDROXIDE 5 - 60% Solutions

SDS no. T4JUVN9H • Version 1.0 • Date of issue: 2023-02-01

SECTION 1: Identification

GHS Product identifier

Product name SODIUM HYDROXIDE 5 - 60% Solutions

Recommended use of the chemical and restrictions on use

Used in chemical manufacturing (pH control, acid neutralization, off-gas scrubbing and catalyst); pulp and paper manufacturing; in petroleum and natural gas industry (removing acidic contaminants in oil and gas processing); manufacture of soap and detergents and other cleaning products; and cellulose, such as rayon, cellophane and cellulose ethers; cotton mercerizing and scouring; water treatment; food processing; flue-gas scrubbing; mining; glass making; textile processing, laundering, and bleaching; refining vegetable oils; rubber reclamation; metal processing; etching and electroplating; oxide coating; electrolytic extraction of zinc; tin plating; aluminium processing; metal degreasing; drain and pipe cleaning; adhesive preparations; paint remover; wood treatment; disinfectant; cleaning of non-disposable bottles by the drink and beer industry; batteries; oven-cleaner pads; rubber latex stabilizer; stabilization of sodium hypochlorite; in making plastics to dissolve casein; pharmaceutical aid (alkalizer) and laboratory reagent.

Supplier's details

Name	ChemSupply Australia Pty Ltd
Address	38-50 Bedford Street 5013 Gillman South Australia Australia
Telephone	08 8440 2000
email	www.chemsupply.com

Emergency phone number

CHEMCALL 1800 127 406 (Australia) / +64-4-917-9888 (International)

SECTION 2: Hazard identification

General hazard statement

Classified as dangerous goods according to the Australian Dangerous Goods Code (ADG).

Classified as Hazardous according to the Globally Harmonised System of classification and labelling of Chemicals (GHS) including Work, Health and Safety regulations, Australia.

Classification of the substance or mixture

GHS classification in accordance with: UN GHS revision 7

- Serious eye damage/eye irritation, Cat. 1
- Corrosive to metals, Cat. 1
- Skin corrosion/irritation, Cat. 1A

GHS label elements, including precautionary statements

Pictograms



Signal word

Danger

Hazard statement(s)

H290
H314

May be corrosive to metals
Causes severe skin burns and eye damage

Precautionary statement(s)

P234
P260
P264
P280
P301+P330+P331
P303+P361+P353

Keep only in original packaging.
Do not breathe dust/fume/gas/mist/vapors/spray.
Wash hands thoroughly after handling.
Wear protective gloves/protective clothing/eye protection/face protection.
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Immediately call a POISON CENTER/doctor/physician
Wash contaminated clothing before reuse.
Absorb spillage to prevent material-damage.
Store locked up.
Store in a corrosive resistant/... container with a resistant inner liner.
Dispose of contents/container to an approved waste disposal facility

P304+P340
P305+P351+P338

P310
P363
P390
P405
P406
P501

SECTION 3: Composition/information on ingredients

Mixtures

Molecular weight: 40

Other components either not classified as Hazardous under the GHS, or below cut-off concentrations to be classified as Hazardous.

Components

Component	Concentration
Sodium hydroxide (CAS no.: 1310-73-2; EC no.: 215-185-5; Index no.: 011-002-00-6)	5 - <= 60 % (weight)
CLASSIFICATIONS: Skin corrosion/irritation, Cat. 1A. HAZARDS: H314 - Causes severe skin burns and eye damage. [SCLs/M-factors/ATEs]: Skin Corr. 1A; H314: C ≥ 5 %; Skin Corr. 1B; H314: 2 % ≤ C < 5 %; Skin Irrit. 2; H315: 0,5 % ≤ C < 2 %; Eye Irrit. 2; H319: 0,5 % ≤ C < 2 %	

SECTION 4: First-aid measures

Description of necessary first-aid measures

General advice

First Aid Facilities: Maintain eyewash fountain, safety shower and a general washing facility in work area.

Advice to Doctor: Treat symptomatically and supportively as for strong alkalis. Burns

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are not immediately painful; onset of pain may be minutes to hours. Symptoms of pulmonary oedema can be delayed up to 48 hours after exposure.

For advice, contact a Poisons Information Centre (e.g. phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor (at once).

If inhaled	If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.
In case of skin contact	If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water.
In case of eye contact	If in eyes, hold eyelids apart and flush eye continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre (e.g. phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor, or for at least 15 minutes.
If swallowed	If swallowed, do NOT induce vomiting.

Personal protective equipment for first-aid responders

No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing, or wear gloves.

Most important symptoms/effects, acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

Indication of immediate medical attention and special treatment needed, if necessary

For advice in an emergency, contact a Poisons Information Centre (Phone Australia 131 126) or a doctor at once.

SECTION 5: Fire-fighting measures

Suitable extinguishing media

Use fire extinguishing media appropriate for surrounding environment. Use water spray, dry chemical, carbon dioxide, or appropriate foam.

Specific hazards arising from the chemical

Material does not burn.

Special protective actions for fire-fighters

Fire fighters should wear full protective clothing and self-contained breathing apparatus (SCBA) operated in positive pressure mode. Fight fire from safe location.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation. Use personal protective equipment. For personal protection see section 8.

Methods and materials for containment and cleaning up

Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

SECTION 7: Handling and storage

Precautions for safe handling

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Avoid contact with eyes, skin, and clothing. If ingested, seek medical advice immediately and show the container or the label. Wear appropriate protective clothing. Contaminated clothing and other protective equipment should be removed and washed before storage or re-use. Wash thoroughly after handling. Keep away from incompatibles such as oxidizing agents, reducing agents, metals, acids, alkalis, organic materials and moisture.

Conditions for safe storage, including any incompatibilities

Store in the original, tightly closed container, in a cool, dry, well-ventilated area away from sources of heat, moisture and incompatible materials. Protect from physical damage, direct sunlight, air and moisture. Keep away from strong acids, metals, flammable liquids, ammonium salts, organic halogens, organic materials and foodstuffs. Do not allow contact with water. Keep containers closed when not in use.

Corrosive to aluminium, tin, zinc, copper, brass and bronze. Corrosive to steel at elevated temperatures (above 40 °C). Not corrosive to nickel.

Slowly attacks glass at room temperature.

Store at room temperature (16 to 25 °C recommended). Store above 16 °C to prevent freezing.

Unsuitable Materials: Aluminium, magnesium, tin, zinc or galvanised containers. Do not use die-cast zinc or aluminium bungs.

SECTION 8: Exposure controls/personal protection

Control parameters

TWA (Inhalation): 2 Peak limitation mg/m³; Australia (AU/SWA)

REL (Inhalation): (C) 2 mg/m³; USA (NIOSH)

OSHA Annotated Table Z-1, www.osha.gov

TLV® (Inhalation): (C) 2 mg/m³; USA (ACGIH)

OSHA Annotated Table Z-1, www.osha.gov

Appropriate engineering controls

Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, gas, etc.) below recommended exposure limits.

Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336.

Skin protection

Clean impervious clothing should be worn. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.

Hand Protection: Normally not required but if in doubt ensure hand protection should comply with AS 2161, Occupational protective gloves - Selection, use and maintenance.

Body protection

Suitable protective workwear, e.g. cotton overalls buttoned at neck and wrist is recommended. Chemical resistant apron is recommended where large quantities are handled.

Respiratory protection

If engineering controls are not effective in controlling airborne exposure then an approved respirator with a replaceable vapor/ mist filter should be used. Refer to relevant regulations for further information concerning respiratory protective requirements. Reference should be

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made to Australian Standards AS/ NZS 1715, Selection, Use and Maintenance of Respiratory Protective Devices; and AS/NZS 1716, Respiratory Protective Devices, in order to make any necessary changes for individual circumstances.

SECTION 9: Physical and chemical properties

Basic physical and chemical properties

Physical state	Liquid
Appearance	Clear, colourless, water-white to slightly coloured viscous liquid.
Color	No data available.
Odor	Odourless.
Odor threshold	No data available.
Melting point/freezing point	-4 °C (5%w/w); -10 °C (10%w/w); -26 °C (20%w/w); 2 °C (30%w/w); 16 °C (40%w/w); 12 °C (50%w/w); 42 °C (60%w/w).
Boiling point or initial boiling point and boiling range	102 °C (5%); 105 °C (10%); 110 °C (20%); 115 °C (30%); 128 °C (40%); 140 °C (50%); 160 °C (60%).
Flammability	No data available.
Lower and upper explosion limit/flammability limit	No data available.
Flash point	No data available.
Explosive properties	Reactions with a number of commonly encountered materials can generate sufficient heat to ignite nearby combustible materials. Reactions with metals, such as aluminium, tin and zinc, can form explosive/flammable hydrogen gas. Reaction with ammonia + silver nitrate forms explosive products. Reaction with sodium salt of trichlorophenol + methyl alcohol + trichlorobenzene + heat can cause an explosion. Reaction with impure tetrahydrofuran, which can contain peroxides, can cause serious explosions. Benzene extract of allyl benzenesulfonate prepared from allyl alcohol, and benzene sulfonyl chloride in presence of aqueous sodium hydroxide, under vacuum distillation, residue darkened and exploded.
Auto-ignition temperature	No data available.
Decomposition temperature	>1390 °C (boiling point of pure substance).
Oxidizing properties	No data available.
pH	Basic. >14.
Kinematic viscosity	No data available.
Solubility	Solubility in Water: Miscible (soluble) in all proportions. [13] Solubility in Organic Solvents: Soluble in all proportions in ethanol, methanol and glycerol.
Partition coefficient n-octanol/water (log value)	No data available.
Vapor pressure	No data available.
Evaporation rate	No data available.
Density and/or relative density	Specific Gravity: 1.05383 (5%); 1.0869 (8%); 1.1309 (12%); 1.1751 (16%); 1.2191 (20%); 1.2629 (24%); 1.3064 (28%); 1.349 (32%); 1.39 (36%); 1.43 (40%); 1.4685 (44%); 1.5065 (48%); 1.5253 (50%); 1.11 (3N Vol Sol.); 1.15 (4N Vol Sol.); 1.17 (5N Vol Sol)
Relative vapor density	No data available.

Particle characteristics

No data available.

Supplemental information regarding physical hazard classes

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No data available.

Further safety characteristics (supplemental)

Saturated Vapour Concentration: 1980 ppm (0.2%) at 20 °C (50% solution) (calculated).

Other Information: Taste: Tasteless; bitter, strong, alkaline taste.

SECTION 10: Stability and reactivity

Reactivity

Reacts with incompatible materials

Chemical stability

Stable at room temperature in tightly closed containers under ordinary conditions of use and storage. Sensitive to air. Sodium hydroxide rapidly absorbs carbon dioxide from the air (forming sodium carbonate). Moreover, contamination with iron is possible in carbon steel storage vessels or in lined carbon steel storage vessels where the liner has been impaired.

Possibility of hazardous reactions

Reactions with many organic and inorganic chemicals, such as strong acids, nitroaromatic, nitroparaffin and organohalogen compounds, glycols and organic peroxides are vigorous, violent or explosive. Reaction with water is violent, generating significant heat, causing possible localized overheating and dangerously spattering corrosive sodium hydroxide. Reactions with sodium tetrahydroborate or metals, such as aluminium, tin, or zinc produce flammable and explosive hydrogen gas. Reactions with 1,2-dichloroethylene, trichloroethylene or tetrachloroethane can form spontaneously flammable chemicals. Reactions with solutions of sugars, such as fructose, lactose and maltose can produce carbon monoxide.

Hazardous Polymerization: Violently polymerizes acetaldehyde, acrolein or acrylonitrile.

Conditions to avoid

Extremes of temperature and direct sunlight, heat, moisture/water, light metals (aluminium, tin, or zinc), exposure to air, or carbon monoxide, and incompatible materials.

Incompatible materials

Many organic and inorganic chemicals, such as strong acids, nitroaromatic, nitroparaffin and organohalogen compounds, glycols and organic peroxides, water, acetaldehyde, acrolein or acrylonitrile, sodium tetrahydroborate or metals, such as aluminium, tin, or zinc, 1,2-dichloroethylene, trichloroethylene or tetrachloroethane, solutions of sugars, such as fructose, lactose and maltose.

Sodium hydroxide : Caustic soda reacts with all the mineral acids to form the corresponding salts. It also reacts with weak-acid gases, such as hydrogen sulfide, sulfur dioxide, and carbon dioxide. Caustic soda reacts with amphoteric metals (Al, Zn, Sn) and their oxides to form complex anions such as AlO_2^- , ZnO_2^{2-} , SnO_2^{2-} , and H_2 (or H_2O with oxides). All organic acids also react with sodium hydroxide to form soluble salts. Another common reaction of caustic soda is dehydrochlorination.

Hazardous decomposition products

Toxic fumes of sodium/sodium oxides (Na_2O). Contact in moist air with light metals (like aluminium, zinc, tin and lead) may evolve combustible/explosive/flammable hydrogen gas.

Water: In the event of fire: see section 5

Sodium hydroxide : Sodium oxides

SECTION 11: Toxicological information

Information on toxicological effects

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Acute toxicity

Ingestion: Corrosive! Causes severe irritation and severe corrosive burns to the mucous membranes of the mouth, throat, oesophagus, stomach and gastrointestinal tract. Swallowing can result in severe pain, burning of the mouth, throat and oesophagus, nausea, vomiting, diarrhoea, abdominal pain, swelling of the larynx and subsequent suffocation, severe and permanent damage to the digestive tract, perforation of the gastrointestinal tract (oesophagus and stomach), bleeding, severe scarring of tissue, shock, fall in blood pressure, cardiovascular collapse, collapse, coma and possible death. Burns to the oesophageal tissue may progress to stricture formation. Damage may appear days after exposure.

Inhalation: Sodium hydroxide has a negligible vapour pressure and is rapidly neutralized in air by carbon dioxide and therefore vapour exposure is not expected. Inhalation of aerosols may result in respiratory irritation, with coughing, sneezing, runny nose, sore throat, burning sensation, tightness of chest, dyspnoea (difficult breathing) and possible pulmonary oedema (severe, life-threatening lung injury), chemical pneumonitis, emphysema, irreversible obstructive lung disease and coma. Exposure and symptoms may be increased at higher temperatures.

Skin corrosion/irritation

Corrosive. Causes severe skin irritation and severe skin burns, which will result in redness, itchiness, pain, swelling and necrosis. May cause deep, penetrating ulcers of the skin and permanent scarring. Penetration to deeper layers of skin and corrosion will continue until removed. Pain and sign of burns may be delayed, beginning with aching for minutes to hours. May be harmful if absorbed through the skin. May cause skin rash (in milder cases), and cold and clammy skin with cyanosis or pale colour.

Serious eye damage/irritation

Corrosive! Causes severe eye irritation and severe burns that may result in redness, stinging, pain, lacrimation (tearing), blurred vision, mild scarring, blistering, loss of colour vision (blue vision), corneal damage, corneal oedema, photophobia, chemical conjunctivitis, corneal burns, necrosis, disintegration, and severe scarring. In severe cases, there is progressive ulceration and clouding of eye tissue which may lead to permanent blindness. Possible late developments may include glaucoma and cataracts. Risk of blindness!

Respiratory or skin sensitization

Sodium hydroxide has been used widely and for a long time and no human cases of skin sensitisation have been reported and therefore sodium hydroxide is not considered to be a skin sensitizer.

Germ cell mutagenicity

No data available.

Carcinogenicity

Alkalis are known to increase the risk of oesophageal cancer, which can occur years after the initial injury. The incidence of carcinoma following oesophageal injury from sodium hydroxide is 0.8-4%. Of the fifteen patients (age range 38-83) in a study by Isolaure and Markkula (1989) twelve had accidentally swallowed sodium hydroxide at the age of two or three years, one at fifteen years and one at twenty-three years of age. The time between ingestion and the diagnosis of oesophageal cancer was 22-81 years. Appelqvist and Salmo (1980) describe similar results, out of sixty patients with oesophageal cancer for which the time of ingestion was known, fifty-two had ingested the sodium hydroxide at the age of ten years or younger.

Reproductive toxicity

No data available.

Specific target organ toxicity (STOT) - single exposure

No data available

Specific target organ toxicity (STOT) - repeated exposure

No data available.

Aspiration hazard

Not expected to be an aspiration hazard.

Additional information

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Chronic Effects: Skin: Prolonged contact with dilute solutions or dust has a destructive effect upon tissue. Repeated or prolonged skin contact may lead to irritant contact dermatitis. Effects may be delayed.

Lungs/Respiratory System: Repeated or prolonged exposure (2 hours per day over 20 years) to mists from boiling solutions of sodium hydroxide (exposure levels of the aerosols were not measured) in a small room with inadequate ventilation has resulted in the development of severe obstructive airway disease. The massive and prolonged exposure induced irritation and burns to the respiratory system, which eventually led to the disease. Chronic exposure had not previously been reported, probably since the strong and immediate irritation upon inhalation would normally deter workers from further exposure. Late onset asthma could not definitely be excluded as a cause of the worker's condition.

SECTION 12: Ecological information

Toxicity

Ecotoxicity: Toxic effect on fish and plankton. Harmful effect due to pH shift. Death of fish possible.

Does not cause biological oxygen deficit.

[8X] Acute Toxicity - Fish: *Onchorhynchus mykiss* CL50 : 45,4 mg/l /96h. (anhydrous substance).

[8Y] Acute Toxicity - Daphnia: *Daphnia magna* EC50: 76 mg/l /24h. (anhydrous substance).

Persistence and degradability

No data available.

Bioaccumulative potential

No data available.

Mobility in soil

No data available.

Results of PBT and vPvB assessment

No data available.

Endocrine disrupting properties

No data available.

Other adverse effects

No data available.

SECTION 13: Disposal considerations

Disposal methods

Product disposal

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers.

Other disposal recommendations

Do not discharge this material into waterways, drains and sewers.

SECTION 14: Transport information

ADG (Road and Rail)

UN Number: 1824

Class: 8

Packing Group: II

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Proper Shipping Name: SODIUM HYDROXIDE SOLUTION

Hazchem emergency action code (EAC)

2R

IMDG

UN Number: 1824

Class: 8

Packing Group: II

EMS Number:

Proper Shipping Name: SODIUM HYDROXIDE SOLUTION

IATA

UN Number: 1824

Class: 8

Packing Group: II

Proper Shipping Name: SODIUM HYDROXIDE SOLUTION

SECTION 15: Regulatory information

Safety, health and environmental regulations specific for the product in question

Australia SUSMP

Poison Schedule: S6

SECTION 16: Other information

Further information/disclaimer

ChemSupply Australia Pty Ltd does not warrant that this product is suitable for any use or purpose. The user must ascertain the suitability of the product before use or application intended purpose. Preliminary testing of the product before use or application is recommended. Any reliance or purported reliance upon ChemSupply Australia Pty Ltd with respect to any skill or judgement or advice in relation to the suitability of this product of any purpose is disclaimed. Except to the extent prohibited at law, any condition implied by any statute as to the merchantable quality of this product or fitness for any purpose is hereby excluded. This product is not sold by description. Where the provisions of Part V, Division 2 of the Trade Practices Act apply, the liability of ChemSupply Australia Pty Ltd is limited to the replacement of supply of equivalent goods or payment of the cost of replacing the goods or acquiring equivalent goods.