

PRODUCT: CAUSTIC SODA PEARL

1. IDENTIFICATION OF CHEMICAL PRODUCT AND SUPPLIER

PRODUCT IDENTIFICATION:

Product Names:

CAUSTIC SODA PEARL

Other Names:

Sodium hydroxide, Sodium hydrate, Lye

Recommended Use:

General chemical

Formula:

Molecular formula

H-Na-O

Structural formula

NaOH

Chemical family

Alkali hydroxide

2. HAZARDS IDENTIFICATION

HAZARDOUS SUBSTANCE. DANGEROUS GOODS

Classified as hazardous according to the criteria of NOHSC.

Hazard Category:

C Corrosive,

Risk phrases:

R35 Causes severe burns, R41 Risk of serious damage to eyes

Safety phrases:

S2 Keep out of reach of children. S26 In case of contact with eyes, rinse immediately with plenty of water and contact a doctor or Poisons Information Centre. S37/39 Wear suitable gloves and eye/face protection.

SUSDP Classification:

Schedule 6

ADG Classification:

Class 8 Corrosive

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms:

Caustic soda, Sodium hydrate, Lye

Appearance:

White deliquescent solid in small bead form, absorbs water on exposure to air.

Ingredients:

Chemical Name, CAS No

Proportion

Risk Phrases

Sodium hydroxide 1310-73-2

95 - 100 %

R35, R41

All the constituents of this material are listed on the Australian Inventory of Chemical Substances (AICS)

4. FIRST AID MEASURES

Poison Information Centres in each state can provide additional assistance for scheduled poisons. Phone 131126 from anywhere in Australia.

Ingestion:

Never give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. Rinse mouth thoroughly with water. Do NOT induce vomiting. If victim can swallow, have him/her drink 250 to 300 mL of water to dilute material in stomach. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Repeat administration of water. Obtain medical attention immediately.

Eye Contact:

Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 30 minutes, by the clock, holding the eyelid(s) open. Take care not to rinse contaminated water into the non-affected eye. If irritation persists, repeat flushing. If available, a neutral saline solution may be used to flush the contaminated eye(s) an additional 30 minutes. Obtain medical attention immediately.

Skin Contact:

First aiders avoid direct contact with this chemical. As quickly as possible, flush contaminated area with lukewarm, gently running water for at least 30 minutes, by the clock. Under running water, remove contaminated clothing, shoes, and leather goods (e.g. watchbands, belts). If irritation persists, repeat flushing. Obtain medical attention immediately. Completely decontaminate clothing, shoes and leather goods before re-use or discard.

Inhalation:

Remove source of contamination or move victim to fresh air. Obtain medical advice immediately.

Other First Aid:

Provide general supportive measures (comfort, warmth, rest). Consult a physician and/or the nearest Poison Information Centre for all exposures except minor instances of inhalation contact.

Notes to physician:

Treat symptomatically as for strong alkalis.

5. FIRE FIGHTING MEASURES

Specific hazards:

Non-combustible material.

Fire fighting further advice:

Not combustible. Can react with some metals generating flammable hydrogen gas. Contact with some organic chemicals can produce violent or explosive conditions. Reaction with water may generate enough heat to ignite combustible material.

Suitable Extinguishing media:

Water fog (or if unavailable fine water mist or spray), foam, dry agent (carbon dioxide, dry chemical powder).

6. ACCIDENTAL RELEASE MEASURES

Small Spills: Wear personal protective equipment. Sweep up but avoid generating dust. Contain solutions using sand or diatomaceous earth. Collect and seal in properly labeled drums. Wash remaining area with large volumes of water.

Large Spills:

PRECAUTIONS Restrict access to area. Clear area of unprotected personnel. Provide adequate protective equipment and ventilation. Remove chemicals which can react with the spilled material. Spills of solutions containing material are slippery.

CLEANUP Contain spill or leak. Do not allow entry into sewers or waterways.

Neutralise the final traces and flush area with water. Spilled solutions should be contained by dyking with inert material, such as sand or earth. Solutions can be recovered or carefully diluted with water and cautiously neutralised with acids such as acetic acid or hydrochloric acid

DISPOSAL Federal, state and local regulations should be reviewed prior to disposal. May be possible to neutralise, dilute and flush the material into a sewer. May be possible to atomise dilute solutions in an approved combustion chamber. Harmful to aquatic life in high concentrations.

7. HANDLING AND STORAGE

HANDLING Avoid generating mist or spray. When diluting solution, add sodium hydroxide to water in small amounts. Heat evolved when dissolving may cause boiling and spattering. Add to large volumes of cold water only. Label containers. Keep containers closed when not in use. Empty containers may contain residues which are hazardous. Use smallest possible amounts in designated areas with adequate ventilation. Have emergency equipment (for fires, spills, leaks, etc.) readily available.

STORAGE CONDITIONS Materials that react violently with sodium hydroxide should not be stored in the same area. Use corrosion-resistant structural materials and lighting and ventilation systems in the storage area.

Store in suitable labelled containers. Keep containers tightly closed when not in use and when empty. Protect from damage. Containers made of nickel alloys are preferred. Steel containers are acceptable if temperatures are not elevated. Storage tanks should be above ground and surrounded with dykes capable of holding entire contents. Limit quantity of material in storage. Restrict access to storage area. Post warning signs when appropriate. Keep storage area separate from populated work areas. Inspect periodically for deficiencies such as damage or leaks.

Class 8 goods are not to be loaded with Classes 1, 4.3, 5.1, 5.2, 6*, 7, or foodstuffs or foodstuff empties.

* when Class 6 is a cyanide and Class 8 is an acid. Do not store or transport with strong acids.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Standards: TLV/TWA: 2 mg/m³, peak, NOHSC Australia.

Engineering Controls: Maintain concentration below recommended exposure limit.

Engineering control methods to reduce hazardous exposures are preferred. General methods include mechanical ventilation, (dilution and general exhaust), process or personnel enclosure, control of process conditions and process modification (e.g. substitution of a less hazardous material). Administrative controls and personal protective equipment may be also required. Use a corrosion-resistant ventilation system separate from other exhaust ventilation systems. Exhaust directly to the outside. Use local exhaust ventilation, and process enclosure if necessary, to control airborne spray / mists. Supply sufficient air to make up for air removed by exhaust systems.

Personal Protection:

RESPIRATORY PROTECTION : If engineering controls and work practices are not effective in controlling exposure to this material, then wear suitable personal protective equipment including approved respiratory protection.

Have appropriate equipment available for use in emergencies such as spills or fire. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.

CONCENTRATIONS IN AIR: UP TO 50 mg/m³: Powered air-purifying respirator with dust and mist filter(s); or SAR operated in a continuous flow mode. **UP TO 100 mg/m³**: Full-face piece SCBA; or full-face piece SAR; or full-face piece respirator with high-efficiency particulate filter(s). **UP TO 250 mg/m³** Positive pressure, full-face piece SAR. **EMERGENCY OR PLANNED ENTRY IN UNKNOWN CONCENTRATION OR IDLH CONDITIONS**: Positive pressure, full-face piece SCBA; or positive pressure, full-face piece SAR with an auxiliary positive pressure SCBA. **ESCAPE**: Full-face piece respirator with high-efficiency particulate filter(s); or escape-type SCBA. NOTE: The IDLH concentration for sodium hydroxide is 250 mg/m³. NOTE: Substance causes eye irritation or damage; eye protection needed.

ABBREVIATIONS: SAR = supplied-air respirator; SCBA = self-contained breathing apparatus. IDLH = Immediately Dangerous to Life or Health.

NOTE: In these recommendations the IDLH concentration is defined as the maximum concentration which would not cause any escape impairing symptoms or irreversible health effects to a person exposed for 30 minutes if the respirator failed.

EYE/FACE PROTECTION Splash proof chemical safety goggles. A face shield may also be necessary.

SKIN PROTECTION Impervious gloves, coveralls, boots and/or other resistant protective clothing. Have a safety shower/eye-wash fountain readily available in the immediate work area.

RESISTANCE OF PROTECTIVE CLOTHING: SODIUM HYDROXIDE: GOOD: Chlorinated polyethylene (CPE), natural rubber, neoprene, nitrile/polyvinyl chloride (PVC), nitrile, polyethylene (PE), PVC, polyurethane, styrene-butadiene rubber (SBR), Viton/chlorobutyl rubber, Silvershield, SBR/neoprene **FAIR/POOR**: Butyl rubber

SODIUM HYDROXIDE SOLUTIONS, LESS THAN 30%: GOOD: PE, neoprene/natural rubber **SODIUM HYDROXIDE SOLUTIONS, 30-70%: VERY GOOD**: Natural rubber, neoprene, nitrile/PVC, nitrile, PE, PVC, Viton, Saranex **GOOD**: Butyl rubber, CPE, Viton/neoprene, butyl rubber/neoprene, Teflon, natural rubber/neoprene/nitrile-butadiene rubber, SBR, neoprene/natural rubber, neoprene/PVC **FAIR/POOR**: Polyvinyl alcohol, nonwoven PE

NOTE: Resistance of specific materials can vary from product to product. Evaluate resistance under conditions of use and maintain clothing carefully.

PERSONAL PROTECTION COMMENTS Remove contaminated clothing promptly. Keep contaminated clothing in closed containers. Discard or launder before rewearing. Inform laundry personnel of contaminant's hazards. Do not eat, drink or smoke in work areas. Wash hands thoroughly after handling this material. Maintain good housekeeping.

9. PHYSICAL & CHEMICAL PROPERTIES

Appearance:	White deliquescent solid in small bead form
Odour threshold:	Odourless
Specific Gravity:	approx 1.1 - 1.5
Flash Point:	Non-combustible (does not burn)
Flammability limits	Non-flammable
pH:	12 (0.05% soln); 13 (1% soln); 14 (5% soln)
Solubility in water:	Completely soluble

10. STABILITY AND REACTIVITY

INCOMPATIBILITY -MATERIALS TO AVOID:

STRONG ACIDS - may react violently.

METALS - reaction may produce flammable and explosive hydrogen gas.

ORGANOHALOGEN COMPOUNDS - may react to form spontaneously combustible compounds.

NITRO AND CHLORO ORGANIC COMPOUNDS - may react explosively.

HAZARDOUS DECOMPOSITION PRODUCTS None

HAZARDOUS POLYMERIZATION Does not occur

CORROSIVITY TO METALS Corrosive to aluminium, tin, zinc. Corrosive to steel at elevated temperatures.

Fire/Explosion Hazard:

EXPLOSION DATA - SENSITIVITY TO MECHANICAL IMPACT Not applicable

EXPLOSION DATA - SENSITIVITY TO STATIC CHARGE Not applicable

FIRE HAZARD COMMENTS Sodium hydroxide and its solutions will not burn or support combustion. However, reaction of sodium hydroxide with a number of commonly encountered materials (see Chemical Reactivity) can generate sufficient heat to ignite nearby combustible materials.

FIRE EXTINGUISHING AGENTS Use an extinguisher appropriate to the material which is burning

FIRE FIGHTING PROCEDURES Water can be used to extinguish a fire in an area where sodium hydroxide is stored.

COMBUSTION PRODUCTS None

Fire fighters to wear full body protective clothing with breathing apparatus

11. TOXICOLOGICAL INFORMATION

Acute Effects:

Ingestion:

There are no reported cases of industrial workers ingesting sodium hydroxide or its solutions. Should ingestion occur, severe pain; burning of the mouth, throat and oesophagus; vomiting; diarrhoea; collapse and possible death may result.

Eye contact:

Extremely corrosive. Can penetrate deeply causing irritation or severe burns depending on the concentration and duration of exposure. In severe cases, ulceration and permanent blindness may occur.

Skin contact:

Extremely corrosive. Capable of causing severe burns with deep ulceration. Can penetrate to deeper layers of skin. Corrosion will continue until removed. Severity depends on concentration and duration of exposure. Burns are not immediately painful; onset of pain may be minutes to hours.

Inhalation:

Effects of inhaling sodium hydroxide mists have not been clearly established. Most references indicate that irritation of the nose, throat and lungs would occur due to the corrosive nature of sodium hydroxide. However, there are no actual reports of industrial workers exposed to sodium hydroxide experiencing these symptoms.

Long term Effects:

HEALTH EFFECTS There have been no documented effects due to long-term exposure to sodium hydroxide.

CARCINOGENICITY Sodium hydroxide has been implicated as a cause of cancer of the oesophagus in individuals who have ingested it. The cancer may develop 12 to 42 years after the ingestion incident. Similar cancers have been observed at the sites of severe thermal burns. These cancers may be due to tissue destruction and scar formation rather than the sodium hydroxide itself. Not classed as a carcinogen by Worksafe Australia.

TERATOGENICITY AND EMBRYOTOXICITY Insufficient information

TOXICOLOGICAL SYNERGISTIC MATERIALS Insufficient information

MUTAGENICITY Insufficient information

POTENTIAL FOR ACCUMULATION None

Toxicity Data:

ANIMAL TOXICITY DATA Lethal dose (rabbits, oral): 500 mg/kg. Irritant dose (rabbits, dermal): 500 mg/24 hours - severe skin irritant. Irritant dose (rabbits, ocular): 50 ug/24 hour - severe eye irritant.

More detailed information about the effects of chemicals on health can be obtained from NOHSC Australia.

12. ECOLOGICAL INFORMATION

Avoid contaminating waterways.

13. DISPOSAL CONSIDERATIONS

Refer to State Land Waste Management Authority. Decontaminate empty containers before disposal, by triple rinsing with water, using rinse water in further processing or neutralize rinse water.

14. TRANSPORT INFORMATION

UN No: 1823

Proper Shipping Name: SODIUM HYDROXIDE SOLID

Class: 8

Packing Group: 2

Hazchem Code: 2X

EPG 8A1

Segregation not to be loaded with Classes 1, 4.3, 5.1, 5.2, 6, 7, Class 8 strong acids or foodstuffs or

Dangerous Goods foodstuff empties.

15. REGULATORY INFORMATION

Classified as hazardous according to the criteria of NOHSC, Schedule 6 poison according to SUSDP, Class 8 according to ADG

R-phrases: R35, causes severe burns and R41, risk of serious damage to eyes.

S-phrases: S2, keep out of reach of children, S26, in case of contact with eyes, rinse immediately with plenty of water and seek medical advice, S37/39, wear suitable gloves and eye/face protection.