



SAFETY DATA SHEET

PRODUCT NAME: CAUSTIC SODA (Pearl)

Issue Date: July 22

IDENTIFICATION

Product Name: Caustic Soda (Pearl)
Other Names: Sodium Hydroxide solid, NaOH, Caustic Soda Anhydrous, pearl, prills, flakes.
Product Code: CCS25, CCS1400
Uses: Component of alkali cleaners, manufacture of soap, pulp and paper.
Chemical manufacture, manufacture of aluminium, detergents, textile processing.
Supplier: HamChem Hamilton Chemicals Ltd, 75 Ruffell Rd, Hamilton
Phone: 07 974 4971 Web: www.hamchem.nz Email: info@hamchem.nz

- In emergency dial 111, and then ask for Fire, Ambulance or Police as necessary.
- In case of poisoning phone National Poisons Centre – 0800 764 766

HAZARD IDENTIFICATION



GHS Classifications

Corrosive to Metals – Category 1
Acute Oral Toxicity – Category 4
Acute Dermal Toxicity – Category 4
Skin Corrosion – Category 1B
Serious Eye Damage – Category 1

Signal Word: Danger

Hazard Statements

H290 May be corrosive to metals.
H302 Harmful if swallowed
H312 Harmful in contact with skin
H314 Causes severe skin burns and eye damage.

PRECAUTIONARY STATEMENTS

P101 If medical advice is needed, have product container or label at hand
P102 Keep out of reach of children
P103 Read label before use

Prevention

P234 Keep only in original packaging
P260 Do not breathe dusts or mists
P264 Wash hands thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves/protective clothing/eye protection.

Response

P301 + P312 IF SWALLOWED: Call a POISON CENTRE or Doctor if you feel unwell

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P330 Rinse mouth

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P303 + P361 + P353 IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.

P363 Wash contaminated clothing before reuse.

P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P310 Immediately call a POISON CENTRE or Doctor

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P390 Absorb spillage to prevent material damage.

Storage

P405 Store locked up.

P406 Store in corrosive resistant container with a resistant inner liner

Disposal

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

COMPOSITION & INFORMATION ON INGREDIENTS

Chemical Entity	CAS No.	Proportion (%)
Sodium Hydroxide	1310-73-2	>99%

FIRST AID MEASURES

Swallowed: Call an ambulance immediately. Urgent hospital treatment is likely to be needed. If swallowed do NOT induce vomiting. Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink. Do not induce vomiting. Transport to hospital or doctor without delay.

Eye: If this product comes in contact with the eyes: Immediately hold eyelids apart and flush the eye continuously with running water. Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids. Continue flushing until advised to stop by the Poison Centre or a doctor, or for at least 15 minutes. Transport to hospital or doctor without delay. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Skin: If skin or hair contact occurs: Immediately flush body and clothes with large amounts of water, using safety shower if available. Quickly remove all contaminated clothing, including footwear. Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poison Centre. Transport to hospital, or doctor.

Inhaled: If fumes or combustion products are inhaled remove from contaminated area. Lay patient down. Keep warm and rested. Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures. Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary. Transport to hospital, or doctor, without delay.

Notes to physician: For acute or short-term repeated exposures to highly alkaline materials: Respiratory stress is uncommon but present occasionally because of soft tissue oedema. Unless endotracheal intubation can be accomplished under direct vision, cricothyroidotomy or tracheotomy may be necessary. Oxygen is given as indicated. The presence of shock suggests perforation and mandates an intravenous line and fluid administration. Damage due to alkaline corrosives occurs by liquefaction necrosis whereby the saponification of fats and solubilisation of proteins allow deep penetration into the tissue. Alkalis continue to cause damage after exposure.

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FIRE FIGHTING MEASURES

Extinguishing media: Flooding quantities of water spray or fog, foam, dry chemical powder, carbon dioxide.

Fire fighting: Alert Fire Brigade and tell them location and nature of hazard. Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or water course. Use firefighting procedures suitable for surrounding area. Do not approach containers suspected to be hot. Cool fire exposed containers with water spray from a protected location. If safe to do so, remove containers from path of fire. Equipment should be thoroughly decontaminated after use.

Fire/explosion hazard: Non-combustible. Not considered a significant fire risk, however containers may burn. May emit corrosive fumes.

Fire incompatibility: None known.

Personal protective equipment: Breathing apparatus. Gas tight chemical resistant suit. Limit exposure duration to 1 BA set 30 minutes.

ACCIDENTAL RELEASE MEASURES

Minor spills: Clean up all spills immediately. Avoid contact with skin and eyes. Control personal contact by using impervious protective equipment. Use dry clean up procedures. Place in a suitable labelled container for waste disposal.

Major spills: Clear area of personnel. Alert Fire Brigade and tell them location and nature of hazard. Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or water course. Stop leak if safe to do so. Contain spill with sand, earth or vermiculite. Collect recoverable product into labelled containers for recycling. Neutralise/decontaminate residue. Collect solid residues and seal in labelled drums for disposal. Wash area and prevent runoff into drains. After clean-up operations, decontaminate and launder all protective clothing and equipment before storing and re-using. If contamination of drains or waterways occurs, advise emergency services.

HANDLING & STORAGE

Procedure for Handling: Contact lenses should not be worn when working with this chemical. Avoid all personal contact. Wear protective clothing. Use in a well-ventilated area. **WARNING:** To avoid violent reaction, ALWAYS add material to water and NEVER water to material. 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. Always wash hands with soap and water after handling. Work clothes should be laundered separately. Launder contaminated clothing before re-use. Use good occupational work practice. Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

Suitable containers: Lined metal can, Lined metal pail, Plastic pail, Polyliner drum, Plastic bag. Packing as recommended by manufacturer. Check all containers are clearly labelled and free of leaks. **NOTE:** Bags should be stacked, blocked, interlocked, and limited in height so that they are stable and secure against sliding or collapse.

Storage incompatibility: Store away from liquids. DO NOT store near acids, or oxidising agents. Store away from nitro compounds and trichlorethylene.

Storage requirements: Store in original containers. Keep containers securely sealed. Store in a cool, dry, well-ventilated area. Store away from incompatible materials and foodstuff containers. Protect containers against physical damage and check regularly for leaks.

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EXPOSURE CONTROLS & PERSONAL PROTECTION

Exposure controls:

Source	Material	TWA Mg/m ³	Peak Mg/m ³
New Zealand Exposure Standards (WES 2010)	Sodium hydroxide	Ceiling 2	2

Emergency exposure limits:

Material	IDLH Value (mg/m ³)
Sodium hydroxide	10

Engineering controls:

DO NOT add water to product, dilute according to suppliers' instructions. Use in a well-ventilated area. Local exhaust ventilation usually required. If risk of overexposure exists, wear approved respirator. Correct fit is essential to obtain adequate protection. Supplied-air type respirator may be required in special circumstances. Correct fit is essential to ensure adequate protection. An approved self-contained breathing apparatus (SCBA) may be required in some situations. Provide adequate ventilation in warehouse or closed storage area. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

Type of contaminant:	Air speed:
Solvent, vapours, degreasing, etc., evaporating from tank (in still air).	0.25-0.5 m/s (50-100 f/min.)
Aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation)	0.5-1 m/s (100-200 f/min.)
Direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)	1-2.5 m/s (200-500 f/min.)
Grinding, abrasive blasting, tumbling, high speed wheel generated dusts, (released at high initial velocity into zone of very high rapid air motion).	2.5-10 m/s (500-2000 f/min.)

Within each range the appropriate value depends on:

Lower end of the range	Upper end of the range
1. Room air currents minimum or favourable to capture	1. Disturbing room air currents
2. contaminants of low toxicity or of nuisance value only	2. Contaminants of high toxicity
3. Intermittent, low production	3. High production, heavy use.
4. Large hood or large air mass in motion	4. Small hood-local control only

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore, the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction

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apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

Personal Protection Equipment (PPE): The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.

Personal Respirators: An approved dust mask e.g. a P2 respirator, is recommended when using this product in dusty conditions or where exposure standards are exceeded. For more information see Australian/New Zealand Standard, AS/NZS 1715:2009 and AS/NZS 1716:2003. If in doubt, seek expert occupational hygiene advice.

Skin Protection: Wear impervious protective clothing, including chemical resistant boots, rubber gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Refer to AS/NZS 2161.1:2000 Occupational Protective Gloves – Selection, use and maintenance; AS/NZS 2210.1:2010 for Safety footwear; AS/NZS 4501.1:2008 Occupational protective clothing – Guidelines on the selection, use, care and maintenance of protective clothing.

Eye Protection: Use approved chemical safety goggles and a full-face shield where splashing is possible. Refer to Personal eye protection Part 1: Eye and face protectors for occupational applications, Australian/New Zealand Standard: AS/NZS 1337.1:2010. Maintain eye wash fountain in work area.

Other: Local exhaust ventilation usually required. If risk of overexposure exists, wear approved respirator. Correct fit is essential to obtain adequate protection.

PHYSICAL & CHEMICAL PROPERTIES

Appearance: White hygroscopic, odourless, pellets, flakes, sticks or solid cast mass.

Physical properties: Soluble in water, alcohol, ether, glycerol.

Property	Value
Molecular weight:	40
Melting Range (°C):	318.4
Solubility in water (g/L):	Miscible
pH (1% solution):	Approx 12.7
Volatile Component (%vol):	Not available
Relative vapour density (air=1):	Not available
Lower Explosive Limit (%):	Not applicable
Autoignition Temp (°C):	Not applicable
State:	Divided Solid
Boiling range (°C):	1390
Specific Gravity (water=1):	2.12 @ 20°C
pH (as supplied):	Not applicable
Evaporation Rate:	Negligible
Flash Point (°C):	Not applicable
Upper Explosive Limit (%):	Not applicable
Decomposition Temp (°C):	Not available

STABILITY & REACTIVITY

Stability: Normally stable but can become unstable at elevated temperatures and pressures.

Hazardous Decomposition Products: Toxic fume of sodium oxide.

Hazardous Polymerization: Will not occur.

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Incompatibles: Avoid contact with copper, aluminium and their alloys, strong acids. Flammable gas may be produced on contact with metals. May be incompatible with cellulose-based absorbents and mineral-based & clay-based absorbents. Incompatible with strong oxidizing agents. Keep containers dry and tightly closed to avoid moisture absorption and contamination. Rapidly picks up moisture from the air and with carbon dioxide in air forms sodium carbonate. Reacts with ammonium salts and evolves ammonia gas.

Conditions to Avoid: Avoid excessive heat, direct sunlight, moisture, and temperature extremes. Dissolution in water can liberate enough heat to cause steaming and spattering and ignite adjacent combustible material. In presence of moisture, the material is corrosive to aluminium, zinc and tin producing highly flammable hydrogen gas.

TOXICOLOGICAL INFORMATION

Potential Acute Health Effects

Swallowed: Accidental ingestion of the material may be damaging to the health of the individual. Ingestion of alkaline corrosives may produce burns around the mouth, ulcerations and swellings of the mucous membranes, profuse saliva production, with an inability to speak or swallow. Both the oesophagus and stomach may experience burning pain; vomiting and diarrhoea may follow. Epiglottal swelling may result in respiratory distress and asphyxia; shock can occur. Narrowing of the oesophagus, stomach or stomach valve may occur immediately or after a long delay (weeks to years). Severe exposure can perforate the oesophagus or stomach leading to infections of the chest or abdominal cavity, with low chest pain, abdominal stiffness and fever. All of the above can cause death.

Eye: If applied to the eyes, this material causes severe eye damage. Direct eye contact with corrosive bases can cause pain and burns. There may be swelling, epithelium destruction, clouding of the cornea and inflammation of the iris. Mild cases often resolve; severe cases can be prolonged with complications such as persistent swelling, scarring, permanent cloudiness, bulging of the eye, cataracts, eyelids glued to the eyeball and blindness.

Skin: The material can produce severe chemical burns following direct contact with the skin. Skin contact with alkaline corrosives may produce severe pain and burns; brownish stains may develop. The corroded area may be soft, gelatinous and necrotic; tissue destruction may be deep. Entry into the blood-stream through contact may produce systemic injury with harmful effects.

Inhaled: The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage. Inhaling corrosive bases may irritate the respiratory tract. Symptoms include cough, choking, pain and damage to the mucous membrane. In severe cases, lung swelling may develop, sometimes after a delay of hours to days. There may be low blood pressure, a weak and rapid pulse, and crackling sounds. Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled. The material is not thought to produce adverse health effects following inhalation (as classified by EC Directives using animal models). Nevertheless, adverse systemic

effects have been produced following exposure of animals by at least one other route and good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.

Chronic Health Effects: Sodium hydroxide is not expected to be systemically available in the body under normal handling and use conditions. Repeated or prolonged inhalation exposure may cause damage to lungs and the respiratory system; however, solid sodium hydroxide is hygroscopic and dust is not expected.

Toxicity and Irritation Data

Toxicity: Schedule 4 toxic substance. Acute Dermal Toxicity, Rabbit LD50: 1350mg/kg [NZ EPA CCID] Acute Inhalation Toxicity, LC50: No data.

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Irritation: Skin: Corrosive irritant, mouse. EC Classification = Highly corrosive (causes severe burns). [NZ EPA CCID]. **Eyes:** Contact with the eyes causes disintegration and sloughing of conjunctival and corneal epithelium, corneal opacification, marked edema, and ulceration; after 7 to 13 days either gradual recovery begins, or there is progression of ulceration and corneal opacification. Complications of severe eye burns are symblepharon (adhesion of the lid to the eyeball) with overgrowth of the cornea by a vascularized membrane, progressive or recurrent corneal ulceration, and permanent corneal opacification. Rabbit: Corrosive [NZ EPA CCID]. Skin (rabbit): 500 mg/24h SEVERE Eye (rabbit): 0.05 mg/24h SEVERE Eye (rabbit): 1 mg/24h SEVERE Eye (rabbit): 1 mg/30s rinsed- SEVERE

ECOLOGICAL INFORMATION

Ecotoxicity: Acutely toxic in the aquatic environment. Harmful to terrestrial vertebrates.

Toxicity Data: Acute toxicity, Fish, 96hr LC50: 43 mg/L Acute toxicity, Fish, (*Oncorhynchus mykiss*), 96hr LC50: 45.4 mg/L (static) Acute toxicity, Crustacean, (*Ceriodaphnia dubia*), 48hr EC50: 40.38 mg/L Acute toxicity, Algae (*Scenedesmus*), 72 or 96hr EC50: No data available. [NZ EPA CCID] Acute Dermal Toxicity, Rabbit LD50: 1350mg/kg [NZ EPA CCID]

Persistence and Degradability: Rapidly Degradable: Yes

Mobility: Very mobile in soil and soluble in water.

Bioaccumulation: Not bio accumulative. Remark: Considering its high-water solubility, NaOH is not expected to bioconcentrate in organisms. Log Pow is not applicable for an inorganic compound which dissociates.

BOD5 and COD: Not applicable.

Products of Biodegradation: Not applicable.

Toxicity of the Products of Biodegradation: Not applicable.

Prevent, by any means available, spillage from entering drains or water courses. DO NOT discharge into sewer or waterways.

DISPOSAL CONSIDERATIONS

Product: Recycle wherever possible. The product may be treated so that it is no longer hazardous. This includes incineration at an approved site or burial in a landfill in such a manner that it will not lead to any adverse health effects to any person or exceed any TEL (tolerable exposure limit) set by the Authority for this substance. Treatment in a biological wastewater treatment system with prior approval and arrangement is also permissible providing that the substance is rendered non-hazardous and does not pose any adverse effects to human health or the environment. Alkalis may be neutralized with dilute acetic acid (vinegar) provided that they do not contain dissolved heavy metals. Alternatively consult an approved Waste Management company for disposal options.

Packaging: Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed. For toxic, corrosive or ecotoxic substances the residual contents of the package must be diluted to below the thresholds for the respective hazard and the diluted residue is 1% or less of the volume of the package. (e.g., triple rinsing of agricultural containers). Alternatively consult an approved Waste Management company for disposal options.

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TRANSPORT INFORMATION

UN Number:	1823
Proper Shipping name:	Sodium Hydroxide, Solid
Dangerous Goods Class:	8 - Corrosive
Packing group:	II
Hazchem Code:	2W

REGULATORY INFORMATION

HSNO Classifications: 8.1A, 6.1D, 8.2B, 8.3A
EPA Approval #: HSR001547

OTHER INFORMATION

End of SDS.

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