



MATERIAL SAFETY DATA SHEET

CAUSTIC SODA

Date Issued: April 2014 and is valid for 3 years from this date.

Page 1 of 8

Revision No: 4

Print Date: 3/10/14

1. PRODUCT AND COMPANY IDENTIFICATION

TRADE NAME: CAUSTIC SODA

SUPPLIER: EFEKTO
PO Box 652147
BENMORE
2010

TEL No. 011 287 5700

EMERGENCY TELEPHONE NUMBERS:

SPILLAGES: 083 1233 911

Fax: 086 685 3129

POISONINGS:

National Poison Centre 021-9386084 (office hours).

021-9316129 (after hours).

082 446 8946

Use: Various [textiles, wood and pulp, soap and detergent] industries.

2. HAZARDS IDENTIFICATION

- Highly Corrosive. Sodium hydroxide is corrosive and irritating to the skin, eyes and mucous membranes
- Inhalation: can produce burns.
- Dangerous for the environment.
- Very toxic to aquatic organisms.

Biological Hazards:

Sodium hydroxide is irritating and corrosive to all tissues. Most frequent exposures involve direct skin and eye contact, although inhalation of mist or dust can occur. Cases of ingestion are unlikely in industry, but may occur accidentally in young children, or intentionally.

Health effects

Eyes:

Sodium hydroxide is extremely corrosive to the eye and splashes are especially hazardous. Damage can range from severe irritation and mild corneal scarring to fluid accumulation, disintegration, ulceration, and severe corneal scarring and clouding. Permanent blindness may result in severe cases, and immediate first aid is vital to avoid permanent damage.

Skin:

Solid sodium hydroxide and concentrated solutions are highly corrosive to the skin, and although skin contact may not lead to immediate pain, damage begins at once.



MATERIAL SAFETY DATA SHEET

CAUSTIC SODA

Date Issued: April 2014 and is valid for 3 years from this date.

Page 2 of 8

Revision No: 4

Print Date: 3/10/14

Ingestion:

Ingestion will cause severe mouth burns, and if swallowed, extensive damage to the oesophagus and may lead to vomiting, prostration, collapse, and constrictive scarring.

Inhalation:

Inhalation of the particles or concentrated mist may cause irritation and damage to the respiratory tract. Although prolonged exposure to high concentrations may cause discomfort and even ulceration of the nasal passages, subjective symptoms are often relied upon as an indication of the need for control.

Carcinogenicity:

Sodium hydroxide has been implicated as a possible cause of cancer of the oesophagus 12 to 42 years after ingestion. Carcinogenesis in these cases, however, may be due to tissue destruction and scar formation rather than sodium hydroxide itself.

Mutagenicity:

Sodium hydroxide has been found to be non-mutagenic

Reproductive hazards:

No data.

Risk phrases: R35

UN No.: 1823

Class: 8

3. COMPOSITION/INFORMATION ON INGREDIENTS

Active ingredients:

Active ingredients.	CAS No.:	EC No.:
Caustic soda flake 95-100%	1310-73-2	215- 181-5

Chemical Name: Sodium Hydroxide

Chemical Family: Alkali Hydroxide

Chemical Family: Alkali

Chemical Formula: NaOH

NIOSH/RTECS No.: WB 4900000 (Flake)

4. FIRST-AID MEASURES

Eyes:

Rinse eyes with a flow of water for at least 15 minutes holding eyelids apart to ensure complete irrigation of all eye and lid tissues. Washing eyes within several seconds of exposure is essential to achieve maximum effectiveness. Seek medical advise immediately.



MATERIAL SAFETY DATA SHEET

CAUSTIC SODA

Date Issued: April 2014 and is valid for 3 years from this date.

Page 3 of 8

Revision No: 4

Print Date: 3/10/14

Skin:

Rinse contaminated areas with water as soon as possible. Remove contaminated clothing and footwear. Wash contaminated areas with plenty of soap and water. Seek medical advise immediately.

Inhalation:

Move to fresh air. If not possible try to provide fresh air by ventilation. If breathing is difficult, have a trained person administer oxygen. If respiration or pulse has stopped, administer Basic Life Support and call for emergency services immediately.

Ingestion:

If swallowed, do not induce vomiting. Give large quantities of water. (If possible, give several glasses of milk.) If vomiting occurs spontaneously, keep airway clear and give more water or milk. Seek medical advise immediately.

Note to Physician:

Perform endoscopy in all cases of suspected sodium hydroxide ingestion. In cases of severe esophageal corrosion, the uses of therapeutic doses of steroids should be considered. General supportive measures with continual monitoring of gas exchange, acid-base balance, electrolytes, and fluid intake are also required.

5. FIRE-FIGHTING MEASURES

Extinguishing media:

Not combustible but solid form in contact with moisture or water may generate sufficient heat to ignite combustible materials. Foam, carbon dioxide, or dry chemicals may be used where this product is stored. Adding water to caustic solution generates large amounts of heat.

Special hazards:

Sodium hydroxide and its solutions will not burn or support combustion. However, reaction of sodium hydroxide with a number of commonly encountered materials such as strong acids, water, metals, organohalogen compounds, and nitro and chloro organic compounds can generate sufficient heat to ignite nearby combustible materials.

Protective clothing:

Protective clothing should be worn, especially approved respiratory protection, butyl or natural rubber, Neoprene or nitrile gloves (Not polyethylene) and safety goggles. Sodium hydroxide should only be used in a chemical fume hood.

6. ACCIDENTAL RELEASE MEASURES

Large spills:

Only trained personnel equipped with NIOSH approved, full face piece combination dust/mist respirators should be permitted in area. Leaks should be stopped. Spills should be contained and cleaned up immediately. Spills should be removed by using a vacuum truck.

Neutralize remaining traces of material with any dilute inorganic acid such as hydrochloric, sulfuric, nitric, phosphoric, or acetic acid. The spill area should then be flushed with water, followed by liberal covering of sodium bicarbonate.

All clean-up material should be removed and placed in approved containers, labeled and stored in a safe place to await proper treatment or disposal. Spills on areas other than pavement (dirt or sand) may be handled by removing the affected soils and placing in approved containers. Persons not wearing protective equipment and clothing should be restricted from areas of spills until cleanup has been completed.



MATERIAL SAFETY DATA SHEET

CAUSTIC SODA

Date Issued: April 2014 and is valid for 3 years from this date.

Page 4 of 8

Revision No: 4

Print Date: 3/10/14

Protective clothing should be worn. See Section 5.

Dangerous to aquatic life in high concentrations. Notify local Health and Pollution Control Authorities.

Small spills:

Ventilate the area and wear chemical resistant overalls, safety glasses, gloves, an approved respirator. Neutralise with dilute hydrochloric acid (10-15%), mop up with plenty of water and run to waste. Sweep up spilled caustic flake and transfer to a dry container.

7. HANDLING AND STORAGE

Storage:

Store in watertight containers in a cool, dry places separate from the normal work area. Materials that react violently with sodium hydroxide and easily ignitable materials 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 for solutions should be above ground and surrounded with dikes capable of holding entire contents. Avoid any dust buildup by frequent cleaning and suitable construction of storage area. 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.

Handling:

Avoid generating mist or dust. Keep solid sodium hydroxide away from water. Post "DO NOT USE WATER" signs in area of use. When diluting or preparing solution, add caustic to water in small amounts to avoid boiling and splattering. 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.

Special Mixing and Handling Instructions:

Considerable heat is generated when water is added to sodium hydroxide; therefore, when making solutions always add the sodium hydroxide to the water with constant stirring. The water should always be lukewarm (80° - 100° F). Never start with hot or cold water. If sodium hydroxide becomes concentrated in one area, or if added too rapidly, or if added to hot or cold water, a rapid temperature increase can result in dangerous boiling and/or spattering or may cause an immediate violent eruption.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limits:

STEL 2 mg/m³

OSHA PEL 2 mg/m³

ACGIH 2 mg/m³

UK Exposure limits:

Long-term (8 hr. TWA value) 2 mg/m³

Short-term (10 min TWA value) 2 mg/m³

ENGINEERING CONTROL MEASURES

Engineering methods to control hazardous conditions are preferred. General methods include mechanical ventilation (dilution and local exhaust), process or personnel enclosure, control of process conditions and process modification (eg. substitution of a less hazardous material). Administrative controls and personal protective equipment may also



MATERIAL SAFETY DATA SHEET

CAUSTIC SODA

Date Issued: April 2014 and is valid for 3 years from this date.

Page 5 of 8

Revision No: 4

Print Date: 3/10/14

be 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 dust and mist. Supply sufficient replacement air to make up for air removed by exhaust systems.

Personal protection

Respiratory:

Full respiratory protection should be readily available in case of spillage.

Hand:

Wear butyl or natural rubber, Neoprene or nitrile gloves (NOT Polyethylene).

Personal protection - Eye

Safety goggles or approved safety glasses. Contact lenses should not be worn.

Skin:

Wear overall, safety shoes/boots.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	White deliquescent solid.
Odour:	Odourless
pH:	Strongly alkaline.[14.0]
Boiling point/range:	1390 °C at 1013 mbar
Melting point/range:	318°C
Flash point:	Not applicable
Flammability:	Not applicable
Explosive properties:	None
Oxidising properties:	None
Vapour pressure:	Not applicable.
Density:	2,13 g/cm ³ at 20°C
Solubility:	Soluble in water.

10. STABILITY AND REACTIVITY

Conditions to avoid: Isolate from acids.

Materials to avoid:

- Reacts violently with fire extinguishers containing water.
- The substance is a strong base, reacts violently with acids and is corrosive,
- Reacts with water generating sufficient heat to ignite combustible materials.
- Reacts violently with strong acids, causing fire and explosion hazard. Attacks many plastics, rubber, coatings, many metals, such as aluminium, zinc, tin, and lead, forming flammable/explosive gas (hydrogen).
- Reacts with ammonium salts to produce ammonia and causing fire hazard.
- Rapidly absorbs carbon dioxide and water from the air.
- Contact with moisture will generate heat.

Hazardous decomposition products:

Sodium Oxide and Hydroxide from heating.

Hazardous polymerization:



MATERIAL SAFETY DATA SHEET

CAUSTIC SODA

Date Issued: April 2014 and is valid for 3 years from this date.

Page 6 of 8

Revision No: 4

Print Date: 3/10/14

Will not occur.

11. TOXICOLOGICAL INFORMATION

The greatest industrial hazard is rapid tissue destruction of eyes or skin upon contact with either the solid or with concentrated solutions.

Acute toxicity: The oral LD₅₀ in rabbits is 500 mg/kg of a 10% solution.

Ingestion:

Ingestion produces severe pain in the esophagus and stomach, corrosion of the lips, mouth, tongue, and pharynx and the vomiting of large pieces of mucosa

Skin and eye contact:

Sodium hydroxide is a strong alkali; the mist, dust and solutions cause severe injury to the eyes, mucous membranes, and skin.

Skin:

Cause severe irritation.

If not removed from the skin, severe burns with deep ulceration will occur; exposure to the dust or mist may cause multiple small burns, with temporary loss of hair. On the skin, solutions of 25 to 50% cause the sensation of irritation within about 3 minutes; with solutions of 4%, this does not occur until after several hours.

Eyes:

Cause severe irritation.

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.

Inhalation:

Although inhalation is usually of secondary importance in industrial exposures, the effects from the dust or mist will vary from mild irritation of the nose at 2 mg/m³ to severe pneumonitis, depending on the severity of exposure.

Carcinogenicity:

Chronic carcinogenicity studies using mice and rats showed no cancer effects.

Cases of squamous cell carcinoma of the esophagus have occurred with latent periods of 12 to 42 years after ingestion; these cancers may have been sequelae of tissue destruction and possibly scar formation rather than from a direct carcinogenic action of sodium hydroxide itself.

Mutagenicity: The chemical is not mutagenic.

12. ECOLOGICAL INFORMATION

Aquatic toxicity:

In high concentrations Dangerous to aquatic life.

Fish:

Bluegill 96-hour TLM LC₅₀: 240 ug/l

Daphnia: No data available

Algae: No data available

Biodegradability : No data available



MATERIAL SAFETY DATA SHEET

CAUSTIC SODA

Date Issued: April 2014 and is valid for 3 years from this date.

Page 7 of 8

Revision No: 4

Print Date: 3/10/14

Bio-accumulation: No data available
Mobility: No data available

13. DISPOSAL CONSIDERATIONS

Disposal methods:

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and, therefore subject to specific regulations. Package, store, transport and dispose of all clean-up materials and any contaminated equipment in accordance with all applicable government and local environmental health regulations. Shipments of waste materials are subject to manifesting requirements per applicable regulations. Dispose in approved chemical disposal area or in a manner which complies with all local, state and federal regulations. **Do not flush to sewer.**

Disposal of packaging:

Always obey hazard warnings.

14. TRANSPORT INFORMATION

UN No.: 1823

ADR/RID

Shipping name: Sodium hydroxide solid
Classification code: C5
Packaging Group: II
Class: 8
Hazard identity No.: 80

IMDG

Shipping name: Sodium hydroxide solid
Class: 8
Packaging group: II

IATA

Shipping name: Sodium Hydroxide solid
Class: 8
Label: Corrosive
Packaging Group: II
Y814 (5 kg), 814 (15 kg)
816 (50 kg)

Tremcard No.: 121

15. REGULATORY INFORMATION

Symbol: C



MATERIAL SAFETY DATA SHEET

CAUSTIC SODA

Date Issued: April 2014 and is valid for 3 years from this date.

Page 8 of 8

Revision No: 4

Print Date: 3/10/14

Indication of danger: Corrosive.

Risk Phrases

R35 Causes severe burns.

Safety Phrases

S (1/2) Keep locked up and out of the reach of children

S24/25 Avoid contact with skin and eyes.

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S36/ 37 Wear suitable gloves and eye/face protection.

S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

National legislation:

In accordance with the South African National Road Traffic Act, 1996 (Act 93 of 1996), the Fire Brigade Act, 1987 (Act 99 of 1987) and the Occupational Health and Safety Act, 1993 (Act. No. 85 of 1993)

16. OTHER INFORMATION

Compiled by: Danie Fourie

All information and instructions provided in this Material Safety Data Sheet (MSDS) are based on the current state of scientific and technical knowledge at the date indicated on the present MSDS and are presented in good faith and believed to be correct. This information applies to the PRODUCT AS SUCH. In case of new formulations or mixes, it is necessary to ascertain that a new danger will not appear.

It is the responsibility of persons in receipt of this MSDS to ensure that the information contained herein is properly read and understood by all people who may use, handle, dispose or in any way come in contact with the product. If the recipient subsequently produces formulations(s) containing this product, it is the recipients sole responsibility to ensure the transfer of all relevant information from this MSDS to their own MSDS.

REFERENCES

- Similar product MSDS.
- EPA, RED FACTS, 1992.
- ADR 2011, Part 3.
- IMDG Code, 2005 Edition, Vol. 2.
- IATA Dangerous goods regulations, Effective 1 January 2011

END OF MSDS.