Material Safety Data Sheet

CAUSTIC SODA

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name: CAUSTIC SODA
Synonym:

Use: Multi purpose alkaline cleaner.

MILESTONE CHEMICALS AUSTRALIA PTY LTD
115 NORTHERN ROAD,
WEST HEIDELBERG, VIC, 3081
Tel: (03) 9450 4555
Fax: (03) 9457 5518

Emergency Advice All Hours:
Chief Chemist  Tel: (03) 9450 4555  Monday 8:00 a.m. - Friday 6:00 p.m.
Poisons Information Centre  Phone Australia: 13 1126  24 hours

2. HAZARDS IDENTIFICATION

HAZARDOUS ACCORDING TO EU CRITERIA

Hazard Category: Very Corrosive (C+)
Hazard Classification: HAZARDOUS SUBSTANCE, DANGEROUS GOOD

RISK PHRASES
R35  Causes severe burns.
R41  Risk of serious damage to eyes.

SAFETY PHRASES
S1/2  Keep locked up and out of reach of children.
S26  In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S28  After contact with skin, wash immediately with plenty of soap and water.
S37/39  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)

Poison Schedule:  S6 [Aust]
This material is a Scheduled S6 Poison and must be stored, handled and used according to the appropriate regulations..

Warning Statement:
Corrosive.
May produce severe burns.
Attacks skin and eyes.

3. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>SUBSTANCE NAME</th>
<th>Proportion</th>
<th>CAS Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>SODIUM HYDROXIDE</td>
<td>100%</td>
<td>1310-73-2</td>
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</tbody>
</table>

All other ingredients not hazardous according to EU Criteria.
4. FIRST AID MEASURES

Swallowed:
If swallowed, DO NOT induce vomiting. Give plenty of water to drink. Seek urgent medical assistance.

Eye:
If material is splashed into eyes, flush with plenty of water for at least 15 minutes, ensuring eye lids are held open. Immediately transport to hospital or doctor.

Skin:
If material is splashed onto the skin, remove any contaminated clothing and wash skin thoroughly with water and soap. Immediately transport to hospital or doctor.

Inhaled:
Remove victim to fresh air. Do not use mouth-to-mouth method if victim inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Administer oxygen if breathing is difficult.

First Aid Facilities:
Eye wash fountain, safety shower and normal wash room facilities.

Advice to Doctor:
Treat symptomatically.

In case of poisoning, contact Poisons Information Centre
In Australia call Tel: 131126

5. FIRE-FIGHTING MEASURES

Fire/Explosion Hazard
CAUTION: Use of water spray when fighting fire may be inefficient.

EXTINGUISHING MEDIA: Use dry chemical, carbon dioxide, foam or water fog.

SPECIAL FIRE FIGHTING PROCEDURES: Self-contained breathing apparatus (SCBA) required for fire-fighting personnel. If possible to do so safely, shut off fuel to fire. Use water spray to spray to cool fire-exposed surfaces and to protect personnel.

UNUSUAL FIRE AND EXPLOSION HAZARDS: If tanks, drums or containers of this material are heated, they may rupture and project corrosive liquids over a wide area.

HAZCHEM CODE: 2X [Aust]

FLAMMABILITY
Not flammable or combustible. If involved in a fire may generate noxious and corrosive fumes.

6. ACCIDENTAL RELEASE MEASURES

EMERGENCY ACTION:
Keep unnecessary people away; Isolate hazard area and deny entry. Stay upwind; Keep out of low areas. Wear appropriate eye, skin and respiratory protection as outlined in this MSDS. Warning, this material is corrosive and if spilt on floors will be slippery.

SPILL OR LEAK PROCEDURE:
Remove all non-ferrous metals from area (aluminium, zinc and magnesium), if product has spilt on these metals immediately, flush them with plenty of water and shut off ignition sources, no smoking or flames in hazard area. Stop leak if you can do it without risk. Water spray may reduce vapour; but it may not prevent ignition in closed spaces.

SMALL SPILLS:
Take up with sand, dirt or vermiculite. DO NOT use sawdust. Use non-sparking tools. Place into labeled plastic drum(s) for later disposal.

LARGE SPILLS:
Notify Emergency Services (Police or Fire Brigade). Tell them exact location, nature, hazards, quantities, type of vehicle and any other information that would be helpful. Contain spill. Remove all ignition sources and safely stop flow of spill. Bund area. Trained personnel should wear Personal Protective equipment as highlighted in this MSDS. Blanket the spill with foam or use water fog to disperse vapour clouds. Consult an expert regarding disposal of this product.

Warning: Products that contain alkali hydroxides must be kept away from non-ferrous metals, as extremely flammable hydrogen gas will be generated and if the appropriate flammability limits are reached and a source of ignition is present, a violent explosion will occur.
CAUSTIC SODA

7. HANDLING AND STORAGE
Store in a cool place and out of direct sunlight. Store away from sources of heat or ignition, strong acids, aluminium, zinc and magnesium or their alloys. All equipment must be earthed. Store in original packages as approved by manufacturer. Check all fittings, valves, reticulation (piping) and any ancillary equipment for leaks. A supplied air respirator or a self-contained breathing apparatus (SCBA) for emergencies should be available and checked regularly. For further information please refer to the Engineering Controls of this MSDS.

Additional Information: Mixing this product with strong mineral acids such as sulfuric, nitric and/or hydrochloric acid will result in a highly exothermic (releasing heat) reaction, which may lead to a fire and potential explosion.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Standards
No exposure standards are available for this product, however, the following exposure standards have been assigned by [NOHSC] to the following components of the product:

SODIUM HYDROXIDE
(Worksafe Australia)
[TWA] ≤ 2 mg/m³
[STEL] Peak limitation

References: H
(ACGIH)
[STEL] ≤ 2 (Ceiling)

Engineering Controls
Corrosive solid. Single significant exposure may cause severe injury or even death. Maintain adequate ventilation at all times. Prevent accumulation of vapours in hollows or sumps. Eliminate any sources of ignition. Exposure to this material may be controlled in a number of ways. The measures appropriate for a particular worksite depend on how the material is used and on the potential for exposure. Engineering methods to prevent or control exposure are preferred. Methods include process or personnel enclosure, mechanical ventilation (dilution and local exhaust), and control of process conditions. If engineering controls and work practices are not effective in preventing or controlling exposure, then suitable personal protective equipment, which is known to perform satisfactorily, should be used.

Personal Protection Equipment
This material is extremely corrosive and poisonous. The following protective equipment is recommended in all circumstances when using this product.
CLOTHING: PVC or Nitrile apron.
GLOVES: PVC or Nitrile.
EYES: Chemical goggles or faceshield to protect eyes.
RESPIRATORY PROTECTION: Avoid breathing of vapours. Select and use respirators in accordance with AS/NZS 1715/1716. When the concentration of airborne contaminants reach the exposure standards then the use of a half-face respirator with P1 filter is recommended. For high concentration use an atmosphere-supplied, positive pressure demand self-contained or airline breathing apparatus supplied air respirator complying with the requirements of AS/NZS 1715 is recommended. Filter capacity and respirator type depends on exposure levels and type of contaminant.
If entering spaces where the airborne concentration of a contaminant is unknown then the use of a Self-contained breathing apparatus (SCBA) with positive pressure air supply complying with AS/NZS 1715 / 1716, or any other acceptable International Standard is recommended. The use of fully-encapsulating, gas-tight suit is also recommended.
9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>White prill</td>
</tr>
<tr>
<td>Boiling Point Melting Point</td>
<td>&gt;100°C</td>
</tr>
<tr>
<td>Vapour Pressure</td>
<td>None</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>2.0 - 2.2</td>
</tr>
<tr>
<td>Flash Point</td>
<td>None</td>
</tr>
<tr>
<td>Flammability Limits</td>
<td>Non Flammable</td>
</tr>
<tr>
<td>Solubility in Water</td>
<td>Up to 600 grams per litre</td>
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<tr>
<td></td>
<td>and generates extreme heat</td>
</tr>
<tr>
<td>Other Properties</td>
<td></td>
</tr>
<tr>
<td>pH (1% solution)</td>
<td>12.5 - 13.5</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

STABILITY:
Stable under normal conditions of use.

HAZARDOUS DECOMPOSITION PRODUCTS:
Emits choking and corrosive fumes when heated to decomposition.

HAZARDOUS POLYMERIZATION:
Will not occur.

INCOMPATIBILITIES:
Strong mineral acids, aluminium, magnesium and zinc and their alloys.

CONDITIONS TO AVOID:
Reactions with mineral acids generate heat. Reaction with non-ferrous metals generates hydrogen gas which may cause explosion under appropriate conditions.

11. TOXICOLOGICAL INFORMATION

No adverse health effects are expected, if the product is handled in accordance with this Material Safety Data Sheet and the product label. Symptoms and effects that may arise if the product is mishandled and overexposure occurs are:

ACUTE HEALTH EFFECTS:

Swallowed:
Will cause severe burns to the mouth, mucous membranes, throat, oesophagus and stomach with effects including: Spontaneous vomiting with diarrhoea and possible bloody stools. Small quantities, approximately 20-50 ml, ingested (swallowed) will cause death.

Eye:
Will cause severe burns to the eyes with effects including: Pain, tearing, corneal opacity and blindness. If prompt action is not taken, permanent eye damage will occur.

Skin:
Will cause severe burns to the skin, with effects including: Redness, blistering, localised pain, dermatitis and deep burns.

Inhaled:
Will cause severe irritation to the nose, throat and respiratory system with effects including: Dizziness, headache, coughing, loss of co-ordination, chest pains, respiratory paralysis and or failure.

Chronic:
Prolonged contact may cause severe eye irritation and some form of permanent eye damage may occur. Prolonged or repeated skin contact will lead to necrosis (death) of the skin.

Additional information for Chronic
According to OECD Guideline for the Testing of Chemicals (OECD 405) for eye corrosion and OECD Guideline for the Testing of Chemicals (OECD 404) for skin corrosion, both test procedures have been utilized to determine that sodium hydroxide is a confirmed corrosive substance.

Toxicological Data:
There is no other toxicological information available for this product.
12. ECOLOGICAL INFORMATION

Ecotoxity:
Extremely poisonous and corrosive/reactive in large amounts, particularly in aquatic environments.

Mobility:
Small pourable solid beads, which sublime to a liquid in contact with moisture in the atmosphere. Readily transported and diluted by water emitting large amounts of heat in the process.

Persistence / Degradability:
Biodegradable.

Chemical Fate Information:
This substance may cause long term adverse effects in the aquatic environment.

13. DISPOSAL CONSIDERATIONS

Refer to appropriate authority in your State. Dispose of material through a licensed waste contractor. Advise of caustic/alkali nature. Normally suitable for disposal by approved waste disposal agent.

14. TRANSPORT INFORMATION

Road Transport
UN Number: 1823
Proper Shipping Name: SODIUM HYDROXIDE, SOLID
Dangerous Goods Class: 8
Packing Group: II
Label: Very Corrosive (C+)

Air Transport
UN Number: 1823
Proper Shipping Name: SODIUM HYDROXIDE, SOLID
Dangerous Goods Class: 8
Packing Group: II
Label: Very Corrosive (C+)

Sea Transport
UN Number: 1823
Proper Shipping Name: SODIUM HYDROXIDE, SOLID
Dangerous Goods Class: 8
Packing Group: II
Label: Very Corrosive (C+)

15. REGULATORY INFORMATION

Poison Schedule: S6 [Aust]

Inventory Status:
Inventory Status
Australia (AICS) Material is listed.
16. OTHER INFORMATION

**Date of Preparation:**
Issue date: 25/09/07
Supersedes: 13/09/07

**Reasons for Update:**
Review period reached.
New Format.
Address and phone number.

**Disclaimer Statement:**

**Key Legend Information:**

NOHSC - National Occupational Health & Safety Commission {Formerly Worksafe}[Aust]
ASCC – Australian Safety and Compensation Council {Formerly NOHSC}
SUSDP - Standard for the Uniform Scheduling of Drugs and Poisons [Aust]
TWA - Time Weighted Average [Int]
STEL - Short Term Exposure Limit [Int]
AICS - Australian Inventory of Chemical Substances
EPA - Environmental Protection Agency [Int]
NIOSH - National Institute for Occupational Safety and Health [US]
AS/NZS 1715 - Selection, use and maintenance of respiratory protective devices. [Aust/NZ]
AS/NZS 1716 - Respiratory protective devices. [Aust/NZ]
IATA - International Aviation Transport Authority [Int]
ICAO - International Civil Aviation Organization [Int]
IMO - International Maritime Organisation. [Int]
IMDG - International Maritime Dangerous Goods [Int]
United Nations Recommendations for the Transport of Dangerous Goods and Globally Harmonized System for the classification and labelling of Chemicals. [Int]
EU - European Union

[Aust/NZ] = Australian New Zealand
[Int] = International
[US] = United States of America

Removal of the heading of **Poison Schedule [Aust]**, in section 3 and 15 of this Material Safety Data Sheet (MSDS) makes this a valid health and safety document in other international jurisdictions/countries. For full compliance please contact your Federal, State or Local regulators for further information.

**Disclaimer**

This MSDS summarises our best knowledge of the health and safety hazard information available on the product and the measures to be used to handle and use the product safely. Each user should read this MSDS and consider the information in connection with the way the product is intended to be handled or used.

Milestone Chemicals Australia Pty Ltd will not accept any responsibility for any changes made to its M.S.D.S by any other person or organisation.

**Principal References:**
Information supplied by manufacturer, reference sources including the public domain.

**END OF MSDS**