

Appendix D - Figure 6



Safety Data Sheet CAUSTIC SODA

MVC-MSDS-B-002P/L
Issue Date : 11/15/13
Rev. Code : 02
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I. PRODUCT AND COMPANY IDENTIFICATION

| | |
|---|---|
| Product Name | Caustic Soda, 50% |
| Recommended use of the chemical and restrictions on use | Chemicals manufacture; neutralising agent; pulp and paper, aluminum, detergent, and textile processing; oil refining; process cleaning; reclaiming rubber; etching and electroplating. |
| Manufacturer | Mabuhay Vinyl Corporation 3 rd Floor Philamlife, 126 L.P. Leviste St. Salcedo Village, Makati City For Assistance Call : (02) 817-8971 to 76 loc 214; Direct line (02) 817-1830 |
| Iligan Plant | Assumption Heights, Iligan City Tel: (063) 221-9466, 221-1190 |
| Batangas Depot | BBTI Compound, Bauan, Batangas Tel: (043) 980-5869 |
| Cebu Depot | Ceniza St., Ouano, Mandaue City Tel: (032) 344-5259, 345-0639 |
| Davao Depot | Bunawan, Davao City Tel: (082) 236-0015 |

II. HAZARDS IDENTIFICATION

Symbols



Signal Word: DANGER!

Hazard statements:

H314: Causes severe skin burns and eye damage.
H335: May cause respiratory irritation.
H302: Harmful if swallowed.
H400: Very toxic to aquatic life
H290: May be corrosive to metals.

Precautionary statements:

Prevention

P260: Avoid breathing dust/fume/gas/mist/vapours/spray.
P264: Wash hand thoroughly after handling.
P280: Wear protective gloves/protective clothing/eye protection /face protection.
P273: Avoid release to the environment.

Response:

P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P301+ P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting

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

P337+P313: If eye irritation persists: Get medical advice/attention.

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

P310: Immediately call a POISON CENTER or doctor/physician.

P390: Absorb spillage to prevent material damage.

Storage:

P406: Store in corrosive resistant container with a resistant inner liner.

P405: Store locked up.

Disposal:

P501: Dispose of contents/container in accordance with applicable local, regional, national, and/or international regulations.

III. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Identity Sodium Hydroxide(liquid)

Trade Names/
Synonyms Caustic soda, lye, soda lye, sodium hydrate, sodium hydroxide(NaOH)

CAS Number 1310-73-2

Minimum Percentage 48%

IV. FIRST AID MEASURES

Description of first-aid measures: In all instances, seek immediate medical attention.

Inhalation: Remove to fresh air. Give artificial respiration if not breathing. If breathing is difficult, administer oxygen. No mouth to mouth or mouth to nose resuscitation.

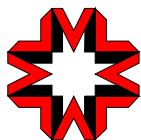
Ingestion: Rinse mouth. If victim is conscious and alert, give a small glass of water to drink. Do NOT induce vomiting.

Skin contact: Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Thoroughly clean and dry contaminated clothing before reuse. Destroy contaminated shoes.

Eye contact: Immediately flush eyes with plenty of water for at least 15minutes.

Most important symptoms/effects, both acute and delayed

Highly corrosive and can cause severe pain. Causes blisters and burns. Corrosive to the eyes with a danger of vision impairment/blindness. Ingestion causes burns in the mouth, throat and esophagus. Inhalation of product may cause irritation, high levels can cause difficulty in breathing and possible lung damage. May cause serious permanent damage.



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Indication of any immediate medical attention and special treatment needed: Treat symptomatically as for strong alkalis. Burns are not immediately painful; onset of pain may be minutes to hours. Symptoms of pulmonary edema can be delayed up to 48 hours after exposure. For inhalation, consider oxygen, and avoid gastric lavage or emesis. For cases of suspected ingestion, perform endoscopy. In cases of severe esophageal corrosion, the use 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.

First Aid Facilities: Eye wash station, safety shower and normal washroom facilities.

V. FIRE FIGHTING MEASURES

Extinguishing media

Suitable extinguishing media: Regular dry chemical, carbon dioxide, fine water spray, regular foam

Unsuitable extinguishing media: High volume water jet.

Special hazards arising from the substance or mixture:

Not combustible, but contact with moisture or water may generate sufficient heat to ignite combustible materials. Forms flammable and explosive hydrogen through corrosion of metals. Generates dense black smoke and may form toxic fumes of carbon monoxide (CO), carbon dioxide (CO₂) and sodium oxide (Na₂O).

Special protective actions for firefighters: Do not breathe fumes. Respirator with independent air-supply and airtight garment is required. Fight fire in early stages if safe to do so. Containers close to fire should be removed immediately or cooled with water. Do not allow contaminated extinguishing water to enter the soil, groundwater or surface waters.

VI. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Evacuate all unprotected personnel. Put on protective equipment (see Section 8). Avoid direct contact with skin, eyes and clothing. Ensure adequate ventilation/exhaust extraction.

Environmental precautions: Avoid entry of product into drains, sewers, surface/ground water system or soil.

Methods and material for containment and cleaning up: Contain and recover liquid when possible. Do not flush residues to the sewer. Residues can be diluted with water or neutralized with dilute acid such as acetic, hydrochloric or sulfuric. Absorb neutralized residue on clay, vermiculite or other inert substance and package in a suitable container for disposal according to applicable regulations.

VII. HANDLING AND STORAGE

Precautions for safe handling: Use protective equipment (see Section 8). Provide adequate ventilation. Avoid inhalation of vapors and skin and eye contact. Change contaminated or soaked clothing immediately. Wash hands after handling.

Use work methods which minimize aerosol production. Addition of water directly to this product may cause vigorous reaction/boiling. Always dilute by carefully pouring the product into the water.

Keep away from foodstuffs, drinks and tobacco.

Keep away from incompatible products and naked flames/heat.

Do not discharge the waste into drains.

Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well-ventilated bunded area and keep protected from light and direct sunlight.

Suitable packaging material: stainless steel –nickel, polyethylene –polypropylene, glass –stoneware/porcelain

Non suitable packaging material: lead, aluminum, copper, zinc, bronze, tin

Minimum storage temperature: 25°C for 50% solution, 20°C for 30% solutions. Mild steel tanks must be stress relieved if storing material above 40°C for concentrations of 30% or higher concentrations.

Keep away from combustible materials, acids, water, steam, metals, oxidising agents, aluminium, zinc, tin, ammonium salts, and nitroaromatic or organohalogens.

VIII. EXPOSURE CONTROLS AND PROTECTION

Control parameters

Exposure limits USA-ACGIH 2007 : Ceiling = 2 mg/m³
(maximum value)
EH40 WEL 2007; STEL 2 mg/m³

Appropriate engineering controls: Provide sufficient ventilation to keep airborne levels below the exposure limits.

Personal protective equipment

Maintain eye wash fountain and quick-drench facilities in work area. Final choice of appropriate protection will vary according to methods of handling, engineering controls and risk assessments undertaken.

Respiratory protection Respiratory equipment with combination filter.

Hand protection: Nitrile, butyl rubber, polyvinyl chloride (PVC), or neoprene gloves with long sleeves.

Eye / face protection: Safety glasses with side shields, goggles or full-face shield

Skin protection: Appropriate protective clothing to protect against possible skin contact.



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IX. PHYSICAL AND CHEMICAL PROPERTIES

| | |
|---|-------------------------------------|
| Appearance | Colorless to slightly turbid liquid |
| Odor | Odorless |
| Odor threshold | Not applicable |
| pH | >14 at 100g/l at 20°C |
| Freezing point | 12°C |
| Boiling point /range | 142 - 144°C |
| Flash point | Not applicable |
| Evaporation rate | Not available |
| Flammability | Not applicable |
| Flammability/explosive limits | Not applicable |
| Vapor pressure | (20°C) : 2 hPa (mbar) |
| Vapor density | No data available |
| Relative density(water = 1) | (20°C) : 1520 kg/m ³ |
| Solubility | Completely soluble |
| Partition coefficient: n-octanol/water | Not relevant |
| Auto-ignition temperature | Not applicable |
| Decomposition temperature | Not available |
| Viscosity | Viscosity (20°C) : 78 mPa.s |

X. STABILITY AND REACTIVITY

Reactivity: Exothermic reaction with water, strong acids and other incompatible materials. Reacts with some metals to release hydrogen.

Stability: Stable under recommended storage conditions. Rapidly absorbs carbon dioxide from the air, forming sodium carbonate. Slowly absorbs moisture from the air.

Possibility of hazardous reactions: Forms flammable hydrogen gas with zinc and aluminum. May ignite or explode on contact with combustible materials. Carbon monoxide gas may form upon contact with reducing sugars, food and beverage products in enclosed spaces.

Conditions to avoid: Extremes of temperature and direct sunlight, heat, moisture, light metals, exposure to air or carbon dioxide and incompatibles

Incompatible materials: Acids, water, steam, water mixtures, metals/alloys(zinc, aluminum, copper, lead, tin, brass, bronze), metal salts, halogenated hydrocarbons, acid anhydrides, ketones, glycols, acetaldehyde, acrolein, acrylonitrile, allyl alcohol, nitroaromatics, organic peroxides, oxidizing materials, combustible materials.

Hazardous decomposition products: hydrogen gas, carbon monoxide, carbon dioxide, sodium oxide. Can induce hazardous polymerization of acetaldehyde, acrolein, and acrylonitrile.

XI. TOXICOLOGICAL INFORMATION

Routes of exposure: inhalation, ingestion, skin and eye contact

Potential acute effects

Highly corrosive to any tissue with which it comes into contact. Produces burns, deep ulceration and gelatinous necrotic areas at the site of contact. Low systemic toxicity.

Inhalation: After 24-36 hours, injured persons may develop serious shortness of breath and lung edema. High concentrations may cause severe lung damage.

Ingestion: Causes burning of the mouth, throat and esophagus; vomiting; diarrhea; edema (swelling) of larynx and subsequent suffocation. Perforation of gastrointestinal tract can occur. May cause serious permanent damage.

Skin contact: May cause serious chemical burns to the skin. It can penetrate to deeper layers of skin and corrosion will continue until removed. The severity of injury depends on the concentration and the duration of exposure

Eye contact: Causes severe burns and serious eye damage. Immediate first aid is imperative. Risk of permanent corneal damage, loss of sight and blindness.

Chronic Effects: May aggravate existing respiratory disorders such as emphysema and chronic bronchitis, or may lead to respiratory disorders, or dermatitis in some individuals.

Numerical measures of toxicity

LD50 (Intrapertioneal, Mouse): 40 mg/kg

(Oral, Rabbit): >500 mg/kg

Skin (rabbit) severe irritation : 500 mg/24hr

Eyes (rabbit) severe irritation : 1 mg/30 sec rinse

XII. ECOLOGICAL INFORMATION

Ecotoxicity

FISH TOXICITY: 240 ug/L 96 hour(s) LC50 (Mortality) Bluegill (Lepomis macrochirus)

INVERTEBRATE TOXICITY: 330000-1000000 ug/L 48 hour(s) LC50 (Mortality) Cockle (Cerastoderma edule)

ALGAL TOXICITY: 765 ug/L 30 day(s) (Biomass)

Algae, phytoplankton, algal mat (Algae)

PHYTOTOXICITY: 230 ug/L 21 week(s) (Biomass) Waterweed (Elodea canadensis)

Persistence and degradability:

Biodegradation (In water): Not applicable

Photodegradation (In air) : Overall half-life time: 13 s,
Neutralization by atmospheric carbon dioxide

Bioaccumulative potential : An accumulation in aquatic organisms is not to be expected

Mobility in the soil. Very mobile in soils. During movement through soil some ion exchange will occur. Some of the hydroxide may remain in the aqueous phase and will move downward through soil in the direction of groundwater flow.



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Other adverse effects. Toxic effect on fish, plankton and on sedentary organisms. The toxicity to aquatic life will be influenced by the hardness and alkalinity of the receiving water. The upper pH limit tolerated by most freshwater fish is 8.4; the pH must generally be greater than 9 before the aqueous environment becomes lethal for fully developed fish. Freshwater algae are destroyed above pH 8.5

XIII. DISPOSAL CONSIDERATIONS

Reuse or reprocess, if possible. Can be dissolved carefully in water and greatly diluted or carefully neutralised with dilute acid and flushed to drain with copious amounts of water. Empty containers must be decontaminated. Dispose of in accordance with all Government and Local regulations.

XIV. TRANSPORT INFORMATION

| | |
|--------------------------------|---------------------------|
| UN Number | 1824 |
| UN Proper Shipping Name | SODIUM HYDROXIDE SOLUTION |
| Transport hazard class | 8(Corrosive) |
| Packing group | II |



Label

Environmental Hazards

| | |
|--------------------------------|--------------------------------------|
| Marine Pollutant : No | IMDG |
| Environmentally Hazardous : No | ADR(Road), AND(Water), IATA (Air) |

XV. REGULATORY INFORMATION

U.S. Regulations:

CERCLA Sections 102a/103 Hazardous Substances
(40 CFR 302.4): 1000 LBS RQ

SARA Title III Section 302 Extremely Hazardous
Substances (40 CFR 355.30): Not regulated.

SARA Title III Section 304 Extremely Hazardous
Substances (40 CFR 355.40): Not regulated.

SARA Title III Sections 311/312 Hazardous Categories
(40 CFR 370.21):

Acute: Yes
Chronic: No
Fire: No
Reactive: Yes
Sudden release: No

SARA Title III Section 313 (40 CFR 372.65): Not regulated.
OSHA Process Safety (29CFR1910.119): Not regulated.

Canadian Regulations

WHMIS Classification: Not determined.

European Regulations

EC Classification (assigned): C Corrosive
EC Classification may be inconsistent with independently-researched data.

Danger/Hazard Symbol: C Corrosive

EC Risk and Safety Phrases:

R 35 Causes severe burns.
S 1/2 Keep locked-up and out of reach of children.
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 37/39 Wear suitable gloves and eye/face protection.
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

National Inventories

Australian Chemical Inventory(AICS) : Listed
Canadian Chemical Inventory(DSL) : Listed
China Chemical Inventory(IECS) : Listed
European Union Inventory(EINECS) : 215-185-5
Japan Chemical Inventory(ENCS) : 1-410; 2-1972
Korean Chemical Inventory(KECL) : KE-31487
New Zealand Chemical Inventory(NZIOC) : Listed
Philippines - Priority Chemical List(PICCS) : Listed
U.S. Inventory (TSCA) : Listed

XVI. OTHER INFORMATION

The information herein is presented in good faith and believed to be correct as of the date of issue. However, no warranty, expressed or implied, is made by Mabuhay Vinyl Corporation regarding the product's merchantability, fitness for a particular purpose, performance, safety or stability. This information is not intended to be all-inclusive as to the manner and conditions of use, handling, storage, disposal and other factors that may involve other or additional legal, environmental, safety or performance considerations, and Mabuhay Vinyl Corporation assumes no liability whatsoever for the use of or reliance upon this information. No suggestions for use are intended as, and nothing herein shall be construed as, a recommendation to infringe any existing patents or to violate any existing laws or regulations.

End of Safety Data Sheet