SECTION 1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT IDENTIFIER: SODIUM HYDROXIDE, SOLID

RECOMMENDED USAGE: Neutralizing agent, industrial cleaner, pulping and bleaching, catalyst

MANUFACTURER: AGC Chemicals (Thailand) Co., Ltd.
25 Bangkok Insurance Building, 24th Floor
South Sathorn Rd., Tungmahamek, Sathorn, Bangkok 10120, Thailand
Tel: +66-2-679-1600
Fax: +66-2-679-3180

EMERGENCY PHONE NUMBER: Samutprakarn Factory: +66-2-463-6345 - 8 Ext. 400
Rayong Factory: +66-38-683-572 - 5 Ext. 155, 191

SECTION 2 HAZARDS IDENTIFICATION

GHS Classification

Health	Environmental	Physical
Skin corrosion/irritation -Category 1 Serious eye damage/eye irritation -Category 1 Specific target organ toxicity -Single exposure - Category 1(respiratory system)	Acute toxicity to the aquatic environment -Category 3	No data available

GHS Label

Symbols:

Signal word: Danger, Corrosive

Hazard Statements	Precautionary Statements
Causes severe skin burns and eye damage Causes serious eye damage Causes damage to respiratory system Harmful to aquatic life	[Prevention] Do not breathe dust/fume. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection. [Response] IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue

	rinsing. Immediately call a POISON CENTER or doctor/ physician. Wash contaminated clothing before reuse. [Storage] Store locked up. [Disposal] Dispose of contents/container in accordance with local/regional/national/international regulations.

SECTION 3 COMPOSITION, INFORMATION ON INGREDIENTS

CHEMICAL IDENTITY: **SODIUM HYDROXIDE, SOLID**
TRADE NAMES/SYNONYMS:
CAUSTIC SODA; SODA LYE; LYE; WHITE CAUSTIC; BEAD; DRY; FLAKE; SOLID; SODIUM HYDRATE; SODIUM HYDROXIDE (NaOH); DRY SOLID, FLAKE, PRILL, BEAD, OR GRANULAR; UN 1823; NaOH;

CAS-No	Name	% Weight
1310-73-2	Sodium Hydroxide	98 - 99
497-19-8	Sodium Carbonate	0.5 – 1.5
7732-18-5	Deionized Water	0.5

SECTION 4 FIRST AID MEASURES

INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

SKIN CONTACT: Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get immediate medical attention. Thoroughly clean and dry contaminated clothing and shoes before reuse. Destroy contaminated shoes.

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15minutes. Then get immediate medical attention.

INGESTION: If swallowed, drink plenty of water, do NOT induce vomiting. Get immediate medical attention.
NOTE TO PHYSICIAN: For inhalation, consider oxygen. Avoid gastric lavage or emesis.

SECTION 5 FIRE FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA: regular dry chemical, carbon dioxide, water, regular foam
Large fires: Use regular foam or flood with fine water spray.
FIRE AND EXPLOSION HAZARDS: Negligible fire hazard.
FIRE FIGHTING: Move container from fire area if it can be done without risk.
Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks.

SECTION 6 ACCIDENTAL RELEASE MEASURES

-PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT & EMERGENCY PROCEDURES:

-ENVIRONMENT PRECAUTION:
SOIL RELEASE: Dig holding area such as lagoon, pond or pit for containment. Cover with plastic sheet or tarpaulin to minimize spreading and protect from contact with water.

WATER RELEASE: Neutralize.

-METHODS & MATERIALS FOR CONTAINMENT & CLEANING UP
Do not touch spilled material. Stop leak if possible without personal risk.

Small spills: Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal.
Small dry spills: Move containers away from spill to a safe area.
Large spills: Dike for later disposal. Keep unnecessary people away, isolate hazard area and deny entry.

SECTION 7 HANDLING AND STORAGE

-PRECAUTIONS FOR SAFE HANDLING:
Use smallest possible amounts in designated areas with adequate ventilation. Keep containers closed when not in use. Empty containers may contain hazardous residues. Transfer solids using tools or equipment, which are corrosion -resistant. Cautiously, transfer into sturdy containers made of compatible materials. Never return contaminated material to its original container. Considerable heat is generated when diluted with water. Proper handling procedures must be followed to prevent vigorous boiling, splattering or violent eruption of the diluted solution. Never add water to caustic. **ALWAYS ADD CAUSTIC TO WATER** and provide agitation. When mixing with water, stir small amounts in slowly. Use cold water to prevent excessive heat generation. In general, keep solid sodium hydroxide away from water.

-PRECAUTIONS FOR SAFE STORAGE (including any incompatibilities):
Store in a cool, dry, well-ventilated area. This material absorbs water. Keep containers tightly closed when not in use and when empty. Protect from damage.
Store away from incompatable materials such as strong acids, nitroaromatic, nitroparaffinnic or organohalogen compounds. Use corrosion-resistant structural materials and lighting and ventilation systems in the storage area. Containers made of nickel alloys are preferred. Steel containers are acceptable if temperatures are not elevated. Nickel is the preferred metal from handling this product. Plastics or plastic-lined steel, or FRP tanks of derakane vinyl ester resin may be suitable. If outdoor storage of pearl caustic is unavailable, the pallets should be protected against extremes of weather.

SECTION 8 EXPOSURE CONTROLS, PERSONAL PROTECTION

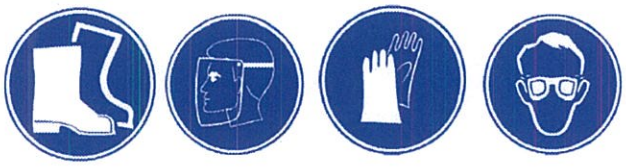
-CONTROL PARAMETERS:
OCCUPATIONAL EXPOSURE LIMIT or BIOLOGICAL LIMIT VALUE:

2 mg/m3 MINISTRY OF LABOUR, THAILAND TLV-C
2 mg/m3 OSHA TWA
2 mg/m3 OSHA ceiling (vacated by 58 FR 35338, June 30, 1993)
2 mg/m3 ACGIH ceiling
2 mg/m3 NIOSH recommended ceiling

-APPROPRIATE ENGINEERING CONTROLS:

Local exhaust ventilation should be applied wherever there is an incidence of point source emissions or dispersion of regulated contaminants in the work area. Ventilation control of the contaminant as close to its point of generation is both the most economical and safest method to minimize personnel exposure to airborne contaminants. The most effective measures are the total enclosure of processes and the mechanization of handling procedures to prevent all personal contact. VENTILATION: Ensure compliance with applicable exposure limits.

PERSONAL PROTECTIVE EQUIPMENT



Maintain eye wash fountain and quick-drench facilities in work area. Detailed requirements for personal protective equipment should be established on a site-specific basis.
EYE PROTECTION: Wear full face-shield and chemical safety goggles when there is potential for contact.
SKIN PROTECTION: Wear appropriate personal protective clothing to prevent skin contact. Chemical protective clothing composed of natural rubber, neoprene, nitrile, or styrene/butadiene (SBR)-coated fabric is highly recommended, having break through times greater than one hour. Butyl rubber, polyethylene, chlorinated polyurethane, or polyvinyl alcohol may be used but data suggests breakthrough times of approximately an hour or more.

RESPIRATORY PROTECTION:

Up To 10 mg/m3 : Supplied Air Respirator (SAR) operated in a continuous-flow mode, eye protection needed; or full-facepiece respirator with high-efficiency particulate filter(s); or powered air-purifying respirator with dust and mist filter(s), eye protection needed; or full-facepiece Self-Contained Breathing Apparatus (SCBA); or full-facepiece SAR.
Emergency or Planned Entry into Unknown Concentrations or IDLH Conditions: Positive pressure, full-facepiece SAR; or positive pressure, full-facepiece SAR with an auxiliary positive pressure SAR.
ESCAPE: Full-facepiece respirator with high-efficiency particulate filter(s); or escape-type SCBA

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE
PHYSICAL STATE: Solid
COLOR: white
CHANGE IN APPEARANCE: hygroscopic
ODOR: odorless
ODOR THRESHOLD: No data available
MOLECULAR FORMULA: Na-O-H
MOLECULAR WEIGHT: 40.00
pH: 12-14 (5% solution)
MELTING POINT: 604 F (318 C)
BOILING POINT: 2534 F (1390 C)
FLASH POINT: No data available
EVAPORATION RATE: No data available
FLAMMABILITY (solid, gas): No data available
VAPOR PRESSURE: No data available
VAPOR DENSITY: No data available

RELATIVE DENSITY (water=1): 2.130

SOLUBILITY IN WATER: VERY soluble (108 g/100 ml at 20 ° C(68˚F))

SOLVENT SOLUBILITY: Soluble: alcohol, glycerol Insoluble: acetone, ether

PARTITION COEFICIENT ***n-octanol / water:*** No data available

AUTO-IGNITION TEMPERATURE: No data available

DECOMPOSITION TEMPERTURE: No data available

SECTION 10 STABILITY AND REACTIVITY

- CHEMICAL STABILITY: Stable at room temperature. Rapidly absorbs carbon dioxide from the air, forming sodium carbonate. Rapidly absorbs moisture from the air
- POSSIBILITY OF HAZARDOUS REACTIONS:

REACTIVITY: May react with evolution of heat on contact with water.

- CONDITIONS TO AVOID: Water, moisture, and air. Dangerous gases may accumulate in confined spaces. May ignite or explode on contact with combustible materials.
- INCOMPATIBILITIES: combustible materials, acids, halo carbons, metals, halogens, oxidizing materials, peroxides, metal salts

SECTION 11 TOXICOLOGICAL INFORMATION

Health Hazardous (Acute and Chronic)
(sodium hydroxide, dry)
Genetic Toxicity (IUCLID Release 3.1, 2000.2)
DNA Damage and repair assay: negative

Irritation:
Skin: rabbit 1mg/24h Severe
Eye(s): rabbit 400µg Mild, 1 % Severe, 50µg/24h Severe, 1mg/30s rinse Severe
Toxic Oral: rabbit LDL_0: 500 mg/kg

Carcinogenic classification:

NTP : Not Established.

IARC Monographs : Not Established.

OSHA Regulated : Not Established.

Other information: Since burns of the skin or membrane by contact is based on the dissolution action to the protein of alkali as compared with acid, generally, wound is moist and an ulcer tends to advance deeply, so it is more critical than the burn by acid.

SECTION 12 ECOLOGICAL INFORMATION

Fish: LD_{50}: 189 mg/l (1N solution = 40 g/l) EC_0 < 20 mg/l Aquatic organism: LD_{50}: 10-100 mg/l 96 h. High toxic to fish and plankton due to pH changing. But not result in a lack of oxygen in ecological system.

SECTION 13 DISPOSAL CONSIDERATIONS

Review federal, state and local government requirements prior to disposal. Do not dispose of waste with normal garbage, or to sewer systems. Whatever cannot be saved for recovery or recycling, including containers, should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options.

SECTION 14 TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:

PROPER SHIPPING NAME: Sodium hydroxide, solid
ID NUMBER: UN1823
HAZARD CLASS OR DIVISION: 8
PACKING GROUP: II

LAND TRANSPORT ADR/RID:

PROPER SHIPPING NAME: Sodium hydroxide, solid
UN NUMBER: UN1823
ADR/RID CLASS: 8
CLASSIFICATION CODE: C6
PACKING GROUP: II

AIR TRANSPORT IATA/ICAO:

PROPER SHIPPING NAME: Sodium hydroxide, solid
UN/ID NUMBER: UN1823
IATA/ICAO CLASS: 8
PACKING GROUP: II

MARITIME TRANSPORT IMDG:

PROPER SHIPPING NAME: Sodium hydroxide, solid
UN NUMBER: UN1823
IMDG CLASS: 8
PACKING GROUP: II
CAS NO: 1310-73-2
HS CODE: 2815.1100.000

SECTION 15 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 SARA 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.

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 ½	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).

CONCENTRATION LIMITS:

C>=5%	C	R35
2%<=C<5%	C	R 34
0.5%<=C<2%	Xi	R 36/38

NATIONAL INVENTORY STATUS:
U.S. INVENTORY (TSCA): Listed on inventory.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

THAILAND REGULATIONS:

Notification of The Ministry of Industry: Type 1 Hazardous Substance (September 22, 2003)

Notification of The Ministry of Agriculture and Cooperatives: Type 1 Hazardous

Notification of The Ministry of Interior: Working Safety Relating to Harmful Chemicals (September 24, 1991)

Standard for Sodium Hydroxide for Industrial Use: TIS.150-2006

SECTION 16 OTHER INFORMATION

Revise: 0
Date:
Target for the next revision: July, 2011

This chemical is certified to ANSI/NSF Standard 60, Drinking Water Treatment Chemicals - Health Effects. The maximum use for potable water is 100 mg/l.

The information in this SDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, expressed or implied, regarding its accuracy and/or completeness. User should consult experts in their review of this SDS prior to use of the product.