1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product Identifier
Product Name
SWG® Biocide

Other means of identification
Chemical Family
Stabilized bromine biocide, aqueous solution
CAS-No
Mixture

Recommended use of the chemical and restrictions on use
General function
Water treatment chemical.
Uses advised against
No information available

Details of the supplier of the safety data sheet
Company
Albemarle Corporation
451 Florida Street
Baton Rouge, LA 70801

For Non-Emergency
800-535-3030

‘Competent Body for SDS’
HSE@Albemarle.com

Emergency telephone number
Emergency Telephone Numbers +1-225-344-7147

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity - Inhalation (Dusts/Mists)</td>
<td>4</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>1</td>
</tr>
<tr>
<td>Serious eye damage/eye irritation</td>
<td>1</td>
</tr>
<tr>
<td>Chronic aquatic toxicity</td>
<td>3</td>
</tr>
</tbody>
</table>

Label elements

Emergency Overview

Danger

Hazard Statements
Harmful if inhaled
Causes severe skin burns and eye damage
Harmful to aquatic life with long lasting effects
Can decompose exothermically at elevated temperatures (see Environmental Protection, Storage Requirement Section for details)
Prevention
Use only outdoors or in a well-ventilated area
Do not breathe dust/fume/gas/mist/vapors/spray
Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves/protective clothing/eye protection/face protection
Avoid release to the environment

Response
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
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing Call a POISON CENTER or doctor/physician if you feel unwell
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting

Storage
Store locked up

Disposal
Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

Other Information

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium hydroxide</td>
<td>1310-73-2</td>
<td>&lt;10</td>
</tr>
</tbody>
</table>

Note: The exact concentrations of the above listed chemicals are being withheld as a trade secret.

4. FIRST AID MEASURES

First aid measures
Eye contact
If in eyes, hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

Skin Contact
If on skin or clothing, take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Inhalation
Remove to fresh air.
Ingestion

If swallowed,. Call a physician or Poison Control Center immediately. Have person sip a glass of water if able to swallow. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person.

**Most important symptoms and effects, both acute and delayed**

| Symptoms | No information available. |

**Indication of any immediate medical attention and special treatment needed**

| Notes to Physician | Probable mucosal damage may contraindicate the use of gastric lavage. |

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### 5. FIRE-FIGHTING MEASURES

**Extinguishing media**

| Suitable extinguishing media | Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames. |
| Unsuitable Extinguishing Media | No information available. |

**Specific Hazards Arising from the Chemical**

| Combustion/explosion hazards | No information available. |

| Hazardous Combustion Products | Bromine. Chlorine. |

**Explosion Data**

| Sensitivity to mechanical impact | None. |
| Sensitivity to static discharge | None. |

**Protective Equipment and Precautions for Firefighters**

In the event of fire and/or explosion do not breathe fumes.

---

### 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions, protective equipment and emergency procedures**

| Personal precautions | Ensure adequate ventilation. |

**Environmental Precautions**

| Environmental precautions | Contain any spill with dikes or absorbents to prevent migration and entry into sewers or streams. Large spills should be collected mechanically (remove by pumping) for disposal. May require excavation of contaminated soil. Take up small spills by first diluting with water and then using a dehalogenating agent such as sodium thiosulfate solution. |

**Methods and material for containment and cleaning up**

| Methods for Containment | Prevent further leakage or spillage if safe to do so. |
| Methods for Cleaning up | Soak up with inert absorbent material (e.g. sand, silica gel, universal binder, sawdust) |

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### 7. HANDLING AND STORAGE

**Precautions for safe handling**

| Handling | Avoid contact with skin, eyes and clothing. |

**Conditions for safe storage, including any incompatibilities**
Storage

Avoid freezing, excessive heat or exposure to light, especially direct sunlight. If heating is necessary to prevent freezing, care must be taken to prevent overheating. Precautions should be taken to ensure that the average product temperature is maintained below 110°F. Temperature monitoring is recommended. At elevated temperatures, self-heating can lead to vigorous gas generation and over-pressurization of storage containers if appropriate controls are not in place. Avoid exposure of this product to incompatible materials/chemicals (see Stability and Reactivity section). Use of incompatible materials can promote the exothermic decomposition of the product. In extreme cases, this could result in vigorous gas formation and over-pressurization of the storage container. STORAGE CONTAINER: Vented and opaque containers: As the product ages, activity is gradually lost and pressure can build-up in the headspace (nitrogen); therefore, the product should be stored in vented containers. Product should also be stored in opaque containers to prevent exposure to light. To maximize product shelf life, store the product in an opaque container, in a cool, dry, well-ventilated area.

Incompatible Materials

None known based on information supplied.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

<table>
<thead>
<tr>
<th>Component</th>
<th>ACGIH TLV (TWA)</th>
<th>OSHA PEL (TWA)</th>
<th>NIOSH IDLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium hydroxide 1310-73-2</td>
<td>Ceiling: 2 mg/m³</td>
<td>2MGM³</td>
<td>IDLH: 10 mg/m³ Ceiling: 2 mg/m³</td>
</tr>
</tbody>
</table>

Other information

Wear suitable protective clothing.

Appropriate engineering controls

Use only in well-ventilated areas.

Engineering Controls

Use only in well-ventilated areas.

Individual protection measures, such as personal protective equipment

Eye/face Protection

Chemical goggles or face shield with safety glasses.

Skin Protection

Wear protective gloves/clothing.

Respiratory protection

None under normal conditions.

General Hygiene Considerations

Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Liquid</td>
</tr>
<tr>
<td>Color</td>
<td>Yellow</td>
</tr>
<tr>
<td>Odor</td>
<td>Mild, Sweet</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>No information available</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>No information available</td>
</tr>
<tr>
<td>pH</td>
<td>12.4</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>0 °C / 32 °F</td>
</tr>
<tr>
<td>Boiling Point/Range</td>
<td>106 °C / 223 °F</td>
</tr>
<tr>
<td>Flash Point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>No information available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No information available</td>
</tr>
<tr>
<td>Flammability Limit in Air</td>
<td>No information available</td>
</tr>
<tr>
<td>Upper flammability limit:</td>
<td>No information available</td>
</tr>
<tr>
<td>Lower flammability limit:</td>
<td>No information available</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>2533.118 Pa (25°C)</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>No information available</td>
</tr>
<tr>
<td>Relative density</td>
<td>1.29 - 1.37 (25°C)</td>
</tr>
<tr>
<td>Solubility(ies)</td>
<td></td>
</tr>
</tbody>
</table>
Water Solubility: Miscible.
Solubility in other solvents: No information available
Partition coefficient: No information available
Autoignition temperature: No information available
Decomposition temperature: No information available
Viscosity, kinematic: 2 cSt (25°C)
Dynamic viscosity: 2.7 cPs (25°C)
Explosive Properties: No information available
Oxidizing Properties: Oxidizer

10. STABILITY AND REACTIVITY

Reactivity Hazard: No data available
Stability: Stable.
Hazardous Reactions: No hazardous reaction expected under normal handling.
Hazardous Polymerization: None under normal processing.
Conditions to Avoid: Protect from light. Extremes of temperature and direct sunlight. Keep away from heat.
Freezing.
Materials to avoid: This product is strongly basic and an oxidizing agent. Avoid contact with alcohols, aldehydes, strong reducing agents, strong oxidizers, acids, ammonia-containing products, and common metals such as steel, aluminum, iron and copper. Use of incompatible materials can promote the exothermic decomposition of the product.

Hazardous decomposition products: Bromine. Chlorine.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure:

Inhalation: Harmful by inhalation.
Eye contact: Causes burns. Possible risk of irreversible effects.
Skin Contact: Causes burns.
Ingestion: Not expected to be acutely toxic.

Potential Health Effects
Acute Effects
Skin corrosion/irritation: Causes burns.
Serious eye damage/eye irritation: Causes eye burns.
Respiratory irritation: Irritating to respiratory system
Sensitization: Not expected to be a sensitizer.

Chronic Effects
Mutagenic Effects: No information available.

Carcinogenicity:
The table below indicates whether each agency has listed any ingredient as a carcinogen.

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>ACGIH Carcinogens</th>
<th>IARC</th>
<th>NTP</th>
<th>OSHA Carcinogens</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium hydroxide</td>
<td>1310-73-2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Reproductive Effects
No information available.

STOT - single exposure
No information available.

STOT - repeated exposure
No information available.

Chronic Effects
None known

Aspiration hazard
No information available.

Numerical measures of toxicity
The following values are calculated based on chapter 3.1 of the GHS document.

Product Information
No information available

ATEmix (oral)
12185 mg/kg

ATEmix (dermal)
13500 mg/kg

ATEmix (inhalation-dust/mist)
4.6 mg/L

LD50 Oral:
Rat Oral LD50: 2491 mg/kg

LD50 Dermal:
Rat Dermal LD50: > 2000 mg/kg

Inhalation LC50
LC50/inhalation/4h/rat: > 2.09 mg/l

Component Information
No information available

Component | Rat Oral LD50 | Rabbit Dermal LD50 | Rat Inhalation LC50
---|---|---|---
Sodium hydroxide | - | = 1350 mg/kg (Rabbit) | -

12. ECOLOGICAL INFORMATION

Ecotoxicity
Harmful to aquatic life with long lasting effects

| Component | Freshwater Algae EC50/72h | Freshwater Fish LC50/96h | Water Flea EC50/48h |
---|---|---|---|
Sodium hydroxide (CAS #: 1310-73-2) | - | 189 mg/L | - |

Persistence/Degradability
No information available.

Bioaccumulation/ Accumulation
No information available.

Mobility in Environmental Media
No information available.

Other adverse effects
No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods
Waste Disposal Method
Dispose in a safe manner in accordance with local/national regulations.

Contaminated Packaging
Do not reuse container.
14. TRANSPORT INFORMATION

DOT
Proper Shipping Name: Corrosive Liquids, Basic, Inorganic, N.O.S. (Halogenated Complex, Sodium Hydroxide)
Hazard Class: 8
UN No.: 3266
Packing Group: III
Description: UN 3266 Corrosive liquid, Basic, Inorganic, N.O.S. (Halogenated complex, Sodium hydroxide), 8, III

IMDG/IMO
IMO Class: 8
Packing Group: III
UN-No: 3266
IMO Labelling and Marking: 8
Proper Shipping Name: Corrosive liquid, Basic, Inorganic, N.O.S. (Halogenated complex, Sodium hydroxide)
EmS: F-A, S-B
Marpol - Annex II: Not determined
Marpol - Annex III: Unregulated
Transport Description: UN 3266 Corrosive liquid, Basic, Inorganic, N.O.S. (Halogenated complex, Sodium hydroxide), 8, III

IATA/ICAO
IATA/ICAO Class: 8
Packing Group: III
UN-No: 3266
IATA/ICAO Labelling/Marking: 8
Passenger Aircraft: Maximum net quantity per package: 5 L
Cargo aircraft only: Maximum net quantity per package: 60 L
Proper shipping name: Corrosive liquid, Basic, Inorganic, N.O.S. (Halogenated complex, Sodium hydroxide)
Transport Description: UN 3266 Corrosive liquid, Basic, Inorganic, N.O.S. (Halogenated complex, Sodium hydroxide), 8, III

15. REGULATORY INFORMATION

<table>
<thead>
<tr>
<th>International Inventories</th>
<th>TSCA</th>
<th>DSL</th>
<th>NDSL</th>
<th>AICS</th>
<th>EINECS</th>
<th>ELINCS</th>
<th>ENCS</th>
<th>KECL</th>
<th>PICCS</th>
<th>IECSC</th>
<th>NZIoC</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWG® Biocide</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

TSCA Statement
THIS MATERIAL IS EXEMPT FROM THE TOXIC SUBSTANCES CONTROL ACT (15 USC 2601-2629)

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazardous Categorization
Acute Health Hazard: Yes
Chronic Health Hazard: No
Fire Hazard: No
Sudden Release of Pressure Hazard: No
Reactive Hazard: No

Reportable and Threshold Planning Quantities
The following components have RQs and/or TPQs under SARA and/or CERCLA

<table>
<thead>
<tr>
<th>Component</th>
<th>CERCLA RQ, lbs</th>
<th>SARA 302 RQ, lbs</th>
<th>SARA 302 TPQ, lbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium hydroxide (CAS #: 1310-73-2)</td>
<td>1000</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

State Right-to-Know
This product contains the following chemicals regulated in the states listed below.

| Component | California Prop. 65 | New Jersey | Massachusetts | Pennsylvania |
|-----------|---------------------|------------|---------------|--------------|--------------|
Sodium hydroxide (CAS #: 1310-73-2) - Listed. Listed. Listed.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

**WHMIS Hazards**

- E  Corrosive material
- D2B  Toxic materials

### 16. OTHER INFORMATION

<table>
<thead>
<tr>
<th>NFPA</th>
<th>Health</th>
<th>Flammability</th>
<th>Instability</th>
<th>Physical Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HMIS</th>
<th>Health</th>
<th>Flammability</th>
<th>Physical Hazards</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Prepared By

Health & Environment Department
Albemarle Corporation

FOR ADDITIONAL NONEMERGENCY PRODUCT INFORMATION, CONTACT:

HEALTH AND ENVIRONMENT DEPARTMENT
ALBEMARLE CORPORATION
451 FLORIDA ST.
BATON ROUGE, LA.  70801
(800) 535-3030

Preparation Date : 14-Aug-2013
Revision Date: 28-Oct-2014

Disclaimer:
The information contained herein is accurate to the best of our knowledge. The Company makes no warranty of any kind, express or implied, concerning the safe use of this material in your process or in combination with other substances.

End of Safety Data Sheet