SAFETY DATA SHEET

Sour Water

Section 1. Identification

Product name: Sour Water
Synonyms: Not available.

Relevant identified uses of the substance or mixture and uses advised against
Product use: Intermediate.

Manufacturer:
HollyFrontier Refining & Marketing LLC
2828 North Harwood
Suite 1300
Dallas, Texas 75201
USA
Customer Service: (888) 286-8836

Emergency telephone number:
CHEMTREC® (800) 424-9300
CCN 201319

Section 2. Hazards identification

OSHA/HCS status:
This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture:
ACUTE TOXICITY (inhalation) - Category 4
SKIN CORROSION - Category 1B
SERIOUS EYE DAMAGE - Category 1
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) - Category 1

GHS label elements
Hazard pictograms:

Signal word: Danger
Hazard statements:
Harmful if inhaled.
Causes severe skin burns and eye damage.
Causes damage to organs.

Precautionary statements
Prevention:
Wear protective gloves. Wear eye or face protection. Wear protective clothing. Use only outdoors or in a well-ventilated area. Do not breathe vapor. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling.

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

Storage:
Not applicable.

Disposal:
Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements:
Do not taste or swallow. Wash thoroughly after handling.

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**Hazards not otherwise classified**

Causes digestive tract burns.

### Section 3. Composition/information on ingredients

**Substance/mixture**

Mixture

**CAS number/other identifiers**

**CAS number**

Not available.

**Product code**

Not available.

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>%</th>
<th>CAS number</th>
</tr>
</thead>
<tbody>
<tr>
<td>water</td>
<td>0 - 100</td>
<td>7732-18-5</td>
</tr>
<tr>
<td>hydrogen sulfide</td>
<td>0 - 10</td>
<td>7783-06-4</td>
</tr>
<tr>
<td>ammonia, anhydrous</td>
<td>0 - 10</td>
<td>7664-41-7</td>
</tr>
<tr>
<td>phenol</td>
<td>0 - 0.05</td>
<td>108-95-2</td>
</tr>
</tbody>
</table>

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

**Occupational exposure limits, if available, are listed in Section 8.**

### Section 4. First aid measures

**Description of necessary first aid measures**

**Eye contact**

Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician. Continue to rinse for at least 15 minutes.

**Inhalation**

Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

**Skin contact**

Get medical attention immediately. Call a poison center or physician. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 15 minutes. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

**Ingestion**

Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

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

**Potential acute health effects**

**Eye contact**

Causes serious eye damage.

**Inhalation**

Harmful if inhaled. May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

**Skin contact**

Causes severe burns.
**Ingestion**
- Corrosive to the digestive tract. Causes burns. May cause burns to mouth, throat and stomach.

**Over-exposure signs/symptoms**
- **Eye contact**: pain; watering; redness
- **Inhalation**: respiratory tract irritation; coughing; nausea or vomiting; headache; heartbeat irregularity (arrhythmia); drowsiness/fatigue; dizziness/vertigo; loss of smell; respiratory paralysis; unconsciousness
- **Skin contact**: pain or irritation; redness; blistering may occur
- **Ingestion**: stomach pains

**Indication of immediate medical attention and special treatment needed, if necessary**
- **Notes to physician**: In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- **Specific treatments**: No specific treatment.
- **Protection of medical responders**: No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

### Section 5. Fire-fighting measures

**Extinguishing media**
- **Suitable extinguishing media**: Use an extinguishing agent suitable for the surrounding fire.
- **Unsuitable extinguishing media**: Do not use water jet.

**Specific hazards arising from the chemical**
- **Hazardous thermal decomposition products**: Decomposition products may include the following materials:
  - nitrogen oxides
  - sulfur oxides

**Special protective actions for fire-fighters**
- Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

**Special protective equipment for fire-fighters**
- Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

### Section 6. Accidental release measures

**Personal precautions, protective equipment and emergency procedures**
- **For non-emergency personnel**: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

- **For emergency responders**: If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

**Environmental precautions**
- Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

**Methods and materials for containment and cleaning up**

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Date of previous issue: No previous validation.
Version: 1.
Sour Water

HollyFrontier Refining & Marketing LLC

Small spill:
Stop leak if without risk. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill:
Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, waterways, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures:
Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene:
Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities:
Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>Exposure limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>hydrogen sulfide</td>
<td>OSHA PEL 1989 (United States, 3/1989).&lt;br&gt;TWA: 10 ppm 8 hours.&lt;br&gt;TWA: 14 mg/m³ 8 hours.&lt;br&gt;STEL: 15 ppm 15 minutes.&lt;br&gt;STEL: 21 mg/m³ 15 minutes.&lt;br&gt;OSHA PEL Z2 (United States, 2/2013).&lt;br&gt;CEIL: 20 ppm AMP: 50 ppm 10 minutes.&lt;br&gt;OSHA PEL 1989 (United States, 3/1989).&lt;br&gt;STEL: 35 mg/m³ 15 minutes.&lt;br&gt;ACGIH TLV (United States, 4/2014).&lt;br&gt;TWA: 1 ppm 8 hours.&lt;br&gt;STEL: 5 ppm 15 minutes.&lt;br&gt;NIOSH REL (United States, 10/2013).&lt;br&gt;CEIL: 10 ppm 10 minutes.&lt;br&gt;CEIL: 15 mg/m³ 10 minutes.</td>
</tr>
<tr>
<td>ammonia, anhydrous</td>
<td>OSHA PEL 1989 (United States, 3/1989).&lt;br&gt;STEL: 35 ppm 15 minutes.&lt;br&gt;STEL: 27 mg/m³ 15 minutes.&lt;br&gt;OSHA PEL (United States, 2/2013).&lt;br&gt;TWA: 50 ppm 8 hours.&lt;br&gt;TWA: 35 mg/m³ 8 hours.&lt;br&gt;OSHA PEL 1989 (United States, 3/1989).&lt;br&gt;STEL: 15.6 ppm 15 minutes.&lt;br&gt;ACGIH TLV (United States, 4/2014).&lt;br&gt;TWA: 25 ppm 8 hours.&lt;br&gt;TWA: 17 mg/m³ 8 hours.&lt;br&gt;STEL: 35 ppm 15 minutes.&lt;br&gt;STEL: 24 mg/m³ 15 minutes.&lt;br&gt;ACGIH TLV (United States, 4/2014).&lt;br&gt;TWA: 5 ppm 8 hours.&lt;br&gt;TWA: 21 mg/m³ 8 hours.&lt;br&gt;NIOSH REL (United States, 10/2013).&lt;br&gt;CEIL: 10 ppm 10 hours.&lt;br&gt;CEIL: 18 mg/m³ 10 hours.&lt;br&gt;STEL: 35 ppm 15 minutes.&lt;br&gt;STEL: 27 mg/m³ 15 minutes.&lt;br&gt;STEL: 15 ppm 15 minutes.&lt;br&gt;NIOSH REL (United States, 10/2013).&lt;br&gt;Absorbed through skin.&lt;br&gt;TWA: 5 ppm 10 hours.&lt;br&gt;TWA: 19 mg/m³ 10 hours.&lt;br&gt;OSHA PEL (United States, 2/2013).&lt;br&gt;Absorbed through skin.&lt;br&gt;TWA: 5 ppm 8 hours.&lt;br&gt;TWA: 19 mg/m³ 8 hours.&lt;br&gt;NIOSH REL (United States, 10/2013).&lt;br&gt;Absorbed through skin.&lt;br&gt;TWA: 60 mg/m³ 15 minutes.</td>
</tr>
<tr>
<td>phenol</td>
<td>OSHA PEL 1989 (United States, 3/1989).&lt;br&gt;STEL: 19 mg/m³ 8 hours.&lt;br&gt;OSHA PEL (United States, 2/2013).&lt;br&gt;STEL: 19 mg/m³ 8 hours.&lt;br&gt;TWA: 19 mg/m³ 8 hours.</td>
</tr>
</tbody>
</table>
**Appropriate engineering controls**: Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

**Environmental exposure controls**: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

**Individual protection measures**

**Hygiene measures**: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

**Eye/face protection**: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to protect against chemical splash or if inhalation hazards exist. A full-face respirator may be required instead.

**Skin protection**

**Hand protection**: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

**Body protection**: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

**Other skin protection**: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

**Respiratory protection**: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

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**Section 9. Physical and chemical properties**

**Appearance**

<table>
<thead>
<tr>
<th>Physical state</th>
<th>Liquid.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Clear./Gray.</td>
</tr>
<tr>
<td>Odor</td>
<td>Rotten eggs.</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>Not available.</td>
</tr>
<tr>
<td>pH</td>
<td>6 to 8</td>
</tr>
<tr>
<td>Melting point</td>
<td>Not available.</td>
</tr>
<tr>
<td>Boiling point</td>
<td>Not available.</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not available.</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not available.</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Lower and upper explosive (flammable) limits</td>
<td>Not available.</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>Not available.</td>
</tr>
<tr>
<td>Vapor density</td>
<td>Not available.</td>
</tr>
<tr>
<td>Specific gravity</td>
<td>1</td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble in the following materials: cold water and hot water.</td>
</tr>
</tbody>
</table>
Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

Molecular weight : Not applicable.

**Section 10. Stability and reactivity**

**Reactivity** : No specific test data related to reactivity available for this product or its ingredients.

**Chemical stability** : The product is stable.

**Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.

**Conditions to avoid** : No specific data.

**Incompatible materials** : No specific data.

**Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

**Section 11. Toxicological information**

**Information on toxicological effects**

**Acute toxicity**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Dose</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>hydrogen sulfide</td>
<td>LC50</td>
<td>Rat</td>
<td>444 ppm</td>
<td>4 hours</td>
</tr>
<tr>
<td>ammonia, anhydrous</td>
<td>LC50</td>
<td>Rat</td>
<td>9500 ppm</td>
<td>1 hours</td>
</tr>
<tr>
<td>phenol</td>
<td>LC50</td>
<td>Rat</td>
<td>2000 ppm</td>
<td>4 hours</td>
</tr>
<tr>
<td></td>
<td>LC50</td>
<td>Rat</td>
<td>316 mg/m³</td>
<td>4 hours</td>
</tr>
<tr>
<td></td>
<td>LD50</td>
<td>Rabbit</td>
<td>630 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>LD50</td>
<td>Rat</td>
<td>669 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>LD50</td>
<td>Rat</td>
<td>317 mg/kg</td>
<td>-</td>
</tr>
</tbody>
</table>

**Irritation/Corrosion**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Score</th>
<th>Exposure</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>phenol</td>
<td>Eyes - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>0.5 minutes 5 milligrams</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Eyes - Severe irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>5 milligrams 100 milligrams</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Skin - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>535 milligrams 535 milligrams</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Skin - Severe irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Conclusion/Summary**

**Skin** : Causes Severe Skin Burns.

**Eyes** : Causes serious eye damage.

**Carcinogenicity**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>OSHA</th>
<th>IARC</th>
<th>NTP</th>
</tr>
</thead>
<tbody>
<tr>
<td>phenol</td>
<td>-</td>
<td>3</td>
<td>-</td>
</tr>
</tbody>
</table>

**Specific target organ toxicity (single exposure)**
### Information on the likely routes of exposure

Routes of entry anticipated: Oral, Dermal, Inhalation.

### Delayed and immediate effects and also chronic effects from short and long term exposure

#### Short term exposure

- **Potential immediate effects**: Not available.
- **Potential delayed effects**: Not available.

#### Long term exposure

- **Potential immediate effects**: Not available.
- **Potential delayed effects**: Not available.

#### Potential chronic health effects

- **General**: No known significant effects or critical hazards.
- **Carcinogenicity**: No known significant effects or critical hazards.
- **Mutagenicity**: No known significant effects or critical hazards.
- **Teratogenicity**: No known significant effects or critical hazards.
- **Developmental effects**: No known significant effects or critical hazards.
- **Fertility effects**: No known significant effects or critical hazards.

### Numerical measures of toxicity

#### Acute toxicity estimates

<table>
<thead>
<tr>
<th>Route</th>
<th>ATE value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation (gases)</td>
<td>7266.8 ppm</td>
</tr>
</tbody>
</table>

### Date of issue/Date of revision

: 1/20/2015.

### Date of previous issue

: No previous validation.

### Version

: 1
# Section 12. Ecological information

## Toxicity

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>hydrogen sulfide</td>
<td>Acute EC50 62 µg/l Fresh water</td>
<td>Crustaceans - Gammarus pseudolimnaeus</td>
<td>2 days</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 2 µg/l Fresh water</td>
<td>Fish - Coregonus clupeaformis - Yolk-sac fry</td>
<td>96 hours</td>
</tr>
<tr>
<td>ammonia, anhydrous</td>
<td>Acute EC50 29.2 µg/l Marine water</td>
<td>Algae - Ulva fasciata - Zoa</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 2080 µg/l Fresh water</td>
<td>Crustaceans - Gammarus pulex</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 0.53 ppm Fresh water</td>
<td>Daphnia - Daphnia magna</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 300 µg/l Fresh water</td>
<td>Fish - Hypophthalmichthys nobilis</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 1 mg/l Fresh water</td>
<td>Algae - Skeletonema costatum</td>
<td>3 days</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 0.204 mg/l Marine water</td>
<td>Fish - Dicentrarchus labrax</td>
<td>62 days</td>
</tr>
<tr>
<td>phenol</td>
<td>Acute EC50 61.1 µg/l Fresh water</td>
<td>Algae - Pseudokirchneriella subcapitata</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Acute EC50 36 mg/l Marine water</td>
<td>Algae - Hormosira banksii - Gamete</td>
<td>72 hours</td>
</tr>
<tr>
<td></td>
<td>Acute EC50 12000 µg/l Fresh water</td>
<td>Aquatic plants - Lemna minor</td>
<td>4 days</td>
</tr>
<tr>
<td></td>
<td>Acute EC50 4200 µg/l Fresh water</td>
<td>Daphnia - Daphnia magna</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 800 µg/l Marine water</td>
<td>Crustaceans - Archaeomysis kokuboi - Juvenile (Fledgling, Hatchling, Weanling)</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 1555 µg/l Fresh water</td>
<td>Fish - Cirrhus mrigala - Larvae</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Chronic EC10 969 µg/l Fresh water</td>
<td>Algae - Pseudokirchneriella subcapitata - Exponential growth phase</td>
<td>72 hours</td>
</tr>
<tr>
<td></td>
<td>Chronic IC10 2.38 mg/l Fresh water</td>
<td>Daphnia - Daphnia magna - Neonate</td>
<td>21 days</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 118 µg/l Fresh water</td>
<td>Fish - Oncorhynchus mykiss</td>
<td>90 days</td>
</tr>
</tbody>
</table>

## Persistence and degradability

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Test</th>
<th>Result</th>
<th>Dose</th>
<th>Inoculum</th>
</tr>
</thead>
<tbody>
<tr>
<td>phenol</td>
<td>301C Ready Biodegradability - Modified MITI Test (I)</td>
<td>85 % - 14 days</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

## Bioaccumulative potential

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>LogP_{ow}</th>
<th>BCF</th>
<th>Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>water</td>
<td>-1.38</td>
<td>-</td>
<td>low</td>
</tr>
<tr>
<td>ammonia, anhydrous</td>
<td>1.3</td>
<td>-</td>
<td>low</td>
</tr>
<tr>
<td>phenol</td>
<td>1.47</td>
<td>647</td>
<td>high</td>
</tr>
</tbody>
</table>

## Mobility in soil

**Soil/water partition coefficient (Koc)**: Not available.

## Other adverse effects

No known significant effects or critical hazards.
**Section 13. Disposal considerations**

**Disposal methods**

The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

**United States - RCRA Toxic hazardous waste "U" List**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS #</th>
<th>Status</th>
<th>Reference number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen sulfide; Hydrogen sulfide H2S</td>
<td>7783-06-4</td>
<td>Listed</td>
<td>U135</td>
</tr>
</tbody>
</table>

**Section 14. Transport information**

<table>
<thead>
<tr>
<th>UN number</th>
<th>DOT Classification</th>
<th>TDG Classification</th>
<th>Mexico Classification</th>
<th>ADR/RID</th>
<th>IMDG</th>
<th>IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN3082</td>
<td>Not regulated.</td>
<td>UN3082</td>
<td>UN3082</td>
<td>UN3082</td>
<td>UN3082</td>
<td>UN3082</td>
</tr>
</tbody>
</table>

**UN proper shipping name**

Environmentally hazardous substance, liquid, n.o.s. (ammonia, anhydrous, hydrogen sulfide) RQ (ammonia, anhydrous, hydrogen sulfide) - SUBSTANCIA LIQUIDA POTENCIALMENTE PELIGROSAS PARA EL MEDIO AMBIENTE, N. E.P. (ammonia, anhydrous, hydrogen sulfide) ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (ammonia, anhydrous, hydrogen sulfide) ENVIRONMENTALLY hazardous substance, liquid, n.o.s. (ammonia, anhydrous, hydrogen sulfide)

**Transport hazard class(es)**

9 - 9 - 9 - 9

**Packing group**

III - III - III - III

**Environmental hazards**

Yes. - Yes. - Yes. - Yes.

**Additional information**

Reportable quantity

2000 lbs / 908 kg [239.87 gal / 908 L]

The classification of the product is due solely to - The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg. The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg. The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg. The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg.

**Date of issue/Date of revision**

1/20/2015

**Date of previous issue**

No previous validation.

**Version**

1
the presence of one or more US DOT-listed 'Hazardous substances' that are subject to reportable quantity requirements and only applies to shipments of packages greater than, or equal to, the product reportable quantity. Package sizes less than the product reportable quantity are not regulated as hazardous materials.

**Limited quantity**
Yes.

**Special provisions**
8, 146, 173, 335, IB3, T4, TP1, TP29

<table>
<thead>
<tr>
<th>Special provisions</th>
<th>Hazard identification number</th>
<th>Limited quantity</th>
<th>IMDG Code Segregation group</th>
</tr>
</thead>
<tbody>
<tr>
<td>274, 331, 335</td>
<td>90</td>
<td>5 L</td>
<td>18 - Alkalis</td>
</tr>
</tbody>
</table>

**Tunnel code**
(E)

<table>
<thead>
<tr>
<th>Special provisions</th>
<th>Special provisions</th>
<th>IMDG Code Segregation group</th>
</tr>
</thead>
<tbody>
<tr>
<td>274, 335, 601</td>
<td>274, 335</td>
<td>18 - Alkalis</td>
</tr>
</tbody>
</table>

**Passenger and Cargo Aircraft**

- **Quantity limitation:** 450 L
- **Packaging instructions:** 964
- **Limited Quantities - Passenger Aircraft**
  - **Quantity limitation:** 30 kg
  - **Packaging instructions:** Y964
  - **Special provisions**
    - A97, A158

**Limited quantities - Passenger Aircraft**

- **Quantity limitation:** 50 kg
- **Packaging instructions:** 274, 331, 335

**Transport within user's premises**:
always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

**Section 15. Regulatory information**

**U.S. Federal regulations**

- **United States inventory (TSCA 8b):** All components are listed or exempted.
- **Clean Water Act (CWA) 307:** phenol
- **Clean Water Act (CWA) 311:** ammonia, anhydrous; hydrogen sulfide; phenol
- **Clean Air Act (CAA) 112 regulated toxic substances:** ammonia, anhydrous; hydrogen sulfide

**Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs)**
Listed

**SARA 302/304**

- **Composition/information on ingredients**

**Date of issue/Date of revision**
1/20/2015.

**Date of previous issue**
No previous validation.

**Version**
1
The following components are listed: AMMONIA; HYDROGEN SULFIDE

None of the components are listed.

Massachusetts:
SARA 313/312
Classification: Immediate (acute) health hazard

Composition/information on ingredients

<table>
<thead>
<tr>
<th>Name</th>
<th>%</th>
<th>EHS</th>
<th>SARA 302 TPQ (lbs)</th>
<th>SARA 304 RQ (gallons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ammonia, anhydrous</td>
<td></td>
<td>Yes.</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>hydrogen sulfide</td>
<td></td>
<td>Yes.</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>phenol</td>
<td>0 - 0.05</td>
<td>Yes.</td>
<td>500 / 10000</td>
<td></td>
</tr>
</tbody>
</table>

SARA 304 RQ: 2000 lbs / 908 kg [239.9 gal / 908 L]

SARA 311/312

<table>
<thead>
<tr>
<th>Name</th>
<th>%</th>
<th>Fire hazard</th>
<th>Sudden release of pressure</th>
<th>Reactive</th>
<th>Immediate (acute) health hazard</th>
<th>Delayed (chronic) health hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>ammonia, anhydrous</td>
<td></td>
<td>Yes.</td>
<td>Yes.</td>
<td>No.</td>
<td>Yes.</td>
<td>No.</td>
</tr>
<tr>
<td>phenol</td>
<td>0 - 0.05</td>
<td>Yes.</td>
<td>No.</td>
<td>No.</td>
<td>No.</td>
<td>Yes.</td>
</tr>
</tbody>
</table>

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts: The following components are listed: AMMONIA; HYDROGEN SULFIDE

New York: The following components are listed: Ammonia; Hydrogen sulfide; Hydrosulfuric acid

New Jersey: The following components are listed: AMMONIA; HYDROGEN SULFIDE

Pennsylvania: The following components are listed: AMMONIA; HYDROGEN SULFIDE (H2S)

California Prop. 65
None of the components are listed.

Canada inventory:
All components are listed or exempted.

International regulations

International lists:
Australia inventory (AICS): All components are listed or exempted.
China inventory (IECSC): All components are listed or exempted.
Japan inventory: All components are listed or exempted.
Korea inventory: All components are listed or exempted.
Malaysia Inventory (EHS Register): Not determined.
New Zealand Inventory of Chemicals (NZIoC): All components are listed or exempted.
Philippines inventory (PICCS): All components are listed or exempted.
Taiwan inventory (CSNN): All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)

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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Date of issue/Date of revision : 1/20/2015.
Date of previous issue : No previous validation.
Version : 1

Key to abbreviations : ATE = Acute Toxicity Estimate
                      BCF = Bioconcentration Factor
                      GHS = Globally Harmonized System of Classification and Labelling of Chemicals
                      IATA = International Air Transport Association
                      IMDG = International Maritime Dangerous Goods
                      LogPow = logarithm of the octanol/water partition coefficient
                      UN = United Nations

⚠ Indicates information that has changed from previously issued version.

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