1 Identification

· Product identifier

· Trade name: Pyridine-Barbituric Acid
  APHA For Cyanide Analysis

· Article number: ACB127

· Details of the supplier of the safety data sheet

· Manufacturer/Supplier:
  Aqua Solutions, Inc.
  6913 Highway 225
  DEER PARK, TX 77536
  USA
  800-256-2586

· Information department:
  Technical Coordinator
  Sherman Nelson sherman@aquasolutions.org

· Emergency telephone number:
  Chemtrec: 800-424-9300
  Canutec: 613-996-6666

2 Hazard(s) identification

· Classification of the substance or mixture

[Exclamation mark] GHS02 Flame
Flam. Liq. 2  H225  Highly flammable liquid and vapor.

[Exclamation mark] GHS05 Corrosion
Skin Corr. 1A  H314  Causes severe skin burns and eye damage.
Eye Dam. 1  H318  Causes serious eye damage.

· Label elements

· GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).

· Hazard pictograms

[Exclamation mark] GHS02
[Exclamation mark] GHS05

· Signal word Danger

· Hazard-determining components of labeling:
  Hydrochloric Acid

· Hazard statements
  Highly flammable liquid and vapor.
  Causes severe skin burns and eye damage.

· Precautionary statements
  Keep away from heat/sparks/open flames/hot surfaces. No smoking.
  Keep container tightly closed.
  Ground/bond container and receiving equipment.

(Contd. on page 2)
Trade name: Pyridine-Barbituric Acid
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Use explosion-proof electrical/ventilating/lighting/equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Do not breathe dusts or mists.
Wash thoroughly after handling.
Wear protective gloves/protective clothing/eye protection/face protection.
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 person to fresh air and keep comfortable for breathing.
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/doctor.
Specific treatment (see on this label).
Wash contaminated clothing before reuse.
In case of fire: Use for extinction: CO2, powder or water spray.
Store in a well-ventilated place. Keep cool.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.

Classification system:

NFPA ratings (scale 0 - 4)

Health = 3
Fire = 3
Reactivity = 0

HMIS-ratings (scale 0 - 4)

HEALTH 3
Health = 3

FIRE 2
Fire = 2

REACTIVITY 0
Reactivity = 0

Other hazards

Results of PBT and vPvB assessment

PBT: Not applicable.
vPvB: Not applicable.

3 Composition/information on ingredients

Chemical characterization: Mixtures

Description: Mixture of the substances listed below with nonhazardous additions.

Dangerous components:

<table>
<thead>
<tr>
<th>CAS</th>
<th>Chemical Name</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>110-86-1</td>
<td>Pyridine</td>
<td>29.352%</td>
</tr>
<tr>
<td>7647-01-0</td>
<td>Hydrochloric Acid</td>
<td>6.876%</td>
</tr>
</tbody>
</table>

Table of Nonhazardous Ingredients

<table>
<thead>
<tr>
<th>CAS</th>
<th>Chemical Name</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>67-52-7</td>
<td>Barbituric Acid, 99%</td>
<td>5.979%</td>
</tr>
<tr>
<td>7732-18-5</td>
<td>Water</td>
<td>57.794%</td>
</tr>
</tbody>
</table>

4 First-aid measures

Description of first aid measures

General information: Immediately remove any clothing soiled by the product.
1 After inhalation: In case of unconsciousness place patient stably in side position for transportation.
2 After skin contact: Immediately wash with water and soap and rinse thoroughly.
3 After eye contact: Rinse opened eye for several minutes under running water. Then consult a doctor.
4 After swallowing: Drink copious amounts of water and provide fresh air. Immediately call a doctor.
5 Information for doctor:
6 Most important symptoms and effects, both acute and delayed No further relevant information available.
7 Indication of any immediate medical attention and special treatment needed
8 No further relevant information available.

5 Fire-fighting measures

- Extinguishing media
  - Suitable extinguishing agents:
    CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- Special hazards arising from the substance or mixture No further relevant information available.
- Advice for firefighters
  - Protective equipment: No special measures required.

6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures
  Wear protective equipment. Keep unprotected persons away.
- Environmental precautions:
  Dilute with plenty of water.
  Do not allow to enter sewers/surface or ground water.
- Methods and material for containment and cleaning up:
  Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
  Use neutralizing agent.
  Dispose contaminated material as waste according to item 13.
  Ensure adequate ventilation.
- Reference to other sections
  See Section 7 for information on safe handling.
  See Section 8 for information on personal protection equipment.
  See Section 13 for disposal information.
- Protective Action Criteria for Chemicals

- PAC-1:
  CAS: 110-86-1 Pyridine 3 ppm
  CAS: 7647-01-0 Hydrochloric Acid 1.8 ppm

- PAC-2:
  CAS: 110-86-1 Pyridine 19 ppm
  CAS: 7647-01-0 Hydrochloric Acid 22 ppm

- PAC-3:
  CAS: 110-86-1 Pyridine 3600* ppm
  CAS: 7647-01-0 Hydrochloric Acid 100 ppm

(Contd. on page 4)
7 Handling and storage

· Handling:
  · Precautions for safe handling No special precautions are necessary if used correctly.
  · Information about protection against explosions and fires:
    Keep ignition sources away - Do not smoke.
    Protect against electrostatic charges.

· Conditions for safe storage, including any incompatibilities
  · Storage:
    · Requirements to be met by storerooms and receptacles: Store in a cool location.
    · Information about storage in one common storage facility: Not required.

· Further information about storage conditions:
  Keep receptacle tightly sealed.
  Store in cool, dry conditions in well sealed receptacles.

· Specific end use(s) No further relevant information available.

8 Exposure controls/personal protection

· Additional information about design of technical systems: No further data; see item 7.

· Control parameters

<table>
<thead>
<tr>
<th>Component</th>
<th>Limit Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS: 110-86-1 Pyridine</td>
<td></td>
</tr>
<tr>
<td>PEL</td>
<td>Long-term value: 15 mg/m³, 5 ppm</td>
</tr>
<tr>
<td>REL</td>
<td>Long-term value: 15 mg/m³, 5 ppm</td>
</tr>
<tr>
<td>TLV</td>
<td>Long-term value: 3.1 mg/m³, 1 ppm</td>
</tr>
<tr>
<td>CAS: 7647-01-0 Hydrochloric Acid</td>
<td>Ceiling limit values:</td>
</tr>
<tr>
<td>NIOSH RECOMMENDED EXP LIMI</td>
<td>Ceiling limit: 7.0 mg/m³</td>
</tr>
<tr>
<td>PEL</td>
<td>Ceiling limit value: 7 mg/m³, 5 ppm</td>
</tr>
<tr>
<td>REL</td>
<td>Ceiling limit value: 7 mg/m³, 5 ppm</td>
</tr>
<tr>
<td>TLV</td>
<td>Ceiling limit value: 2.98 mg/m³, 2 ppm</td>
</tr>
</tbody>
</table>

· Additional information: The lists that were valid during the creation were used as basis.

· Exposure controls

· Personal protective equipment:

· General protective and hygienic measures:
  Keep away from foodstuffs, beverages and feed.
  Immediately remove all soiled and contaminated clothing.
  Wash hands before breaks and at the end of work.
  Avoid contact with the eyes.
  Avoid contact with the eyes and skin.

· Breathing equipment: Not required.

· Protection of hands:

  Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
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Due to missing tests no recommendation to the glove material can be given for the product/the preparation/the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

- Material of gloves
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

- Penetration time of glove material
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

- Eye protection:
Tightly sealed goggles

- Body protection: Protective work clothing

9 Physical and chemical properties

- Information on basic physical and chemical properties
- General Information
  - Form: Liquid
  - Color: Beige to Tan to Brown
  - Odor: Acrid
  - Odor threshold: Not determined.

- pH-value at 20 °C (68 °F):
<2

- Change in condition
  - Melting point/Melting range: Undetermined.
  - Boiling point/Boiling range: 100 °C (212 °F)

- Flash point:
17 °C (63 °F)

- Flammability (solid, gaseous):
Not applicable.

- Ignition temperature:
550 °C (1022 °F)

- Decomposition temperature:
Not determined.

- Auto igniting:
Product is not selfigniting.

- Danger of explosion:
Product is not explosive. However, formation of explosive air/vapor mixtures are possible.

- Explosion limits:
  - Lower: 1.7 Vol %
  - Upper: 10.6 Vol %

- Vapor pressure at 20 °C (68 °F):
23 hPa (17 mm Hg)

- Density at 20 °C (68 °F):
1.00357 g/cm³ (8.375 lbs/gal)

- Relative density:
Not determined.

- Vapor density:
Not determined.

- Evaporation rate:
Not determined.
Trade name: Pyridine-Barbituric Acid
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- Solubility in / Miscibility with
  Water: Fully miscible.

- Partition coefficient (n-octanol/water): Not determined.

- Viscosity:
  Dynamic: Not determined.
  Kinematic: Not determined.

- Solvent content:
  Organic solvents: 0.0 %
  Water: 57.8 %
  VOC content: 0.0 g/l / 0.00 lb/gl

- Solids content: 6.0 %

- Other information
  No further relevant information available.

10 Stability and reactivity

- Reactivity
  No further relevant information available.

- Chemical stability
  No decomposition if used according to specifications.

- Thermal decomposition / conditions to be avoided
  No decomposition if used according to specifications.

- Possibility of hazardous reactions
  No dangerous reactions known.

- Conditions to avoid
  No further relevant information available.

- Incompatible materials
  No further relevant information available.

- Hazardous decomposition products
  No dangerous decomposition products known.

11 Toxicological information

- Information on toxicological effects
  Acute toxicity:

- LD/LC50 values that are relevant for classification:

  ATE (Acute Toxicity Estimate)

<table>
<thead>
<tr>
<th>Route</th>
<th>LD50/ LC50</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>LD50</td>
<td>3036 mg/kg (rat)</td>
</tr>
<tr>
<td>Dermal</td>
<td>LD50</td>
<td>3819 mg/kg (rabbit)</td>
</tr>
<tr>
<td>Inhalative</td>
<td>LC50/4 h</td>
<td>37.5 mg/l</td>
</tr>
</tbody>
</table>

  CAS: 110-86-1 Pyridine

<table>
<thead>
<tr>
<th>Route</th>
<th>LD50</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>LD50</td>
<td>891 mg/kg (rat)</td>
</tr>
<tr>
<td>Dermal</td>
<td>LD50</td>
<td>1121 mg/kg (rabbit)</td>
</tr>
<tr>
<td>Inhalative</td>
<td>LC50/4 h</td>
<td>11 mg/l (ATE)</td>
</tr>
</tbody>
</table>

  CAS: 7647-01-0 Hydrochloric Acid

<table>
<thead>
<tr>
<th>Effect</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irritation of skin</td>
<td>Skin Corrosion/Irritation causes burns (rabbit)</td>
</tr>
<tr>
<td>Irritation of eyes</td>
<td>Eye damage/eye irritation corrosiv to eye (rabbit)</td>
</tr>
<tr>
<td>Germ cell mutagenicity</td>
<td>No Data Availab (Human)</td>
</tr>
</tbody>
</table>

- Primary irritant effect:
  - on the skin: Strong caustic effect on skin and mucous membranes.
  - on the eye: Strong caustic effect.
Safety Data Sheet  
acc. to OSHA HCS

Trade name: Pyridine-Barbituric Acid  
APHA For Cyanide Analysis

(Contd. of page 6)

Strong irritant with the danger of severe eye injury.
· Sensitization: No sensitizing effects known.
· Additional toxicological information:
The product shows the following dangers according to internally approved calculation methods for preparations:
Corrosive
Irritant
Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus
and stomach.

· Carcinogenic categories
  · IARC (International Agency for Research on Cancer)
    CAS: 110-86-1 Pyridine 3
  · NTP (National Toxicology Program)
    None of the ingredients is listed.
  · OSHA-Ca (Occupational Safety & Health Administration)
    None of the ingredients is listed.

12 Ecological information

· Toxicity
  · Aquatic toxicity: No further relevant information available.
· Persistence and degradability No further relevant information available.
· Behavior in environmental systems:
  · Bioaccumulative potential No further relevant information available.
  · Mobility in soil No further relevant information available.
· Additional ecological information:
  · General notes:
    Water hazard class 2 (Self-assessment): hazardous for water
    Do not allow product to reach ground water, water course or sewage system.
    Must not reach bodies of water or drainage ditch undiluted or unneutralized.
    Danger to drinking water if even small quantities leak into the ground.
· Results of PBT and vPvB assessment
  · PBT: Not applicable.
  · vPvB: Not applicable.
· Other adverse effects No further relevant information available.

13 Disposal considerations

· Waste treatment methods
  · Recommendation:
    Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
· Uncleaned packagings:
  · Recommendation: Disposal must be made according to official regulations.
  · Recommended cleansing agent: Water, if necessary with cleansing agents.

(Contd. on page 8)
## 14 Transport information

| UN-Number | UN2924 |
| UN proper shipping name | Flammable liquids, corrosive, n.o.s. (Pyridine, Hydrochloric acid) |
| DOT, IMDG, IATA | FLAMMABLE LIQUID, CORROSIVE, N.O.S. (PYRIDINE, HYDROCHLORIC ACID) |

### DOT
- Class: 3 Flammable liquids  
- Label: 3, 8

### IMDG
- Class: 3 Flammable liquids  
- Label: 3/8

### IATA
- Class: 3 Flammable liquids  
- Label: 3 (8)

### Packing group
- DOT, IMDG, IATA: II

### Environmental hazards:
- Marine pollutant: No

### Special precautions for user
- Warning: Flammable liquids

### Danger code (Kemler):
- 338

### EMS Number:
- F-E-S-C

### Segregation groups
- Acids

### Stowage Category
- B

### Stowage Code
- SW2 Clear of living quarters.

### Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
- Not applicable.
Transport/Additional information:

- DOT
  - Quantity limitations
    On passenger aircraft/rail: 1 L
    On cargo aircraft only: 5 L

IMDG
- Limited quantities (LQ)
  1L
- Excepted quantities (EQ)
  Code: E2
  Maximum net quantity per inner packaging: 30 ml
  Maximum net quantity per outer packaging: 500 ml

UN "Model Regulation":
UN 2924 FLAMMABLE LIQUIDS, CORROSIVE, N.O.S.
(PYRIDINE, HYDROCHLORIC ACID), 3 (8), II

15 Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture

- Section 355 (extremely hazardous substances):
  None of the ingredients is listed.

- Section 313 (Specific toxic chemical listings):
  CAS: 110-86-1 Pyridine

- TSCA (Toxic Substances Control Act):
  All ingredients are listed.

- Proposition 65
  CAS: 110-86-1 Pyridine

- Chemicals known to cause cancer:
  CAS: 110-86-1 Pyridine

- Chemicals known to cause reproductive toxicity for females:
  None of the ingredients is listed.

- Chemicals known to cause reproductive toxicity for males:
  None of the ingredients is listed.

- Chemicals known to cause developmental toxicity:
  None of the ingredients is listed.

Carcinogenic categories

- EPA (Environmental Protection Agency)
  None of the ingredients is listed.

- TLV (Threshold Limit Value established by ACGIH)
  CAS: 110-86-1 Pyridine A3

- NIOSH-Ca (National Institute for Occupational Safety and Health)
  None of the ingredients is listed.

GHS label elements
The product is classified and labeled according to the Globally Harmonized System (GHS).
Trade name: Pyridine-Barbituric Acid
APHA For Cyanide Analysis

- **Hazard pictograms**

  GHS02  GHS05

- **Signal word** Danger

- **Hazard-determining components of labeling:**
  Hydrochloric Acid

- **Hazard statements**
  Highly flammable liquid and vapor.
  Causes severe skin burns and eye damage.

- **Precautionary statements**
  Keep away from heat/sparks/open flames/hot surfaces. No smoking.
  Keep container tightly closed.
  Ground/bond container and receiving equipment.
  Use explosion-proof electrical/ventilating/lighting/equipment.
  Use only non-sparking tools.
  Take precautionary measures against static discharge.
  Do not breathe dusts or mists.
  Wash thoroughly after handling.
  Wear protective gloves/protective clothing/eye protection/face protection.
  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 person to fresh air and keep comfortable for breathing.
  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/doctor.
  Specific treatment (see on this label).
  Wash contaminated clothing before reuse.
  In case of fire: Use for extinction: CO2, powder or water spray.
  Store in a well-ventilated place. Keep cool.
  Store locked up.
  Dispose of contents/container in accordance with local/regional/national/international regulations.

- **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

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### 16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Department issuing SDS:** Environment protection department.
- **Contact:**
- **Date of preparation / last revision**
  10-03-2017: review SDS for accuracy. STN
  Creation date for SDS 12-09-2014. STN
  10/03/2017 / -
- **Abbreviations and acronyms:**
  ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
  IMDG: International Maritime Code for Dangerous Goods
  DOT: US Department of Transportation
  IATA: International Air Transport Association

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(Contd. on page 11)
Trade name: Pyridine-Barbituric Acid
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ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
VOC: Volatile Organic Compounds (USA, EU)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBTF: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Flam. Liq. 2: Flammable liquids – Category 2
Skin Corr. 1A: Skin corrosion/irritation – Category 1A
Eye Dam. 1: Serious eye damage/eye irritation – Category 1