SAFETY DATA SHEET

1. Identification
Product identifier YSI 7170-7179-2970 Ammonium-Potassium Buffer
Other means of identification
Product code 7170-2970
Recommended use Analysis Standard/Reagent
Recommended restrictions None known.
Manufacturer/Importer/Supplier/Distributor information
Company name YSI, Inc
Address 1700/1725 Brannum Lane
Telephone (937) 767-7241
E-mail MSDSinfo@ysi.com
Emergency phone number CHEMTREC (US/Canada) (800) 424-9300
CHEMTREC (International) 011 703-527-3887

2. Hazard(s) identification
Physical hazards Not classified.
Health hazards Not classified.
OSHA defined hazards Not classified.
Label elements
Hazard symbol None.
Signal word None.
Hazard statement The mixture does not meet the criteria for classification.
Precautionary statement
Prevention Observe good industrial hygiene practices.
Response Wash hands after handling.
Storage Store away from incompatible materials.
Disposal Dispose of waste and residues in accordance with local authority requirements.
Hazard(s) not otherwise classified (HNOC) None known.

3. Composition/information on ingredients
Mixtures
<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium chloride</td>
<td>12125-02-9</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>Benzoic acid</td>
<td>65-85-0</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>Ethylenediamine tetraacetic acid</td>
<td>60-00-4</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>Lithium Acetate Dihydrate</td>
<td>6108-17-4</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>Potassium chloride</td>
<td>7447-40-7</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>&gt; 95</td>
</tr>
</tbody>
</table>

4. First-aid measures
Inhalation Move to fresh air. Call a physician if symptoms develop or persist.
Wash off with soap and water. Get medical attention if irritation develops and persists.

Eye contact
Rinse with water. Get medical attention if irritation develops and persists.

Ingestion
Rinse mouth. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed
Direct contact with eyes may cause temporary irritation.

Indication of immediate medical attention and special treatment needed
Treat symptomatically.

General information
Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media
Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media
Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical
During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters
Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire-fighting equipment/instructions
Move containers from fire area if you can do so without risk.

Specific methods
Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards
No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Keep unnecessary personnel away. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up
This product is miscible in water.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Environmental precautions
Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling
Use care in handling/storage. Handle and open container with care. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities
Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium chloride (CAS 12125-02-9)</td>
<td>STEL</td>
<td>20 mg/m3</td>
<td>Fume.</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>10 mg/m3</td>
<td>Fume.</td>
</tr>
</tbody>
</table>

US. NIOSH: Pocket Guide to Chemical Hazards

<table>
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<td>Fume.</td>
</tr>
</tbody>
</table>
No biological exposure limits noted for the ingredient(s).

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

If contact is likely, safety glasses with side shields are recommended.

For prolonged or repeated skin contact use suitable protective gloves.

In case of insufficient ventilation, wear suitable respiratory equipment. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Wear appropriate thermal protective clothing, when necessary.

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

**Components**

**Type** | **Value** | **Form**
--- | --- | ---
TWA | 10 mg/m³ | Fume.

**Biological limit values**

- **Appropriate engineering controls**

- **Individual protection measures, such as personal protective equipment**
  - **Eye/face protection**
    - If contact is likely, safety glasses with side shields are recommended.

  - **Skin protection**
    - **Hand protection**
      - For prolonged or repeated skin contact use suitable protective gloves.
    - **Other**
      - Wear suitable protective clothing.

  - **Respiratory protection**
    - In case of insufficient ventilation, wear suitable respiratory equipment. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

  - **Thermal hazards**
    - Wear appropriate thermal protective clothing, when necessary.

  - **General hygiene considerations**
    - Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

**9. Physical and chemical properties**

**Appearance**

- **Physical state**
  - Liquid.

- **Form**
  - Liquid.

- **Color**
  - Clear and colorless.

- **Odor**
  - None.

- **Odor threshold**
  - Not available.

- **pH**
  - 5.2 - 5.5

- **Melting point/freezing point**
  - Not available.

- **Initial boiling point and boiling range**
  - 212 °F (100 °C)

- **Flash point**
  - None.

- **Evaporation rate**
  - Not available.

- **Flammability (solid, gas)**
  - Not applicable.

- **Upper/lower flammability or explosive limits**
  - **Flammability limit - lower (%)**
    - Not available.
  - **Flammability limit - upper (%)**
    - Not available.
  - **Explosive limit - lower (%)**
    - Not available.
  - **Explosive limit - upper (%)**
    - Not available.

- **Vapor pressure**
  - Equivalent to water

- **Vapor density**
  - Equal to water vapor.

- **Relative density**
  - 1

- **Solubility(ies)**
  - **Solubility (water)**
    - Infinitely soluble

- **Partition coefficient (n-octanol/water)**
  - Not available.

- **Auto-ignition temperature**
  - Not available.

- **Decomposition temperature**
  - Not available.

- **Viscosity**
  - Not available.
10. Stability and reactivity

Reactivity
The product is stable and non-reactive under normal conditions of use, storage and transport.

Chemical stability
Material is stable under normal conditions.

Possibility of hazardous reactions
No dangerous reaction known under conditions of normal use.

Conditions to avoid
Contact with incompatible materials.

Incompatible materials
None known.

Hazardous decomposition products
No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Ingestion
Expected to be a low ingestion hazard.

Inhalation
No adverse effects due to inhalation are expected.

Skin contact
No adverse effects due to skin contact are expected.

Eye contact
Direct contact with eyes may cause temporary irritation.

Symptoms related to the physical, chemical and toxicological characteristics
Direct contact with eyes may cause temporary irritation.

Information on toxicological effects

Acute toxicity
Not classified.

Components | Species | Test Results
--- | --- | ---
Ammonium chloride (CAS 12125-02-9) | | |
Acute | Rat | 1650 mg/kg
Oral | LD50 | |
| | LD50 | |
Benzoic acid (CAS 65-85-0) | | |
Acute | Rabbit | > 5000 mg/kg
Dermal | LD50 | |
Inhalation | Rat | > 0.026 mg/l, 1 Hours
Oral | LD50 | |
Potassium chloride (CAS 7447-40-7) | | |
Acute | Rat | 2600 mg/kg
Oral | LD50 | |

Skin corrosion/irritation
Prolonged skin contact may cause temporary irritation.

Serious eye damage/eye irritation
Direct contact with eyes may cause temporary irritation.

Respiratory or skin sensitization

Respiratory sensitization
Not available.

Skin sensitization
This product is not expected to cause skin sensitization.

Germ cell mutagenicity
No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity
This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
Not listed.

Reproductive toxicity
This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure
Not classified.
12. Ecological information

Ecotoxicity

The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium chloride (CAS 12125-02-9)</td>
<td>Aquatic Fish LC50</td>
<td>Lake trout, siscowet (Salvelinus namaycush) 0.28 mg/l, 96 hours</td>
</tr>
<tr>
<td>Benzoic acid (CAS 65-85-0)</td>
<td>Aquatic Fish LC50</td>
<td>Western mosquitofish (Gambusia affinis) 180 mg/l, 96 hours</td>
</tr>
<tr>
<td>Ethylenediamine tetraacetic acid (CAS 60-00-4)</td>
<td>Aquatic Crustacea EC50</td>
<td>Water flea (Daphnia magna) 113 mg/l, 48 hours</td>
</tr>
<tr>
<td></td>
<td>Aquatic Fish LC50</td>
<td>Bluegill (Lepomis macrochirus) 34 - 62 mg/l, 96 hours</td>
</tr>
<tr>
<td></td>
<td>Aquatic Crustacea EC50</td>
<td>Water flea (Daphnia magna) 83 mg/l, 48 hours</td>
</tr>
<tr>
<td></td>
<td>Aquatic Fish LC50</td>
<td>Western mosquitofish (Gambusia affinis) 435 mg/l, 96 hours</td>
</tr>
</tbody>
</table>

Persistence and degradability

No data is available on the degradability of this product.

Bioaccumulative potential

No data available.

Partition coefficient n-octanol / water (log Kow)

Benzoic acid (CAS 65-85-0) 1.87

Mobility in soil

No data available.

Other adverse effects

No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions

Collect and reclaim or dispose in sealed containers at licensed waste disposal site.

Local disposal regulations

Dispose in accordance with all applicable regulations.

Hazardous waste code

The waste code should be assigned in discussed between the user, the producer and the waste disposal company.

Waste from residues / unused products

Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging

Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not established.
15. Regulatory information

US federal regulations
This product is not known to be a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)
Ammonium chloride (CAS 12125-02-9) LISTED
Benzoic acid (CAS 65-85-0) LISTED
Ethylenediamine tetraacetic acid (CAS 60-00-4) LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)
Hazard categories
Immediate Hazard - No
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance
Not listed.

SARA 311/312 Hazardous chemical
No

SARA 313 (TRI reporting)
<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS number</th>
<th>% by wt.</th>
</tr>
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<tbody>
<tr>
<td>Ammonium chloride</td>
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Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.

Safe Drinking Water Act (SDWA)
Not regulated.

US state regulations

US. Massachusetts RTK - Substance List
Ammonium chloride (CAS 12125-02-9)
Benzoic acid (CAS 65-85-0)
Ethylenediamine tetraacetic acid (CAS 60-00-4)

US. New Jersey Worker and Community Right-to-Know Act
Ammonium chloride (CAS 12125-02-9)
Benzoic acid (CAS 65-85-0)
Ethylenediamine tetraacetic acid (CAS 60-00-4)

US. Pennsylvania Worker and Community Right-to-Know Law
Ammonium chloride (CAS 12125-02-9)
Benzoic acid (CAS 65-85-0)
Ethylenediamine tetraacetic acid (CAS 60-00-4)

US. Rhode Island RTK
Ammonium chloride (CAS 12125-02-9)
Benzoic acid (CAS 65-85-0)
Ethylenediamine tetraacetic acid (CAS 60-00-4)

US. California Proposition 65
California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance
Not listed.

International Inventories
<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>Yes</td>
</tr>
</tbody>
</table>

YSI 7170-2970 Ammonium-Potassium Buffer
SDS US
921724 Version #: 01 Revision date: - Issue date: 15-July-2014
<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>No</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>No</td>
</tr>
<tr>
<td>Japan</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
<td>Yes</td>
</tr>
<tr>
<td>New Zealand</td>
<td>New Zealand Inventory</td>
<td>Yes</td>
</tr>
<tr>
<td>Philippines</td>
<td>Philippine Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*“Yes” indicates this product complies with the inventory requirements administered by the governing country(s). A “No” indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).*

16. Other information, including date of preparation or last revision

<table>
<thead>
<tr>
<th>Issue date</th>
<th>15-July-2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revision date</td>
<td>-</td>
</tr>
<tr>
<td>Version #</td>
<td>01</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HMIS® ratings</th>
<th>Health: 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammability: 0</td>
<td></td>
</tr>
<tr>
<td>Physical hazard: 0</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NFPA ratings</th>
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</thead>
<tbody>
<tr>
<td>0 0 0</td>
</tr>
</tbody>
</table>

Disclaimer

YSI, Inc cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use.