1. Product and Company Identification

Material name: YSI Glutamine Standards - All Concentrations
Version #: 01
Issue date: 15-January-2014
Revision date: -
Supersedes date: -
CAS #: Mixture
Product code: 2736, 2737, 7136
Manufacturer: YSI, Inc
1700/1725 Brannum Lane
Yellow Springs, Ohio 45387
MSDSinfo@ysi.com
(937) 767-7241
CHEMTREC (US/Canada) (800) 424-9300
CHEMTREC (International) 011 703-527-3887
(Collect calls accepted)

2. Hazards Identification

Potential health effects
- Eyes: Health injuries are not known or expected under normal use.
- Skin: Health injuries are not known or expected under normal use.
- Inhalation: Health injuries are not known or expected under normal use.
- Ingestion: Health injuries are not known or expected under normal use.

3. Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS #</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>BES, free acid</td>
<td>10191-18-1</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>BES, sodium salt</td>
<td>66992-27-6</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>EDTA</td>
<td>25102-12-9</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>L-Glutamine</td>
<td>56-85-9</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>Sodium Benzoate</td>
<td>532-32-1</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

First aid procedures
- Eye contact: Rinse with water. Get medical attention if irritation develops and persists.
- Skin contact: Rinse skin with water/shower. Get medical attention if irritation develops and persists.
- Inhalation: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. Call a physician if symptoms develop or persist.
- Ingestion: Rinse mouth. If ingestion of a large amount does occur, call a poison control center immediately.
- General advice: If you feel unwell, seek medical advice (show the label where possible). Show this safety data sheet to the doctor in attendance.

5. Fire Fighting Measures

Extinguishing media
- Unsuitable extinguishing media: Do not use water jet as an extinguisher, as this will spread the fire.
Protection of firefighters
Specific hazards arising from the chemical
During fire, gases hazardous to health may be formed.
Protective equipment 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.
Explosion data
Sensitivity to static discharge
Not available.
Sensitivity to mechanical impact
Not available.

6. Accidental Release Measures
Personal precautions
Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. For personal protection, see Section 8 of the MSDS.
Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not contaminate water.
Methods for containment
Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible.
Methods for cleaning up
Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. 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.
Never return spills in original containers for re-use. For waste disposal, see section 13 of the MSDS.

7. Handling and Storage
Handling
Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid contact with eyes, skin, and clothing. Provide adequate ventilation. Wear personal protective equipment. Wash thoroughly after handling.
Storage
Store in accordance with local/regional/national/international regulation. Store away from incompatible materials (See Section 10).

8. Exposure Controls / Personal Protection
Occupational exposure limits
No exposure limits noted for ingredient(s).
Engineering controls
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.
Personal protective equipment
Eye / face protection
If contact is likely, safety glasses with side shields are recommended.
Skin protection
Wear suitable protective clothing. For prolonged or repeated skin contact use suitable protective gloves.
Respiratory protection
No personal respiratory protective equipment normally required.

9. Physical & Chemical Properties
Appearance
Not available.
Physical state
Liquid.
Form
Liquid.
Color
Clear and colorless.
Odor
None.
Odor threshold
Not available.
pH
6.5 - 7.5
Vapor pressure Equal to water.
Vapor density Equal to water vapor.
Boiling point 212 °F (100 °C)
Melting point/Freezing point Not available.
Solubility (water) Infinitely soluble.
Specific gravity Not available.
Flash point Not available.
Flammability limits in air, upper, % by volume Not available.
Flammability limits in air, lower, % by volume Not available.
Auto-ignition temperature Not available.

Other data
Explosive properties Not explosive.
Flammability (solid, gas) Not applicable.

10. Chemical Stability & Reactivity Information
Chemical stability Material is stable under normal conditions.
Conditions to avoid None known.
Incompatible materials None known.
Hazardous decomposition products No hazardous decomposition products are known.

11. Toxicological Information
Acute effects Not classified.
Local effects May cause temporary irritation on skin or eye contact.
Chronic effects Not expected to be hazardous by WHMIS criteria.
Carcinogenicity This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA. Based on available data, the classification criteria are not met.
Mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Reproductive effects Based on available data, the classification criteria are not met.
Symptoms and target organs None known.

12. Ecological Information
Ecotoxicological data

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium Benzoate (CAS 532-32-1)</td>
<td>Fathead minnow (Pimephales promelas)</td>
<td>&gt; 100 mg/l, 96 hours</td>
</tr>
<tr>
<td>Aquatic Fish</td>
<td>LC50</td>
<td></td>
</tr>
</tbody>
</table>

Ecotoxicity Not expected to be harmful to aquatic organisms.
Environmental effects An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Persistence and degradability Not available.

13. Disposal Considerations
Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Dispose in accordance with all applicable regulations.
Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport Information

TDG Not regulated as dangerous goods.
IATA
Not regulated as dangerous goods.

IMDG
Not regulated as dangerous goods.

15. Regulatory Information
Canadian regulations This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS status Non-controlled

Inventory status

<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>No</td>
</tr>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>No</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>No</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td>No</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>No</td>
</tr>
<tr>
<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
<td>No</td>
</tr>
<tr>
<td>New Zealand</td>
<td>New Zealand Inventory</td>
<td>No</td>
</tr>
<tr>
<td>Philippines</td>
<td>Philippine Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>No</td>
</tr>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>No</td>
</tr>
</tbody>
</table>

*A “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

HMIS® ratings
Health: 0
Flammability: 0
Physical hazard: 0

NFPA ratings
Health: 0
Flammability: 0
Instability: 0

Disclaimer
The information in the sheet was written based on the best knowledge and experience currently available.