MATERIAL SAFETY DATA SHEET

SECTION I - PRODUCT & COMPANY IDENTIFICATION

Product name: Stabilized Liquid Yeast
Product code: 6412-01
Description: Saccharomyces cerevisiae. Yeast culture in liquid form.
Product use: Fuel ethanol and beverage alcohol production.
Supplier name and address
Lallemand Biofuels & Distilled Spirits
Corporate Support Center, 1815 Satellite Boulevard, Building 200
Duluth, GA 30097
Information telephone: 1 (678) 474-4590
Emergency telephone: 1 (678) 474-4590
Date of MSDS preparation: October 2011, Revised January 2013

SECTION II - HEALTH HAZARD IDENTIFICATION

Signs and symptoms of overexposure to liquid yeast through primary routes of exposure:
- Skin contact: May cause irritation on prolonged contact.
- Eye contact: May cause eye irritation upon direct contact. Seek medical attention.
- Inhalation: In some cases repeated exposure may lead to allergic sensitization based on the exposure level, duration and susceptibility of the individual. Subsequent chronic or acute exposure in sensitized persons may cause a respiratory allergic reaction in minutes or delayed, or a mixture of both. Typical symptoms are respiratory irritation, breathlessness, coughing, chest tightness and difficulty breathing. Respiring yeast may naturally generate carbon dioxide. Over exposure to carbon dioxide may cause asphyxiation.
- Ingestion: Excessive ingestion of liquid yeast could lead to intestinal discomfort (e.g. diarrhea, bloating, cramping, etc.).

SECTION III – DATA ON COMPONENTS

Product composition: Water, yeast and food grade stabilizers.
Hazardous ingredients: None

Information on yeast component, as follows:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>Solids Content</th>
<th>LD50 &amp; LC50</th>
<th>OSHA PEL</th>
<th>ACGIH TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saccharomyces cerevisiae</td>
<td>68876-77-7</td>
<td>23-26%</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
</tr>
</tbody>
</table>

SECTION IV – FIRST AID MEASURES (If any symptoms persist, seek medical attention)

Emergency and First aid procedures
- Eye contact: Flush eyes for at least 15 minutes. If irritation persists seek medical advice
- Skin contact: Wash affected area with soap and water. Remove contaminated clothing and wash before reuse
- Inhalation: Immediately remove person to fresh air. If allergic respiratory reaction occurs seek medical advice
- Ingestion: Wash mouth and throat with water seek medical advice if symptoms persist

Medical conditions likely to be aggravated by exposure: Not determined
Delayed effect that can be expected after exposure: Not determined
SECTION V – FIRE FIGHTING MEASURES

Conditions of flammability: Unknown.
Extinguishing media: Water, foam, carbon dioxide, dry powder.
Flash point: Not applicable
Flammable limits: Not applicable.
Auto-ignition temperature: No data available.
Hazardous combustion products: None.
Explosion – sensitivity to mechanical impact: None.
Explosion – sensitivity to static discharge: None.
Firefighting procedures: Use self-contained breathing apparatus (SCBA) when exposed to confined or enclosed fires.

SECTION VI – ACCIDENTAL RELEASE MEASURES

Contain spill and collect waste in suitable disposal container. Rinse contaminated area with water. Avoid high pressure rinsing. Maintain good housekeeping practices. No special disposal method required, except in accordance with current local, state/provincial and federal regulations.

SECTION VII – HANDLING & STORAGE

Handling: Avoid contact with eyes, skin and clothing. Wear protective equipment described in Section VIII if exposure conditions warrant. Wash thoroughly after handling.
Storage: Store refrigerated in original packaging at 34°F to 40°F (1°C to 4°C). Containers should be kept sealed and dry.

SECTION VIII – EXPOSURE CONTROLS / PERSONAL PROTECTION

Respiratory protection: Not generally required.
Eye contact: Safety glasses/goggles recommended
Clothing: Wear rubber or vinyl gloves.
Specific engineering controls: None.
Environmental exposure control: None.

SECTION IX – PHYSICAL & CHEMICAL PROPERTIES

Physical state: Liquid
Appearance: Light to medium tan liquid
Odor: Characteristic yeasty smell.
Odor threshold: Not applicable.
Specific gravity: 1.06
Vapour pressure: Not applicable.
Vapour density: Not applicable.
Evaporation rate: Not applicable.
Boiling point: Not applicable.
Freezing point: Not applicable.
Melting point: Mixture.
pH: No data available.
Partition coefficient: Not applicable.
Viscosity: Not applicable.
Solubility in water: Partially soluble.
Explosive properties: Not applicable
Oxidising properties: Not applicable
**SECTION X – STABILITY AND REACTIVITY**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stability</td>
<td>Non-reactive (stable under normal conditions of use)</td>
</tr>
<tr>
<td>Incompatibility</td>
<td>No hazardous incompatibilities. Must be kept refrigerated at 34°-40°F.</td>
</tr>
<tr>
<td>Conditions to avoid</td>
<td>Avoid high temperatures.</td>
</tr>
<tr>
<td>Materials to avoid</td>
<td>None</td>
</tr>
<tr>
<td>Hazardous decomposition products</td>
<td>None</td>
</tr>
<tr>
<td>Hazardous polymerization</td>
<td>None</td>
</tr>
</tbody>
</table>

**SECTION XI – TOXICOLOGICAL INFORMATION**

Product recognized as safe.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effects of short-term exposure</td>
<td>None</td>
</tr>
<tr>
<td>Effects of long-term exposure</td>
<td>None</td>
</tr>
<tr>
<td>Irritancy</td>
<td>Unknown</td>
</tr>
<tr>
<td>Sensitization</td>
<td>Possible allergic sensitization (see Section II).</td>
</tr>
<tr>
<td>Allergy</td>
<td>Yeast product</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>Not listed as a carcinogen or potential by the NTP, IARC Monographs or OSHA</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>Unknown</td>
</tr>
<tr>
<td>Teratogenicity</td>
<td>Unknown</td>
</tr>
<tr>
<td>Mutagenicity</td>
<td>Unknown</td>
</tr>
<tr>
<td>Toxicologically synergistic products</td>
<td>Unknown</td>
</tr>
</tbody>
</table>

**SECTION XII – ECOLOGICAL INFORMATION**

Adopt good working practices so that the product is not released into the environment
No ecological information is available.

**SECTION XIII – DISPOSAL CONSIDERATIONS**

Dispose of in accordance with all federal, state, provincial and local regulations.

**SECTION XIV – TRANSPORT INFORMATION**

Not a DOT controlled material

**SECTION XV – REGULATORY INFORMATION**

WHMIS classification for product: Not a WHMIS regulated product. Product is classified as NIH (National Institute of Health, US) Risk Group I and is not considered to fall within the Canadian Controlled Products Regulations criteria for biohazardous infectious materials. This product does not meet the definition of a hazardous material given in the U.S. Occupational Safety and Health Administration’s Hazard Communication Standard. This product does not require a registration or Chemical Safety Report under EU Regulation 1907/2006.

**SECTION XVI – OTHER INFORMATION**

The information herein is based on current available data and is believed to be correct. No warranty, express or implied, is made regarding data accuracy, merchantability or hazards associated with product use. The user is responsible for determining product suitability, conditions of use and all associated hazards. Values listed in this document are not product specifications.