1. IDENTIFICATION

Product Identifier: Hygromycin B, Hygromycin B EvoPure Low Endotoxin, Hygromycin B Evopure

Distributor Name: TOKU-E Company

Distributor Address: 715 W Orchard Dr, Suite 3, Bellingham, WA 98225

Phone Number: (360) 734-1789

Emergency Phone Number (International): +1 (352) 323-3500

Emergency Phone Number (US only): 1 (800) 535-5053

Safety Data Sheet Issued by: TOKU-E USA

CAS-No.: [31282-04-9]

EC/REACH Number: [250-545-5]

Recommended Use: Selective agent in cell culture or microbiology applications to isolate Hygromycin B resistant cells after transfection or transformation

Restrictions on Use: Not for human or animal use

2. HAZARD(S) IDENTIFICATION

GHS Classification: Acute toxicity, Oral (Category 2), H300
Acute toxicity, Inhalation (Category 1), H330
Acute toxicity, Dermal (Category 2), H310
Serious eye damage (Category 1), H318
Respiratory sensitization (Category 1), H334
GHS Label Elements, Including Precautionary statements

Signal word: Danger

Hazard Statements
H300 + H310 + H330: Fatal if swallowed, in contact with skin or if inhaled
H318: Causes serious eye damage
H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Precautionary Statements
P260: Do not breathe dust/fume/gas/mist/vapors/spray
P262: Do not get in eyes, on skin, or on clothing
P264: Wash skin thoroughly after handling
P270: Do not eat, drink or smoke when using this product
P271: Use only outdoors or in a well-ventilated area
P280: Wear protective gloves/eye protection/face protection
P284: Wear respiratory protection
P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
P302 + P350: IF ON SKIN: Gently wash with plenty of soap and water
P304 + P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do, continue rinsing
P310: Immediately call a POISON CENTER or doctor/physician
P320: Specific treatment is urgent
P330: Rinse mouth
P361: Remove/Take off immediately all contaminated clothing
P363: Wash contaminated clothing before reuse
P403 + P233: Store in a well-ventilated place, keep container tightly closed
P405: Store locked up
P501: Dispose of contents/ container to an approved waste disposal plant
3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonym(s)  Hygromycin B

Formula  C_{20}H_{37}N_{3}O_{13}

Molecular Weight  572.52 g/mol

CAS-No.  [31282-04-9]

EC No.  [250-545-5]

Index-No.  Not available

Hazardous components  Hygromycin B
Acute Tox. 2; Acute Tox. 1; Acute Tox. 2; Eye Dam. 1; Resp. Sens. 1; H300 + H310 + H330, H318, H334 90 - 100 %

4. FIRST-AID MEASURES

General Advice  Consult a physician. Show this Safety Data Sheet to the medical provider

If Inhaled  If breathed in, move person to fresh air. If not breathing, give artificial respiration. Consult a doctor

In Case of Skin Contact  Wash thoroughly with plenty of soap and water. Consult a physician

In Case of Eye Contact  Rinse thoroughly with plenty of water for at least 15 minutes

If Swallowed  Never give anything by mouth to an unconscious person. Consult a doctor. Rinse mouth with water.

Most important symptoms and effects, both acute and delayed  Please see Section 2 and/or Section 11

Indication of any immediate medical attention and special treatment needed  No data available
5. **FIRE-FIGHTING MEASURES**

<table>
<thead>
<tr>
<th>Suitable Extinguishing Media</th>
<th>Water spray, alcohol-resistant foam, dry chemical, carbon dioxide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Protective Equipment for Firefighters</td>
<td>Wear self-contained breathing apparatus</td>
</tr>
<tr>
<td>Hazardous Combustion Products</td>
<td>Formed under fire conditions: Carbon and Nitrogen oxides</td>
</tr>
</tbody>
</table>

6. **ACCIDENTAL RELEASE MEASURES**

<table>
<thead>
<tr>
<th>General</th>
<th>Evacuate personnel to safe location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Precautions</td>
<td>Wear respiratory protection. Avoid dust formation and breathing vapors/mist/dust/gas. Ensure adequate ventilation</td>
</tr>
<tr>
<td>Environmental Precautions</td>
<td>Prevent spillage, do not let product enter drains</td>
</tr>
<tr>
<td>Methods of Containment and Cleanup</td>
<td>Place in suitable, closed containers for licensed disposal. Avoid dust formation</td>
</tr>
</tbody>
</table>

7. **HANDLING AND STORAGE**

<table>
<thead>
<tr>
<th>Precautions for Safe Handling</th>
<th>Avoid contact with skin and eyes. Provide exhaust ventilation in areas where dust if formed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Precautions for Safe Storage</td>
<td>Keep container tightly closed and in a dry, well-ventilated place. Recommended storage temperature: 2-8°C</td>
</tr>
<tr>
<td>Incompatibilities</td>
<td>None known</td>
</tr>
</tbody>
</table>

8. **EXPOSURE CONTROLS/ PERSONAL PROTECTION**

Contains no substances with occupational exposure limit values
PPE: Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate, use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

PPE: Hand Protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal techniques to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices, and wash and dry hands.

PPE: Eye Protection

Use a face shield and safety glasses. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).

PPE: Skin and Body Protection

Handle with gloves. Wear protective clothing. Choose body protection according to the amount and concentration of the dangerous substance at the work place. When deemed needed according to the concentration and amount of this product, use a complete body suit.

9. PHYSICAL/CHEMICAL PROPERTIES

| Property                        | Value                        |
|---------------------------------|==============================|
| Appearance                      | Off-white to tan powder      |
| pH                              | No data available            |
| Melting Point/Freezing Point    | 160-180°C                    |
| Boiling Point                   | No data available            |
| Flash Point                     | No data available            |
| Ignition Temperature            | No data available            |
| Autoignition Temperature        | No data available            |
| Lower Explosion Limit           | No data available            |
| Upper Explosion Limit           | No data available            |
| Vapor Pressure                  | No data available            |
Density | No data available
Water Solubility | Freely soluble
Solubility in Other Solvents | No data available
Partition Coefficient: n-octanol/water | No data available
Optical Rotation | No data available
Absorbance (290nm, 5% in H2O) | No data available
Water content (Loss on drying) | No data available

10. STABILITY AND REACTIVITY

Chemical Stability | Stable under recommended storage conditions
Possibility of Hazardous Reactions | No data available
Conditions to Avoid | No data available
Materials to Avoid | Strong oxidizing agents
Hazardous Decomposition Products | Carbon and Nitrogen oxides

11. TOXICOLOGICAL INFORMATION

Oral LD50 | Rat: 13 mg/kg
Inhalation LC50 | Rat: 4 h - 2.22 mg/m3
Dermal LD50 | Guinea pig: 55 mg/kg
Intraperitoneal LD50 | Rat: 63 mg/kg
Guinea pig: 13 mg/kg
Intravenous LD50 | Mouse: 6 mg/kg
Subcutaneous LD50 | No data available
Skin Corrosion/Irritation | No data available
Serious Eye Damage/ Eye Irritation | No data available
Respiratory or Skin Sensitization | No data available
### Germ Cell Mutagenicity
No data available

### Carcinogenicity
- **IARC:** No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by IARC
- **ACGIH:** No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH
- **NTP:** No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP
- **OSHA:** No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA

### Reproductive Toxicity
No data available

### Specific Target Organ Toxicity: Single Exposure (Globally Harmonized System)
No data available

### Specific Target Organ Toxicity: Repeated Exposure (Globally Harmonized System)
No data available

### Aspiration Hazard
No data available

### Potential Health Effects
See Section 2, Hazard(s) Identification

### Signs and Symptoms of Exposure
To the best of our knowledge, the chemical, physical, and toxicological properties of this material have not been thoroughly investigated

### Synergistic Effects
No data available

### Additional Information
RTECS: WK2130000
Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting, conjunctivitis, dermatitis, loss of hearing.

Stomach - Irregularities - Based on Human Evidence

### 12. ECOLOGICAL INFORMATION

<table>
<thead>
<tr>
<th>Toxicity</th>
<th>No data available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persistence and Degradability</td>
<td>No data available</td>
</tr>
</tbody>
</table>
Bioaccumulative Potential No data available
Mobility in Soil No data available
PBT and vPvB Assessment No data available

13. DISPOSAL CONSIDERATIONS

Product Dispose of product through a licensed disposal company
Contaminated Packaging Dispose of as unused product

14. TRANSPORTATION INFORMATION

DOT (US) UN number: 2811 Class: 6.1 Packing group: I
Proper shipping name: Toxic solid, organic, n.o.s. (Hygromycin B)
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG UN number: 2811 Class: 6.1 Packing group: I
Proper shipping name: Toxic solid, organic, n.o.s. (Hygromycin B)
Marine pollutant: No

IATA UN number: 2811 Class: 6.1 Packing group: I
Proper shipping name: Toxic solid, organic, n.o.s. (Hygromycin B)
IATA Passenger: Not permitted for transport

15. REGULATORY INFORMATION

SARA 302 Components No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302

SARA 313 Components This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313

SARA 311/312 Hazards Acute Health Hazard, Chronic Health Hazard
<table>
<thead>
<tr>
<th>Components</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Massachusetts Right to Know Components</td>
<td>No components are subject to the Massachusetts Right to Know Act</td>
</tr>
<tr>
<td>Pennsylvania Right to Know Components</td>
<td>Hygromycin B</td>
</tr>
<tr>
<td></td>
<td>CAS-No. [31282-04-9]</td>
</tr>
<tr>
<td></td>
<td>Registration date: Not available</td>
</tr>
<tr>
<td>New Jersey Right to Know Components</td>
<td>Hygromycin B</td>
</tr>
<tr>
<td></td>
<td>CAS-No. [31282-04-9]</td>
</tr>
<tr>
<td></td>
<td>Registration date: Not available</td>
</tr>
<tr>
<td>California Prop. 65 Components</td>
<td>WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm</td>
</tr>
<tr>
<td></td>
<td>Hygromycin B</td>
</tr>
<tr>
<td></td>
<td>CAS-No. [31282-04-9]</td>
</tr>
<tr>
<td></td>
<td>Revision date: 2007-09-28</td>
</tr>
<tr>
<td>EU Information</td>
<td>SDS in accordance with REACH 1907/2006</td>
</tr>
<tr>
<td></td>
<td>Guanidinium chloride</td>
</tr>
<tr>
<td></td>
<td>CAS-No. [31282-04-9]</td>
</tr>
<tr>
<td></td>
<td>EC-No. [250-545-5]</td>
</tr>
<tr>
<td></td>
<td>Envisaged registration: 30/11/2010</td>
</tr>
</tbody>
</table>

16. OTHER INFORMATION

Date of last revision: 2015-08-19

The above information is believed to be correct but does not purport to be all-inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. TOKU-E Company shall not be held liable for any damage resulting from handling or from contact with the above product. Please see reverse side of invoice or packing slip for additional terms and conditions of sale.