1. IDENTIFICATION

Product Identifier: Enramycin
Product Number: E006
Distributor Name: TOKU-E Company
Distributor Address: 715 W Orchard Dr, Suite 3
Bellingham, WA 98225
Phone Number: (360) 734-1789
Emergency Phone Number (US only): 1 (800) 535-5053
Emergency Phone Number (International): +1 (352) 323-3500
Safety Data Sheet Issued by: TOKU-E USA
CAS-Number: [11115-82-5]
Recommended Use: Polypeptide antibiotic
Restrictions on Use: Not for human or animal use

2. HAZARD(S) IDENTIFICATION

OSHA Hazards: Skin and Respiratory Sensitizer
GHS Classification: Acute Toxicity, Oral (Category 4), H302;
Skin Sensitization (Category 1), H317;
Respiratory Sensitization (Category 1), H334

GHS Label Elements, Including Pictograms
Precautionary Statements:
- Signal Word: Danger
- Hazard Statements:
  - H302: Harmful if swallowed
  - H317: May cause an allergic skin reaction
  - H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled
- Precautionary Statements:
  - P261: Avoid breathing dust/ fumes/ gas/ mist/ vapors/ spray
  - P280: Wear protective gloves
  - P342+P311: If experiencing respiratory symptoms, call a Poison Center or doctor/physician
  - P332+P313: If skin irritation occurs: Get medical advice/attention
- Potential Health Effects:
  - Inhalation: May be harmful if inhaled. May cause respiratory tract irritation
3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonym(s)  Enduracidin
            Enradin

Formula  Mixture

Molecular Weight  361.37 g/mol

CAS-Number  [11115-82-5]

EC-Number  NA

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 Eye Contact  Rinse thoroughly with plenty of water for at least 15 minutes, consult a doctor

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

5. FIRE-FIGHTING MEASURES

Conditions of Flammability  Not flammable or combustible

Suitable Extinguishing Media  Water spray, alcohol-resistant foam, dry chemical, carbon dioxide

Special Protective Equipment for Firefighters  Wear self-contained breathing apparatus

Hazardous Combustion Products  Formed under fire conditions: Carbon and Nitrogen oxides, Hydrogen fluoride

6. ACCIDENTAL RELEASE MEASURES

General  Evacuate personnel to safe location

Personal Precautions  Wear respiratory protection. Avoid dust formation and breathing vapors/mist/dust/gas. Ensure adequate ventilation

Environmental Precautions  Prevent spillage, do not let product enter drains

Methods of Containment and Cleanup  Place in suitable, closed containers for licensed disposal. Avoid dust formation

7. HANDLING AND STORAGE
Precautions for Safe Handling
Avoid contact with skin and eyes. Provide exhaust ventilation in areas where dust is formed.

Precautions for Safe Storage
Keep container tightly closed and in a dry, well-ventilated place. Store at -20°C.

Incompatibilities
None known

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
When deemed needed according to the concentration and amount of this product, use a complete body suit.

9. PHYSICAL/CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Powder</td>
</tr>
<tr>
<td>pH</td>
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<tr>
<td>Melting Point/Freezing Point</td>
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<td>Upper Explosion Limit</td>
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<tr>
<td>Vapor Pressure</td>
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<tr>
<td>Density</td>
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</tr>
<tr>
<td>Water Solubility</td>
<td>Slightly soluble</td>
</tr>
</tbody>
</table>
Solubility in Other Solvents
- Acids (Dilute HCl): Freely soluble
- Dimethylformamide: Freely soluble
- Partition Coefficient: n-octanol/water: No data available
- Relative vapor density: No data available
- Odor: No data available
- Odor Threshold: No data available
- Evaporation Rate: 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 and Hydrogen chloride gas formed under fire conditions

11. TOXICOLOGICAL INFORMATION
- Oral LD$_{50}$: Rat: >10 gm/kg
- Inhalation LC$_{50}$: No data available
- Intramuscular LD$_{50}$: Rat: >5 gm/kg
- Intraperitoneal LD$_{50}$: Rat: 830 mg/kg
- Subcutaneous LD$_{50}$: Rat: >5 gm/kg
- Intravenous LD$_{50}$: Rat: >66,600 µg/kg
- 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: No component of this product present at levels greater than or equal to 0.1% is identified as a possible or probable carcinogen by IARC, ACGIH, NTP, or OSHA
- Reproductive Toxicity: No data available
- Teratogenicity: 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: Chronic exposure may cause nausea and vomiting. Overexposure may cause headache, dizziness, fatigue, nausea, and vomiting. Specific effects may include severe erythema (redness) and moderate edema (raised skin).
- Synergistic Effects: No data available
- Additional Information: RTECS: JZ4107000
12. ECOLOGICAL INFORMATION

Toxicity
No data available
Persistence and Degradability
No data available
Bioaccumulative Potential
No data available
Mobility in Soil
No data available
PBT and vPvB Assessment
No data available

Treat as if harmful if released into environment

13. DISPOSAL CONSIDERATIONS

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

14. TRANSPORTATION INFORMATION

DOT (US)
Not Dangerous Goods
IMDG
Not Dangerous Goods
IATA
Not Dangerous Goods

15. REGULATORY INFORMATION

OSHA Hazards
Skin and respiratory sensitizer
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
None
Massachusetts Right to Know Components
No components are subject to the Massachusetts Right to Know Act
Pennsylvania Right to Know Components
No components are subject to the Pennsylvania Right to Know Act
New Jersey Right to Know Components
No components are subject to the New Jersey Right to Know Act
California Prop. 65 Components
This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm
Canada Information
Identifier: [11115-82-5]
This substance is not specified on any list. There is no control measure imposed on this substance
EU Information
SDS in accordance with REACH 1907/2006
Not an ECHA Pre-Registered or Registered Substance
See GHS Information under Section 2, Hazard Identification

16. OTHER INFORMATION
Date of last revision: 2016-03-10

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.