



GRAMICIDIN SAFETY DATA SHEET

1. IDENTIFICATION

Product Identifier	Gramicidin
Product Number	G038
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-Number	[1405-97-6]
EC/ REACH List Number	[215-790-4]
Recommended Use	A combination of six different antimicrobial polypeptides effective against Gram positive bacteria
Restrictions on Use	Not for human or animal use

2. HAZARD(S) IDENTIFICATION

GHS Classification	Not classified. Toxicology information unavailable.
GHS Label Elements, Including Precautionary statements	None
Hazard Statements	None
Precautionary Statements	None
Hazards not otherwise classified (HNOC) by GHS	None

3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula	Gramicidin A ₁ : C ₉₉ H ₁₄₀ N ₂₀ O ₁₇ Composition: Gramicidin A ₁ , A ₂ , B ₁ , C ₁ , and C ₂ ≥95.0% Gramicidin A ₁ : ≥60.0%
Molecular Weight	Mixture. Gramicidin A ₁ : 1,882.29 g/mol
CAS-Number	[1405-97-6]
EC List Number	[215-790-4]
Index-Number	Not available
Hazardous components	No data available

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

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

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

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. Recommended storage temperature: 2-8°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	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

Appearance	White of almost-white crystalline powder
pH	No data available
Melting Point/Freezing Point	≥229°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	Almost insoluble
Solubility in Other Solvents	Acetic acid: Soluble Lower alcohols: Soluble
Partition Coefficient: n-octanol/water	No data available
Optical Rotation	No data available
Absorbance (290nm, 5% in H ₂ O)	No data available
Water content (Loss on Drying)	≤3.0%

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 formed under fire conditions

11. TOXICOLOGICAL INFORMATION

Oral LD ₅₀	No data available
Inhalation LC ₅₀	No data available
Dermal LD ₅₀	No data available
Intraperitoneal LD _{Lo}	Mouse: 20 mg/kg Remarks, Behavioral: Somnolence (general depressed activity). Excitement Remarks, Lungs, Thorax, or Respiration: Other changes
Intraperitoneal LD ₅₀	No data available
Intravenous TD _{Lo}	Dog: 16 mg/kg/8D-I Remarks, Behavioral: Food intake (animal) Remarks, Nutritional and Gross Metabolic: Weight loss or decreased weight gain Remarks, Related to Chronic Data: Death
Intravenous LD ₅₀	Mouse: 1,500 µg/kg
Parenteral LD ₅₀	Mouse: 17 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	Test: DNA Adduct <i>Escherichia coli</i>: 2,200 nmol/L
Carcinogenicity	No data available
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	Stomach irregularities, based on human evidence. Exposure may cause chemical meningitis and/or a prolonged loss of smell. 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: MD8225000

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

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	Chronic Health Hazard
Massachusetts Right to Know Components	No components are subject to the Massachusetts Right to Know Act
Pennsylvania Right to Know Components	Gramicidin CAS-Number [1405-97-6] Revision Date: Not available
New Jersey Right to Know Components	Gramicidin CAS-Number [1405-97-6] Revision Date: Not available
California Prop. 65 Components	This product does not contain any chemicals known to the State of California to cause birth defects, cancer, or any other reproductive harm
EU Information	SDS in accordance with REACH 1907/2006 EC List Number [215-790-4] CAS-Number [1405-97-6] Name: Gramicidin Envisaged Registration Deadline: 31-05-2013 See GHS Information under Section 2, Hazard Identification

16. OTHER INFORMATION

Date of last revision: 2017-04-20

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.