SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Clasto-Lactacystin β-lactone

PRODUCT CODES: Cat# 1710-100

MANUFACTURER: BioVision, Inc.
ADDRESS: 155 S. Milpitas Boulevard, Milpitas, CA 95035

EMERGENCY PHONE: 858-373-8066
CHEMTREC PHONE: 408-493-1800
FAX PHONE: 408-493-1801

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Volume</th>
<th>Safety Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clasto-Lactacystin β-lactone</td>
<td>Solid</td>
<td>100 µg</td>
<td></td>
</tr>
</tbody>
</table>

SECTION 3: HAZARDS IDENTIFICATION

<table>
<thead>
<tr>
<th>Product Name/Chemical Name</th>
<th>CAS Number</th>
<th>EC-No.</th>
<th>MW</th>
<th>Chemical Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clasto-Lactacystin β-lactone</td>
<td>154226-60-5</td>
<td>--</td>
<td>213.23</td>
<td>C_{10}H_{15}NO_{4}</td>
</tr>
</tbody>
</table>

Clasto-Lactacystin β-lactone:

Emergency Overview
OSHA Hazards: Target organ effect, Toxic by ingestion, Harmful by skin absorption, Irritant
Target Organs: Central nervous system, Liver, Kidney, Blood, Lungs
GHS Classification: Acute toxicity, Oral (Category 3)
                      Skin irritation (Category 2)
                      Serious eye damage (Category 1)

GHS Label elements, including precautionary statements

Pictogram:

Signal word: Danger
Hazard statement(s):
  H301 Toxic if swallowed.
  H315 Causes skin irritation.
  H319 Causes serious eye irritation,
  H335 May cause respiratory irritation.
Precautionary statement(s):
  P261 Avoid breathing dust/fumes/gas/mist/vapors/spray.
  P280 Wear protective gloves/protective clothing/eye protection/face protection.
  P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
  P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

HMIS Classification
  Health hazard: 3
  Chronic health hazard: *
  Flammability: 0
  Physical hazards: 0

NFPA Rating
  Health Hazard: 2
  Fire: 0
  Reactivity Hazard: 0

Potential Health Effects
  Inhalation: May be harmful if inhaled. Causes respiratory tract irritation.
  Skin: Causes skin irritation.
  Eyes: Causes eye irritation.
  Ingestion: Toxic if swallowed.

SECTION 4: FIRST AID MEASURES

General advice: Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.
If inhaled: If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
In case of skin contact: Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.

If swallowed: Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions: Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

Methods for cleaning up: Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place.

Recommended storage temperature: -20 °C

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Contains no substances with occupational exposure limit values.

Personal protective equipment

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).

Hand protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection
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).

Skin and body protection
Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Clasto-Lactacystin β-lactone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>White solid</td>
</tr>
<tr>
<td>pH</td>
<td>No data available</td>
</tr>
<tr>
<td>Water Solubility</td>
<td>5 mg/ml</td>
</tr>
<tr>
<td>Other Solubility</td>
<td>DMSO (20 mg/ml)</td>
</tr>
<tr>
<td>Specific Gravity (g/ml):</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling Point (°C):</td>
<td>No data available</td>
</tr>
<tr>
<td>Melting Point (°C):</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash Point (°C):</td>
<td>No data available</td>
</tr>
<tr>
<td>Ignition Temperature (°C):</td>
<td>No data available</td>
</tr>
<tr>
<td>Density</td>
<td>No data available</td>
</tr>
</tbody>
</table>
SECTION 10: STABILITY AND REACTIVITY

<table>
<thead>
<tr>
<th>Property</th>
<th>Clasto-Lactacystin β-lactone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical stability</td>
<td>Stable under recommended storage conditions</td>
</tr>
<tr>
<td>Conditions to avoid:</td>
<td>No data available</td>
</tr>
<tr>
<td>Materials to avoid:</td>
<td>Strong oxidizing agents</td>
</tr>
<tr>
<td>Hazardous decomposition products:</td>
<td>Carbon oxides, nitrogen oxides</td>
</tr>
</tbody>
</table>

SECTION 11: TOXICOLOGICAL INFORMATION

**Clasto-Lactacystin β-lactone:**
- **Acute toxicity:** no data available
- **Skin corrosion/irritation:** no data available
- **Serious eye damage/eye irritation:** no data available
- **Respiratory or skin sensitzation:** 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 probable, possible or confirmed human 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
- **Teratogenicity:** no data available
- **Specific target organ toxicity – single exposure (GHS):** Inhalation – may cause respiratory irritation.
- **Specific target organ toxicity – repeated exposure (GHS):** no data available
- **Aspiration hazard:** no data available
- **Potential Health Effects:**
  - **Inhalation:** May be harmful if inhaled. Causes respiratory tract irritation.
  - **Skin:** Causes skin irritation.
  - **Eyes:** Causes eye irritation.
  - **Ingestion:** Toxic if swallowed.
- **Signs and Symptoms of Exposure:** To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
- **Synergistic effects:** no data available
- **Additional information:** RTECS: not available

SECTION 12: ECOLOGICAL INFORMATION

**Clasto-Lactacystin β-lactone:**
- **Persistence and degradability:** no data available
- **Toxicity:** no data available
- **Bioaccumulative potential:** no data available
- **Mobility in soil:** no data available
- **PBT and vPvB assessment:** no data available
- **Other adverse effects:** no data available

SECTION 13: DISPOSAL CONSIDERATIONS

**Product:** Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

**Contaminated packaging:** Dispose of as unused product.

SECTION 14: TRANSPORT INFORMATION

**Clasto-Lactacystin β-lactone:**
- **DOT (US):** UN-number: 2811, Class: 6.1, Packing group: III; Proper shipping name: Toxic solids, organic, n.o.s. (Clasto-Lactacystin β-lactone); Reportable Quantity (RQ): 31250 lbs.; Marine pollutant: No; Poison inhalation hazard: No
- **IMDG:** UN-number: 2811, Class: 6.1, Packing group: III; EMS-No: F-A, S-A; Proper shipping name: TOXIC SOLID, ORGANIC, N.O.S. (Clasto-Lactacystin β-lactone); Marine pollutant: No
- **IATA:** UN-number: 2811, Class: 6.1, Packing group: III; Proper shipping name: Toxic solid, organic, n.o.s. (Clasto-Lactacystin β-lactone)

SECTION 15: REGULATORY INFORMATION

**Clasto-Lactacystin β-lactone:**
- **OSHA Hazards:** Target organ effect, Toxic by ingestion, Harmful by skin absorption, Irritant
SAFETY DATA SHEET
Cat# 1710-100, Clasto-Lactacystin β-lactone
SDS DATE: Mar 8, 2012

SARA 302 Components: SARA 302: No chemical in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313 Components: SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title II, Section 313.
SARA 311/312 Hazards: Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components: No components are subject to the Massachusetts Right to Know Act.
Pennsylvania Right To Know Components: Clasto-Lactacystin β-lactone, CAS-No. 154226-60-5
New Jersey Right To Know Components: Clasto-Lactacystin β-lactone, CAS-No. 154226-60-5
California Prop. 65 Components: This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

EU regulations

<table>
<thead>
<tr>
<th>Component</th>
<th>Risk Phrases</th>
<th>Safety Phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clasto-Lactacystin β-lactone</td>
<td>R25, R36/37/38</td>
<td>S26, S36/37/39, S45</td>
</tr>
</tbody>
</table>

SECTION 16: OTHER INFORMATION

OTHER INFORMATION:
PREPARATION INFORMATION:
DISCLAIMER:
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. BioVision, Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.