**Section 1. Identification of the Substance/Mixture and of the**

1.1 Product Code: 10007187  
Product Name: Microcystin-LA  
Synonyms: cyclo[2,3-didehydro-N-methylalanyl-D-alanyl-L-leucyl-(3S)-3-methyl-D-ß-aspartyl-L-alanyl-(2S,3S,4E,6E,8S,9S)-3-amino-9-methoxy-2,6,8-trimethyl-10-phenyl-4,6-decadienoyl-D-ß-glutamyl]; Cyanoginosin-LA; Toxin BE4 (Microcystis aeruginosa);

1.2 Relevant identified uses of the substance or mixture and uses advised against  
Relevant identified uses: For research use only, not for human or veterinary use.

1.3 Details of the Supplier of the Safety Data Sheet  
Company Name: Cayman Chemical Company  
Emergency Contact: CHEMTREC Within USA and Canada: +1 (800)424-9300  
Alternate Emergency Contact: CHEMTREC Outside USA and Canada: +1 (703)527-3887  
Information: Cayman Chemical Company +1 (734)971-3335  
Web site address: www.caymanchem.com

**Section 2. Hazards Identification**

<table>
<thead>
<tr>
<th>GHS Classification</th>
<th>Placard</th>
<th>Key word</th>
<th>GHS hazard phrase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammable Liquids, Category 2</td>
<td>Flame</td>
<td>Danger</td>
<td>Highly flammable liquid and vapor</td>
</tr>
<tr>
<td>Acute Toxicity: Inhalation, Category 3</td>
<td>Skull and crossbones</td>
<td>Danger</td>
<td>Toxic if inhaled</td>
</tr>
<tr>
<td>Acute Toxicity: Oral, Category 3</td>
<td>Skull and crossbones</td>
<td>Danger</td>
<td>Toxic if swallowed</td>
</tr>
<tr>
<td>Acute Toxicity: Skin, Category 3</td>
<td>Skull and crossbones</td>
<td>Danger</td>
<td>Toxic in contact with skin</td>
</tr>
<tr>
<td>Target Organ Systemic Toxicity (single exposure), Category 1</td>
<td>Health hazard</td>
<td>Danger</td>
<td>Causes damage to organs {eyes}.</td>
</tr>
</tbody>
</table>

**GHS Hazard Phrases:**  
H225: Highly flammable liquid and vapor.  
H331: Toxic if inhaled.  
H301: Toxic if swallowed.  
H311: Toxic in contact with skin.  
H370: Causes damage to organs {eyes}.

**GHS Precaution Phrases:**  
P210: Keep away from {heat/sparks/open flames/hot surfaces}. - No smoking.  
P280: Wear {protective gloves/protective clothing/eye protection/face protection}.  
P261: Avoid breathing {dust/fume/gas/mist/vapours/spray}.  
P264: Wash {hands} thoroughly after handling.  
P361+364: Take off immediately all contaminated clothing and wash it before reuse.  
P260: Do not breathe {dust/fume/gas/mist/vapours/spray}.

**GHS Response Phrases:**  
P303+361+353: IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.  
P304+340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
P311: Call a {POISON CENTER/doctor/...}.  
P301+310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.  
P330: Rinse mouth.  
P302+352: IF ON SKIN: Wash with plenty of soap and water.  
P312: Call a {POISON CENTER/doctor/...} if you feel unwell.  
P321: Specific treatment {see ... on this label}.
Microcystin-LA

GHS Storage and Disposal Phrases:

Please refer to Section 7 for Storage and Section 13 for Disposal information.

2.3 Adverse Human Health Effects and Symptoms:

Cannot be made nonpoisonous.

Harmful vapors.

Material may be irritating to the mucous membranes and upper respiratory tract.

May be fatal or cause blindness if swallowed.

May cause eye, skin, or respiratory system irritation.

Toxic if swallowed, inhaled, or absorbed through the skin.

Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.

To the best of our knowledge, the toxicological properties have not been thoroughly investigated.

Target Organs:

Central nervous system, Eyes, Gastrointestinal System, Respiratory system, Skin.

Medical Conditions Generally Aggravated By Exposure:

No data available.

Section 3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Hazardous Components (Chemical Name)</th>
<th>CAS #</th>
<th>Concentration</th>
<th>EC#</th>
<th>Risk Phrases</th>
<th>RTECS #</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Microcystin-LA</td>
<td>96180-79-9</td>
<td>0.095 %</td>
<td>NA</td>
<td>R23-27/28-36/37/38-43</td>
<td>GT2805000</td>
</tr>
</tbody>
</table>

Section 4. First Aid Measures

4.1 Description of First Aid Measures:

4.1.1 In Case of Inhalation:

Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Get immediate medical attention.

4.1.2 In Case of Skin Contact:

Immediately wash skin with soap and plenty of water for at least 20 minutes. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before reuse.

4.1.3 In Case of Eye Contact:

Hold eyelids apart and flush eyes with plenty of water for at least 20 minutes. Have eyes examined and tested by medical personnel.

4.1.4 In Case of Ingestion:

Wash out mouth with water provided person is conscious. Never give anything by mouth to an unconscious person. Get medical attention. Do NOT induce vomiting unless directed to do so by medical personnel.

4.2 Important Symptoms and Effects, Both Acute and Delayed:

Overexposure may cause: confusion, dermatitis, headache, drowsiness, dizziness, gastrointestinal disturbance, optic nerve damage (blindness), nausea, unconsciousness, vomiting, visual disturbance, weakness.

May cause convulsions.

Once methanol is absorbed into the body, it is very slowly eliminated.

4.3 Indication of any immediate medical attention and special treatment needed:

No data available.

Section 5. Fire Fighting Measures

5.1 Suitable Extinguishing Media:

Use alcohol-resistant foam, carbon dioxide, water, or dry chemical spray.

Use water spray to cool fire-exposed containers.

5.2 Unsuitable Extinguishing Media:

A solid water stream may be inefficient.

5.3 Flammable Properties and Hazards:

Can release vapors that form explosive mixtures at temperatures at or above the flashpoint.

Container explosion may occur under fire conditions.

Emits toxic fumes under fire conditions.

Sensitive to static discharge.

Vapors can travel to a source of ignition and flash back.
Flash Pt: 11.00 °C  Method Used: Closed Cup
Autoignition Pt: 385.00 °C
Explosive Limits: LEL: 6.0% at 25.0 °C  UEL: 36.0% at 25.0 °C
Hazardous Combustion Products: No data available.

5.3 Fire Fighting Instructions: As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent), and full protective gear to prevent contact with skin and eyes. Note: Flammable as diluted in methanol.

Section 6. Accidental Release Measures

6.1 Protective Precautions, Protective Equipment and Emergency Procedures: Avoid breathing vapors and provide adequate ventilation.
As conditions warrant, wear a NIOSH approved self-contained breathing apparatus, or respirator, and appropriate personal protection (rubber boots, safety goggles, and heavy rubber gloves).

6.2 Environmental Precautions: Take steps to avoid release into the environment, if safe to do so.

6.3 Methods and Material For Containment and Cleaning Up: Contain spill and collect, as appropriate. Transfer to a chemical waste container for disposal in accordance with local regulations.

Section 7. Handling and Storage

7.1 Precautions To Be Taken in Handling: Avoid breathing dust/fume/gas/mist/vapours/spray.
Avoid prolonged or repeated exposure.
Keep away from sources of ignition.
Take precautionary measures against static discharge.

7.2 Precautions To Be Taken in Storing: Keep away from heat, sparks, and flame.
Keep container tightly closed.
Store in accordance with information listed on the product insert.

Hazard Label Information: Avoid contact with skin and eyes. Do not reuse this container. Use with adequate ventilation. Wash thoroughly after handling.

Section 8. Exposure Controls/Personal Protection

<table>
<thead>
<tr>
<th>Hazardous Components (Chemical Name)</th>
<th>CAS #</th>
<th>OSHA PEL</th>
<th>ACGIH TWA</th>
<th>Other Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Microcystin-LA</td>
<td>96180-79-9</td>
<td>No data.</td>
<td>No data.</td>
<td>No data.</td>
</tr>
</tbody>
</table>

Hazardous Components (Chemical Name)  CAS #  Britain EH40  France VL  Europe
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Microcystin-LA</td>
<td>96180-79-9</td>
<td>No data.</td>
<td>No data.</td>
<td>No data.</td>
</tr>
<tr>
<td>2. Methanol</td>
<td>67-56-1</td>
<td>TWA: 266 mg/m3 (200 ppm) STEL: 333 mg/m3 (250 ppm)</td>
<td>TWA: 260 mg/m3 (200 ppm) STEL: 1300 mg/m3 (1000 ppm)</td>
<td>TWA: 260 mg/m3</td>
</tr>
</tbody>
</table>

Protective Equipment Summary - Hazard Label Information: Compatible chemical-resistant gloves, Eye wash station in work area, Lab coat, Safety glasses, Safety shower in work area, Vent Hood.

8.2.1 Engineering Controls (Ventilation etc.): Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

8.2.2.1 Eye Protection: Safety glasses

8.2.2.2 Protective Gloves: Compatible chemical-resistant gloves

Other Protective Clothing: Lab coat

8.2.2.3 Respiratory Equipment (Specify Type): NIOSH approved respirator, as conditions warrant.

Work/Hygienic/Maintenance Practices: Keep the work area clean. Facilities storing or utilizing this material should be equipped with an eyewash and a safety shower.
Wash thoroughly after handling.

Multi-region format
### Section 9. Physical and Chemical Properties

#### 9.1 Information on Basic Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical States:</td>
<td>[ ] Gas [ X ] Liquid [ ] Solid</td>
</tr>
<tr>
<td>Appearance and Odor:</td>
<td>Solution</td>
</tr>
<tr>
<td>Melting Point:</td>
<td>No data</td>
</tr>
<tr>
<td>Boiling Point:</td>
<td>No data</td>
</tr>
<tr>
<td>Flash Pt:</td>
<td>11.00 °C Method Used: Closed Cup</td>
</tr>
<tr>
<td>Evaporation Rate:</td>
<td>LEL: 6.0% UEL: 36.0%</td>
</tr>
<tr>
<td>Explosive Limits:</td>
<td>96 MM_HG at 20.0 °C</td>
</tr>
<tr>
<td>Vapor Pressure (vs. Air or mm Hg):</td>
<td>96 MM_HG at 20.0 °C</td>
</tr>
<tr>
<td>Vapor Density (vs. Air = 1):</td>
<td>No data</td>
</tr>
<tr>
<td>Specific Gravity (Water = 1):</td>
<td>385.00 °C</td>
</tr>
<tr>
<td>Solubility in Water:</td>
<td>No data</td>
</tr>
<tr>
<td>Autoignition Pt:</td>
<td>385.00 °C</td>
</tr>
</tbody>
</table>

#### 9.2 Other Information

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Volatile:</td>
<td>C46H67N7O12</td>
</tr>
<tr>
<td>Molecular Weight:</td>
<td>910.10</td>
</tr>
</tbody>
</table>

### Section 10. Stability and Reactivity

#### 10.1 Reactivity:  
No data available.

#### 10.2 Stability:  
Unstable [ ] Stable [ X ]

#### 10.3 Stability Note(s):  
Stable if stored in accordance with information listed on the product insert.

#### 10.4 Conditions To Avoid:  
heat, flames and sparks

#### 10.5 Polymerization:  
Will occur [ ] Will not occur [ X ]

#### 10.6 Incompatibility - Materials To Avoid:
- acids
- acid anhydrides
- acid chlorides
- alkali metals
- oxidizing agents
- reducing agents

#### 10.6 Hazardous Decomposition Or Byproducts:
- carbon dioxide
- carbon monoxide

### Section 11. Toxicological Information

#### 11.1 Information on Toxicological Effects:  
The toxicological effects of this product have not been thoroughly studied.

- Microcystin-LA - Toxicity Data: Intraperitoneal LD50 (rat): 122 µg/kg; Intraperitoneal LD50 (mouse): 25 µg/kg;

- Methanol - Toxicity Data: Oral LD50 (rat): 5,600 mg/kg; Oral LD50 (rabbit): 14,200 mg/kg; Inhalation LC50 (rat): 64,000 ppm (4h); Inhalation LC50 (mouse): 61,100 ppm (134 m); Skin LD50 (rabbit): 15,800 mg/kg; Oral LDLO (human): 143 mg/kg;

- Methanol - Irritation Data: Skin (rabbit): 20 mg (24h) moderate; Eyes (rabbit): 40 mg moderate; Eyes (rabbit): 100 mg (24h) moderate;
**Chronic Toxicological Effects:**
Methanol - Investigated as a mutagen and reproductive effector. Only select Registry of Toxic Effects of Chemical Substances (RTECS) data is presented here. See actual entry in RTECS for complete information.

- Methanol RTECS Number: PC1400000
- Microcystin-LA RTECS Number: GT2805000

### Hazardous Components (Chemical Name)

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS #</th>
<th>NTP</th>
<th>IARC</th>
<th>ACGIH</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microcystin-LA</td>
<td>96180-79-9</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Methanol</td>
<td>67-56-1</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

### Carcinogenicity:
- NTP? No
- IARC Monographs? No
- OSHA Regulated? No

### Section 12. Ecological Information

**12.1 Toxicity:**
Avoid release into the environment. Runoff from fire control or dilution water may cause pollution.

### Section 13. Disposal Considerations

**13.1 Waste Disposal Method:**
Dispose in accordance with local, state, and federal regulations.

### Section 14. Transport Information

#### 14.1 LAND TRANSPORT (US DOT)
- **DOT Proper Shipping Name:** Methanol Solution
- **DOT Hazard Class:** 3 (6.1)
- **DOT Hazard Label:** FLAMMABLE LIQUID, POISON
- **UN/NA Number:** 1230
- **Packing Group:** II

#### 14.1 LAND TRANSPORT (European ADR/RID)
- **ADR/RID Shipping Name:** Methanol Solution
- **UN Number:** 1230
- **Hazard Class:** 3 (6.1) - FLAMMABLE LIQUID, POISON
- **Packing Group:** II

#### 14.3 AIR TRANSPORT (ICAO/IATA)
- **ICAO/IATA Shipping Name:** Methanol Solution
- **UN Number:** 1230
- **Hazard Class:** 3 (6.1) - FLAMMABLE LIQUID, POISON
- **Packing Group:** II
- **IATA Classification:** 3, 6.1

**Additional Transport Information:**
Transport in accordance with local, state, and federal regulations.

### Section 15. Regulatory Information

**European Community Hazard Symbol codes**
- F: Highly Flammable; T: Toxic

**European Community Risk and Safety Phrases**
- R11 - Highly flammable.
- R39/23/24/25 - Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.
- S7 - Keep container tightly closed.
- S16 - Keep away from sources of ignition.
- S24/25 - Avoid contact with skin and eyes.
- S33 - Take precautionary measures against static discharges.
- S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection.
**Microcystin-LA**

**SAFETY DATA SHEET**

**Revision Date:** 08/14/2013

### US EPA SARA Title III

<table>
<thead>
<tr>
<th>Hazardous Components (Chemical Name)</th>
<th>CAS #</th>
<th>Sec.302 (EHS)</th>
<th>Sec.304 RQ</th>
<th>Sec.313 (TRI)</th>
<th>Sec.110</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Microcystin-LA</td>
<td>96180-79-9</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>2. Methanol</td>
<td>67-56-1</td>
<td>No</td>
<td>Yes 5000 LB</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

### Other US EPA or State Lists

<table>
<thead>
<tr>
<th>Hazardous Components (Chemical Name)</th>
<th>CAS #</th>
<th>CAA HAP,ODC</th>
<th>CWA NPDES</th>
<th>TSCA</th>
<th>CA PROP.65</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Microcystin-LA</td>
<td>96180-79-9</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>2. Methanol</td>
<td>67-56-1</td>
<td>HAP</td>
<td>No</td>
<td>Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Regulatory Information Statement:** This SDS was prepared in accordance with Regulation (EC) No.1272/2008 and European Directive 67/548/EEC as amended.

### Section 16. Other Information

**Revision Date:** 08/14/2013

**Company Policy or Disclaimer**

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N.A.=Not available, N.P.=Not applicable, N.D.=Not determined, N.E.=Not established, N.R.=Not required