SAFETY DATA SHEET
Brefeldin A

Section 1. Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product Code: 11861
Product Name: Brefeldin A
Synonyms: (1R,2E,6S,10E,11aS,13S,14aR)-1,6,7,8,9,11a,12,13,14,14a-decahydro-1,13-dihydroxy-6-methyl-
4H-cyclopent[f]oxacyclotridecen-4-one; Ascotoxin; Cyanein; Decumbin; NSC 107456; NSC
244390; NSC 56310; NSC 89671; Nectrolide; Synergisidin; BFA;

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
1180 E. Ellsworth Rd.
Ann Arbor, MI 48108
Web site address: www.caymanchem.com
Information: +1 (734)971-3335

1.4 Emergency telephone number:

Emergency Contact: CHEMTREC Within USA and Canada: +1 (800)424-9300
CHEMTREC Outside USA and Canada: +1 (703)527-3887

Section 2. Hazards Identification

2.1 Classification of the Substance or Mixture:

2.1.1 Classification according to Regulation (EC) No 1272/2008 [CLP]:
Acute Toxicity: Oral, Category 3

2.2 Label Elements:

2.2.1 Labeling according to Regulation (EC) No 1272/2008 [CLP]:

GHS Signal Word: Danger

GHS Hazard Phrases:
H301: Toxic if swallowed.

GHS Precaution Phrases:
P264: Wash {hands} thoroughly after handling.

GHS Response Phrases:
P301+310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P330: Rinse mouth.

GHS Storage and Disposal Phrases:
Please refer to Section 7 for Storage and Section 13 for Disposal information.
Section 3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>CAS # /</th>
<th>Hazardous Components (Chemical Name)</th>
<th>Concentration</th>
<th>EC No./</th>
<th>GHS Classification</th>
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<tbody>
<tr>
<td>RTECS #</td>
<td>REACH Registration No.</td>
<td></td>
<td>EC Index No.</td>
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<tr>
<td>20350-15-6</td>
<td>GY8410000</td>
<td>100.0 %</td>
<td>606-528-3</td>
<td>Acute Tox.(O) 3: H301</td>
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</table>

Section 4. First Aid Measures

4.1 Description of First Aid Measures:

- **In Case of Inhalation:** Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Get immediate medical attention.
- **In Case of Skin Contact:** Immediately wash skin with soap and plenty of water for at least 15 minutes. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before reuse.
- **In Case of Eye Contact:** Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Have eyes examined and tested by medical personnel.
- **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.

Section 5. Fire Fighting Measures

5.1 Suitable Extinguishing Media:
Use alcohol-resistant foam, carbon dioxide, water, or dry chemical spray.

Unsuitable Extinguishing Media:
Use water spray to cool fire-exposed containers. A solid water stream may be inefficient.

5.2 Flammable Properties and Hazards:
- **Flash Pt:** No data.
- **Explosive Limits:** LEL: No data. UEL: No data.
- **Autoignition Pt:** No data.

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.

Section 6. Accidental Release Measures

6.1 Protective Precautions, Protective Equipment and Emergency Procedures:
Avoid raising and breathing dust, 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:
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  
Avoid breathing dust/fume/gas/mist/vapours/spray.  
in Handling:  
Avoid prolonged or repeated exposure.

7.2 Precautions To Be Taken  
Keep container tightly closed.  
in Storing:  
Store in accordance with information listed on the product insert.

Section 8. Exposure Controls/Personal Protection

8.1 Exposure Parameters:

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Partial Chemical Name</th>
<th>Britain EH40</th>
<th>France VL</th>
<th>Europe</th>
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<td>20350-15-6</td>
<td>Brefeldin A, Natural</td>
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<td>No data.</td>
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<table>
<thead>
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<th>CAS #</th>
<th>Partial Chemical Name</th>
<th>OSHA TWA</th>
<th>ACGIH TWA</th>
<th>Other Limits</th>
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<td>20350-15-6</td>
<td>Brefeldin A, Natural</td>
<td>No data.</td>
<td>No data.</td>
<td>No data.</td>
</tr>
</tbody>
</table>

8.2 Exposure Controls:

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

8.2.2 Personal protection equipment:

- **Eye Protection:** Safety glasses
- **Protective Gloves:** Compatible chemical-resistant gloves
- **Other Protective Clothing:** Lab coat
- **Respiratory Equipment:** NIOSH approved respirator, as conditions warrant.

(Specify Type):

- **Work/Hygienic/Maintenance Practices:**
  - Do not take internally.
  - Facilities storing or utilizing this material should be equipped with an eyewash and a safety shower.
  - Wash thoroughly after handling.
  - No data available.

Section 9. Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

- **Physical States:** [ ] Gas [ ] Liquid [ X ] Solid
- **Appearance and Odor:** A crystalline solid
- **Melting Point:** No data.
- **Boiling Point:** No data.
- **Flash Pt:** No data.
- **Evaporation Rate:** No data.
- **Explosive Limits:** LEL: No data.  UEL: No data.
- **Vapor Pressure (vs. Air or mm Hg):** No data.
- **Vapor Density (vs. Air = 1):** No data.
- **Specific Gravity (Water = 1):** No data.
- **Solubility in Water:** No data.
- **Solubility Notes:** ~0.5 mg/ml in 1:1 DMF:PBS (pH 7.2); ~1 mg/ml in EtOH; ~0.5 mg/ml in DMSO; ~3 mg/ml in DMF;
- **Autoignition Pt:** No data.
9.2 Other Information

Percent Volatile: No data.
Molecular Formula & Weight: C16H24O4 280.4

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: No data available.
10.5 Incompatibility - Materials strong oxidizing agents
10.6 Hazardous Decomposition Or: carbon dioxide
Byproducts: carbon monoxide

Section 11. Toxicological Information

11.1 Information on Toxicological Effects: The toxicological effects of this product have not been thoroughly studied.
Brefeldin A - Toxicity Data: Intraperitoneal LD50 (mouse): 250 mg/kg; Oral LD50 (rat): 275 mg/kg;
Brefeldin A - Investigated as a mutagen.
Only select Registry of Toxic Effects of Chemical Substances (RTECS) data is presented here. See actual entry in RTECS for complete information.
Brefeldin A RTECS Number: GY8410000

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Hazardous Components (Chemical Name)</th>
<th>NTP</th>
<th>IARC</th>
<th>ACGIH</th>
<th>OSHA</th>
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<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

Section 12. Ecological Information

12.1 Toxicity: Avoid release into the environment.
Runoff from fire control or dilution water may cause pollution.
12.2 Persistence and Degradability: No data available.
12.3 Bioaccumulative Potential: No data available.
12.4 Mobility in Soil: No data available.
12.5 Results of PBT and vPvB assessment: No data available.

Section 13. Disposal Considerations

13.1 Waste Disposal Method: Dispose in accordance with local, state, and federal regulations.
Brefeldin A
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Section 14. Transport Information

14.1 LAND TRANSPORT (US DOT):

DOT Proper Shipping Name: Toxic solid, organic, n.o.s. (Brefeldin A)
DOT Hazard Class: 6.1 - POISON
UN/NA Number: 2811
Packing Group: III

ADT/RID Shipping Name: Toxic solid, organic, n.o.s. (Brefeldin A)
UN Number: 2811
Packing Group: III
Hazard Class: 6.1 - POISON

14.3 AIR TRANSPORT (ICAO/IATA):

ICAO/IATA Shipping Name: Toxic solid, organic, n.o.s. (Brefeldin A)
UN Number: 2811
Packing Group: III
Hazard Class: 6.1
IATA Classification: POISON

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

When sold in quantities of less than or equal to 1 mL, or 1 g, with an Excepted Quantity Code of E1, E2, E4, or E5, this item meets the De Minimis Quantities exemption, per IATA 2.6.10. Therefore packaging does not have to be labeled as Dangerous Goods/Excepted Quantity.

Section 15. Regulatory Information

EPA SARA (Superfund Amendments and Reauthorization Act of 1986) Lists

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Hazardous Components (Chemical Name)</th>
<th>S. 302 (EHS)</th>
<th>S. 304 RQ</th>
<th>S. 313 (TRI)</th>
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<tr>
<td>20350-15-6</td>
<td>Brefeldin A, Natural</td>
<td>No</td>
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<th>CAS #</th>
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<th>Other US EPA or State Lists</th>
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<tr>
<td>20350-15-6</td>
<td>Brefeldin A, Natural</td>
<td>CAA HAP,ODC: No; CWA NPDES: No; TSCA: No; CA PROP.65: No</td>
</tr>
</tbody>
</table>

Regulatory Information Statement:
This SDS was prepared in accordance with 29 CFR 1910.1200 and Regulation (EC) No.1272/2008.

Section 16. Other Information

Revision Date: 02/06/2015
Additional Information About This Product: No data available.

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