SAFETY DATA SHEET
Prostaglandin E1 ethyl ester

according to Regulation (EC) No. 1907/2006 as amended by (EC) No. 1272/2008

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

1.1 Product Code: 9001730
Product Name: Prostaglandin E1 ethyl ester
Synonyms: 11.alpha.,15S-dihydroxy-9-oxo-prost-13E-en-1-oic acid, ethyl ester; Alprostadil ethyl ester; PGE1 ethyl ester;

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
Toxic To Reproduction, Category 2

2.1.2 Classification according to Directive 1999/45/EC:
T: Toxic
Reproductive Hazard: 3
Risk Phrases: R25, R62, R63
For full text of R- phrases: see SECTION 15.

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.
H361: Suspected of damaging fertility or the unborn child.

GHS Precaution Phrases:
P264: Wash hands thoroughly after handling.
P201: Obtain special instructions before use.
P202: Do not handle until all safety precautions have been read and understood.
P281: Use personal protective equipment as required.

GHS Response Phrases:
P301+310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P330: Rinse mouth.
P308+313: IF exposed or concerned: Get medical attention/advice.

GHS Storage and Disposal Phrases:
Please refer to Section 7 for Storage and Section 13 for Disposal information.
2.2.2 Labeling according to Directive 1999/45/EC:

Reproductive Hazard: 3

2.3 Adverse Human Health Exposure may cause sensitization. Exposure may cause vasodilation and an inhibition of platelet aggregation. Material may be irritating to the mucous membranes and upper respiratory tract. May be harmful by inhalation or skin absorption. May cause eye, skin, or respiratory system irritation. Suspected of damaging fertility or the unborn child. Toxic if swallowed. To the best of our knowledge, the toxicological properties have not been thoroughly investigated.

Section 3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>CAS # / RTECS #</th>
<th>Hazardous Components (Chemical Name)/REACH Registration No.</th>
<th>Concentration</th>
<th>EC No./EC Index No.</th>
<th>Risk Phrases/GHS Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>35900-16-4 NA</td>
<td>Prostaglandin E1 ethyl ester</td>
<td>100.0 %</td>
<td>NA</td>
<td>T; Rp:3, R25-62-63 Acute Tox.(O) 3: H301 Toxic Repro. 2: H361</td>
</tr>
</tbody>
</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.

4.2 Important Symptoms and Effects, Both Acute and Delayed:

Exposure may cause: Nausea, diarrhea, headache, vomiting, flushing, shivering, hypotension, and dizziness.
Section 5. Fire Fighting Measures

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

5.2 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 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.

7.2 Precautions To Be Taken 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>
</tr>
</thead>
<tbody>
<tr>
<td>35900-16-4</td>
<td>Prostaglandin E1 ethyl ester</td>
<td>No data.</td>
<td>No data.</td>
<td>No data.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Partial Chemical Name</th>
<th>OSHA TWA</th>
<th>ACGIH TWA</th>
<th>Other Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>35900-16-4</td>
<td>Prostaglandin E1 ethyl ester</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 (Ventilation etc.): 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.

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.

**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:** ~2 mg/ml in PBS (pH 7.2); ~100 mg/ml in EtOH; ~50 mg/ml in DMSO; ~75 mg/ml in DMF;
- **Autoignition Pt:** No data.

### 9.2 Other Information

- **Molecular Formula & Weight:** C22H38O5 382.5

**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 To Avoid:
- strong oxidizing agents

### 10.6 Hazardous Decomposition Or Byproducts:
- carbon dioxide
- carbon monoxide
- nitrogen oxides
Section 11. Toxicological Information

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

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: Toxic solid, organic, n.o.s. (Prostaglandin E1 ethyl ester)
DOT Hazard Class: 6.1 POISON
UN/NA Number: 2811 Packing Group: III

14.1 LAND TRANSPORT (European ADR/RID):

ADR/RID Shipping Name: Toxic solid, organic, n.o.s. (Prostaglandin E1 ethyl ester)
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. (Prostaglandin E1 ethyl ester)
UN Number: 2811 Packing Group: III
Hazard Class: 6.1 - POISON IATA Classification: 6.1

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>
</tr>
</thead>
<tbody>
<tr>
<td>35900-16-4</td>
<td>Prostaglandin E1 ethyl ester</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Hazardous Components (Chemical Name)</th>
<th>Other US EPA or State Lists</th>
</tr>
</thead>
<tbody>
<tr>
<td>35900-16-4</td>
<td>Prostaglandin E1 ethyl ester</td>
<td>CAA HAP, ODC: No; CWA NPDES: No; TSCA: No; CA PROP.65: No</td>
</tr>
</tbody>
</table>
Prostaglandin E1 ethyl ester

SAFETY DATA SHEET

European Community Hazard Symbol codes:

Reproductive Hazard: 3

European Community Risk and Safety Phrases:

R25  Toxic if swallowed.
R62  Risk of impaired fertility.
R63  Possible risk of harm to the unborn child.
S22  Do not breathe dust.
S24/25  Avoid contact with skin and eyes.
S36/37/39  Wear suitable protective clothing, gloves and eye/face protection.
S45  In case of accident or if you feel unwell, seek medical advice immediately (show the label whenever possible.)
S53  Avoid exposure - obtain special instructions before use.

Regulatory Information

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: 12/06/2013
Additional Information About This Product:
No data available.

Company Policy or Disclaimer:

DISCLAIMER: This information is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.

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