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

Product Code: 14510
Product Name: 11.beta.-Prostaglandin E2
Intended Use: For research use only, not for human or veterinary use.

Manufacturer Information
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

2. Hazards Identification

GHS Classification
Acute Toxicity: Oral, Category 4
Toxic To Reproduction, Category 1B
Flammable Liquids, Category 2
Serious Eye Damage/Eye Irritation, Category 2A
Target Organ Systemic Toxicity (single exposure), Category 3

Placard
Exclamation point
Health hazard
Flame
Exclamation point
Exclamation point

Key word
Warning
Danger
Danger
Warning
Warning

GHS Hazard
Harmful if swallowed.
May damage fertility or the unborn child.
Highly flammable liquid and vapor.
Causes serious eye irritation.
May cause drowsiness or dizziness.
May cause respiratory irritation, or may cause drowsiness and dizziness.

GHS Hazard Phrases:
H302: Harmful if swallowed.
H360: May damage fertility or the unborn child.
H225: Highly flammable liquid and vapor.
H316: Causes mild skin irritation.
H319: Causes serious eye irritation.
H336: May cause drowsiness or dizziness.
EUH066: Repeated exposure may cause skin dryness or cracking.

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.
P210: Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P280: Wear protective gloves/clothing and eye/face protection as specified by the manufacturer/supplier or the competent authority.
P261: Avoid breathing dust/fume/gas/mist/vapours/spray.

GHS Response Phrases:
P301+312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P330: Rinse mouth.
P308+313: IF exposed or concerned: Get medical attention/advice.
P303+361+353: IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+313: If eye irritation persists, get medical advice/attention.
P309+311: Call a POISON CENTER or doctor/physician if exposed or you feel unwell.
P304+340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable.
SAFETY DATA SHEET  
11.beta.-Prostaglandin E2

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

Route(s) of Entry: Inhalation? Yes  Skin? Yes  Eyes? Yes  Ingestion? Yes  Other: Injection

Potential Health Effects (Acute and Chronic): Causes serious eye irritation. Causes mild skin irritation. Harmful if swallowed. Material may be irritating to the mucous membranes and upper respiratory tract. May be harmful by inhalation or skin absorption. May cause adverse reproductive effects in males and/or females. May cause gastrointestinal disturbances. May cause harm to the unborn child. May cause respiratory system irritation. May impair fertility. May stimulate contraction of intestinal and reproductive smooth muscle. Repeated exposure may cause skin dryness or cracking. Vapors may cause drowsiness and dizziness. This chemical has the potential to induce premature labor or abortion.

Target Organs: Central nervous system, Eyes, Reproductive system, Gastrointestinal System, Kidneys, Smooth muscles, Respiratory system, Endocrine system, Skin.

LD 50 / LC 50: Please refer to Section 11.

Signs and Symptoms Of Exposure: Exposure can cause: diarrhea, dizziness, fever, flushing, headache, hypotension, nausea, shivering, vomiting. Exposure may cause: coughing, drowsiness, narcosis, optic nerve atrophy, chest tightness. To the best of our knowledge, the toxicological properties have not been thoroughly investigated.

Medical Conditions Generally Aggravated By Exposure: No data available.

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>11.beta.-Prostaglandin E2</td>
<td>3831-09-6</td>
<td>0.5 %</td>
<td>NA</td>
<td>R22-60-61</td>
<td>NA</td>
</tr>
<tr>
<td>Methyl acetate</td>
<td>79-20-9</td>
<td>99.5 %</td>
<td>201-185-2</td>
<td>R11-36-66-67</td>
<td>A9100000</td>
</tr>
</tbody>
</table>

4. First Aid Measures

Emergency and First Aid Procedures:

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 20 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 20 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.

Indication of any immediate medical attention and special treatment needed: No data available.

5. Fire Fighting Measures

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

Use water spray to cool fire-exposed containers.

Multi-region format
11.beta.-Prostaglandin E2

SAFETY DATA SHEET

Unsuitable Extinguishing Media: A solid water stream may be inefficient.

Flammable Properties and Hazards: Can release vapors that form explosive mixtures at temperatures at or above the flash point. 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: -10.00 C  Method Used: Closed Cup
Autoignition Pt: 455.00 C

Explosive Limits: LEL: 3.1% at 25.0 C  UEL: 16.0% at 25.0 C

Hazardous Combustion Products: No data available.

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 methyl acetate.

6. Accidental Release Measures

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).

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

Steps To Be Taken In Case Material Is Released Or Spilled: Contain spill and collect, as appropriate.
Transfer to a chemical waste container for disposal in accordance with local regulations.

7. Handling and Storage

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

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.

Other Precautions: Protect from moisture.

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

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. 11.beta.-Prostaglandin E2</td>
<td>3831-09-6</td>
<td>No data.</td>
<td>No data.</td>
<td>No data.</td>
</tr>
<tr>
<td>2. Methyl acetate</td>
<td>79-20-9</td>
<td>PEL: 200 ppm</td>
<td>TWA: 200 ppm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>STEL: 250 ppm</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hazardous Components (Chemical Name)</th>
<th>CAS #</th>
<th>Britain EH40</th>
<th>France VL</th>
<th>Europe</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 11.beta.-Prostaglandin E2</td>
<td>3831-09-6</td>
<td>No data.</td>
<td>No data.</td>
<td>No data.</td>
</tr>
<tr>
<td>2. Methyl acetate</td>
<td>79-20-9</td>
<td>TWA: 616 mg/m3 (200 ppm)</td>
<td>TWA: 610 mg/m3 (200 ppm)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL: 770 mg/m3 (250 ppm)</td>
<td>STEL: 760 mg/m3 (250 ppm)</td>
<td></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

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

Eye Protection: Safety glasses

Protective Gloves: Compatible chemical-resistant gloves
**9. Physical and Chemical Properties**

**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>-10.00 C Method Used: Closed Cup</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>No data</td>
</tr>
<tr>
<td>Explosive Limits</td>
<td>LEL: 3.1% at 25.0 C UEL: 16.0% at 25.0 C</td>
</tr>
<tr>
<td>Vapor Pressure (vs. Air or mm Hg)</td>
<td>173 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>No data</td>
</tr>
<tr>
<td>Solubility in Water</td>
<td>No data</td>
</tr>
<tr>
<td>Autoignition Pt</td>
<td>455.00 C</td>
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<tr>
<td>Explosive Properties</td>
<td>No data available.</td>
</tr>
<tr>
<td>Oxidizing Properties</td>
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</tr>
<tr>
<td>Other Information</td>
<td></td>
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<tr>
<td>Percent Volatile</td>
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<tr>
<td>Formula</td>
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<td>Molecular Weight</td>
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**10. Stability and Reactivity**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reactivity</td>
<td>No data available.</td>
</tr>
<tr>
<td>Stability</td>
<td>Unstable [ ] Stable [ X ]</td>
</tr>
<tr>
<td>Stability Note(s)</td>
<td>Stable if stored in accordance with information listed on the product insert.</td>
</tr>
<tr>
<td>Conditions To Avoid</td>
<td>heat, flames and sparks</td>
</tr>
<tr>
<td>Polymerization</td>
<td>Will occur [ ] Will not occur [ X ]</td>
</tr>
<tr>
<td>Incompatibility - Materials To Avoid:</td>
<td>acids bases nitrates strong oxidizing agents</td>
</tr>
<tr>
<td>Hazardous Decomposition Or Byproducts:</td>
<td>carbon dioxide carbon monoxide</td>
</tr>
</tbody>
</table>

**11. Toxicological Information**

**Toxicological Information:**

The toxicological effects of this product have not been thoroughly studied.

Methyl Acetate - Toxicity Data: Oral LD50 (rat): >5,000 mg/kg; Oral LD50 (rabbit): 3,705 mg/kg; Skin LD50 (rabbit): >5,000 mg/kg; Inhalation TCLO (human): 15,000 mg/m3 mg/kg;
Methyl Acetate - Irritation Data: Skin (rabbit): 500 mg (24h) mild; Eyes (rabbit): 100 mg (24h)
SAFETY DATA SHEET
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Chronic Toxicological Effects:

Only select Registry of Toxic Effects of Chemical Substances (RTECS) data is presented here. See actual entry in RTECS for complete information.

Methyl Acetate RTECS Number: AI9100000

<table>
<thead>
<tr>
<th>Hazardous Components (Chemical Name)</th>
<th>CAS #</th>
<th>NTP</th>
<th>IARC</th>
<th>ACGIH</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 11.beta.-Prostaglandin E2</td>
<td>3831-09-6</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>2. Methyl acetate</td>
<td>79-20-9</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

12. Ecological Information

General Ecological Information:
Avoid release into the environment.
Runoff from fire control or dilution water may cause pollution.

13. Disposal Considerations

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

14. Transport Information

Globally Harmonized System of Classification and Labelling

Acute Toxicity: Oral, Category 4 - Warning! Harmful if swallowed
Toxic To Reproduction, Category 1B - Danger! May damage fertility or the unborn child
Flammable Liquids, Category 2 - Danger! Highly flammable liquid and vapor
Serious Eye Damage/Eye Irritation, Category 2A - Warning! Causes serious eye irritation
Target Organ Systemic Toxicity (single exposure), Category 3 - Warning! May cause respiratory irritation, or may cause drowsiness and dizziness

LAND TRANSPORT (US DOT)

DOT Proper Shipping Name: Methyl Acetate Solution
DOT Hazard Class: 3
DOT Hazard Label: FLAMMABLE LIQUID
UN/NA Number: 1231
Packing Group: II

LAND TRANSPORT (European ADR/RID)

ADR/RID Shipping Name: Methyl Acetate Solution
UN Number: 1231
Hazard Class: 3 - FLAMMABLE LIQUID
Packing Group: II

AIR TRANSPORT (ICAO/IATA)

ICAO/IATA Shipping Name: Methyl Acetate Solution
UN Number: 1231
Hazard Class: 3 - FLAMMABLE LIQUID
Packing Group: II
IATA Classification: 3

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

15. Regulatory Information

European Community Hazard Symbol codes
F: Highly Flammable; Xn: Harmful; Reproductive Hazard: 1

European Community Risk and Safety Phrases
R11 - Highly flammable.
SAFETY DATA SHEET
11.beta.-Prostaglandin E2

R22 - Harmful if swallowed.
R36 - Irritating to eyes.
R60 - May impair fertility.
R61 - May cause harm to the unborn child.
R66 - Repeated exposure may cause skin dryness or cracking
R67 - Vapours may cause drowsiness and dizziness
S16 - Keep away from sources of ignition.
S24/25 - Avoid contact with skin and eyes.
S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S29 - Do not empty into drains.
S33 - Take precautionary measures against static discharges.
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.

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. 11.beta.-Prostaglandin E2</td>
<td>3831-09-6</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>2. Methyl acetate</td>
<td>79-20-9</td>
<td>No</td>
<td>No</td>
<td>No</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. 11.beta.-Prostaglandin E2</td>
<td>3831-09-6</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>2. Methyl acetate</td>
<td>79-20-9</td>
<td>No</td>
<td>No</td>
<td>Inventory, 4 Test, 8A PAIR</td>
<td>No</td>
</tr>
</tbody>
</table>


16. Other Information

Revision Date: 10/04/2012

Company Policy or Disclaimer

For research use only, not for human or veterinary use.

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