MATERIAL SAFETY DATA SHEET

Product Name: Pancuronium Bromide Injection

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Manufacturer Name And Address
Hospira Inc.
275 North Field Drive
Lake Forest, Illinois USA
60045

Emergency Telephone
CHEMTREC: North America: 800-424-9300;
International 1-703-527-3887; Australia (02) 8014 4880

Hospira, Inc., Non-Emergency 224-212-2000

Product Name
Pancuronium Bromide Injection

Synonyms
2β, 16β - dipiperidino-5α-androstane-3α, 17-β diol diacetate dimethobromide

2. COMPOSITION/INFORMATION ON INGREDIENTS

Active Ingredient Name
Pancuronium Bromide

Chemical Formula
C₃₅H₆₀Br₂N₂O₄

Preparation
Non-hazardous ingredients include Water for Injection. Hazardous ingredients present at less than 1% may include sodium acetate and sodium chloride. Acetic acid and/or sodium hydroxide may be used to adjust the pH.

<table>
<thead>
<tr>
<th>Component</th>
<th>Approximate Percent by Weight</th>
<th>CAS Number</th>
<th>RTECS Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzyl Alcohol</td>
<td>1</td>
<td>100-51-6</td>
<td>DN3150000</td>
</tr>
<tr>
<td>Pancuronium Bromide</td>
<td>0.1</td>
<td>15500-66-0</td>
<td>TN4930000</td>
</tr>
</tbody>
</table>

3. HAZARD INFORMATION

Carcinogen List

<table>
<thead>
<tr>
<th>Substance</th>
<th>IARC</th>
<th>NTP</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzyl Alcohol</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Pancuronium Bromide</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
</tr>
</tbody>
</table>

Emergency Overview
Pancuronium Bromide Injection is a solution containing pancuronium bromide, a neuromuscular blocking agent used to aid general anesthesia and intratracheal intubation. In the workplace, this material should be considered potentially irritating to the eyes and respiratory tract, and a potent drug. Possible target organs include the central nervous system, respiratory system, muscular system and cardiovascular system.

Occupational Exposure Potential
Information on the absorption of this product via inhalation or skin contact is not available. Avoid liquid aerosol generation and skin contact.

Signs and Symptoms
None known from occupational exposure. In clinical use, pancuronium may cause a moderate rise in heart rate, mean arterial pressure and cardiac output. Other reactions may include excessive salivation, excessive sweating and occasionally transient rashes and wheezing. Other
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reactions generally relate to an extension of the drug’s pharmacological action beyond the time period needed; these reactions may vary from skeletal muscle weakness to profound and prolonged skeletal muscle paralysis resulting in respiratory distress or apnea.

Medical Conditions Aggravated by Exposure
Pre-existing hypersensitivity to the material and/or similar materials. Pre-existing central nervous system, muscles, respiratory system, or kidneys ailments.

4. FIRST AID MEASURES

Eye contact Remove from source of exposure. Flush with copious amounts of water. If irritation persists or signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary.

Skin contact Remove from source of exposure. Flush with copious amounts of water. If irritation persists or signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary.

Inhalation Remove from source of exposure. If signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary.

Ingestion Remove from source of exposure. If signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary.

5. FIRE FIGHTING MEASURES

Flammability None anticipated for this aqueous product. However, when heated, this product may release combustible vapors.

Fire & Explosion Hazard None anticipated for this aqueous product.

Extinguishing media As with any fire, use extinguishing media appropriate for primary cause of fire.

Special Fire Fighting Procedures No special provisions required beyond normal firefighting equipment such as flame and chemical resistant clothing and self contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Spill Cleanup and Disposal Isolate area around spill. Put on suitable protective clothing and equipment as specified by site spill procedures. Absorb the liquid with suitable material and clean affected area with soap and water. Dispose of spill materials according to the applicable federal, state, or local regulations.

7. HANDLING AND STORAGE

Handling No special handling required for hazard control under conditions of normal product use.

Storage No special storage required for hazard control. For product protection, follow storage recommendations noted on the product case label, the primary container label, or the product insert.

Special Precautions No special precautions required for hazard control.
8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

<table>
<thead>
<tr>
<th>Component</th>
<th>Type</th>
<th>mg/m³</th>
<th>ppm</th>
<th>µg/m³</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzyl Alcohol</td>
<td>AIHA WEE</td>
<td>N/A</td>
<td>10</td>
<td>N/A</td>
<td>8-hr TWA</td>
</tr>
<tr>
<td>Pancuronium Bromide</td>
<td>Not Applicable</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>None Established</td>
</tr>
</tbody>
</table>

Respiratory protection

Respiratory protection is normally not needed during intended product use. However, if the generation of aerosols is likely, and engineering controls are not considered adequate to control potential airborne exposures, the use of an approved air-purifying respirator with a HEPA cartridge (N95 or equivalent) is recommended under conditions where airborne aerosol concentrations are not expected to be excessive. For uncontrolled release events, or if exposure levels are not known, provide respirators that offer a high protection factor such as a powered air purifying respirator or supplied air. A respiratory protection program that meets OSHA’s 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions require respirator use. Personnel who wear respirators should be fit tested and approved for respirator use as required.

Skin protection

If skin contact with the product formulation is likely, the use of latex or nitrile gloves is recommended.

Eye protection

Eye protection is normally not required during intended product use. However, if eye contact is likely to occur, the use of chemical safety goggles (as a minimum) is recommended.

Engineering Controls

Engineering controls are normally not needed during the normal use of this product.

9. PHYSICAL/CHEMICAL PROPERTIES

Appearance/Physical State: Liquid
Color: Sterile, isotonic, nonpyrogenic solution for injection
Odor: NA
Odor Threshold: NA
pH: 4.0 (3.8 to 4.2)
Melting point/Freezing point: NA
Initial Boiling Point/Boiling Point Range: NA
Evaporation Rate: NA
Flammability (solid, gas): NA
Upper/Lower Flammability or Explosive Limits: NA
Vapor Pressure: NA
Vapor Density: NA
Specific Gravity: NA
Solubility: NA
Partition coefficient: n-octanol/water: NA
Auto-ignition temperature: NA
Decomposition temperature: NA
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### 10. STABILITY AND-reactivity

**Reactivity**
Not determined

**Chemical Stability**
Stable under standard use and storage conditions.

**Hazardous Reactions**
Not determined

**Conditions to avoid**
Not determined

**Incompatibilities**
Not determined

**Hazardous decomposition products**
Not determined. During thermal decomposition, it may be possible to generate irritating vapors and/or toxic fumes of carbon oxides (COx), nitrogen oxides (NOx), and hydrogen bromide.

**Hazardous Polymerization**
Not anticipated to occur with this product.

### 11. TOXICOLOGICAL INFORMATION

**Acute Toxicity**
Not determined for the product formulation. Information for the ingredients is as follows:

<table>
<thead>
<tr>
<th>Ingredient(s)</th>
<th>Percent</th>
<th>Test Type</th>
<th>Route of Administration</th>
<th>Value</th>
<th>Units</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pancuronium Bromide</td>
<td>100</td>
<td>LD50</td>
<td>Oral</td>
<td>202, 21.2</td>
<td>mg/kg</td>
<td>Rat, Mouse</td>
</tr>
<tr>
<td>Pancuronium Bromide</td>
<td>100</td>
<td>LD50</td>
<td>Intravenous</td>
<td>153, 13, 16</td>
<td>mcg/kg</td>
<td>Rat, Mouse, Rabbit</td>
</tr>
<tr>
<td>Benzyl Alcohol</td>
<td>100</td>
<td>LD50</td>
<td>Oral</td>
<td>1040 - 2500</td>
<td>mg/kg</td>
<td>Rat, Mouse, Rabbit, Guinea Pig</td>
</tr>
<tr>
<td>Benzyl Alcohol</td>
<td>100</td>
<td>LD50</td>
<td>Dermal</td>
<td>2000</td>
<td>mg/kg</td>
<td>Rabbit</td>
</tr>
</tbody>
</table>

**Aspiration Hazard**
None anticipated from normal handling of this product.

**Dermal Irritation/Corrosion**
None anticipated from normal handling of this product.

**Ocular Irritation/Corrosion**
None anticipated from normal handling of this product. However, inadvertent contact of this product with eyes may produce irritation with redness and tearing.

**Dermal or Respiratory Sensitization**
None anticipated from normal handling of this product. In clinical use, rare hypersensitivity reactions such as bronchospasm, flushing, redness, hypotension, tachycardia and other reactions possibly mediated by histamine release have been reported.

**Reproductive Effects**
Long-term studies in animals have not been performed to evaluate the potential for impairment of fertility or effects on development. However, it has been reported that no teratogenic effect was noted in the offspring of pregnant rats or rabbits given single daily injections of pancuronium at dosages that were 1.6 or 0.2 times that used as the initial intravenous dose in humans. Further, intravascular or intramuscular injections of pancuronium directly into the fetus...
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have been used to induce paralysis for prenatal diagnostic and therapeutic procedures in the second or third trimester of pregnancy. No persistent adverse effects related to such use have been reported, although transient decreased fetal heart rate variability occurs frequently.

Mutagenicity
Long-term studies in animals have not been performed to evaluate mutagenic potential.

Carcinogenicity
Long-term studies in animals have not been performed to evaluate carcinogenic potential.

Target Organ Effects
NA

12. ECOLOGICAL INFORMATION

Aquatic Toxicity
Not determined for product. Information for ingredients is as follows: LC50(96 hr) = 460 mg/L in Pimephales promelas for benzyl alcohol LC50 = 640 mg/L in Leuciscus idus for benzyl alcohol EC50(24 hr) = 400 mg/L in Daphnia magna for benzyl alcohol EC50 = 95 mg/L in Chlorella pyrenoidosa for benzyl alcohol

Persistence/Biodegradability
Not determined for product. Information for ingredients is as follows: Benzyl alcohol was degraded over 90% in a 28-day biodegradation assay in sewage sludge.

Bioaccumulation
Not determined for product.

Mobility in Soil
Not determined for product.

13. DISPOSAL CONSIDERATIONS

Waste Disposal
All waste materials must be properly characterized. Further, disposal should be performed in accordance with the federal, state or local regulatory requirements.

Container Handling and Disposal
Dispose of container and unused contents in accordance with federal, state and local regulations.

14. TRANSPORTATION INFORMATION

ADR/ADG/ DOT STATUS: Not regulated
IMDG STATUS: Not regulated
ICAO/IATA STATUS: Not regulated
Transport Comments: None
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15. REGULATORY INFORMATION

<table>
<thead>
<tr>
<th>Substance</th>
<th>TSCA Status</th>
<th>CERCLA Status</th>
<th>SARA 302 Status</th>
<th>SARA 313 Status</th>
<th>PROP 65 Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzyl Alcohol</td>
<td>Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
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<td>Pancuronium Bromide</td>
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</tr>
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</table>

RCRA Status: Not Listed
U.S. OSHA Classification: Possibly Toxic by Ingestion

GHS Classification: *In the EU, classification under GHS/CLP does not apply to certain substances and mixtures, such as medicinal products as defined in Directive 2001/83/EC, which are in the finished state, intended for the final user:

Hazard Class: Not Applicable
Hazard Category: Not Applicable
Signal Word: Not Applicable
Symbol: Not Applicable


Response: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical attention. Wash hands after handling.

Get medical attention if you feel unwell.

EU Classification*
*Medicinal products are exempt from the requirements of the EU Dangerous Preparations Directive. Information provided below is for the pure drug substance Pancuronium Bromide.

Classification(s): Not Applicable
Symbol: Not Applicable
Indication of Danger: Not Applicable

Risk Phrases: Not Applicable
Safety Phrases: $S23$ - Do not breathe vapor.
$S24$ - Avoid contact with skin.
$S25$ - Avoid contact with eyes.
$S37/39$ - Wear suitable gloves and eye/face protection.
## 16. OTHER INFORMATION:

<table>
<thead>
<tr>
<th>Notes:</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH TLV</td>
<td>American Conference of Governmental Industrial Hygienists – Threshold Limit Value</td>
</tr>
<tr>
<td>CAS</td>
<td>Chemical Abstracts Service Number</td>
</tr>
<tr>
<td>CERCLA</td>
<td>US EPA law, Comprehensive Environmental Response, Compensation, and Liability Act</td>
</tr>
<tr>
<td>DOT</td>
<td>US Department of Transportation Regulations</td>
</tr>
<tr>
<td>EEL</td>
<td>Employee Exposure Limit</td>
</tr>
<tr>
<td>IATA</td>
<td>International Air Transport Association</td>
</tr>
<tr>
<td>LD50</td>
<td>Dosage producing 50% mortality</td>
</tr>
<tr>
<td>NA</td>
<td>Not applicable/Not available</td>
</tr>
<tr>
<td>NE</td>
<td>Not established</td>
</tr>
<tr>
<td>NIOSH</td>
<td>National Institute for Occupational Safety and Health</td>
</tr>
<tr>
<td>OSHA PEL</td>
<td>US Occupational Safety and Health Administration – Permissible Exposure Limit</td>
</tr>
<tr>
<td>Prop 65</td>
<td>California Proposition 65</td>
</tr>
<tr>
<td>RCRA</td>
<td>US EPA, Resource Conservation and Recovery Act</td>
</tr>
<tr>
<td>RTECS</td>
<td>Registry of Toxic Effects of Chemical Substances</td>
</tr>
<tr>
<td>SARA</td>
<td>Superfund Amendments and Reauthorization Act</td>
</tr>
<tr>
<td>STEL</td>
<td>15-minute Short Term Exposure Limit</td>
</tr>
<tr>
<td>TSCA</td>
<td>Toxic Substance Control Act</td>
</tr>
<tr>
<td>TWA</td>
<td>8-hour Time Weighted Average</td>
</tr>
</tbody>
</table>

MSDS Coordinator: Hospira GEHS
Date Prepared: 11/01/2011
Obsolete Date: 10/21/2008

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