SAFETY DATA SHEET

Product Name: Vecuronium Bromide for Injection

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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

Emergency Telephone
CHEMTREC: North America: 800-424-9300;
International 1-703-527-3887; Australia - 61-290372994; UK - 44-870-8200418
Hospira, Inc., Non-Emergency 224 212-2000

Product Name
Vecuronium Bromide for Injection

Synonyms
Piperidinium, 1-[(2β, 3α, 5α, 16β, 17β)-3, 17-bis (acetyloxy)-2-(1-piperidinyl)androstan-16-yl]-1-methyl-, bromide

2. HAZARD(S) IDENTIFICATION

Emergency Overview
Vecuronium Bromide for Injection is a lyophilized powder containing vecuronium bromide, a non-depolarizing neuromuscular blocking agent with pharmacologic effects similar to other neuromuscular blocking materials. In the workplace, this material should be considered potentially irritating to the eyes and respiratory tract and a potent drug. Based on clinical use, possible target organs include the skeletal muscle, the nervous system and the respiratory system.

U.S. OSHA GHS Classification

Physical Hazards

<table>
<thead>
<tr>
<th>Hazard Class</th>
<th>Hazard Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Classified</td>
<td>Not Classified</td>
</tr>
</tbody>
</table>

Health Hazards

<table>
<thead>
<tr>
<th>Hazard Class</th>
<th>Hazard Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Toxicity – Oral</td>
<td>4</td>
</tr>
<tr>
<td>Eye Damage / Irritation</td>
<td>2B</td>
</tr>
</tbody>
</table>

Label Element(s)

Pictogram

Signal Word
Warning

Hazard Statement(s)
Harmful if swallowed
Causes eye irritation

Precautionary Statement(s)

Prevention
Do not breathe vapor or spray
Do not eat, drink or smoke when using this product
Wash hands thoroughly after handling

Response
Get medical attention if you feel unwell.

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.

IF SWALLOWED: Call a poison center/doctor if you feel unwell. Rinse mouth.
Product Name: Vecuronium Bromide for Injection

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Active Ingredient Name</th>
<th>Vecuronium Bromide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Formula</td>
<td>C_{34}H_{57}BrN_{2}O_{4}</td>
</tr>
</tbody>
</table>

<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>Vecuronium Bromide</td>
<td>7</td>
<td>50700-72-6</td>
<td>TN4875000</td>
</tr>
<tr>
<td>Sodium Phosphate, Dibasic</td>
<td>11</td>
<td>7558-79-4</td>
<td>WC4500000</td>
</tr>
<tr>
<td>Citric Acid</td>
<td>14</td>
<td>77-92-9</td>
<td>GE7350000</td>
</tr>
<tr>
<td>Mannitol</td>
<td>67</td>
<td>69-65-8</td>
<td>OP2060000</td>
</tr>
</tbody>
</table>

Non-hazardous ingredients include Water for Injection. Sodium hydroxide and/or phosphoric acid may be used to adjust the pH.

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 product. However, many organic powders will combust at elevated temperatures.

Fire & Explosion Hazard
None anticipated for this product. Avoid the generation of dusty environments.

Extinguishing Media
As with any fire, use extinguishing media appropriate for primary cause of fire such as carbon dioxide, dry chemical extinguishing powder or foam.

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
For spilled powder, isolate area around spill. Put on suitable protective clothing and equipment as specified by site spill control procedures. Collect the spilled powder using techniques that minimize powder migration. Clean affected area with soap and water. Absorb any liquid with an inert absorbent material (e.g., absorbent pad). Dispose of materials according to the applicable federal, state, or local regulations.

If a spill occurs after reconstitution, absorb liquid with suitable material and clean affected area with soap and water. Dispose of 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.
Product Name: Vecuronium Bromide for Injection

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

<table>
<thead>
<tr>
<th>Exposure Guidelines</th>
<th>Exposure Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component</td>
<td>OSHA-PEL</td>
</tr>
<tr>
<td>Vecuronium Bromide</td>
<td>8-hr TWA: Not Established</td>
</tr>
<tr>
<td>Citric Acid</td>
<td></td>
</tr>
<tr>
<td>Mannitol</td>
<td></td>
</tr>
<tr>
<td>Sodium Phosphate, Dibasic</td>
<td></td>
</tr>
</tbody>
</table>


Respiratory Protection
Respiratory protection is normally not needed during intended product use. However, if the generation of dusts or 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 dust or 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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance/Physical State</td>
<td>Fine crystalline powder</td>
</tr>
<tr>
<td>Odor</td>
<td>NA</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>NA</td>
</tr>
<tr>
<td>pH</td>
<td>4 (3.5 to 4.5)</td>
</tr>
<tr>
<td>Melting point/Freezing Point</td>
<td>227-229°C</td>
</tr>
<tr>
<td>Initial Boiling Point/Boiling Point Range</td>
<td>NA</td>
</tr>
<tr>
<td>Flash Point</td>
<td>NA</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>NA</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>NA</td>
</tr>
<tr>
<td>Upper/Lower Flammability or Explosive Limits</td>
<td>NA</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>NA</td>
</tr>
<tr>
<td>Vapor Density (Air =1)</td>
<td>NA</td>
</tr>
<tr>
<td>Relative Density</td>
<td>NA</td>
</tr>
<tr>
<td>Solubility</td>
<td>NA</td>
</tr>
<tr>
<td>Partition Coefficient: n-octanol/water</td>
<td>NA</td>
</tr>
<tr>
<td>Auto-ignition Temperature</td>
<td>NA</td>
</tr>
<tr>
<td>Decomposition Temperature</td>
<td>NA</td>
</tr>
<tr>
<td>Viscosity</td>
<td>NA</td>
</tr>
</tbody>
</table>
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 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 (HBr).
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>Vecuronium Bromide</td>
<td>100</td>
<td>LD50</td>
<td>Oral</td>
<td>455</td>
<td>mg/kg</td>
<td>Rat</td>
</tr>
<tr>
<td>Vecuronium Bromide</td>
<td>100</td>
<td>LD50</td>
<td>Intravenous</td>
<td>0.20</td>
<td>mg/kg</td>
<td>Rat</td>
</tr>
<tr>
<td>Citric Acid</td>
<td>100</td>
<td>LD50</td>
<td>Oral</td>
<td>11,700</td>
<td>mg/kg</td>
<td>Rat</td>
</tr>
<tr>
<td>Citric Acid</td>
<td>100</td>
<td>LD50</td>
<td>Intravenous</td>
<td>43</td>
<td>mg/kg</td>
<td>Mouse</td>
</tr>
<tr>
<td>D-Mannitol</td>
<td>100</td>
<td>LD50</td>
<td>Oral</td>
<td>13,500</td>
<td>mg/kg</td>
<td>Rat</td>
</tr>
<tr>
<td>D-Mannitol</td>
<td>100</td>
<td>LD50</td>
<td>Intravenous</td>
<td>9690</td>
<td>mg/kg</td>
<td>Rat</td>
</tr>
<tr>
<td>Dibasic Sodium Phosphate</td>
<td>100</td>
<td>LD50</td>
<td>Oral</td>
<td>17,000</td>
<td>mg/kg</td>
<td>Rat</td>
</tr>
</tbody>
</table>

LD 50: Dosage that produces 50% mortality.

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 anticipated from normal handling of this product. In clinical use, excessive doses of vecuronium may result in enhanced pharmacological effects. These effects may include skeletal muscle weakness, decreased respiratory reserve, low tidal volume, or apnea. Respiratory depression may be due either wholly or in part to other drugs used during the conduct of general anesthesia such as narcotics, thiobarbiturates and other central nervous system depressants. The administration of vecuronium has been associated with rare instances of hypersensitivity reactions (bronchospasm, hypotension and/or tachycardia, sometimes associated with acute urticaria or erythema).

Aspiration Hazard None anticipated from normal handling of this product.

Dermal Irritation/Corrosion None anticipated from normal handling of this product. Citric acid and dibasic sodium phosphate have been reported to be mild skin irritants. Inadvertent contact of this product with skin may produce mild irritation.

Ocular Irritation/Corrosion None anticipated from normal handling of this product. Dibasic sodium phosphate is reported to be a mild eye irritant while citric acid is reported to be a severe eye irritant. Inadvertent contact of this product with eyes may produce irritation with redness and tearing.
Product Name: Vecuronium Bromide for Injection

11. TOXICOLOGICAL INFORMATION: continued

Dermal or Respiratory Sensitization
None anticipated from normal handling of this product. However, clinical use of this product has been associated with rare instances of hypersensitivity reactions.

Reproductive Effects
None anticipated from normal handling of this product. The effects of this product on fertility or fetal development have not been evaluated.

Mutagenicity
The mutagenic potential of this product has not been evaluated.

Carcinogenicity
The carcinogenic potential of this product has not been evaluated.

Carcinogen Lists
IARC: Not listed  
NTP: Not listed  
OSHA: Not listed

Specific Target Organ Toxicity
– Single Exposure
NA

Specific Target Organ Toxicity
– Repeat Exposure
Based on clinical use, possible target organs include the skeletal muscle, the nervous system and the respiratory system.

12. ECOLOGICAL INFORMATION

Aquatic Toxicity
Not determined for product.

Persistence/Biodegradability
Not determined for product.

Bioaccumulation
Not determined for product.

Mobility in Soil
Not determined for product.

Notes:

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

Proper Shipping Name
NA

Hazard Class
NA

UN Number
NA

Packing Group
NA

Reportable Quantity
NA

ICAO/IATA STATUS
Not regulated

Proper Shipping Name
NA

Hazard Class
NA

UN Number
NA

Packing Group
NA

Reportable Quantity
NA

IMDG STATUS
Not regulated

Proper Shipping Name
NA

Hazard Class
NA

UN Number
NA

Packing Group
NA

Reportable Quantity
NA

Notes: DOT - US Department of Transportation Regulations
# 15. REGULATORY INFORMATION

<table>
<thead>
<tr>
<th>US TSCA Status</th>
<th>Exempt</th>
</tr>
</thead>
<tbody>
<tr>
<td>US CERCLA Status</td>
<td>Not listed</td>
</tr>
<tr>
<td>US SARA 302 Status</td>
<td>Not listed</td>
</tr>
<tr>
<td>US SARA 313 Status</td>
<td>Not listed</td>
</tr>
<tr>
<td>US RCRA Status</td>
<td>Not listed</td>
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<tr>
<td>US PROP 65 (Calif.)</td>
<td>Not listed</td>
</tr>
</tbody>
</table>


### GHS/CLP 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.

<table>
<thead>
<tr>
<th>Hazard Class</th>
<th>Hazard Category</th>
<th>Pictogram</th>
<th>Signal Word</th>
<th>Hazard Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

**Prevention**

Do not breathe vapor or spray
Do not eat, drink or smoke when using this product
Wash hands thoroughly after handling

**Response**

Get medical attention if you feel unwell.

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.

IF SWALLOWED: Call a poison center/doctor if you feel unwell. Rinse mouth.

### EU Classification*

*Medicinal products are exempt from the requirements of the EU Dangerous Preparations Directive.

**Classification(s)**

NA

**Symbol**

NA

**Indication of Danger**

NA

**Risk Phrases**

NA

**Safety Phrases**

S23: Do not breathe vapor/spray
S24: Avoid contact with the skin
S25: Avoid contact with eyes
S37/39 Wear suitable gloves and eye/face protection.
### 16. OTHER INFORMATION

**Notes:**

<table>
<thead>
<tr>
<th>Abbreviation</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>STOT - SE</td>
<td>Specific Target Organ Toxicity – Single Exposure</td>
</tr>
<tr>
<td>STOT - RE</td>
<td>Specific Target Organ Toxicity – Repeated Exposure</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:** October 19, 2012  
**Date Revised:** June 02, 2014

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