MATERIAL SAFETY DATA SHEET

Product Name: NITROPRESS ® (Sodium Nitroprusside Injection)

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Manufacturer Name: Hospira, Inc.
And Address: 275 North Field Drive
Lake Forest, Illinois 60045
USA
Emergency Telephone: CHEMTREC: 800 424-9300
Hospira, Inc.: 224 212-2055
Product Name: NITROPRESS ® (Sodium Nitroprusside Injection)
Synonyms: Sodium nitroprusside dihydrate; sodium nitroferricyanide dihydrate

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient Name: Sodium Nitroprusside Dihydrate
Chemical Formula: \( \text{Na}_2[\text{Fe(CN)}_5\text{NO}] \cdot 2\text{H}_2\text{O} \)

<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>Sodium Nitroprusside Dihydrate</td>
<td>2.5</td>
<td>13755-38-9</td>
<td>LJ8925000</td>
</tr>
</tbody>
</table>

Non-hazardous ingredients include sterile water.

3. HAZARD INFORMATION

Emergency Overview: NITROPRESS ® (Sodium Nitroprusside Injection) contains sodium nitroprusside, a potent direct acting vasodilator that relaxes both arterial and venous smooth muscle. Clinically, it is used as a hypotensive agent for short-term, rapid reduction of blood pressure in hypertensive emergencies. In the workplace, this material should be considered a potent drug, and potentially irritating to the skin, eyes, and respiratory tract. Based on clinical use, possible target organs include the skin, eyes, blood, central nervous system, and cardiovascular system.

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

Signs and Symptoms: None known from workplace exposure. In clinical use, adverse effects are generally an extension of the pharmacologic actions of sodium nitroprusside (e.g. excessive vasodilation and hypotension) and may include nausea, vomiting, sweating, dizziness, restlessness, headache, palpitation and substernal distress. In clinical use, deaths attributable to sodium nitroprusside have resulted in patients following administration.

Medical Conditions Aggravated by Exposure: Pre-existing hypotension or pre-existing skin, eye, nervous system, blood, or cardiovascular ailments.

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

Antidotal treatment of cyanide toxicity consists of

- providing a buffer for cyanide by using sodium nitrite to convert as much hemoglobin into methemoglobin as the person can safely tolerate; and then
- infusing sodium thiosulfate in sufficient quantity to convert the cyanide into thiocyanate.

The necessary medications for treating cyanide toxicity are contained in commercially available Cyanide Antidote Kits. Cyanide Antidote Kits contain both amyl nitrite and sodium nitrite for induction of methemoglobinemia. The amyl nitrite is supplied in the form of inhalant ampules, for administration in environments where intravenous administration of sodium nitrite may be delayed. In a patient who already has a patent intravenous line, use of amyl nitrite confers no benefit that is not provided by infusion of sodium nitrite.

Sodium nitrite is available in a 3% solution, and 4-6 mg/kg (about 0.2 mL/kg) should be injected over 2-4 minutes. This dose can be expected to convert about 10% of the patient’s hemoglobin into methemoglobin; this level of methemoglobinemia is not associated with any important hazard of its own. The nitrite infusion may cause transient vasodilatation and hypotension, and this hypotension must, if it occurs, be routinely managed. Immediately after infusion of the sodium nitrite, sodium thiosulfate should be infused. This agent is available in 10% and 25% solutions, and the recommended dose is 150-200 mg/kg; a typical adult dose is 50 mL of the 25% solution. Thiosulfate treatment of an acutely cyanide-toxic patient will raise thiocyanate levels, but not to a dangerous degree. The nitrite/thiosulfate regimen may be repeated, at half the original doses, after two hours. Hemodialysis is ineffective in removal of cyanide, but it will eliminate most thiocyanate.

5. FIRE FIGHTING MEASURES

<table>
<thead>
<tr>
<th>Flammability:</th>
<th>Non-flammable</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fire &amp; Explosion Hazard:</strong></td>
<td>None</td>
</tr>
<tr>
<td><strong>Extinguishing Media:</strong></td>
<td>Use extinguishing media appropriate for primary cause of fire.</td>
</tr>
<tr>
<td><strong>Special Fire Fighting Procedures</strong></td>
<td>No special provisions required beyond normal fire fighting equipment such as flame and chemical resistant clothing and self contained breathing apparatus.</td>
</tr>
</tbody>
</table>
Product Name: NITROPRESS® (Sodium Nitroprusside Injection)

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 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
Protect from light by retaining in carton until contents have been used.

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

Special Precautions
Not determined.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

<table>
<thead>
<tr>
<th>Component</th>
<th>OSHA-PEL</th>
<th>ACGIH-TLV</th>
<th>Hospira EEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium Nitroprusside Dihydrate</td>
<td>8 hr TWA: Not Established</td>
<td>8 hr TWA: Not established</td>
<td>8 hr TWA: 50 mcg/m3 STEL: 100 mcg/m3</td>
</tr>
</tbody>
</table>

Notes: OSHA PEL: US Occupational Safety and Health Administration – Permissible Exposure Limit
ACGIH TLV: American Conference of Governmental Industrial Hygienists – Threshold Limit Value.
EEL: Employee Exposure Limit.
TWA: 8-hour Time Weighted Average.
STEL: 15-minute Short Term Exposure Limit.

Respiratory Protection
Respiratory protection is not needed during normal product use.

Skin Protection
If solution contact with unprotected skin is likely, use of impervious gloves is a prudent practice.

Eye Protection
Eye protection is not required during expected product use conditions but may be warranted should a splash potential exist.

Engineering Controls
Engineering controls are not needed during normal product use conditions.

9. PHYSICAL/CHEMICAL PROPERTIES

Appearance/Physical
Reddish brown solution in amber bottle

State

Odor
None

Boiling Point
Not Applicable

Freezing Point
Not Applicable

Vapor Pressure
Not Applicable

Vapor Density (Air=1)
Not Applicable

Evaporation Rate
Not Applicable

Bulk Density
Not Determined

Specific Gravity
Not Applicable

Solubility
Slightly soluble in alcohol. Soluble in water

pH
5 for a 5% aqueous solution
Product Name: NITROPRESS ® (Sodium Nitroprusside Injection)

10. STABILITY AND REACTIVITY

Chemical Stability
Normally stable under standard storage and use conditions. Product sensitive to certain wavelengths of light. Protect from light.

Incompatibilities
Not determined. May degrade in the presence of acid.

Hazardous Decomposition Products
Toxic fumes of cyanides and oxides of nitrogen.

Hazardous Polymerization
Not Determined.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity – Oral:

<table>
<thead>
<tr>
<th>Ingredient(s)</th>
<th>Percent</th>
<th>Test Type</th>
<th>Route</th>
<th>Value</th>
<th>Units</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium Nitroprusside</td>
<td>100</td>
<td>LD50</td>
<td>Oral</td>
<td>99</td>
<td>mg/kg</td>
<td>Rat</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>61</td>
<td>mg/kg</td>
<td>Mouse</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>34</td>
<td>mg/kg</td>
<td>Rabbit</td>
</tr>
<tr>
<td>Sodium Nitroprusside</td>
<td>100</td>
<td>LD50</td>
<td>Intravenous</td>
<td>1.8</td>
<td>mg/kg</td>
<td>Rabbit</td>
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<tr>
<td>Dihydrate</td>
<td></td>
<td></td>
<td></td>
<td>2.8</td>
<td>mg/kg</td>
<td>Dog</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5.0</td>
<td>mg/kg</td>
<td>Mouse</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6.0, 8.4</td>
<td>mg/kg</td>
<td>Rat</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9.3, 11.2</td>
<td>mg/kg</td>
<td></td>
</tr>
</tbody>
</table>

LD 50: Dosage that produces 50% mortality.

Mutagenicity
Not Determined

Reproductive Effects
Studies to assess the effects of sodium nitroprusside dihydrate on fertility or developmental toxicity in animals have not been conducted. The infusion of 25 mcg/kg/min of sodium nitroprusside for one hour to pregnant ewes resulted in the death of all fetuses; pregnant ewes infused with 1 mcg/kg/min of sodium nitroprusside for one hour delivered normal lambs.

Target Organ Effects
In clinical use target organ effects include hematopoietic, renal, and thyroid systems.

12. ECOLOGICAL INFORMATION

Aquatic Toxicity
Not available for product. Information for sodium nitroprusside (14402-89-2) is as follows:

Lethal Threshold Concentration (LETC, 48 hr) < 210 mg/l in Daphnia magna.
LC50(24 hr) = 350 mg/L in Poecilia reticulate (guppy).
LT50 = 48 hours in Polycelis nigra (a planarian) when applied at a 0.0008 M concentration.

Persistence/Biodegradability
Not determined

Bioaccumulation
Not determined

Mobility in Soil
Not determined

Notes:
1. EC50: Concentration in water that produces 50% mortality in Daphnia sp.
2. LC50: Concentration in water that produces 50% mortality in fish.
3. EC50: Concentration in water that produces 50% inhibition of growth in algae.
4. LD50 = Time to 50% mortality of organisms
13. DISPOSAL CONSIDERATIONS

Waste Disposal
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

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

TSCA Status Exempt
CERCLA Status Not listed
SARA 302 Status Not listed
SARA 313 Status Not listed
RCRA Status Not listed
PROP 65 (Calif.) Not listed

Notes: TSCA, Toxic Substance Control Act;
CERCLA, US EPA law, Comprehensive Environmental Response, Compensation, and Liability Act;
SARA, Superfund Amendments and Reauthorization Act;
Prop 65, California Proposition 65
## 16. OTHER INFORMATION

<table>
<thead>
<tr>
<th>MSDS Coordinator</th>
<th>Global Occupational Toxicology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date Prepared</td>
<td>September 15, 2005</td>
</tr>
<tr>
<td>Revision Date:</td>
<td>April 28, 2008</td>
</tr>
</tbody>
</table>

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