MATERIAL SAFETY DATA SHEET

Product Name: NITROPRESS ® (Sodium Nitroprusside 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
NITROPRESS ® (Sodium Nitroprusside Injection)

Synonyms
Sodium nitroprusside dihydrate; sodium nitroferricyanide dihydrate; disodium pentacyanonitrosylferrate(2-) dihydrate

2. COMPOSITION/INFORMATION ON INGREDIENTS

Active Ingredient Name
Sodium Nitroprusside Dihydrate

Chemical Formula
Na$_2$[Fe(CN)$_5$NO]• 2H$_2$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>

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>Sodium Nitroprusside Dihydrate</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
</tr>
</tbody>
</table>

Emergency Overview
NITROPRESS ® (Sodium Nitroprusside Injection) is a solution containing 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.
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

**Flammability**
None anticipated for this aqueous product.

**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>Sodium Nitroprusside Dihydrate</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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance/Physical State</td>
<td>Liquid</td>
</tr>
<tr>
<td>Color</td>
<td>Reddish brown</td>
</tr>
<tr>
<td>Odor</td>
<td>NA</td>
</tr>
<tr>
<td>Odor Threshold:</td>
<td>NA</td>
</tr>
</tbody>
</table>
Product Name: NITROPRESS ® (Sodium Nitroprusside Injection)

pH: 5 for a 5% aqueous solution
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: Slightly soluble in alcohol. Soluble in water
Partition coefficient: n-octanol/water: NA
Auto-ignition temperature: NA
Decomposition temperature: NA

10. STABILITY AND REACTIVITY

Reactivity Not determined.
Chemical Stability Stable under standard use and storage conditions. However, product is sensitive to certain wavelengths of light. Protect from light.
Hazardous Reactions Not determined.
Conditions to avoid Not determined.
Incompatibilities Not determined. May degrade in the presence of acid.
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 cyanide.
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>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 Dihydrate</td>
<td>100</td>
<td>LD50</td>
<td>Intravenous</td>
<td>1.8</td>
<td>mg/kg</td>
<td>Rabbit</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5.0</td>
<td>mg/kg</td>
<td>Dog</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6.0</td>
<td>mg/kg</td>
<td>Mouse</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9.3</td>
<td>mg/kg</td>
<td>Rat</td>
</tr>
</tbody>
</table>

Aspiration Hazard None anticipated from normal handling of this product.
**Product Name:** NITROPRESS ® (Sodium Nitroprusside Injection)

<table>
<thead>
<tr>
<th>Section</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dermal Irritation/Corrosion</strong></td>
<td>None anticipated from normal handling of this product.</td>
</tr>
<tr>
<td><strong>Ocular Irritation/Corrosion</strong></td>
<td>None anticipated from normal handling of this product. Inadvertent contact of this product with eyes may produce irritation with redness and tearing.</td>
</tr>
<tr>
<td><strong>Dermal or Respiratory Sensitization</strong></td>
<td>None anticipated from normal handling of this product.</td>
</tr>
<tr>
<td><strong>Reproductive Effects</strong></td>
<td>Sodium nitroprusside has not been tested for effects on fertility. Studies to assess the potential for developmental toxicity in animals have not been conducted. However, 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.</td>
</tr>
<tr>
<td><strong>Mutagenicity</strong></td>
<td>Studies assessing sodium nitroprusside’s mutagenic potential have not been conducted.</td>
</tr>
<tr>
<td><strong>Carcinogenicity</strong></td>
<td>Animal studies assessing sodium nitroprusside’s carcinogenic potential have not been conducted.</td>
</tr>
<tr>
<td><strong>Target Organ Effects</strong></td>
<td>Based on clinical use, possible target organs include the skin, eyes, blood, central nervous system, and cardiovascular system.</td>
</tr>
</tbody>
</table>

### 12. ECOLOGICAL INFORMATION

<table>
<thead>
<tr>
<th>Section</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aquatic Toxicity</strong></td>
<td>Not available for product.</td>
</tr>
<tr>
<td></td>
<td>Information for sodium nitroprusside (14402-89-2) is as follows: Lethal Threshold Concentration (LETC, 48 hr) &lt; 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.</td>
</tr>
<tr>
<td><strong>Persistence/Biodegradability</strong></td>
<td>Not determined for product.</td>
</tr>
<tr>
<td><strong>Bioaccumulation</strong></td>
<td>Not determined for product</td>
</tr>
<tr>
<td><strong>Mobility in Soil</strong></td>
<td>Not determined for product</td>
</tr>
</tbody>
</table>

### 13. DISPOSAL CONSIDERATIONS

<table>
<thead>
<tr>
<th>Section</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Waste Disposal</strong></td>
<td>All waste materials must be properly characterized. Further, disposal should be performed in accordance with the federal, state or local regulatory requirements.</td>
</tr>
<tr>
<td><strong>Container Handling and Disposal</strong></td>
<td>Dispose of container and unused contents in accordance with federal, state and local regulations.</td>
</tr>
</tbody>
</table>

### 14. TRANSPORTATION INFORMATION

<table>
<thead>
<tr>
<th>Section</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DOT STATUS</strong></td>
<td>Not regulated</td>
</tr>
<tr>
<td><strong>IMDG STATUS:</strong></td>
<td>Not regulated</td>
</tr>
<tr>
<td><strong>ICAO/IATA STATUS:</strong></td>
<td>Not regulated</td>
</tr>
</tbody>
</table>
Product Name: NITROPRESS ® (Sodium Nitroprusside Injection)

15. REGULATORY INFORMATION

USA Regulations

<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>Sodium Nitroprusside Dihydrate</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
</tr>
</tbody>
</table>

RCRA Status: Not Listed

U.S. OSHA Classification:
- Target Organ Toxin
- Possible Irritant

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


Hazard Statement: 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:
*Medical products are exempt from the requirements of the EU Dangerous Preparations Directive. Information provided below is for the pure drug substance Sodium Nitroprusside Dihydrate.

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:

Notes:
- ACGIH TLV: American Conference of Governmental Industrial Hygienists – Threshold Limit Value
- CAS: Chemical Abstracts Service Number
Product Name: NITROPRESS ® (Sodium Nitroprusside Injection)

CERCLA  US EPA law, Comprehensive Environmental Response, Compensation, and Liability Act
DOT     US Department of Transportation Regulations
EEL     Employee Exposure Limit
IATA    International Air Transport Association
LD50    Dosage producing 50% mortality
NA      Not applicable/Not available
NE      Not established
NIOSH   National Institute for Occupational Safety and Health
OSHA PEL US Occupational Safety and Health Administration – Permissible Exposure Limit
Prop 65 California Proposition 65
RCRA    US EPA, Resource Conservation and Recovery Act
RTECS   Registry of Toxic Effects of Chemical Substances
SARA    Superfund Amendments and Reauthorization Act
STEL    15-minute Short Term Exposure Limit
TSCA    Toxic Substance Control Act
TWA     8-hour Time Weighted Average

MSDS Coordinator: Hospira GEHS
Date Prepared: 10/28/2011
Obsolete Date: 04/28/2008

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