MATERIAL SAFETY DATA SHEET

Product Name: MVI Adult Multi-Vitamin Infusion

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
MVI Adult Multi-Vitamin Infusion

Synonyms
NA

2. COMPOSITION/INFORMATION ON INGREDIENTS

Active Ingredient Name
Vitamin C, Biotin, Vitamin D, Niacinamide, Folic Acid, Vitamin E, Vitamin B2, Vitamin B12, Vitamin K*, Vitamin B1, Vitamin B6, Dextran. *Not present in formulation without vitamin K.

Preparation
Hazardous ingredients present at less than 1% include Polysorbate 20, sodium citrate, and sodium hydroxide; butylated hydroxytoluene (BHT) and butylated hydroxyl anisole (BHA) are added as anti-oxidant preservatives. Vitamin A,

<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>Vitamin C (ascorbic acid)</td>
<td>4</td>
<td>50-81-7</td>
<td>CI7650000</td>
</tr>
<tr>
<td>Propylene Glycol</td>
<td>30</td>
<td>57-55-6</td>
<td>TY2000000</td>
</tr>
<tr>
<td>Gentisic Acid Ethanolamide</td>
<td>2</td>
<td>61969-53-7</td>
<td>NA</td>
</tr>
<tr>
<td>Polysorbate 80</td>
<td>1.6</td>
<td>9005-65-6</td>
<td>WG2932500</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>Gentisic Acid Ethanolamide</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Polysorbate 80</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Propylene Glycol</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Vitamin C (ascorbic acid)</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
</tr>
</tbody>
</table>

Emergency Overview
MVI Adult Multi-Vitamin Infusion is a liquid formulation containing water- and fat-soluble vitamins. The product may have two vials, or one larger vial with two chambers. Clinically, this product is used as a vitamin supplementation for patients receiving parenteral nutrition. In the workplace, the liquid product should be considered potentially irritating to the eyes and respiratory tract. Based on clinical use, possible target organs include the skin, eyes, and central nervous 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.
Product Name: MVI Adult Multi-Vitamin Infusion

Signs and Symptoms: None known from occupational exposure. In clinical use, there have been rare reports of anaphylactoid reactions following large intravenous doses of thiamine. The risk is negligible if thiamine is co-administered with other B-vitamins. There have also been rare reports of rash, erythema, pruritus, headache, dizziness, agitation, anxiety, diplopia, urticaria, periorbital and digital edema.

Medical Conditions Aggravated by Exposure: Pre-existing hypersensitivity to any of the vitamins in this product or pre-existing hypervitaminosis.

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: Not anticipated from this aqueous product.

Fire & Explosion Hazard: None anticipated from 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 any 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>Exposure limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propylene Glycol</td>
<td>AIHA WEEL</td>
<td>10 mg/m³, N/A ppm, N/A µg/m³, 8hr TWA</td>
</tr>
<tr>
<td>Gentisic Acid Ethanolamide</td>
<td>Not Applicable</td>
<td>N/A, N/A, N/A, None Established</td>
</tr>
<tr>
<td>Vitamin C (ascorbic acid)</td>
<td>Not Applicable</td>
<td>N/A, N/A, N/A, None Established</td>
</tr>
<tr>
<td>Polysorbate 80</td>
<td>Not Applicable</td>
<td>N/A, N/A, N/A, 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>Sterile aqueous solutions</td>
</tr>
<tr>
<td>Odor</td>
<td>NA</td>
</tr>
<tr>
<td>Odor Threshold:</td>
<td>NA</td>
</tr>
<tr>
<td>pH</td>
<td>NA</td>
</tr>
<tr>
<td>Melting point/Freezing point:</td>
<td>NA</td>
</tr>
<tr>
<td>Initial Boiling Point/Boiling Point Range:</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:</td>
<td>NA</td>
</tr>
<tr>
<td>Specific Gravity:</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>
</tbody>
</table>
Product Name: MVI Adult Multi-Vitamin Infusion

Decomposition temperature: NA

### 10. STABILITY AND REACTIVITY

**Reactivity**
Not determined

**Chemical Stability**
Stable under standard use and storage conditions. Vitamin A, Vitamin D and riboflavin are light sensitive and exposure to light should be minimized.

**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) and nitrogen oxides (NOx).

**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>
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</thead>
<tbody>
<tr>
<td>Gentisic Acid Ethanolamide</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Propylene Glycol</td>
<td>100</td>
<td>LD50</td>
<td>Oral</td>
<td>10,400-29,536</td>
<td>mg/kg</td>
<td>Rat, Mouse, Rabbit, Dog, Guinea Pig</td>
</tr>
<tr>
<td>Propylene Glycol</td>
<td>100</td>
<td>LD50</td>
<td>Intravenous</td>
<td>6423-6800</td>
<td>mg/kg</td>
<td>Rat</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6630-8000</td>
<td></td>
<td>Mouse</td>
</tr>
<tr>
<td>Polysorbate 80</td>
<td>100</td>
<td>LD50</td>
<td>Oral</td>
<td>25,000</td>
<td>mg/kg</td>
<td>Mouse</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>37,260</td>
<td></td>
<td>Rat</td>
</tr>
<tr>
<td>Vitamin C (ascorbic acid)</td>
<td>100</td>
<td>LD50</td>
<td>Oral</td>
<td>11,900</td>
<td>mg/kg</td>
<td>Rat</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Intravenous</td>
<td>&gt; 4000</td>
<td>mg/kg</td>
<td>Rat</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Oral</td>
<td>3367</td>
<td>mg/kg</td>
<td>Mouse</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Intravenous</td>
<td>518</td>
<td>mg/kg</td>
<td>Mouse</td>
</tr>
</tbody>
</table>

**Aspiration Hazard**
None anticipated from normal handling of the intact product.

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

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

**Dermal or Respiratory Sensitization**
None anticipated from normal handling of the intact product. In clinical use, there have been rare reports of anaphylactoid reactions following large intravenous doses of thiamine. The risk is negligible if thiamine is co-
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administered with other B-vitamins. There have also been rare reports of rash, erythema, pruritus, headache, dizziness, agitation, anxiety, diplopia, urticaria, periorbital and digital edema.

Reproductive Effects
None anticipated from normal use of this product.

Mutagenicity
None anticipated from the normal use of this product.

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

Target Organ Effects
Based on clinical use, possible target organs include the skin, eyes, and central nervous system.

12. ECOLOGICAL INFORMATION

Aquatic Toxicity
Not determined for product.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50(48hr, flow through)</td>
<td>189 mg/l in freshwater fish for sodium hydroxide</td>
</tr>
<tr>
<td>LC50(24hr, static)</td>
<td>125-160 mg/l in freshwater fish for sodium hydroxide</td>
</tr>
<tr>
<td>LC50(48hr, static)</td>
<td>125 mg/l in freshwater fish for sodium hydroxide</td>
</tr>
<tr>
<td>LC50(96hr static)</td>
<td>45.4 - 125 mg/l in freshwater fish for sodium hydroxide</td>
</tr>
<tr>
<td>EC(1ethality)</td>
<td>100 - 156 mg/l in Daphnia for sodium hydroxide</td>
</tr>
<tr>
<td>LC50(96 hr)</td>
<td>51,600 mg/L in rainbow trout for propylene glycol</td>
</tr>
<tr>
<td>LC50(48 hr)</td>
<td>34,400 - 43,500 mg/L in Daphnia magna for propylene glycol</td>
</tr>
<tr>
<td>EC50(14 day)</td>
<td>19,000 mg/L in algae for propylene glycol</td>
</tr>
</tbody>
</table>

Persistence/Biodegradability
Not determined for product. Propylene glycol was reported to be 100% biodegradable after 24-hours in activated 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 by the waste generator. Further, disposal of all pharmaceuticals 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
**Product Name:** MVI Adult Multi-Vitamin Infusion

## 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>
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</thead>
<tbody>
<tr>
<td>Gentisic Acid Ethanolamide</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
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<tr>
<td>Polysorbate 80</td>
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<td>Not Listed</td>
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<tr>
<td>Propylene Glycol</td>
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<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
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<tr>
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<td>Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
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</table>

<table>
<thead>
<tr>
<th>RCRA Status</th>
<th>Not Listed</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>U.S. OSHA Classification</th>
<th>Possible Irritant</th>
</tr>
</thead>
</table>

**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

**Prevention**

P260 - Do not breathe dust/fume/gas/mist/vapors/spray.

**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**

*Medicinal products are exempt from the requirements of the EU Dangerous Preparations Directive. Information provided below is for the pure drug substance Vitamin C (ascorbic acid)

**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.
Product Name: MVI Adult Multi-Vitamin Infusion

16. OTHER INFORMATION:

Notes:

ACGIH TLV  American Conference of Governmental Industrial Hygienists – Threshold Limit Value
CAS  Chemical Abstracts Service Number
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: 10/27/2011
Obsolete Date: 01/15/2009

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