## Section 1. Chemical Product and Company Identification

<table>
<thead>
<tr>
<th>Common Name/Trade Name</th>
<th>Hexamethylphosphoramide</th>
<th>Catalog Number(s)</th>
<th>H2700</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturer</td>
<td>SPECTRUM LABORATORY PRODUCTS INC.</td>
<td>14422 S. SAN PEDRO STREET</td>
<td>GARDENA, CA 90248</td>
</tr>
<tr>
<td>Commercial Name(s)</td>
<td>Hempa; Hexametapol; HMPA; HMPT; HPT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Synonym</td>
<td>Hexamethylphosphoric acid triamide; Hexamethylphosphorotriamide; Hexamethylphosphotriamide; N,N,N,N,N,N-Hexamethylphosphonic triamide; Phosphoric acid hexamethyltriamide; Phosphoric tris(dimethylamide); Phosphoryl hexamethyltriamide; Tri(dimethylamine)phosphine oxide; Tris(dimethylamine)phosphorus oxide</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemical Name</td>
<td>Phosphoric triamide, hexamethyl-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemical Family</td>
<td>Not available.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemical Formula</td>
<td>C6-H18-N3-O-P</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supplier</td>
<td>SPECTRUM LABORATORY PRODUCTS INC.</td>
<td>14422 S. SAN PEDRO STREET</td>
<td>GARDENA, CA 90248</td>
</tr>
</tbody>
</table>

## Section 2. Composition and Information on Ingredients

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>TWA (mg/m³)</th>
<th>STEL (mg/m³)</th>
<th>CEIL (mg/m³)</th>
<th>% by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Hexamethylphosphoramide</td>
<td>680-31-9</td>
<td></td>
<td></td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Toxicological Data on Ingredients</th>
<th>Hexamethylphosphoramide:</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORAL (LD50):</td>
<td>Acute: 2650 mg/kg [Rat]. 2400 mg/kg [Mouse]. 1600 mg/kg [Guinea pig].</td>
</tr>
<tr>
<td>DERMAL (LD50):</td>
<td>Acute: 2600 mg/kg [Rabbit].</td>
</tr>
</tbody>
</table>
## Section 3. Hazards Identification

| Potential Acute Health Effects | Hazardous in case of skin contact (irritant), of eye contact (irritant). Slightly hazardous in case of skin contact (permeator), of ingestion, of inhalation. |
| Potential Chronic Health Effects | **CARCINOGENIC EFFECTS:** Classified 2B (Possible for human.) by IARC. Classified A2 (Suspected for human.) by ACGIH. **MUTAGENIC EFFECTS:** Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. **TERATOGENIC EFFECTS:** Not available. **DEVELOPMENTAL TOXICITY:** Not available. The substance may be toxic to kidneys, upper respiratory tract. Repeated or prolonged exposure to the substance can produce target organs damage. |

## Section 4. First Aid Measures

| Eye Contact | Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention. |
| Skin Contact | In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention. |
| Serious Skin Contact | Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention. |
| Inhalation | If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention. |
| Serious Inhalation | Not available. |
| Ingestion | Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear. |
| Serious Ingestion | Not available. |

## Section 5. Fire and Explosion Data

| Flammability of the Product | May be combustible at high temperature. |
| Auto-Ignition Temperature | Not available. |
| Flash Points | CLOSED CUP: 144°C (291.2°F). |
| Flammable Limits | Not available. |
| Products of Combustion | These products are carbon oxides (CO, CO2), nitrogen oxides (NO, NO2...). |
| Fire Hazards in Presence of Various Substances | Slightly flammable to flammable in presence of open flames and sparks, of heat. |
| Fire Fighting Media and Instructions | SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet. |
| Special Remarks on Fire Hazards | When heated to decomposition it emits very toxic fumes of phosphine, phosphorus oxides, and nitrogen oxides |
| Special Remarks on Explosion Hazards | Not available. |
Section 6. Accidental Release Measures

Small Spill
Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill
Absorb with an inert material and put the spilled material in an appropriate waste disposal. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

Section 7. Handling and Storage

Precautions
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/vapor/spray. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, metals, acids.

Storage
Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8. Exposure Controls/Personal Protection

Engineering Controls
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection
Splash goggles. Lab coat. Gloves.

Personal Protection in Case of a Large Spill
Splash goggles. Full suit. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits
Not available.

Section 9. Physical and Chemical Properties

Physical state and appearance
Liquid.

Odor
Aromatic. Spicy.

Taste
Not available.

Color
Colorless. Clear Colorless to light yellow.

Molecular Weight
179.2 g/mole

PH (1% soln/water)
Not available.

Boiling Point
233°C (451.4°F)

Melting Point
5°C (41°F)

Critical Temperature
Not available.

Specific Gravity
1.03 (Water = 1)

Vapor Pressure
0 kPa (@ 20°C)

Vapor Density
6.18 (Air = 1)

Volatility
Not available.

Odor Threshold
Not available.

Water/Oil Dist. Coeff.
Not available.

Ionicity (in Water)
Not available.

Dispersion Properties
Not available.

Solubility
Not available.
## Section 10. Stability and Reactivity Data

<table>
<thead>
<tr>
<th>Stability</th>
<th>The product is stable.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instability Temperature</td>
<td>Not available.</td>
</tr>
<tr>
<td>Conditions of Instability</td>
<td>Excess heat, incompatible materials.</td>
</tr>
<tr>
<td>Incompatibility with various substances</td>
<td>Reactive with oxidizing agents, metals, acids.</td>
</tr>
<tr>
<td>Corrosivity</td>
<td>Not available.</td>
</tr>
<tr>
<td>Special Remarks on Reactivity</td>
<td>Does not hydrolyze in alkaline, but hydrolyzes slowly in acids.</td>
</tr>
<tr>
<td>Special Remarks on Corrosivity</td>
<td>Not available.</td>
</tr>
<tr>
<td>Polymerization</td>
<td>Will not occur.</td>
</tr>
</tbody>
</table>

## Section 11. Toxicological Information

### Routes of Entry
Absorbed through skin. Eye contact.

### Toxicity to Animals
Acute oral toxicity (LD50): 1600 mg/kg [Guinea pig].
Acute dermal toxicity (LD50): 2600 mg/kg [Rabbit].

### Chronic Effects on Humans
**CARCINOGENIC EFFECTS:** Classified 2B (Possible for human.) by IARC. Classified A2 (Suspected for human.) by ACGIH.

**MUTAGENIC EFFECTS:** Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast.
May cause damage to the following organs: kidneys, upper respiratory tract.

### Other Toxic Effects on Humans
Hazardous in case of skin contact (irritant).
Slightly hazardous in case of skin contact (permeator), of ingestion, of inhalation.

### Special Remarks on Toxicity to Animals
Not available.

### Special Remarks on Chronic Effects on Humans
May cause adverse reproductive effects based on animal test data.
May cause cancer based on animal test data.

### Special Remarks on Other Toxic Effects on Humans
Acute Potential Health Effects:
- **Skin:** Causes skin irritation. It can be absorbed through the skin. It may affect behavior/central nervous system/peri-renal nervous system (somnolence, ataxia, convulsions, fasciculations), kidneys (hematuria), respiration (dyspnea) if absorbed through the skin.
- **Eyes:** Causes eye irritation.
- **Inhalation:** Can cause respiratory tract (nose, throat) irritation. May affect blood.
- **Ingestion:** It may cause hypermotility, diarrhea. It may affect behavior/central nervous system (ataxia, somnolence, convulsions), urinary system (hematuria, incontinence)
- **Chronic Potential Health Effects:** Inhalation: Prolonged or repeated inhalation can irritate the lungs. It may cause bronchitis to develop with cough, phlegm, and/or shortness of breath. May cause lung damage.
- **Ingestion:** Prolonged or repeated ingestion may cause hypermotility, diarrhea. May affect respiration (bronchiectasis, fibrosis, focal (pneumoconiosis)), metabolism (weight loss), endocrine system (thymus). May cause kidney damage.
Hexamethylphosphoramide

Section 12. Ecological Information

Ecotoxicity Not available.

BOD5 and COD Not available.

Products of Biodegradation Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation The product itself and its products of degradation are not toxic.

Special Remarks on the Products of Biodegradation Not available.

Section 13. Disposal Considerations

Waste Disposal Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14. Transport Information

DOT Classification Not a DOT controlled material (United States).

Identification Not applicable.

Special Provisions for Transport Not applicable.

DOT (Pictograms)

Section 15. Other Regulatory Information and Pictograms

Federal and State Regulations

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Hexamethylphosphoramide

California prop. 65: This product contains the following ingredients for which the State of California has found to cause reproductive harm (male) which would require a warning under the statute: Hexamethylphosphoramide

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Hexamethylphosphoramide

Illinois toxic substances disclosure to employee act: Hexamethylphosphoramide

Illinois chemical safety act: Hexamethylphosphoramide

New York release reporting list: Hexamethylphosphoramide

Rhode Island RTK hazardous substances: Hexamethylphosphoramide

Pennsylvania RTK: Hexamethylphosphoramide

Minnesota: Hexamethylphosphoramide

Massachusetts RTK: Hexamethylphosphoramide

New Jersey: Hexamethylphosphoramide

New Jersey spill list: Hexamethylphosphoramide

Louisiana spill reporting: Hexamethylphosphoramide

California Director's List of Hazardous Substances: Hexamethylphosphoramide

TSCA 8(b) inventory: Hexamethylphosphoramide

TSCA 5(a)2 final significant rules: Hexamethylphosphoramide

TSCA 12(b) annual export notification: Hexamethylphosphoramide

SARA 313 toxic chemical notification and release reporting: Hexamethylphosphoramide

CERCLA: Hazardous substances.: Hexamethylphosphoramide: 1 lbs. (0.4536 kg)

California Proposition 65

Warnings

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Hexamethylphosphoramide

Continued on Next Page
Hexamethylphosphoramide

California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found.

Other Regulations

EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances (EINECS No. 211-653-8).
Canada: Listed on Canadian Non-Domestic Substance List (NDSL).
China: Listed on National Inventory.
Japan: Listed on National Inventory (ENCS).
Korea: Listed on National Inventory (KECI).
Philippines: Not listed on National Inventory (PICCS).
Australia: Listed on AICS.

Other Classifications

<table>
<thead>
<tr>
<th>WHMIS (Canada)</th>
<th>CLASS D-2A: Material causing other toxic effects (VERY TOXIC).</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSCL (EEC)</td>
<td>R45- May cause cancer.</td>
</tr>
<tr>
<td></td>
<td>R46- May cause heritable genetic damage.</td>
</tr>
<tr>
<td></td>
<td>S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).</td>
</tr>
<tr>
<td></td>
<td>S53- Avoid exposure - obtain special instructions before use.</td>
</tr>
</tbody>
</table>

HMIS (U.S.A.)

| Health Hazard | 2 |
| Fire Hazard   | 1 |
| Reactivity    | 0 |
| Personal Protection | j |

WHMIS (Canada) (Pictograms)

DSCL (Europe) (Pictograms)

TDG (Canada) (Pictograms)

ADR (Europe) (Pictograms)

Protective Equipment

Gloves.
Lab coat.
Wear appropriate respirator when ventilation is inadequate.
Splash goggles.
### Section 16. Other Information

<table>
<thead>
<tr>
<th>MSDS Code</th>
<th>H0267</th>
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<tbody>
<tr>
<td>References</td>
<td>Not available.</td>
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<tr>
<td>Other Special Considerations</td>
<td>Not available.</td>
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</tbody>
</table>

Validated by Sonia Owen on 1/2/2007.  
Verified by Sonia Owen.  
Printed 1/2/2007.

CALL (310) 516-8000

**Notice to Reader**

All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum Quality Products, Inc. assumes no responsibility for the completeness or accuracy of the information contained herein.