**Section 1. Chemical Product and Company Identification**

<table>
<thead>
<tr>
<th>Common Name/Trade Name</th>
<th>Nitrofurantoin</th>
</tr>
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<tbody>
<tr>
<td>Manufacturer</td>
<td>SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248</td>
</tr>
<tr>
<td>Commercial Name(s)</td>
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<td>Synonym</td>
<td>1-(((5-Nitro-2-furanylmethylene)amino-2,4-imidazolidinedione)</td>
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<tr>
<td></td>
<td>1-((5-Nitrofurfurylidene)amino)hydantoin</td>
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<tr>
<td></td>
<td>1-(5-Nitro-2-furfurylideneamino)-hydantoin</td>
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<tr>
<td></td>
<td>2,4-Imidazolidinedione, 1-((5-nitro-2-furanylmethylene)amino)-Berkfurin</td>
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<td>Chemiofuran</td>
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<tr>
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<td>Cyantin</td>
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<td>Dantafur</td>
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<td>N-(5-Nitro-2-furfurylidene)-1-aminoxydantoin</td>
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<td>Chemical Family</td>
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<td>Chemical Formula</td>
<td>C8H6N4O5</td>
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<tr>
<td>Supplier</td>
<td>SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248</td>
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**NFPA**

<table>
<thead>
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<th>Description</th>
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<td>Health Hazard</td>
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<tr>
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<td>Fire Hazard</td>
</tr>
<tr>
<td>0</td>
<td>Reactivity</td>
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**NFPA**

**HMIS**

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<td>Health Hazard</td>
</tr>
<tr>
<td>1</td>
<td>Fire Hazard</td>
</tr>
<tr>
<td>0</td>
<td>Reactivity</td>
</tr>
</tbody>
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**TSCA**

**RTECS**

**Synonym**

**Chemical Name**

**Chemical Family**

**Chemical Formula**

**Supplier**

**IN CASE OF EMERGENCY**

CHEMTREC (24hr) 800-424-9300

CALL (310) 516-8000

**Continued on Next Page**
# 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>
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<tr>
<td>1) Nitrofurantoin</td>
<td>67-20-9</td>
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<td>100</td>
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### Exposure Limits

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<tr>
<th>Toxicological Data on Ingredients</th>
<th>Nitrofurantoin:</th>
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<tbody>
<tr>
<td>ORAL (LD50):</td>
<td>Acute: 604 mg/kg [Rat]. 360 mg/kg [Mouse]. 53 mg/kg [Bird (Chicken)].</td>
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</tbody>
</table>

# Section 3. Hazards Identification

### Potential Acute Health Effects

Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation.

### Potential Chronic Health Effects

- **CARCINOGENIC EFFECTS**: Not available.
- **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 blood, lungs, liver, peripheral nervous system, central nervous system (CNS).

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. Cold water may be used. WARM water MUST be used. Get medical attention if irritation occurs.

### Skin Contact

Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

### Ingestion

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

### Inhalation

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

### Fire and Explosion Data

### Flammability of the Product

May be combustible at high temperature.

### Auto-Ignition Temperature

Not available.

### Flash Points

Not available.

### 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 heat.

### Explosion Hazards in Presence of Various Substances

- Risks of explosion of the product in presence of mechanical impact: Not available.
- Risks of explosion of the product in presence of static discharge: Not available.

### Fire Fighting Media and Instructions

- SMALL FIRE: Use DRY chemical powder.
- LARGE FIRE: Use water spray, fog or foam. Do not use water jet.
Nitrofurantoin

**Special Remarks on Fire Hazards**
Material in powder form, capable of creating a dust explosion. When heated to decomposition it emits toxic fumes of nitroxides.

**Special Remarks on Explosion Hazards**
Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

### Section 6. Accidental Release Measures

**Small Spill**
Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

**Large Spill**
Use a shovel to put the material into a convenient waste disposal container. 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 dust. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, acids, alkalis.

**Storage**
Keep container tightly closed. Keep container in a cool, well-ventilated area. Sensitive to light. Store in light-resistant containers.

### Section 8. Exposure Controls/Personal Protection

**Engineering Controls**
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

**Personal Protection**
Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

**Personal Protection in Case of a Large Spill**
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. 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**
Solid. (Powdered solid.)

**Molecular Weight**
238.16 g/mole

**pH (1% soln/water)**
Not available.

**Boiling Point**
Not available.

**Melting Point**
263°C (505.4°F)
Decomposition: 270-272°C (518-521.6°F)

**Critical Temperature**
Not available.

**Specific Gravity**
Not available.

**Vapor Pressure**
Not applicable.

**Vapor Density**
Not available.

**Volatility**
Not available.

**Odor Threshold**
Not available.

**Water/Oil Dist. Coeff.**
Not available.

**Ionicity (in Water)**
Not available.

**Dispersion Properties**
Not available.

**Solubility**
Practically insoluble in cold water, diethyl ether.

Continued on Next Page
Section 10. Stability and Reactivity Data

<table>
<thead>
<tr>
<th>Stability</th>
<th>The product is stable.</th>
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</thead>
<tbody>
<tr>
<td>Instability Temperature</td>
<td>Not available.</td>
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<tr>
<td>Conditions of Instability</td>
<td>Excess heat, light, dust generation, incompatible materials</td>
</tr>
<tr>
<td>Incompatibility with various substances</td>
<td>Reactive with oxidizing agents, acids, alkalis.</td>
</tr>
<tr>
<td>Corrosivity</td>
<td>Non-corrosive in presence of glass.</td>
</tr>
<tr>
<td>Special Remarks on Reactivity</td>
<td>Sensitive to light.</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
- Inhalation. Ingestion.

Toxicity to Animals
- Acute oral toxicity (LD50): 53 mg/kg [Bird (Chicken)].

Chronic Effects on Humans
- MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. May cause damage to the following organs: blood, lungs, liver, peripheral nervous system, central nervous system (CNS).

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

Special Remarks on Toxicity to Animals
- Not available.

Special Remarks on Chronic Effects on Humans
- May cause adverse reproductive effects and birth defects (teratogenic).
- May affect genetic material (mutagenic) May cause cancer based on animal test data.

Special Remarks on other Toxic Effects on Humans
- Acute Potential Health Effects:
  - Skin: May cause skin irritation.
  - Eyes: May cause eye irritation.
  - Inhalation: May cause respiratory tract irritation.
  - Ingestion: May be harmful if swallowed. May cause anorexia, nausea, vomiting, diarrhea. May affect behavior/central nervous system (central nervous system depression, peripheral nervous system (peripheral neuropathies of hand and feet with symptoms of burning painful feet and/or hands, and distal motor weakness).

Chronic Potential Health Effects:
- Ingestion: May cause abdominal pain, nausea, vomiting, diarrhea, anorexia, malaise, myalgia as well as arthralgia. May affect behavior/central nervous system (central nervous system depression, headache, ataxia, vertigo, drowsiness), and the peripheral nervous system (peripheral neuropathies of hand and feet with symptoms of burning painful feet and/or hands, neuralgia, and distal motor weakness). May affect eyes/vision (nystagmus (involuntary eye movements), papilledema due to increased cranial pressure, visual defects, loss of central vision), liver (hepatitis, jaundice, liver function tests impaired), the blood (changes in white blood cell count - leukopenia, granulocytopenia, agranulocytosis, eosinophilia; elevated red blood cell sedimentation, anemia), kidneys (acute interstitial nephritis). May cause allergic skin reactions such as itching, rash, hives. May cause itching, burning sensation, and tearing of eyes.
- May cause bronchospasm, or pulmonary hypersensitivity reactions which have the appearance of an allergic basis which may include symptoms such as dyspnea, nonproductive cough, fever, chills, chest pain, noncardiogenic pulmonary edema, allergic pneumonitis, interstitial pulmonary fibrosis. Tachycardia, and increased respiratory rate are often seen, as well as cyanosis and rales (abnormal breathing sounds such as crackles).
### 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 products of degradation are less toxic than the product itself.

**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: Nitrofurantoin

**California Proposition 65 Warnings**
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: Nitrofurantoin

**TSCA 8(b) inventory:** Nitrofurantoin

**California Proposition 65**

**EINECS:** This product is on the European Inventory of Existing Commercial Chemical Substances.

**Other Regulations**

**EINECS:** This product is on the European Inventory of Existing Commercial Chemical Substances.

**Other Classifications**

**WHMIS (Canada)**
CLASS D-2B: Material causing other toxic effects (TOXIC).

**DSCL (EEC)**
R22: Harmful if swallowed.
R40: Limited evidence of a carcinogenic effect.
R68: Possible risk of irreversible effects.

**S46-** If swallowed, seek medical advice immediately and show this container or label.

**HMIS (U.S.A.)**
- Health Hazard: 1
- Fire Hazard: 1
- Reactivity: 0
- Personal Protection: E

**National Fire Protection Association (U.S.A.)**
- Health: 1
- Reactivity: 0
- Specific hazard: 1

### Continued on Next Page
Nitrofurantoin

PHYSICAL AND CHEMICAL PROPERTIES

Protective Equipment

- Gloves.
- Lab coat.
- Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.
- Safety glasses.

Section 16. Other Information

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<tr>
<th>MSDS Code</th>
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<tr>
<td>References</td>
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<tr>
<td>Other Special Considerations</td>
<td>Major Uses: Medication - antibiotic</td>
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</tbody>
</table>


Printed 9/22/2011.

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.