IDENTIFICATION

MSDS Record Number: 5617928
Product Name(s): GUANIDINE HYDROCHLORIDE
Product Identification:
- PRODUCT CODE: 1480, 4075, 4077, 4168, 0072, 0504, 0506, 0507, 25465, 7716, V660
- C.A.S. NUMBER: 50-01-1

Date of MSDS: 2006-08-17
Currency Note: This MSDS was acquired from the supplier on 2007-09-06.

MANUFACTURER/SUPPLIER INFORMATION

Company: MALLINCKRODT BAKER INC

MATERIAL SAFETY DATA

Effective Date: 08/17/06
Supercedes: 12/11/03

MSDS MATERIAL SAFETY DATA SHEET

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865

Emergency Telephone Number: 908-859-2151

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

MALLINCKRODT

GUANIDINE HYDROCHLORIDE

1. Product Identification

Synonyms: Aminomethanamidine; guanidine monohydrochloride; guanidine chloride; iminourea hydrochloride; carbamidine hydrochloride
2. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS No</th>
<th>Percent</th>
<th>Hazardous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guanidine Hydrochloride</td>
<td>50-01-1</td>
<td>&gt; 98%</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3. Hazards Identification

Emergency Overview

WARNING! CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. HARMFUL IF SWALLOWED OR INHALED.

SAP-T-DATA (tm) Ratings (Provided here for your convenience)

- Health Rating: 2 - Moderate
- Flammability Rating: 1 - Slight
- Reactivity Rating: 0 - None
- Contact Rating: 2 - Moderate
- Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES
- Storage Color Code: Green (General Storage)

Potential Health Effects

Inhalation:
Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath.

Ingestion:
Toxic. May cause neurological disturbances. Causes irritation to the gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea.

Skin Contact:
Causes irritation to skin. Symptoms include redness, itching, and pain.

Eye Contact:
Causes irritation, redness, and pain.

Chronic Exposure:
No information found.

Aggravation of Pre-existing Conditions:
No information found.

4. First Aid Measures

Inhalation:
Remove to fresh air. If not breathing, give artificial respiration. If
breathing is difficult, give oxygen. Get medical attention.

Ingestion:
Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

Skin Contact:
Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eye Contact:
Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire:
As with most organic solids, fire is possible at elevated temperatures or by contact with an ignition source.

Explosion:
Not considered to be an explosion hazard.

Fire Extinguishing Media:
Dry chemical, foam or carbon dioxide.

Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Remove all sources of ignition. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8.

Spills: Clean up spills in a manner that does not disperse dust into the air. Use non-sparking tools and equipment. Reduce airborne dust and prevent scattering by moistening with water. Pick up spill for recovery or disposal and place in a closed container.

7. Handling and Storage

Keep in a tightly closed container. Store in a cool, dry, ventilated area away from sources of heat or ignition. Protect against physical damage. Store separately from reactive or combustible materials, and out of direct sunlight. Isolate from oxidizing materials. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:
None established.
Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, "Industrial Ventilation, A Manual of Recommended Practices", most recent edition, for details.

Personal Respirators (NIOSH Approved):
For conditions of use where exposure to the dust or mist is apparent, a half-face dust/mist respirator may be worn. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:
Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:
Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

| Appearance: White powder. | Boiling Point: No information found. |
| Odor: Odorless. | Melting Point: 183°C (361°F) |
| Solubility: Very soluble in water. | Vapor Density (Air=1): No information found. |
| Specific Gravity: No information found. | Vapor Pressure (mm Hg): No information found. |
| pH: No information found. | Evaporation Rate (BuAc=1): No information found. |
| % Volatiles by volume @ 21°C (70°F): No information found. |

10. Stability and Reactivity

Stability:
Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:
Burning may produce carbon monoxide, carbon dioxide, nitrogen oxides and hydrogen chloride.

Hazardous Polymerization:
Will not occur.

Incompatibilities:
Strong oxidizers.

Conditions to Avoid:
Heat, flames, ignition sources and incompatibles.
11. Toxicological Information

Oral rat LD50: 475 mg/kg.
Irritation skin rabbit: 500 mg/24H severe.
Irritation eye rabbit: 81400 ug moderate.
Investigated as a mutagen.

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\Cancer Lists\---

\NTP Carcinogen---

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Known</th>
<th>Anticipated</th>
<th>IARC Category</th>
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<tbody>
<tr>
<td>Guanidine Hydrochloride (50-01-1)</td>
<td>No</td>
<td>No</td>
<td>None</td>
</tr>
</tbody>
</table>

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12. Ecological Information

Environmental Fate:
No information found.

Environmental Toxicity:
48 Hr LC50 Leuciscus idus: 1758 mg/L

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13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations.

Dispose of container and unused contents in accordance with federal, state and local requirements.

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14. Transport Information

Not regulated.

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15. Regulatory Information

---\Chemical Inventory Status - Part 1\---

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>TSCA</th>
<th>EC</th>
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---\Chemical Inventory Status - Part 2---

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<th>NDSL</th>
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<tbody>
<tr>
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<td>Yes</td>
<td>No</td>
<td>Yes</td>
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</table>

---\Federal, State & International Regulations - Part 1---

-SARA 302- \------SARA 313------

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### Ingredient

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>RQ</th>
<th>TPQ</th>
<th>List</th>
<th>Chemical Catg.</th>
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<tbody>
<tr>
<td>Guanidine Hydrochloride (50-01-1)</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

--- Federal, State & International Regulations

### Ingredient

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CERCLA</th>
<th>TSCA 12(b)</th>
<th>COTA</th>
<th>SARA 311/312: Acute</th>
<th>Chronic</th>
<th>Fire</th>
<th>Pressure</th>
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<tbody>
<tr>
<td>Guanidine Hydrochloride (50-01-1)</td>
<td></td>
<td>261.33</td>
<td></td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Australian Hazchem Code: None allocated.
Australian Poison Schedule: None allocated.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

**NFP Ratings:**
Health: 2 Flammability: 1 Reactivity: 0

**Label Hazard Warning:**
WARNING! CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. HARMFUL IF SWALLOWED OR INHALED.

**Label Precautions:**
Avoid breathing dust.
Avoid contact with eyes, skin and clothing.
Keep container closed.
Use only with adequate ventilation.
Wash thoroughly after handling.

**Label First Aid:**
If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In all cases, get medical attention.

**Product Use:**
Laboratory Reagent.

**Revision Information:**
MSDS Section(s) changed since last revision of document include: 12.

**Disclaimer:**

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Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)
G8370

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©2007 Canadian Centre for Occupational Health & Safety
www.ccohs.ca E-mail: clientservice@ccohs.ca Fax: (905) 572-2206 Phone: (905) 572-2981
Mail: 135 Hunter Street East, Hamilton Ontario L8N 1M5