SECTION 1 - Chemical Product & Company Identification

Product Name 100% TACSIMATE™ pH 7.0

Product Number HR2-755

Company Hampton Research
Street Address 34 Journey
City, State, Zip, Country Aliso Viejo, CA 92656 U.S.A.
Technical Phone 949 425 1321
Fax 949 425 1611
Emergency Phone 949 425 1321
For CHEMTREC Assistance, call: 800 424 9300
For International CHEMTREC Assistance, call: 703 527 3887

SECTION 2 - Composition / Information on Ingredient

<table>
<thead>
<tr>
<th>Substance Name</th>
<th>CAS #</th>
<th>%</th>
<th>SARA</th>
<th>RTECS</th>
<th>LD50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium citrate tribasic</td>
<td>3458-72-8</td>
<td>&lt;1</td>
<td>no</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>Ammonium tartrate dibasic</td>
<td>3164-29-2</td>
<td>&lt;1</td>
<td>no</td>
<td>WW8050000</td>
<td>1130 mg / kg</td>
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<tr>
<td>DL-Malic acid</td>
<td>6915-15-7</td>
<td>&lt;2</td>
<td>no</td>
<td>ON7175000</td>
<td>1600 mg / kg</td>
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<tr>
<td>Malonic acid</td>
<td>141-82-2</td>
<td>&lt;1</td>
<td>no</td>
<td>OO1750000</td>
<td>1310 mg / kg</td>
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<tr>
<td>Sodium formate</td>
<td>141-53-7</td>
<td>&lt;1</td>
<td>no</td>
<td>LR0350000</td>
<td>11,200 mg / kg</td>
</tr>
<tr>
<td>Succinic acid</td>
<td>110-15-6</td>
<td>&lt;1</td>
<td>no</td>
<td>WM4900000</td>
<td>2260 mg / kg</td>
</tr>
</tbody>
</table>

SECTION 3 - Hazards Identification

EMERGENCY OVERVIEW
- Toxic (USA)
- Harmful (EU)
- Harmful if swallowed.
- Risk of serious damage to eyes.

HMIS RATING
HEALTH: 2
FLAMMABILITY: 0
REACTIVITY: 0
(CONTINUED) SECTION 3 - Hazards Identification

NFPA RATING

HEALTH: 2
FLAMMABILITY: 0
REACTIVITY: 0

For additional information on toxicity, please refer to SECTION 11.

SECTION 4 - First Aid Measures

ORAL EXPOSURE

• If swallowed, wash out mouth with water provided person is conscious.
• Call a physician immediately.

INHALATION EXPOSURE

• If inhaled, remove to fresh air. If not breathing give artificial respiration.
• If breathing is difficult, GIVE OXYGEN.
• Call a physician.

DERMAL EXPOSURE

• In case of contact, flush with copious amounts of water for at least 15 minutes.
• Remove contaminated clothing and shoes.
• Call a physician.

EYE EXPOSURE

• In case of contact with eyes, flush with copious amounts of water for at least 15 minutes.
• Assure adequate flushing by separating the eyelids with fingers.
• Call a physician.

SECTION 5 - Fire Fighting Measures

FLASH POINT

• 341.6 ° F
• 172.0 ° C

AUTOIGNITION TEMPERATURE

• 580 ° C

EXTINGUISHING MEDIA

• Suitable: Water Spray. Carbon dioxide, dry chemical powder, or appropriate foam.
SECTION 5 - Fire Fighting Measures

FIREFIGHTING
• Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

Specific Hazard(s): Emits toxic fumes under fire conditions.

SECTION 6 - Accidental Release Measures

PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL
• Evacuate area.

PROCEDURE(S) OF PERSONAL PRECAUTIONS
• Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

METHODS FOR CLEANING UP
• Sweep up, place in a bag, and hold for waste disposal.
• Avoid raising dust.
• Ventilate area and wash spill site after material pickup is complete.

SECTION 7 - Handling & Storage

HANDLING
• User Exposure
  - Do not breathe dust.
  - Do not get into eyes, on skin, on clothing.
  - Avoid prolonged or repeated exposure.

STORAGE
• Suitable: Keep tightly closed.

SECTION 8 - Exposure Controls / PPE

ENGINEERING CONTROLS
• Use only in a chemical fume hood
• Safety shower and eye bath

PERSONAL PROTECTIVE EQUIPMENT
• Respiratory: Use respirators and components tested and approved under appropriate government standards such as (NIOSH) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N99 (US) or type P2 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator.
**SECTION 8 - Exposure Controls / PPE**

- Hand: Compatible chemical-resistant gloves.
- Eye: Chemical safety goggles.

**GENERAL HYGIENE MEASURES**
- Wash contaminated clothing before reuse.
- Wash thoroughly after handling.

**SECTION 9 - Physical / Chemical Properties**

<table>
<thead>
<tr>
<th>APPEARANCE</th>
<th>PHYSICAL STATE:</th>
<th>Liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>COLOR:</td>
<td>White</td>
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<tr>
<td>FORM:</td>
<td>Powder</td>
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</table>

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>VALUE</th>
<th>AT TEMPERATURE OR PRESSURE</th>
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<tr>
<td>Molecular Weight</td>
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</tr>
<tr>
<td>pH</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>BP / BP Range</td>
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<td></td>
</tr>
<tr>
<td>MP / MP Range</td>
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<tr>
<td>Freezing Point</td>
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<td></td>
</tr>
<tr>
<td>Vapor Pressure</td>
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<td></td>
</tr>
<tr>
<td>Vapor Density</td>
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<tr>
<td>Saturated Vapor Concentration</td>
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<td></td>
</tr>
<tr>
<td>SG / Density</td>
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<td></td>
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<tr>
<td>Bulk Density</td>
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<tr>
<td>Odor Threshold</td>
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<tr>
<td>Volatile %</td>
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<tr>
<td>VOC Content</td>
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<tr>
<td>Water Content</td>
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<tr>
<td>Solvent Content</td>
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<tr>
<td>Evaporation Rate</td>
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<td>Viscosity</td>
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<td>Decomposition Temperature</td>
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<td>Flash Point</td>
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<td>Explosion Limits</td>
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<td>Autoignition Temperature</td>
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<td>Refractive Index</td>
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<td>Optical Rotation</td>
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<td>Miscellaneous Data</td>
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<tr>
<td>Solubility</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

N/A = NOT AVAILABLE
SECTION 10 - Stability & Reactivity

STABILITY

• Stable: Stable.

• Materials to Avoid: Bases, Oxidizing agents, Reducing agents.

HAZARDOUS DECOMPOSITION PRODUCTS

• Carbon monoxide
• Carbon dioxide

HAZARDOUS POLYMERIZATION

• Will not occur.

SECTION 11 - Toxicological Information

ROUTE OF EXPOSURE

• Skin Contact: May cause skin irritation.
• Skin Absorption: May be harmful if absorbed through the skin.
• Eye Contact: Causes severe eye irritation.
• Inhalation: Harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract.
• Ingestion: May be harmful if swallowed.

SIGNS & SYMPTOMS OF EXPOSURE

• Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting. To the best of our knowledge, the chemical, physical, and toxicological properties have NOT been thoroughly investigated.

TOXICITY DATA

• Oral
  Rat
  1310 mg/kg
  LD50
  Remarks: Behavioral: Convulsions or effect on seizure threshold.
  Lung, Thorax, or Respiration: Dyspnea.
  Lung, Thorax, or Respiration: Cyanosis.

• Inhalation
  Rat
  > 8,900 mg/m3
  LC50

• Intraperitoneal
  Rat
  1500 mg/kg
  LD50
(CONTINUED) SECTION 11 - Toxicological Information

• Oral
  Mouse
  4000 mg/kg
  LD50
  Remarks: Tumorigenic: Active as anti-cancer agent.

• Intraperitoneal
  Mouse
  300 mg/kg
  LD50

IRRITATION DATA
• Skin
  Rabbit
  500 mg
  24 H
  Remarks: Mild irritation effect.

• Eyes
  Rabbit
  100 mg
  24 H
  Remarks: Severe irritation effect.

CHRONIC EXPOSURE - MUTAGEN
• Species: Rat
• Route: Oral
• Dose: 10080 mg/kg
• Exposure Time: 6 W
• Mutation test: Morphological transformation.

SECTION 12 - Ecological Information

• No data available.

SECTION 13 - Disposal Considerations

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION
• Contact a licensed professional waste disposal service to dispose of this material.
• Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an after burner and a scrubber.
• Observe all federal, state, and local environmental regulations.
SECTION 14 - Transportation Information

DOT
- Proper Shipping Name: NONE
- Non-Hazardous for Transport: This substance is considered to be non-hazardous for transport.

IATA
- Non-Hazardous for Transport: Non-hazardous for air transport.

SECTION 15 - Regulatory Information

EU ADDITIONAL CLASSIFICATIONS
- Symbol of Danger: Xn
- Indication of Danger: Harmful
- S: 20 / 22-41
- Risk Statements: Harmful by inhalation and if swallowed. Risk of serious damage to eyes.
- S: 26-36 / 39
- Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing and eye/face protection.

US CLASSIFICATION & LABEL TEXT
- Indication of Danger: Toxic (USA) Harmful (EU)
- Risk Statements: Harmful is swallowed. Toxic by inhalation. Risk of serious damage to eyes.
- Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

UNITED STATES REGULATORY INFORMATION
- SARA LISTED: NO
- TSCA INVENTORY ITEM: Yes

CANADA REGULATORY INFORMATION
- WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.
- DSL: Yes
- NDSL: No

SECTION 16 - Other Information

DISCLAIMER
- For R&D use only. Not for drug, household, or other use.
WARRANTY

• The above information is believed to be correct but does no purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of this product. Hampton Research Corp., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.

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