Section 1 - Product and Company Information

Product Name: PAPAIN LYOPHILIZED
Product Number: P4762
Brand: Sigma Chemical
Company: Sigma-Aldrich
Street Address: 3050 Spruce Street
City, State, Zip, Country: SAINT LOUIS, MO 63103 US
Technical Phone: 314 771 5765
Emergency Phone: 414 273 3850 Ext. 5996
Fax: 600 325 6592

Section 2 - Composition/Information on Ingredient

<table>
<thead>
<tr>
<th>Substance Name</th>
<th>CAS #</th>
<th>SARA 313</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAPAIN</td>
<td>9001-73-4</td>
<td>No</td>
</tr>
</tbody>
</table>

Formula: Aspergillus oryzae
Synonyms: Apsa, Caro, CaroI, Nematol, Papayolin, Sommcrin, Tromasin, Vegetable papain, Velardon, Vermilysm

Section 3 - Hazards Identification

Emergency Overview
Harmful. Irritating to eyes, respiratory system and skin. May cause sensitization by inhalation.

HMIS Rating
Health: 3
Flammability: 0
Reactivity: 1

NFPA Rating
Health: 3
Flammability: 0
Reactivity: 1

*additional chronic hazards present.

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.

Inhalation Exposure
If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

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

Section 5 - Fire Fighting Measures

Autoignition Temp: N/A

Extinguishing Media
Suitable: Water spray, Carbon dioxide, dry chemical powder, or appropriate foam.

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.

Procedures of Personal Precaution(s)
Wear respirator, chemical safety goggles, 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 and Storage

Handling
User Exposure
Do not breathe dust. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

Storage
Suitable
Keep tightly closed. Freeze.

Special Requirements
Light sensitive Freeze.

Section 8 - Exposure Controls / PPE

Engineering Controls
Safety shower and eye bath. Mechanical exhaust required.

Personal Protective Equipment
Respiratory
Government approved respirator.
Hand
Compatible chemical-resistant gloves.
Eye
Chemical safety goggles.
General Hygiene Measures
Wash thoroughly after handling.

Section 9 - Physical/Chemical Properties

Appearance
Physical State
Solid

Molecular Weight: N/A

pH: N/A

BP/EP Range: N/A

MP/MP Range: N/A

Freezing Point: N/A

Vapor Pressure: N/A

Vapor Density: N/A

Saturated Vapor Conc.: N/A

SG/Density: N/A

Bulk Density: N/A

Odor Threshold: N/A

Volatile%: N/A

VOC Content: N/A

Water Content: N/A

Solvent Content: N/A

Evaporation Rate: N/A

Viscosity: N/A

Partition Coefficient: N/A

Decomposition Temp.: N/A

Flash Point “F”: N/A

Flash Point “C”: N/A

Explosion Limits: N/A

Flammability: N/A

Autoignition Temp: N/A

Solubility: N/A

N/A = not available

Section 10 - Stability and Reactivity

Stability
Stable.

Conditions to Avoid
Sensitive to light.

Materials to Avoid
Oxidizing agents.

Hazardous Decomposition Products
Hazardous Decomposition Products
Nature of decomposition products not known.

Hazardous Polymerization
Hazardous Polymerization
Will not occur.

Section 11 - Toxicological Information

Route of Exposure
Skin Contact
Causes skin irritation.

Skin Absorption
May be harmful if absorbed through the skin.

Eye Contact
Causes eye irritation.

Inhalation
Material is irritating to mucous membranes and upper respiratory tract. May be harmful if inhaled.

Ingestion
May be harmful if swallowed

Sensitization
Respiratory
May cause allergic respiratory reaction.

Signs and Symptoms of Exposure
Exposure can cause asthma, skin eruptions, anaphylactic shock, and proteolytic action. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

RTECS Number: RU4950000

Toxicity Data
Oral - Rat: 4,600 mg/kg (LD50)
Oral - Mouse: 12,500 mg/kg (LD50)

Remarks: Lungs, Thorax, or Respiration; Dyspnea.
Gastrointestinal Hypermotility, diarrhea.
Skin and Appendages; Other: Hair.

Chronic Exposure - Teratogen
Species
Route of Application
Dose
Route of Application
Exposure Time

Rat
750 MG/KG
Oral
(13D PREG)

Rat
750 MG/KG
Oral
(8-17D PREG)

Rat
1500 MG/KG
Oral
(10-11D PREG)

Rat
750 MG/KG
Oral
(8D PREG)

Rat
375 MG/KG
Intraperitoneal
(8D PREG)

Rat
375 MG/KG
Intraperitoneal
(12D PREG)

Rat
375 MG/KG
Intraperitoneal
(8-17D PREG)

Rat
750 MG/KG
Intraperitoneal
(8D PREG)

Chronic Exposure - Reproductive Hazard
Species
Route of Application
Dose
Route of Application
Exposure Time

Rat
375 MG/KG
Intraperitoneal
(12D PREG)

Specific Developmental Abnormalities: Other developmental abnormalities. Effects on Embryo or Fetus: Fetal death.
Section 16 - Other Information

Disclaimer
For R&D use only. Not for drug, household or other uses.

Warranty
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. Sigma-Aldrich Inc., 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. Copyright 2004 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.