Section 1 - Product and Company Information

Product Name: Tween® 20
Product Number: P1379
Brand: Sigma Chemical
Company: Sigma-Aldrich
Street Address: 3050 Spruce Street
City, State, Zip, Country: SAINT LOUIS, MO 63103 US
Technical Phone: 314 771 5766
Fax: 800 329 5052
Emergency Phone: 414 273 3850 Ext. 5996

Section 2 - Composition/Information on Ingredient

<table>
<thead>
<tr>
<th>Substance Name</th>
<th>CAS #</th>
<th>SARA 313</th>
<th>EC no</th>
<th>Annex I Index Number</th>
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</thead>
<tbody>
<tr>
<td>POLYOXYETHYLENE SORBITAN MONOGLUCARATE(TWEEN 20)</td>
<td>9005-64-5</td>
<td>No</td>
<td></td>
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</tr>
<tr>
<td>Formula</td>
<td>C58H114O26</td>
<td></td>
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<tr>
<td>Synonyms</td>
<td>Armona pim-20, Capmul, Daeumulse poe-smi, Emsorb 6915, Glycosperse L-20, Glycosperse L-20X, Hoestag pim-20, Liposorb L-20, Roe 20 sorbitan monolaurate, Polysorbo L-20, PSML, Sorbitan monolaurate 300, Sorbitan, monoleodecanole, polyoxy-1.2-(ethanediyl) derivatives, Tween 20</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Section 3 - Hazards Identification

HMIS Rating
- Health: 0
- Flammability: 1
- Reactivity: 0

NFPA Rating
- Health: 0
- Flammability: 1
- 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.

Inhalation Exposure
If inhaled, move to fresh air. If breathing becomes difficult, call a physician.

Dermal Exposure
In case of contact, immediately wash skin with soap and copious amounts of water.

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: 230 °F
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 noxious fumes under fire conditions.

Section 6 - Accidental Release Measures

Methods for Cleaning Up
Absorb on sand or vermiculite and place in closed containers for disposal. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

Handling
- User Exposure: Avoid inhalation. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

Section 8 - Exposure Controls / PPE

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

Personal Protective Equipment
- Hand: Protective gloves.
- Eye: Chemical safety goggles.

General Hygiene Measures
Wash thoroughly after handling.

Section 9 - Physical/Chemical Properties

Appearance: Physical State: Liquid
Molecular Weight: N/A
pH: 7
BP/BP Range: 105 °C
MP/MP Range: N/A

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Freezing Point: N/A
Vapor Pressure: < 0.5 mmHg
Vapor Density: N/A
Saturated Vapor Conc.: N/A
SG/Density: 1.105 / 0.93
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: 250 - 450 Pas
Partition Coefficient: N/A
Decomposition Temp: N/A
Flash Point "F": 230 °F
Flash Point °C: 110 °C
Explosion Limits: N/A
Flashability: N/A
Autoignition Temp: N/A
Refractive Index: 1.47
Solubility: Soluble
N/A = not available

Section 10 - Stability and Reactivity

Stability
Stable

Materials to Avoid
Strong oxidizing agents.

Hazardous Decomposition Products
Carbon monoxide, Carbon dioxide.

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: May cause eye irritation.
Inhalation: May be harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract.
Ingestion: May be harmful if swallowed.

Signs and Symptoms of Exposure
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

RTECS Number: TR7400000

Toxicity Data
Sigma Chemical - P1379 Sigma-Aldrich Corporation www.sigma-aldrich.com

Section 12 - Ecological Information

No data available.

Section 13 - Disposal Considerations

Appropriate Method of Disposal of Substance or Preparation
Consult a licensed professional waste disposal service to dispose of this material.

Section 14 - Transport Information

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

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

Section 15 - Regulatory Information

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.
DLS: Yes
NDSL: No

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Oral - Rat: 36700 UL/KG (LD50)
Intraperitoneal - Rat: 3850 MG/KG (LD50)
Intravenous - Rat: 770 MG/KG (LD50)
Oral - Mouse: > 33000 mg/kg (LD50)
Intraperitoneal - Mouse: 2640 MG/KG (LD50)
Intravenous - Mouse: 1420 MG/KG (LD50)
Oral - Hamster: 18 ML/KG (LD50)

Irritation Data
Skin - Human: 15 mg 3D
Remarks: Mild irritation effect

Chronic Exposure - Teratogen
Species: Mouse
Route of Application: Dose
Exposure Time: 7 days

Chronic Exposure - Reproductive Hazard
Species: Mouse
Route of Application: Dose
Exposure Time: 3 days

Route: Intraperitoneal
Ingestion: 1 G/MG/KG
Inhalation: 1 G/MG/KG
Ingestion: 1 G/MG/KG
Inhalation: 1 G/MG/KG

Result: Specific Development Abnormalities: Musculoskeletal system.
Result: Specific Development Abnormalities: Other developmental abnormalities.

Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).
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. 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 the product. 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 2005 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.