**OPTISHELL™ TECHNOLOGY FOR THE OTC MARKET**

An innovative solution for encapsulation challenges

**Overcome** Expanding upon the utilization of traditional softgel solutions, OptiShell™ technology can handle more APIs with a shell matrix that is not reactive to gelatin cross-linking agents. The plant-derived shell enables filling temperatures significantly higher than conventional softgels.

<table>
<thead>
<tr>
<th>Formula</th>
<th>Base Vehicle</th>
<th>Vehicle Characteristics at Room Temperature</th>
<th>Drug Loading</th>
<th>Physical State of the Formulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PEG 6000</td>
<td>hydrophilic, solid</td>
<td>35-43%</td>
<td>solid solid low viscosity fluid</td>
</tr>
<tr>
<td>2</td>
<td>Sucrose Acetate Isobutyrate</td>
<td>lipophilic, extremely viscous fluid</td>
<td>40-50%</td>
<td>extremely viscous fluid extremely viscous fluid viscous fluid</td>
</tr>
</tbody>
</table>

**Improve** In addition to the elimination of shell odor and a more neutral shell color, the plant-derived shell of OptiShell™ technology helps solve complex solubility, permeability, and stability challenges that may improve the bioavailability of your product, helping you to deliver better treatments to the patients you serve.

**UNIQUE SHELL FORMULATION:**
- modified starch
- carrageenan (extract of red seaweed)
- disodium phosphate
- glycerol and/or sorbitol
- purified water

**Solve** OptiShell™ technology expands the range of fill formulations of traditional gelatin capsules to include:
- Hydrophilic
- Lipophilic
- Microemulsion preconcentrates
- Semi-solids or highly viscous liquids
- High levels of surfactants
- High drug concentrations and drug salts
Expert Encapsulation Solutions, Reliably Supplied

OptiShell™ technology, an innovative evolution in soft capsule drug delivery

**Development**  Our formulation expertise makes Catalent’s OptiShell™ capsules technology an optimized drug delivery technology with benefits beyond that of traditional tablet dosage forms:

- Enhanced bioavailability
- Improved absorption
- Better permeability
- Excellent dose uniformity of highly potent, low-dose compounds
- Targeted delivery
- Improved stability

**Delivery**  OptiShell™ technology offers expanded soft capsule benefits beyond traditional gelatin capsules.

- Excellent stability with highly alkaline fills up to pH 12
- Eliminates cross-linking of capsule shell for fills containing aldehyde or ketone groups
- Withstands elevated filling temperatures, up to 65°C without adversely affecting the capsule quality
- Encapsulation of highly viscous and semi-solid systems
- Elimination of shell odor
- More neutral shell color

**Supply**  We are the originators of the modern softgel manufacturing process with an integrated global network of state-of-the-art cGMP facilities that move your product from the clinic to the market with superior quality and reliability.

- Containment facilities for potent compounds and cytotoxic products
- FDA approved pilot plants that meet cGMP requirements
- An excellent regulatory compliance track record

In addition to:

**Laboratory Encapsulation**  Our expertise in producing small, laboratory-scale softgel batches provides you with the pre-clinical tools necessary for generating early drug product stability data, as well as, animal testing supplies.

**Softgel Printing**  Our innovative in-line gel ribbon printing is a catalyst to help you differentiate your product in the global market place.

Discover more solutions at www.catalent.com/ consumerhealth

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