AVEKA has microencapsulation techniques that are applied to a wide range of materials serving a variety of industries such as food, personal care, and agriculture. Our broad scientific and engineering expertise gives us the ability to investigate and tailor the microencapsulation approaches to best meet your needs.

Our encapsulation technologies include processes such as spray drying, prilling, in situ-polymerization, and alginate encapsulation. We offer a number of bead formation techniques that provide innovative delivery systems and visual appeal. Each technique offers unique and specific advantages dependant on factors such as:

- **Bead Size**
- **Release Mechanism**
- **Active Ingredient**
- **Encapsulation Material**

AVEKA brings years of microencapsulation experience, with proven technology and an extensive intellectual property position to assist in developing and producing your unique engineered particle.

**AVEKA** is your microencapsulation solution provider from R&D to production.
### Core Materials:
- **Liquids**
  - Water miscible
  - Hydrophobic (oils, etc)

- **Solids**
  - Water Soluble
  - Water Insoluble

### Wall Material
- Typical Material: Sugars, starch, Wax, PMU, Salt of alginic acid

### Release Mechanism
- Pressure (breakage)
- Dissolving
- Heat (melting)
- Chewing
- Digestion

### Approved for:
- Food
- Cosmetics

### Capsules
<table>
<thead>
<tr>
<th>Type</th>
<th>Core-shell</th>
<th>Matrix</th>
<th>Core-shell</th>
<th>Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>0-50</td>
<td>0-60</td>
<td>0-80</td>
<td>0-30</td>
</tr>
<tr>
<td>Size limits, microns</td>
<td>5-30</td>
<td>20-2000</td>
<td>10-120</td>
<td>200-5000</td>
</tr>
</tbody>
</table>

### Process
- Relative Cost: Low, Medium, High, Medium

### ADVANTAGES
- Low cost, able to make water soluble walls
- Can set release temperature by matrix material selection
- Tough, impermeable shell holds fragrances well
- Approved for foods, beverages, wet or dry delivery

### DISADVANTAGES
- Limited to water soluble wall materials
- Matrix-type capsule presents less resistance to fill release
- Aggregation; cost
- Capsules somewhat fragile. Some fills may leak slowly

### IDEAL SYSTEM
- Vitamin E oil in a water soluble shell
- Flavor, color and nutraceuticals, solids
- Fragrance oils in cosmetics
- Emollients and fragrances for personal care products. Flavors, color in food