

# AVEKA

**SPECIALISTS IN PARTICLE TECHNOLOGY  
TOLL MANUFACTURING**

## ENCAPSULATION TECHNOLOGIES

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.**

## HIGHLIGHTS

- **SPRAY DRYING**
- **PRILLING**
- **DRY WATER**
- **ALGINATE ENCAPSULATION**
- **IN-SITU POLYMERIZATION**

# MICROENCAPSULATION

	Spray Drying	Prilling	In-Situ Polymerization	Alginate Soft Beads
<b>Core Materials: Liquids</b>				
Water miscible	Some			
Hydrophobic (oils, etc)	■	■	■	■
<b>Core Materials: Solids</b>				
Water Soluble	■			
Water Insoluble	■	■	Some	■
<b>Wall Material</b>				
Typical Material	Sugars, starch	Wax	PMU	Salt of alginic acid
<b>Release Mechanism</b>				
Pressure (breakage)	■	■	■	■
Dissolving	■	■		■
Heat (melting)		■		Slight
Chewing	■	■		■
Digestion	Slight	■		■
<b>Approved for:</b>				
Food	■	■		■
Cosmetics	■	■	■	■
<b>Capsules</b>				
Type	Core-shell	Matrix	Core-shell	Matrix
Typical Payload, %	0-50	0-60	0-80	0-30
Size limits, microns	5-30	20-2000	10-120	200-5000
<b>Process</b>				
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