

AVEKA

**SPECIALISTS IN PARTICLE TECHNOLOGY
TOLL MANUFACTURING**



HIGHLIGHTS

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

ENGINEERED PARTICLES

AVEKA has many techniques to engineer particles with a vast number of materials serving most industries such as food, personal care, and agriculture. Our broad scientific and engineering expertise gives us the ability to investigate and tailor particles to best meet your needs.

The technologies we use to engineer particles 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 particle engineering experience, with proven technology and an extensive intellectual property position to assist in developing and producing your unique engineered particle.

AVEKA is your unique particle solution provider from R&D to production.

ENGINEERED PARTICLES

	Spray Drying	Prilling	In-Situ Polymerization	Alginate Soft Beads
Core Materials: Liquids				
Water miscible	Some			
Hydrophobic (oils, etc)	■	■	■	■
Core Materials: Solids				
Water Soluble	■			
Water Insoluble	■	■	Some	■
Wall Material				
Typical Material	Sugars, starch	Wax	PMU	Salt of alginic acid
Release Mechanism				
Pressure (breakage)	■	■	■	■
Dissolving	■	■		■
Heat (melting)		■		Slight
Chewing	■	■		■
Digestion	Slight	■		■
Approved for:				
Food	■	■		■
Cosmetics	■	■	■	■
Capsules				
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
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