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evocore[®]

White Paper



treasuring the secrets of flavor
unleashing great taste!

evocore 

Consumers look for great taste enjoyment in all food and drink. Encapsulating flavors protects and delivers this great taste. **evocore**® supports food and beverage manufacturers in this task, offering the most comprehensive portfolio of encapsulation taste solutions. The **evocore**® family delivers fit-for-purpose flavor performance at an attractive cost-in-use.



What benefits does encapsulation offer to consumers?

Taste is the number one driver of consumer preferences in the dynamic food and beverage market. While food & beverage trends evolve, great taste continues to be the most important repurchase driver.

Consumer's perception focuses on a couple of key areas and expectations:

In dry beverages, depending on the application such as hot or cold instant drinks or tea infusions, consumers expect:

- full taste experience
- high flavor impact
- instant solubility & flavor release
- consistent blend quality
- natural taste experiences
- premium natural appeal
- visual pleasing appeal
- consistent quality
- reasonable prices

In sweet areas such as baked goods, chewing gum, confectionery, and chocolates, consumers look for the following properties:

- consistent flavor performance
- continuous flavor release
- high flavor impact
- good and lasting taste
- visually appealing colored particles
- balanced taste
- natural appeal

evocore® - a family of encapsulation solutions that delivers fit-for-purpose flavor performance for foods and beverages at an attractive cost-in-use

Encapsulation benefits for Food & Beverage Manufacturers

As much as producers of foods and drinks want to stand out with their individual products and their taste impact, they also want flavor impact to endure and provide a memorable experience.

Whereas liquid flavors provide the right solution for many applications, others require specific characteristics to prevent them from mingling with the matrix, such as in teas or chewing gums.

Consequently, the requirements of manufacturers mirror consumer demands and add challenges to product creation. Summarizing the key requirements for manufacturers, their requirement lies in the following areas:



In dry beverages, depending on the application, such as hot and cold instant drinks and tea infusions for instance, manufacturers look for:

- enhanced flavor stability
- cost efficiency
- instant solubility
- dust-free and free-flowing solutions
- avoiding de-blending
- flexible granule color and shape
- natural appearance
- invisible flavoring solutions

In sweet areas, such as baked goods, chewing gum, confectionery, and chocolates, manufacturers prefer:

- cost efficiency
- easy application in dry mixes
- sugar free carrier systems
- dust-free and free flowing solutions
- superior price-performance ratio
- natural flavor coated particles
- attractive labeling
- long shelf-life
- vegan, kosher and halal

Bringing it altogether

Encapsulation with **evocore**® helps protect great taste in food and beverages. It enables accommodation of the widest variety of needs in a demanding market by uniting all Symrise encapsulation technologies under one roof.

Symrise encapsulation solutions help overcome challenges enabling great taste and protecting flavors during production, transport and storage of the final product.

evocore® increases flavor stability and ensures delivery of the desired taste release while taking into account technical aspects and financial targets for the end product.

Symrise **evocore**® provides a broad range of encapsulation solutions that cover:

Superior flavor delivery with the broadest portfolio of encapsulation solutions, pioneering technology development

Technical expertise with long-term in-house proven know-how across all categories

Collaborative product creation with tailor-made solutions for customers' specific technical challenges.



Four areas of expertise define the **evocore®** encapsulation platform



evocore® a family of encapsulation solutions that delivers fit-for-purpose flavor performance for foods and beverages at an attractive cost-in-use. It protects great taste all the way from production to consumption – unleashing delicious taste at exactly the moment the consumer wants it.

Technology explained

Spray drying is a method of producing a dry powder from a slurry (emulsion) by atomizing the emulsion into a drying chamber with circulating hot air. A fine powder is produced, which might have poor flowing properties. The fine powders generated by these kinds of single stage dryers can in an advanced process be recycled to the top of the spray drying chamber, where they come in contact with the atomized emulsion. This rewetting of the particles causes sticky surfaces which during the transportation of the particles inside the chamber lead to an agglomeration. By this 2-step process, fine powder is agglomerated to form larger particles that are less dusty and free-flowing.

Spray granulation in the fluidized bed permits liquids to be directly made into free-flowing granulate with specific product properties. Liquids containing solids, such as solutions, suspensions or melts, are sprayed into a fluidized bed system. Due to the high heat exchange, the aqueous or organic solutions evaporate immediately, and the solids form small particles as starter cores. These are sprayed with other liquids which in turn, after evaporation, form a hard coating around the starter core. This step is continuously repeated in the fluidized bed so that the granulate grows layer by layer like an onion. Alternatively, a defined volume of suitable starter cores can be provided. In this option, the liquid only serves as a vehicle for the solids that are being applied. This process variant is often used in a continuous fluidized bed system with air-classifying discharge. Through the continuous removal of the finished granules from the drying room,

the amount of particles in the fluidized bed remains constant.

Hot melt extrusion involves mixing a flavor with molten sugar in the hot zones of the extruder. The mixture is then cooled down to become a molten carbohydrate matrix in the cooling zone, forced through a die plate and cut into defined pieces. Extruded flavors have greatly improved shelf-life, as they are captured in a frozen molten mass, which is an ideal glassy matrix.

In the **drip casting** technology, the flavor to be encapsulated and the solution of the shell material are forced simultaneously through a special co-extrusion nozzle. The droplets are falling into a hardening bath where cross-linking of the shell-material occurs. It is also possible to produce beads with the core material being homogeneously dispersed within the matrix material by using a single fluid nozzle system.

Dry beverage applications

| evocore® | | | | | | | | | |
|--|--|--|--|---|---|--|--|---|---|
| spray drying | | | granulation | | extrusion | | drip casting | | |
| evospray® | evodry® | evostar® | evogran® | evogran® coating | evoglass® | evoglass® SF | evocap® | evocap® alginate | evopearls® |
| | | | | | | | | | |
| The first flavor spray drying solution ever. Consistently performing. Globally available & affordable. | Pioneering & globally leading in spray bed drying, offering instant solubility & flavor release. | The next level of spray bed drying. When particle size matters for superior taste. | The unmatched granulation technology with all the flexibility you need (load, size). | The unique technology for an optimal flexibility in color & shape for a natural appeal. | The art of extrusion. Ultimately flexible. Ultimately stable. Made to appeal. | The sugar-free way of extrusion. A continuous flavor release with a visual attraction. | The origin of all drip casting technologies with an outstanding flavor burst for an exciting taste experience. | A further milestone in drip casting technologies. A vegan solution with outstanding flavor burst. | The leading edge in drip casting for high process stability. A vegan solution combining an exciting onset of taste with a remarkably long-lasting experience. |

Sweet applications

| evocore® | | | | | | | | | |
|--|--|--|--|---|---|--|--|---|---|
| spray drying | | | granulation | | extrusion | | drip casting | | |
| evospray® | evodry® | evostar® | evogran® | evogran® coating | evoglass® | evoglass® SF | evocap® | evocap® alginate | evopearls® |
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Do you want to learn more about encapsulating flavors? Please ask our experts.

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