Unique&Easy Micro-Encapsulation Solutions

Product Overview - 8816

SalScent®

A do-it-yourself solution for encapsulating fragrances and (essential) oils

SalScent® is an innovative fragrance encapsulation technology developed by Salvona Technologies, designed to enhance the longevity and performance of fragrances in various products. It is a composite of synthetic polymers that entrap fragrance molecules, allowing for controlled release over time.

Key features include:

- Extended Fragrance Release: Boosts the longevity of scents, making them last longer on skin, hair, or surfaces than traditional fragrance formulations.
- Cost-Effective: Reduces the fragrance needed in formulations, lowering costs while maintaining performance.
- Versatile Compatibility: It works with clear, aqueous, or hydroalcoholic bases and is suitable for personal care (e.g., perfumes, lotions), home (e.g., air fresheners), and industrial applications.
- DIY Encapsulation: Allows manufacturers to encapsulate their chosen fragrances at their facility with simple mixing equipment, offering flexibility.
- Clear Formulations: Enables the creation of alcohol-free, halal-compliant, clear products like fine perfumes.

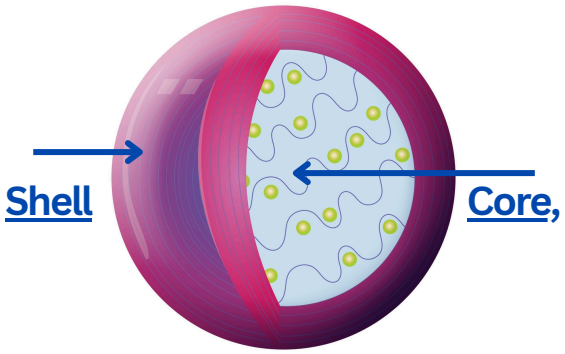


Figure 1: SalScent® is a clear polymeric solution ready to be loaded with functional oils, including fragrance and essential oils.

SalScent® uses a pre-case technology where fragrance is entrapped in the pores or cavities of a polymer core during mixing, ensuring stability and controlled release. It's particularly valuable for products like leave-on sprays, and fine perfumes.



Achieving consistent results in SalScent® encapsulation methods may require some trial and error to optimize the maximal loading of the functional ingredients.

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Mechanism of Encapsulation

The process of oil encapsulation is based on (1) absorption and entrapment of the oil onto sub-micron spheres through thermodynamic and physical interactions such as Van der Waals forces.

Following surface adsorption, (2) the oil penetrates the porous structure of the spheres to form a core saturated with the oil.

The shell is made of hydrated polymer that (3) entraps the core. The spheres are suspended in the medium, typically water or hydro-alcohol. The entrapped ingredients remains stable within the shell. The physical encapsulation occurs at the point of application, i.e. spray the product on the skin.

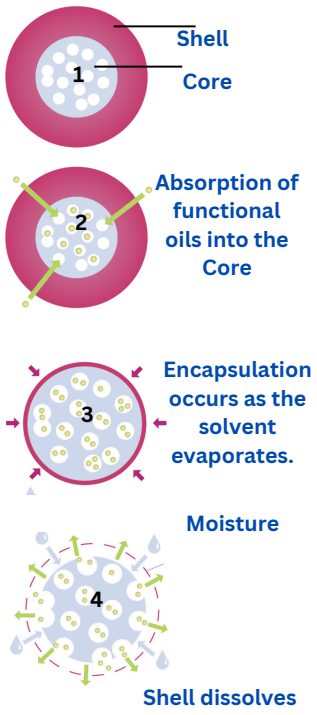


Fig 2: Diagram of the entrapment, encapsulation and release from SalScent®

Release:

As the water evaporates, the polymer concentration rises, bringing chains closer together (3). This proximity enhances intermolecular interactions, setting the stage for crystallization that locks in the oils.

Encapsulated oils are released primarily through diffusion (4), driven by concentration gradients between the interior of the microsphere and the surrounding aqueous environment. However, when the sphere is exposed to water, hydrolytic degradation progresses, diminishing the microsphere's structural integrity and leading to shell erosion. This erosion further facilitates the release of oils by enlarging the pathways through which they can diffuse out of the microsphere.



Figure 3: Spray leaves no residue on the skin and other surfaces.

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Fragrance Time Release

Sensory analysis with panelists evaluates the longevity and intensity of SalScent®-encapsulated fragrances applied via spray bottle on paper strips.

Materials

SalScent®-encapsulated fragrance samples: These are prepared using DIY encapsulation (e.g., 3% fragrance in a clear aqueous base).

Control samples: Non-encapsulated fragrance (same fragrance at 3% in ethanol).
Spray bottles: Uniform nozzle, delivering ~0.054 g per spray (standardized).
Paper test strips: Neutral, unscented blotter paper (5 cm x 1 cm).
Sensory evaluation forms: Labeled Magnitude Scale (LMS) for intensity (0 = no sensation, 100 = strongest).
Timer: For time point measurements.
Controlled environment: Sensory booth (25°C, 50% RH, odor-free, well-ventilated).
Data collection tools: Tablets or paper for recording scores.
Cleansing materials: Unscented wipes and water for panelists to cleanse the olfactory palate.

Panelist Selection

- Number: 20 untrained panelists (10 male, 10 female, aged 18–50).

Sample Preparation

Encapsulation:

Use SalScent® pre-case polymer composite to encapsulate the chosen fragrance
at 3% w/w using simple mixing equipment (per Salvona's DIY guidelines).

Prepare control (non-encapsulated 3% fragrance in ethanol).

Spray Bottle Setup:
Fill spray bottles with 10 mL of each sample (encapsulated and control).
Calibrate to deliver one spray = 0.054 g (verified by weighing).

Paper Strip Application:
Spray one spray of each sample onto a paper strip from 5 cm away.
Label strips with randomized codes to ensure blind testing.



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The ratio of fragrance to SalScent

The ratio of fragrance to SalScent® in a formulation depends on the specific application, desired intensity, and the DIY encapsulation process outlined by Salvona Technologies.

General Guidelines for Fragrance to SalScent® Ratio
Typical Fragrance Loading:
SalScent® is designed to encapsulate fragrances efficiently.
Procedure

1. Setup:
   - Place 1 g of SalScent® pre-case polymer composite into a clean, dry, scaled test tube.
   - Ensure the test tube is marked for volume measurements (e.g., 0.1 mL increments).
2. Fragrance Addition:
   - Using a pipette, add the chosen fragrance dropwise (e.g., 0.01 g increments) to the SalScent® in the test tube.
   - After each addition, cap the test tube and mix thoroughly using a vortex mixer (30 seconds) or magnetic stirrer (1 minute) to ensure even distribution.



3. Determine Maximum Loading:

Continue adding fragrance incrementally, mixing after each addition.
Observe the mixture closely. Stop adding fragrance when you visually detect oil floating on top of the SalScent® (indicating saturation, where the polymer can no longer absorb additional fragrance).

Record the total weight of fragrance added at this point as the maximum loading (e.g., 0.3 g fragrance per 1 g SalScent® = 30% w/w maximum loading).

4. Calculate Optimal Loading:
Reduce the maximum loading by 10% to determine the optimal fragrance loading for stability and performance.
Example: If maximum loading is 0.3 g fragrance per 1 g SalScent® (30% w/w), the optimal loading is:
0.3 g × 0.9 = 0.27 g fragrance per 1 g SalScent® (27% w/w).

5. Verification:
Prepare a small batch using the optimal loading ratio (e.g., 0.27 g fragrance + 1 g SalScent®).
Mix thoroughly and check for homogeneity (no visible oil separation).
Store the mixture for 24 hours at 25°C to confirm stability (no leakage or phase separation).

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Fragrance Time Release

Factors Affecting Fragrance Longevity with SalScent®

Type of Fragrance:

- Volatility: Citrus/floral scents fade faster; woody/musky last longer, enhanced by SalScent®.
- Molecular Structure: Light molecules (e.g., limonene) diffuse quickly; heavier ones (e.g., sandalwood) release slowly.
- Polarity: Affects interaction with SalScent®'s polymer, altering release.

Loading: Optimal: ~10% below max (e.g., 27% w/w if max is 30%) for max longevity.

- Overloading: Excess fragrance reduces longevity.
- Underloading: Weak intensity but extended-release.
-

Application:

Spray (Leave-On): Lasts 6–8+ hours on skin/paper.

Wash-Off: 2–4 hours residual scent on skin/hair.

Surfaces: Days-long release on fabrics, triggered by air/humidity.

Environment: Heat, humidity, airflow impact release; moisture boosts SalScent® longevity.

With SalScent®, craft long-lasting scents tailored to any fragrance or application! From vibrant sprays to wash-off wonders, optimize loading for hours of captivating aroma.

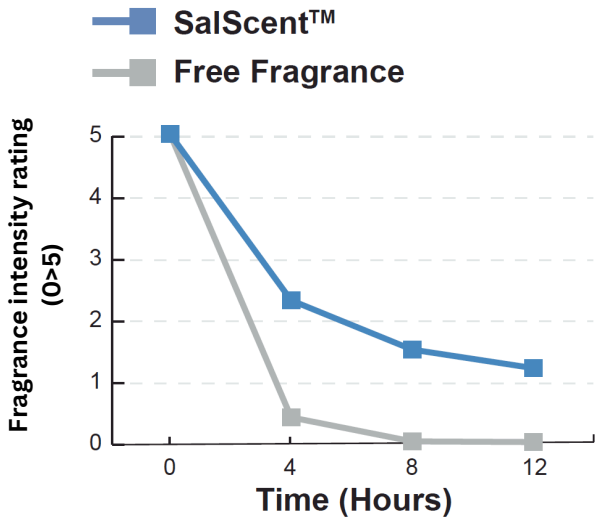


Figure 4: SalScent® at a ratio of 1:2.3 (fragrance: SalScent®) vs. free fragrance. A fragrance with SalScent® smells stronger and for longer.

Benefits of Longer-Lasting Aroma Release from the Body

A longer-lasting aroma release from the body, as enabled by SalScent®, offers multiple advantages. Key benefits:

- **Enhanced Sensory Experience:** Continuous fragrance boosts confidence, delivering a luxurious, refreshing feel all day.
- **Improved Efficacy:** Persistent scent signals quality, building trust and satisfaction.
- **Convenience:** Fewer reapplications save time, and it is perfect for active lifestyles or humid conditions.
- **Mood Boost:** Sustained aromas (e.g., calming lavender) uplift emotions, with SalScent®'s moisture-activated bursts enhancing key moments.
- **Market Edge:** Long-lasting scents stand out, aligning with premium wellness trends.

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Release on-Demand, Body Moisture Triggered Release

The effect of exposure of water on fragrance release.

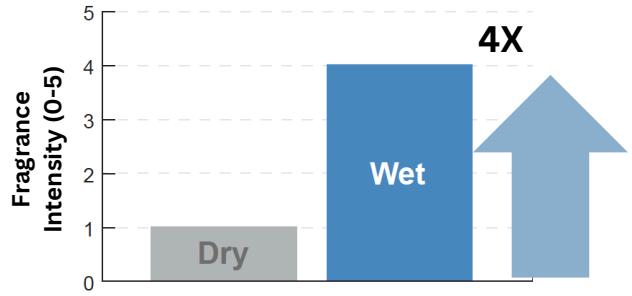


Figure 5: Consumer response ratings for SalScent® before exposure to moisture (dry) and after (wet).
The product (spray) was applied to the skin and allowed to dry out for 8 hours. After 8 hours, we sprayed water to simulate natural moisture. The perceived odor intensity omitted from the wet area was significantly 4 times stronger than that from the dry area.



Unique Aspects of Moisture-Activated Fragrance Release with SalScent®

- SalScent®'s moisture-activated fragrance release is a distinctive feature that sets it apart from traditional fragrance delivery systems. This technology leverages environmental moisture (e.g., humidity, perspiration) to trigger and sustain the release of encapsulated fragrances or essential oils, offering a dynamic and responsive sensory experience. Below are the key unique aspects:
- **Dynamic Release**: SalScent®'s polymer matrix triggers fragrance bursts with moisture (e.g., sweat, humidity), unlike fast-fading conventional scents. Example: A body spray refreshes during activity.
- **Extended Longevity:** Moisture opens polymer pores, releasing fragrance gradually for 6–8+ hours (sprays) or days (surfaces), outlasting non-encapsulated scents.
- **Consumer-Relevant:** Activates during perspiration or humidity, ensuring freshness in active or tropical settings.
- **Versatile:** Enhances lotions, shampoos, perfumes, or air fresheners.
- **Efficient**: Moisture-driven release reduces fragrance waste, using 1–5% loading for cost-effective, long-lasting results.
-

Experience SalScent®'s moisture-activated magic! Sweat or humidity unleashes vibrant, long-lasting fragrance bursts, keeping you fresh at any moment. Ideal for skincare, perfumes, or home—shine effortlessly!

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Technical Data Sheet

INCI - 8816-11

Dipropylene Glycol, C12-15 Pareth-12, PVP, Hydroxypropylcellulose, Water, perservatives.

Property	Specification
Appearance	Transluscent Liquid
Form @RT	Liquid
Color	Colorless to slight yellow
Odor	Characteristic
pH (1% aqueous solution)	4.0 - 6.0



Figure 6: SalScent® is a clear polymeric solution ready to be loaded with functional oils, including fragrance and essential oils.



A



B

Fig 7: A: Body gel and B: Room air freshener based on SalScent®

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Applications of SalScent®

SalScent® enables the encapsulation of hydrophobic ingredients within protective materials. This technique offers several benefits across various applications, enhances their stability, efficacy, and safety, expanding their potential across multiple sectors.
Key hydrophobic ingredients that benefit from encapsulation include:

1. Essential Oils:

- Application: Widely used in aromatherapy, cosmetics, and pharmaceuticals.

2. Fat-Soluble Vitamins (e.g., Vitamins A, D, E, K):

3. Polyunsaturated Fatty Acids (e.g., Omega-3, Omega-6):

4**. Natural Colorants** (e.g., Carotenoids):

5. **Enahnce sun protection factor (SPF)** oils:

- Red Raspberry Seed Oil: Offers an SPF ranging from 28 to 50, providing significant protection against UVA and UVB rays.
- Carrot Seed Oil: Contains an SPF between 35 and 40, and is rich in antioxidants and vitamin A.
- Wheat Germ Oil: Provides an SPF of approximately 20, and is a good source of vitamins E, K, and B.
- Avocado Oil: Has an SPF ranging from 4 to 15, and is high in monounsaturated fats, creating a protective layer over the skin.
- Coconut Oil: Offers an SPF of about 7, and is known for its moisturizing properties.

Formulation tip:

Hydroalcoholic Deodorant Spray

Cherry Blossom Body Mist (PID: 11420)		
INCI		**%WT**
A	*Denatured alcohol*	55.00
A	*Glycerin*	10.00
A	*Propanediol*	10.00
B	*Cherry Blossom Fragrance*	7.50
B	***SalScent® 8816-11***	**7.50**
C	*Water*	10.00
	Total	**100.00**

Procedure

1. Combine phase A ingredients sequentially in main kettle.
2. Pre-mix phase B, then add to main kettle. Mix until homogenous.
3. Add phase C and mix until homogenous.



Figure 8: Spray for personal care use with SalScent

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References

Claim	Reference
Red Raspberry Seed Oil: Offers an SPF ranging from 28 to 50, providing significant protection against UVA and UVB rays.	https://hybridrastamama.com/natural-oils-as-sun-protection/?utm_source=chatgpt.com
Carrot Seed Oil: Contains an SPF between 35 and 40, and is rich in antioxidants and vitamin A.	https://www.leaf.tv/articles/natural-oils-that-contain-spf/?utm_source=chatgpt.com
Wheat Germ Oil: Provides an SPF of approximately 20, and is a good source of vitamins E, K, and B.	https://wildernorthbotanicals.com/blog/5-of-the-best-natural-oils-with-spf-protection/?utm_source=chatgpt.com
Avocado Oil: Has an SPF ranging from 4 to 15, and is high in monounsaturated fats, creating a protective layer over the skin.	https://blackhairinformation.com/general-articles/top-7-natural-oils-spf-sun-protection/?utm_source=chatgpt.com
Coconut Oil: Offers an SPF of about 7, and is known for its moisturizing properties.	https://spflist.com/?utm_source=chatgpt.com
Encapsulating fragrances in personal care products enhanced Fragrance Longevity	https://www.stockfragrance.com/pages/microencapsulation-wet-dry?utm_source=chatgpt.com
Encapsulating fragrances in personal care products improved stability	https://www.stockfragrance.com/pages/microencapsulation-wet-dry?utm_source=chatgpt.com
Encapsulating fragrances in personal care products allows for the design of fragrances that release upon specific triggers, such as friction, moisture, or changes in pH levels.	https://www.givaudan.com/fragrance-beauty/fragrance-technologies/delivery-systems?utm_source=chatgpt.com
Encapsulating fragrances in personal care products can effectively mask undesirable smells in personal care formulations, improving the overall user experience.	https://www.umangencapsulation.com/product-category/personal-care/body-care/fragrance?utm_source=chatgpt.com
Encapsulating fragrances in personal care products can minimize direct contact between potentially irritating fragrance ingredients and the skin, reducing the likelihood of adverse reactions.	https://www.reedpacific.com/101-what-is-micro-encapsulation-and-what-are-the-benefits/?utm_source=chatgpt.com