SalSphere® Even Skin

Encapsulated Salicylic Acid treats acne by exfoliating skin and unclogging pores.

SalSphere® Even Skin is a proprietary sub-micron sphere technology that delivers potent pharmaceutical-grade salicylic acid (30% wt) to fight acne, smooth the skin, unclog pores, eliminate sebum accumulation, and prevent new breakouts while being skin-friendly.

The technology is formulation-ready and easy to suspend in water. It's used to formulate emulsion-based facial formulations, such as washes, lotions, and serums.

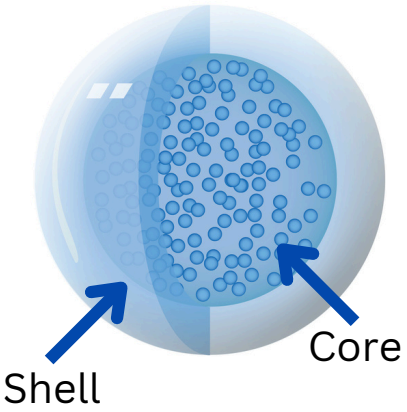


Figure 1: Graphic model of SalSphere® Even Skin. The technology features a solid hydrophobic core of natural lipids surrounded by a molecular hydrophilic shell. This structure enables the submicron spheres to remain suspended in water-based formulations.

Smart design delivery system

SalSphere® Technology is based on submicron spheres featuring a solid lipid core and a semi-liquid shell. The core, composed of natural lipids, encapsulates salicylic acid at the molecular level, preserving it in its active, acid-effective form. This advanced encapsulation system protects approximately 90% of the salicylic acid until it is released, ensuring optimal stability and efficacy.

The thin shell layer adds hydrophilic properties to the otherwise hydrophobic core, allowing the spheres to remain evenly suspended in water-based formulations without phase separation.

Upon application to the skin, the submicron spheres selectively adhere to lesions, acne pimples, and oily areas through hydrophobic, fat-to-fat interactions. This targeted adhesion is essential for enabling a localized, controlled release of salicylic acid over time.
The release of salicylic acid is triggered when the submicron spheres dissolve within the skin's lipid domains. This localized release occurs gradually over several hours, enhancing efficacy while minimizing irritation—making the system effective and skin-friendly.

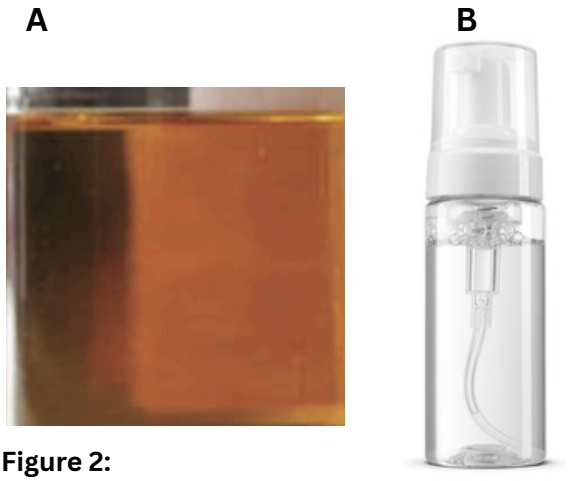


Figure 2:
A. Raw SalSphere® Even Skin in its liquid, homogeneous form with a golden color, containing 30% salicylic acid.

B. A typical commercial facial wash incorporating 2% salicylic acid—is presented as a clear, ready-to-use, homogeneous solution.

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Unique Features

Ease of Formulation: Salicylic acid presents technical challenges in the formulation. Due to its limited solubility (Figure 3), formulators often resort to using alcohol or other harsh solvents to incorporate it at higher concentrations.

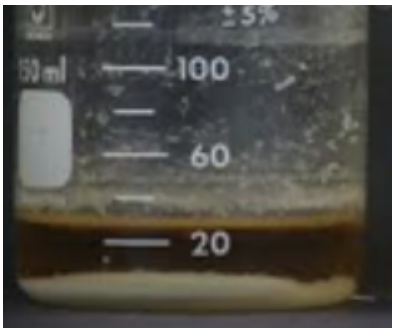


Figure 3: Salicylic acid's low solubility in water causes precipitation.

SalSphere® encapsulation technology enables the easy formulation of various products without the need for alcohol and harsh surfactants (fig 4).

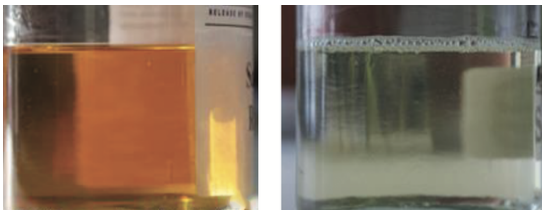


Figure 4: SalSphere® Even Skin is a homogeneous, light liquid. At 30%, it appears golden; at 2%, it becomes clear and transparent.

Technical Data

INCI

Key INCI: Salicylic Acid, Arginine, Ceramide AP, Butyrospermum Parkii (Shea) Butter

Other: Isostearamidopropyl Ethyldimonium Ethosulfate, Polyglyceryl-4-Oleate, Propylene Glycol, Citric Acid

This product is preservative-free. Qualified as **Sephora Clean.**

Speficiations

Characteristic	Specification
Appearance	Translucent to Hazy
Form @RT	Liquid
Color	Light to Dark Amber
pH (1% in water)	2.5-3.5

The technology contains 30% salicylic acid

Recommended storage

24 months in air-tight container at 25°C

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pH Control:

The pKa of salicylic acid is approximately 2.97. This means that at pH levels close to or below 3, salicylic acid exists primarily in its protonated (acidic) form, which is more lipophilic and can penetrate the skin more effectively. However, this also increases the risk of skin irritation and barrier disruption, mainly when used at higher concentrations or in alcohol-based formulations.

The low pH can cause skin damage:

- Redness, stinging, and burning sensation due to the acidic environment.
- Barrier disruption: The skin's protective lipid matrix can be compromised, leading to dryness and increased sensitivity.
- Inflammation: Prolonged exposure to low pH can trigger inflammatory responses, particularly in sensitive or compromised skin.

Maintaining a formulation pH closer to the skin's natural range (4.8–5.5) helps reduce these effects — which is one of the benefits of encapsulating salicylic acid, as done in SalSphere® Even Skin.

Targeted Adhesion:

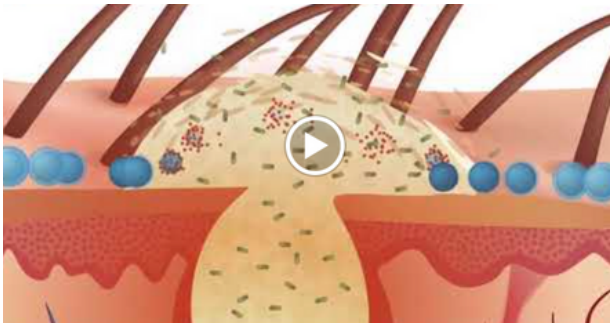


Illustration:
Targeted adhesion and slow release of SalSphere® Even Skin on pimples.
The lipid-based submicron spheres adhere selectively to oily, acne-prone areas. Upon contact, they gradually dissolve into the skin's lipid layer, releasing salicylic acid directly into the clogged pore. This process helps to unclog the pore, restore flow, and allow atmospheric oxygen to penetrate—creating an environment that inhibits the growth of acne-causing bacteria like Cutibacterium acnes.

The lipid core of SalSphere® Even Skin is designed to adhere directly to oily areas and pimples through fat-to-fat (hydrophobic) interactions.

This targeted adhesion offers key benefits that support consumer compliance:

- Precision Delivery
- The active ingredient (salicylic acid) stays where it's needed most—on the blemish—reducing waste and increasing effectiveness.
- Longer-Lasting Action. Adhesion enables slow, sustained release, meaning fewer daily applications are needed.
- Reduced Irritation. Localizing the active ingredient avoids unnecessary exposure to healthy skin, minimizing dryness and redness.
- A gentle yet effective product boosts trust and satisfaction, leading to continued use.

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Skin Testing

Skin pH

The effect of SalSphere® Even Skin on skin pH was measured using a Hanna Skin pH meter on the forearms of the volunteers (Figure 5).

Volunteers used both arms to assess pH levels. One arm was washed with a commercial cleanser containing 2% free salicylic acid, while the other was washed with a formulation containing the same concentration of salicylic acid delivered via SalSphere® Even Skin.



Figure 5: Skin pH measured with Hanna pH meter

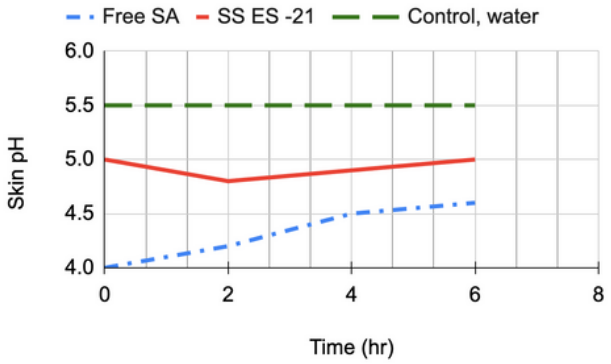


Figure 6: Skin pH measurements over 6 hours following a standard wash: comparison between free salicylic acid, salicylic acid encapsulated in SalSphere® Even Skin, and a water-only wash.

Washing with free salicylic acid caused the skin's pH to drop to around 4, entering the irritation range, with a slow return to normal levels. In contrast, SalSphere® Even Skin helped maintain the skin's natural pH range (4.8–5.5), allowing for a more gradual and balanced recovery.

Skin Exfoliation

Exfoliation was evaluated with a Cutaneous Colorimeter before and after washing with 2% salicylic acid from SalSphere® Even Skin vs free salicylic acid.

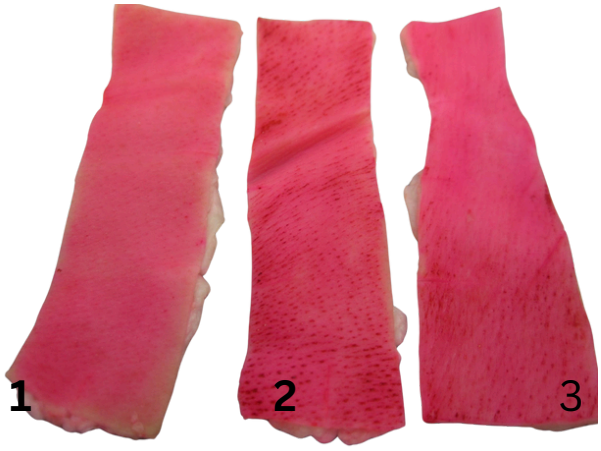


Figure 7: Color Intensity of Skin: The skin was applied with ink and treated with salicylic acid, followed by washing off. 1, SS ES-21, 2, Market product, 3, Control, water

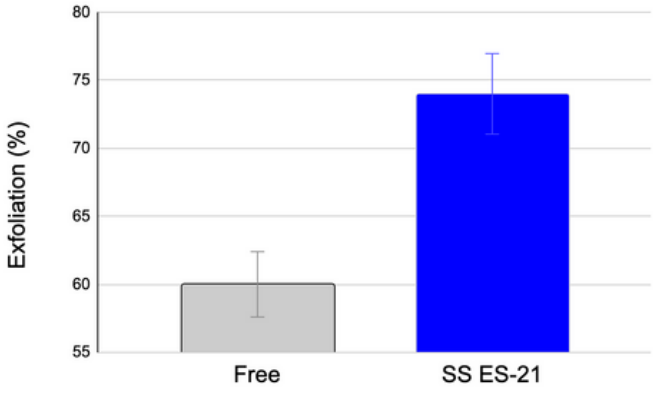


Figure 8: SalSphere® Even Skin provides a significant 20% increase in exfoliation compared with free salicylic acid.

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Clinical Data

SalSphere® Even Skin - 21 was used at 6.67% in Cream Base (2% salicylic acid), n=30, daily application for 4 weeks. The technology compared to a control, base-free salicylic acid. The clinical evaluation focused on three significant benefits to consumers:

1. Anti Acne efficacy
2. Noncomedogenic solution
3. Pore reduction
4. Skin toning

Testing Methods:

- Anti Acne efficiency and Noncomodengic properties are determined by counting the lessons dermatologist evaluation.
- Pore size was assessed using the Antera 3D® CS (Miravex Limited), a camera that captures three-dimensional images to analyze and measure the skin's topographic features.

Clinical testing was conducted by DermaProof Asia

Anti Acne Efficacy

54.55% of subjects showed improvement in lesions (Average Reduction 5.16%), which is a significant reduction of inflammatory lesions.



Figure 9: Before (A) and after (B) 7 days of treatment with 6.67% SalSphere® Even Skin (2% salicylic acid) to reduce acne

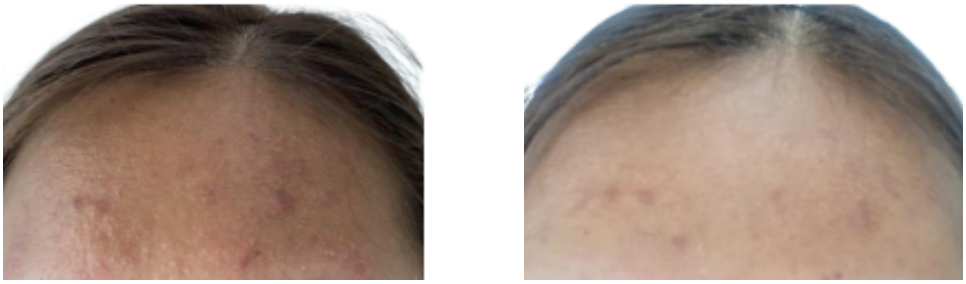


Figure 10: Before (A) and after (B) 7 days of treatment with 6.67% SalSphere® Even Skin (2% salicylic acid) to reduce acne.

Non Comedogenic

SalSphere® Even Skin - 21 found to be non-comedogenic.

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Pore Size Reduction for Skin Smoothing

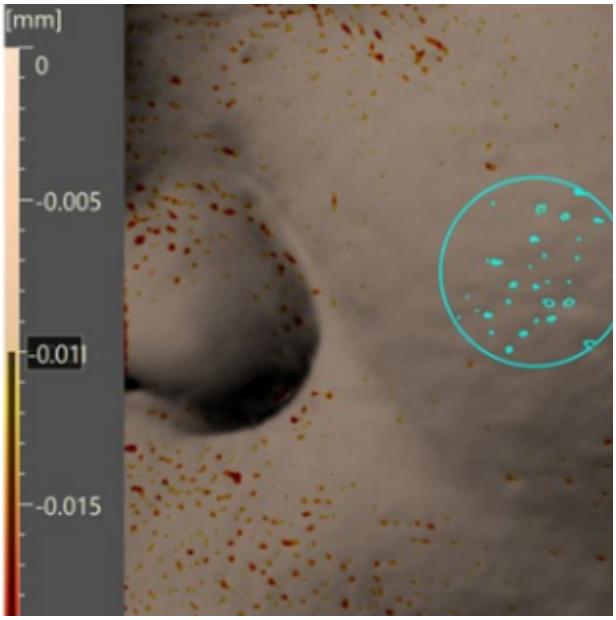


Figure 7: t= 0 weeks

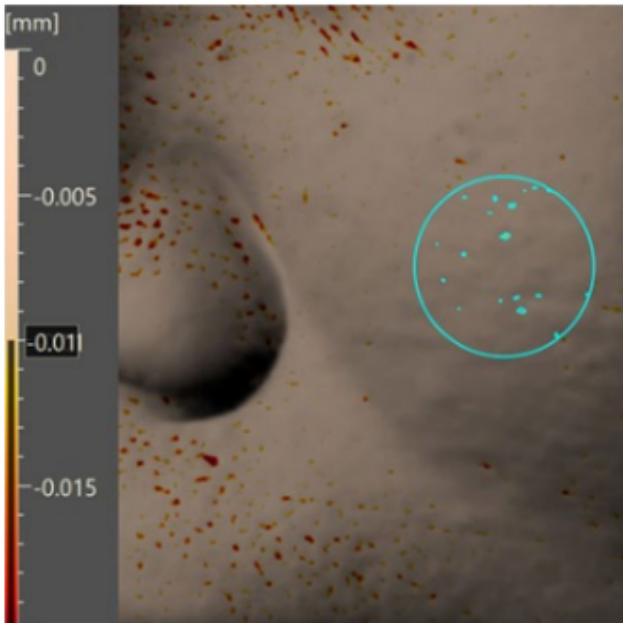


Figure 8: t= 4 weeks

Compared to the cream base, SalSphere® Even Skin -21 showed statistically significant improvements:

- 28.3% reduction in total pore volume
- 28.6% reduction in total pore area
- 18.1% reduction in pore count

Reducing pore size offers several cosmetic and dermatological benefits:

1. Smoother skin texture
2. Smaller pores create a more refined, even skin surface, improving overall skin appearance.
3. Reduced Oiliness
4. Fewer blackheads, whiteheads, breakouts, and acne.
5. Improved makeup application. Foundation and other products apply more smoothly and evenly on skin with less visible pores.
6. Younger-Looking skin
7. Minimizing pores can give the skin a more youthful, tightened appearance and healthier-looking skin.

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Improve Skin Toning

SalSphere® Even Skin shows a tendency to improve the skin whitening effect. 63.6% of subjects saw improvement in Skin Whitening (L* Parameter).





SalSphere® Even Skin delivers salicylic acid in a controlled, targeted manner, enhancing skin tone by:

- Promoting gentle exfoliation: Salicylic acid helps remove dead skin cells, improving skin clarity and radiance without over-irritation, thanks to the slow-release system.
- Targeting uneven pigmentation by reducing the build-up of dead cells and surface debris, the skin appears more even-toned over time.

SalSphere® Even Skin can help with Scars by:

Gentle exfoliation for a smoother texture.

- The controlled release of salicylic acid promotes mild exfoliation, helping to resurface the skin and smooth out rough or scarred areas over time.
- It can fade dark marks and discoloration left behind by acne or blemishes.
- Regular use can help create a more even, refined appearance, making scars less noticeable.

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Formulation Applications

Cream with SalSphere® Even Skin

INCI	Weight (%)
Water	55
Glycerin	6
Xanthan Gum	1
Cetearyl Alcohol (AND) Cetearyl Glucoside	4
Coco Glucoside	4
Cetearyl Alcohol	6
Butyrospermum Parkii (Shea) Butter	6
Isononyl Isononate	6
Squalane	6
SalSphere® Even Skin (8894-21)	**5**
Preservative	1
TOTAL	**100**

Compatibility with Thickeners

SalSphere® Even Skin is compatible with thickeners like xanthan gum and guar gum. When using a carbomer, it can first be mixed with a solubilizer such as polysorbate before being added to the carbomer solution and adjusting the pH.

INCI	Weight (%)
Water	88.7
Carbomer	0.8
Polysorbate 80	0.5
SalSphere® Even Skin (8894-21)	**5**
Propanediol	3
Triethanolamine	1
Preservative	1
TOTAL	**100**

Face Mask with SalSphere® Even Skin

SalSphere® Even Skin (SS ES) can be combined with other technologies such as SalColor FX, to emphasize the usage and efficacy of the products including face masks

INCI	Weight (%)
Water	67.67
Xanthan Gum	0.5
Glycerin	3
Kaolin	5
Bentonite	3
Polymethylsilsesquioxane/Silica Crosspolymer	2
Glyceryl Stearate (AND) PEG 100 Stearate	4
Capric/Caprylic Triglycerides	3
Cetyl Alcohol	2
Synthetic Wax (AND) Titanium Dioxide (AND) Isopropyl Titanium Triisostearate	1
Stearic Acid	2
Dimethicone (AND) Polysilicone-11 (AND) Butyrospermum Parkii (Shea) Butter	2.5
SalSphere® Even Skin (8894-21)	**3.33**
Preservative	1
TOTAL	**100**

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Additional Claim Support

The Main Benefit of Technology

SalSphere® Even Skin is a delivery system for salicylic acid combined with synergistic functional ingredients like arginine. Together, they support gentle exfoliation as part of a skin-rejuvenating routine, offering a time-released, less irritating formulation that promotes healthier-looking skin.

Additional Claims and Unique Features

- Helps to unblock and clean pores to combat acne
- Reduces sebum production of the skin to combat acne
- Exfoliates the skin with no to minimal irritation
- Helps to improve skin tone and smoothness
- Minimal to no irritation or skin barrier damage
- Time-released and long-lasting
- Easy to formulate

References

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Literature Claim Support

Claims	Literature Substantiation
Helps to Unblock and Clean Pores to Combat Acne	"SA is most commonly employed in the treatment of acne, where its lipophilicity allows penetration into the pore and subsequent exfoliation of dead skin; excess oil build up is also diminished. Numerous studies have shown that SA decreases follicular plugging and progression to inflammatory acne lesions." **[1]**
Reduces Sebum Production of the Skin to Combat Acne	"[Salicylic acid] also decreases secretion of sebum in patients with acne, which adds to its therapeutic effect in these patients. Marczyk et al studied the effect of 50% pyruvic acid and 30% SA peels on skin lipid film in patients with acne vulgaris, and concluded that SA had a greater sebumetric effect than pyruvic acid." **[2]**
Exfoliates the Skin with Minimal Irritation	"It has been found that SA, being an organic acid, extracts desmosomal proteins including desmogleins. As a result of this action, the cohesion of epidermal cells is lost, leading to exfoliation...Imayama et al studied histological changes in the skin... [and] concluded that peeling with SA can lead to alterations in the underlying dermal tissue without directly wounding the skin." **[2]** "...creams containing 2% SA or C8-LHA were found to enhance the shedding of corneocytes and reduce the thickness of the stratum corneum. Ultrastructural studies of the skin show that hydroxy acids target in particular the central desmosomes in the stratum disjunctum, resulting in a reduced coherence between the layers of corneocytes but leaving the corneocytes in sheets. The penetration of SA and the AHAs is relatively rapid and consequently the breakdown of central corneosomes occurs throughout the stratum corneum." **[3]**
Helps to Improve Skin Tone and Smoothness	"Taking salicylic acid as an example, human testing on forearm skin (dansyl chloride method) reveals increased stratum corneum turnover with topical 1.5% salicylic acid of 18.5 days vs 21.5 days for the vehicle control. More rapid turnover leads to improvement in facial skin smoothness and color as assessed by test volunteers themselves and by image analysis and expert grader assessment." **[4]** "SA also has been shown to protect against ultraviolet (UV) B radiation and photoaging, as well as improve the appearance of photo-induced skin dyspigmentation. In a study of 268 patients, weekly facial peels of SA 30% used for 8 weeks improved the appearance of melasma, post-acne scars, post-infl ammatory hyperpigmentation (PIH), fine lines and wrinkles." **[1]** "The capacity of the hydroxy acids to stimulate the division and maturation of keratinocytes has been suggested for a number of years...It now seems more certain that the effect of low concentrations of hydroxy acids does not evoke an inflammatory response and indeed SA may even be anti-inflammatory. In animal models, topically applied GA and SA have been found to increase epidermal cell division and in some experiments, a wave of cell proliferation has been observed 12–16 h after topical application." **[3]**

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Claim Support

Claims	Literature Substantiation
Minimal to No Irritation or Skin Barrier Damage	"Taking salicylic acid as an example, human testing on forearm skin (dansyl chloride method) reveals increased stratum corneum turnover with topical 1.5% salicylic acid of 18.5 days vs 21.5 days for the vehicle control…No significant redness or TEWL changes were associated with the salicylic acid treatment." **[4]** "[Salicylic acid] is lipophilic and easily enters the epidermis and membrane of adnexal structures such as sebaceous glands via hair follicle pores…The lipophilic nature of SA helps limit its clinical effect to the superficial epidermis leading to fewer side effects in comparison to α-hydroxy acids, which penetrate deeper into the dermis." **[1]**
Time-Released and Long Lasting	In vitro tests on porcine skin show that SalSphere® Even Skin maintains salicylic acid on skin for a longer duration than unencapsulated salicylic acid
Easy to Formulate	Stability and compatibility tests: SalSphere® Even Skin added to lotion, serum, and wash bases remain stable for up to and beyond 3 months @42C.
Arginine for Skin Care	"Arginine is an amino acid naturally present in the body, considered essential to human development. As a skin care ingredient, it delivers antioxidant benefits and plays a role in repairing visible skin damage. Additionally, arginine's hydration properties have been studied in depth. This essential amino acid plays a key role in skin's natural production of replenishing substances such as proline and urea." https://www.paulaschoice.com/ingredient-dictionary/ingredient-arginine.html