



SalSphere® Benzoyl Peroxide (SS BPO)

A stable and targeted delivery system of benzoyl peroxide for the treatment of acne.

BPO is an FDA-approved acne treatment to clear pores and eradicate P. acnes bacteria. However, it is also difficult to formulate with due to its poor water solubility and high instability. Additionally, while it is a proven antibacterial agent with clinical success, it often results in dryness and discomfort.

One of the major obstacles in enhancing the efficacy of BPO and minimizing the potential for skin irritation is its large particle size (Figure 2A). This characteristic hinders its ability to penetrate the hair follicles and kill P. acnes bacteria. SS BPO is designed to enhance the acne treatment and tackle these issues.

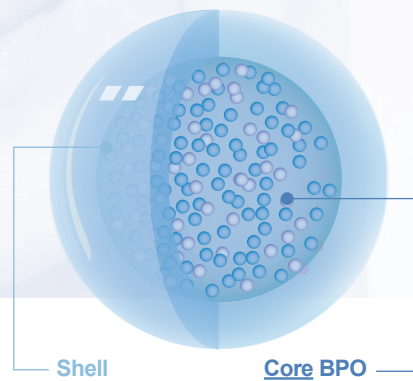


Figure 1: The sub-micron structure of SS BPO, with the BPO infused within the core.

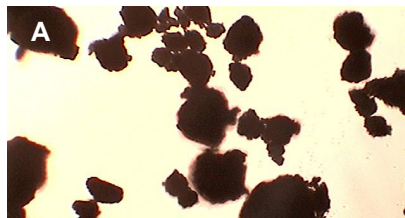


Figure 2: Free BPO (A) and SS BPO (B) dispersed into identical lotion bases (5% BPO) at 42°C. Photographs taken at 100x magnification to show the particle sizes.

UNIQUE FEATURES

- 1 READY FOR FORMULATION**
Improved stability and encapsulation provides a safe, quick, and easy way to formulate acne solutions.
- 2 TARGETED DELIVERY**
SalSphere® technology is designed to deliver BPO where it is needed most in the hair follicles.
- 3 GENTLE, SLOW RELEASE**
With controlled release technology, SS BPO is gentle on the skin. The Repeat Insult Patch Test (RIPT) for SS BPO shows that it is a non-primary irritant, making it suitable for sensitive skin.

HOW THE TECHNOLOGY HELPS YOU

SS BPO is a sub-micron encapsulation system of benzoyl peroxide (Figure 1, 3). The small particle size of the technology is designed to facilitate the targeted delivery of benzoyl peroxide into the follicles. Upon application of the product, the sub-micron spheres adhere to the pimples, where they will dissolve and slowly release BPO directly into the hair follicles.



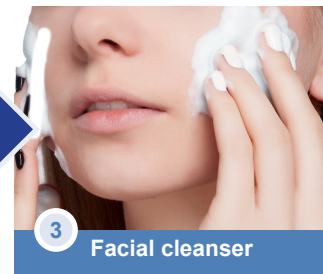
SS BPO raw



1 Cream



2 Lotion



3 Facial cleanser

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EFFECTIVE AGAINST P. ACNES	Sample	P. acnes Kill Rate (%)
	SalSphere® BPO Cream	82.22
	Traditional BPO Cream	76.09

Table 1: An *in-vivo* bacterial kill study was performed to determine the ability of SS BPO to kill P. acnes bacteria compared to free BPO within an 8-hour time frame. P. acnes kill rates over an 8-hour period (n=18).

ENHANCED DEPOSITION: RINSE-OFF

SalSphere® technology provides enhanced deposition of BPO onto the skin from rinse-off products, a critical feature in prolonging treatment and increasing efficacy.

Deposition of SS BPO was compared to market competitors in a rinse-off application (Figure 3).

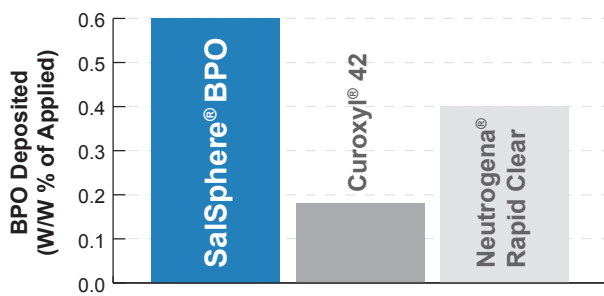


Figure 5: Amount of BPO detected on skin from a rinse-off application containing SS BPO versus benchmark products. 3.5 times more BPO resides on the skin from SS BPO than from the market competitor, demonstrating that the time release technology contains a more potent and effective acne treatment.

IMPROVED STABILITY AND SHELF LIFE

SalSphere® technology protects BPO, thus extending its potency, shelf life, and stability (Figure 6).

- SalSphere® BPO 10%
- National Brand BPO 10%

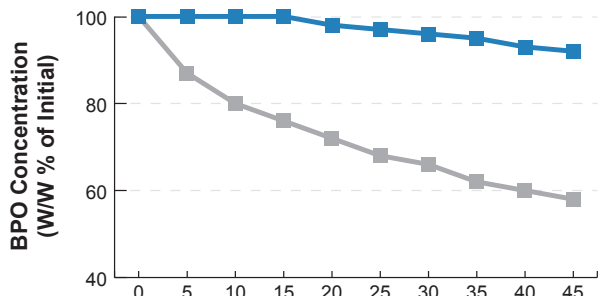


Figure 5: Effect of SalSphere® encapsulation on BPO content in a lotion compared to free BPO (10%) in a lotion at 42°C.

PARTICLE SIZE

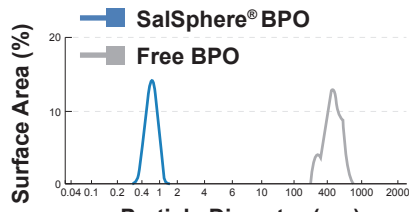


Figure 3: Particle size distribution analysis performed on Beckman Coulter LS13320 Laser Diffraction Particle Size Analyzer using a liquid diffraction module.

TECHNICAL DATA	
Appearance @ 20°C	Opaque liquid
Applications	Creams, lotions, spot treatments, and facial cleansers
Color	White to off-white
Odor	Characteristic
pH (1 % solution)	4.5 ± 1.5
BPO Assay (HPLC) (Wt.%)	≥ 24.0
Shelf Life (months)	36
Usage Level (wt%)	10-40
Storage (°C)	Closed container at 12-32°

FORMULATION	Ingredients	(W/W %)
	SalSphere® Benzoyl Peroxide	20
	Salvona Pre-Mix B	79
	Preservative	1