



SOLAFRESH™

Multifunctional, globally-compliant sunscreen solvent for enhancing organic UV protection performance

HALLSTAR 
B E A U T Y

SOLAFRESH™

SolaFresh™ enhances UV protection performance, allowing high SPF formulations while still complying with expanding sunscreen regulations. It has excellent solvency and skin emollience, as well as high compatibility with UV filters. Its combination effect with other photostabilizers allows high sun protection performance without the use of regionally restricted UV filters like octocrylene, oxybenzone and octinoxate. Elevate your sun protection performance with SolaFresh™.

CHALLENGE: HIGH SPF ORGANIC SUNSCREENS

Achieving high SPF/PFA in organic systems while meeting limits of regulations and local governances is a current challenge for formulators. Most recognize the benefits of organic sunscreens over inorganic when it comes to delivering a lightweight sensoriality and transparent application – one of the top purchase drivers for sun care along with a high level of protection against skin cancer and signs of aging. Currently, avobenzene is the only organic UVA filter that complies with global regulations. However, to achieve the levels of sun protection sought by consumers, avobenzene typically requires stabilizers like octocrylene – an increasingly controversial ingredient, already banned by Hawaii and U.S. Virgin Island regulatory laws. Hallstar's multifunctional emollient SolaFresh™ is a solution to this challenge.

TECHNICAL DATA

- INCI Name: Diethylhexyl 2,6-Napthalate
- Appearance: transparent and odorless liquid
- Recommended Use Level: 3.0 – 10.0%
- Purity: > 97%

BENEFITS

- Multifunctional sunscreen solvent
- Photostabilizer
- Globally-compliant

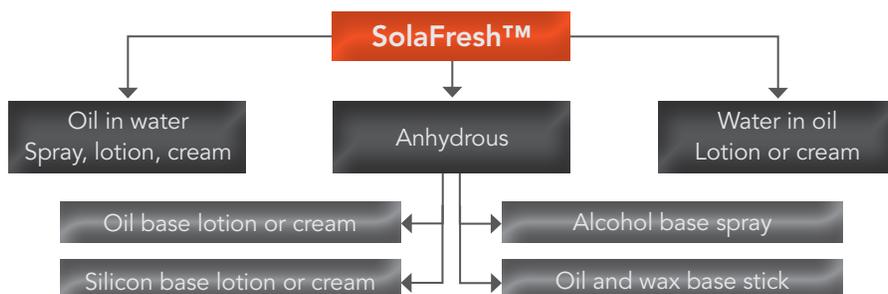
GLOBAL FORMULATION SOLUTION

SolaFresh™ is the global solution to achieving desirable SPF in organic systems. The anticipated growth of avobenzene usage drives the need for innovative, cost-effective photostabilization strategies capable of delivering improved formulation aesthetics. A multifunctional emollient with excellent solvency and triplet quenching properties for photostabilization, SolaFresh™ delivers a synergistic effect with other photostabilizers to achieve better sun protection performance in organic systems while reducing filter dependency for improved sunscreen sensoriality.

Solubility				
	Avobenzene	Uvinul® T 150	Neo Heliopan® MBC	Escalol® 567
	Butyl Methoxydibenzoylmethane	Ethylhexyl Triazone	4-Methylbenzylidene Camphor	Oxybenzone/Benzophenone-3
SolaFresh™	18	10	20	17
C12-15 Alkylbenzoate	12.0	1.8	20.4	17.5
Diisobutyl Adipate	16.5	11.0	25.0	28.5

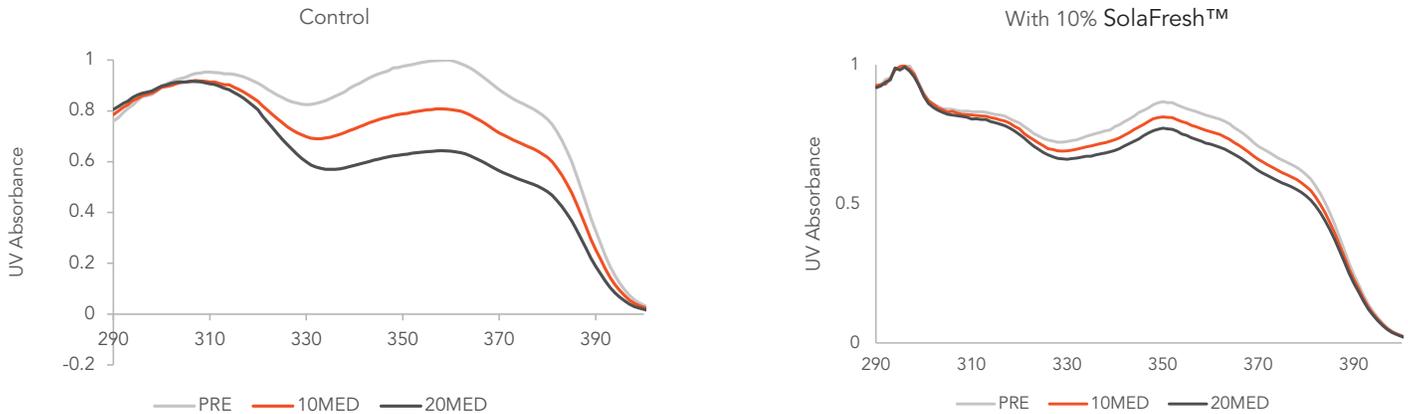
FORMULATION FLEXIBILITY

SolaFresh™ has excellent solvency for solid UV filters and compatibility with liquid UV filters. This makes it possible to formulate high SPF and low-viscous lotions and sunscreen oils, including sprayable products. With its ester nature, SolaFresh™ is itself a skin emollient and readily miscible with all emollients commonly used in sunscreens. These user-friendly characteristics allow formulators to easily create a wide variety of sun care formulations.



IMPROVED SUN PROTECTION PERFORMANCE

Photostabilization properties of SolaFresh™ improve retention of UVA/UVB absorbance after UV irradiation. In a test system consisting of 3.0% avobenzone, 5.0% octisalate, 10.0% homosalate, 2.0% film former, and q.s. ethyl acetate, a significant amount of absorbance in the UVA range (320-400nm), as well as the UVB range (290-320) is lost after UV irradiation at both 10 MED and 20 MED. The addition of 10.0% SolaFresh™ to the test system demonstrates a retention of absorbance in the UVA range, as well as the UVB range, through the photostabilization of avobenzone.

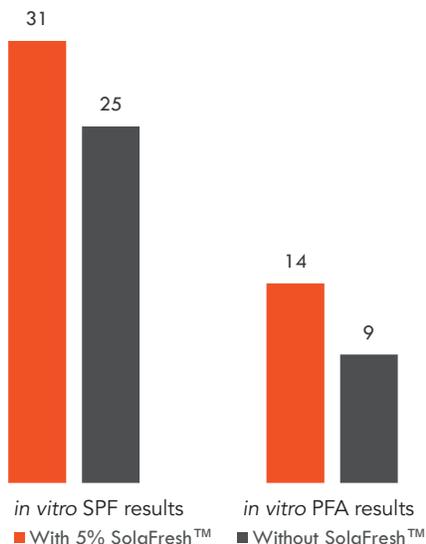


SolaFresh™ remarkably improves a complex UV filter system with near 90% UVA retention at high dose of UV irradiation.

SPF in emulsion systems: *in vitro* results

Regional restrictions in the USA limit the range of organic UV filter options to avobenzone (3.0% maximum), homosalate (15.0% maximum), and octisalate (5.0% maximum). The use of each of these organic UV filters at their maximum allowable concentrations in the USA contributes a maximum SPF of only 15.

SolaFresh™ delivers a synergistic effect with other photostabilizers to achieve better sun protection performance and allow for the development of high performing sun care. In an o/w emulsion system containing 3.0% avobenzone, 10.0% homosalate, and 5.0% octisalate, the addition of 5.0% HallBrite® BHB and 3.0% SolaStay® S1 allows for the improvement of SPF and PFA through photostabilization, providing an *in vitro* SPF 25 and PFA 9. The addition of 5.0% SolaFresh™ elevates the sun protection performance of this system through photostabilization, providing an *in vitro* SPF 31 and PFA 14.



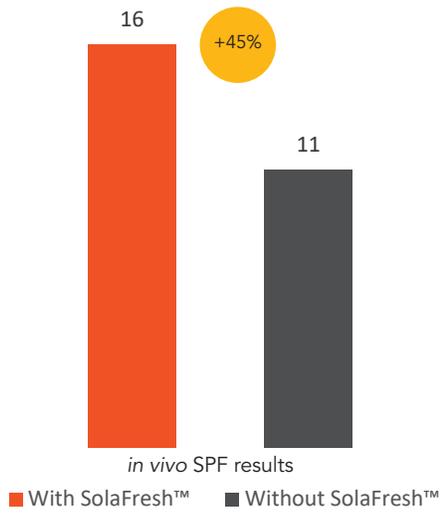
Formula Reference	JZ13-269	JZ13-270
Actives	Organic 18%	Organic 18%
	SolaFresh™ 5%	
SPF, <i>in vitro</i>	31	25
PFA, <i>in vitro</i>	14	9
Critical Wavelength	380	378
% Enhanced on SPF	24%	—
% Enhanced on PFA	55.6%	Control

UV Filter Package - 3% Avobenzone, 10% Homosalate and 5% Octisalate

SolaFresh™ increases SPF in emulsion systems in combination with HallBrite® BHB and SolaStay® S1.

SolaFresh™ photostabilization: *in vivo* results

In vivo testing of a system containing 3.0% avobenzone and 5.0% octyl salicylate further supports the ability of 4.0% SolaFresh™ to improve SPF through photostabilization of avobenzone.



SolaFresh™ significantly increases SPF through its photostabilization mechanism.