

Oil-in-Water Sunscreen Lotion SPF 30

Formula Number: JZ13-95

The formulation was subjected to *in vitro* analysis and delivered SPF ~35, PFA (PPD) ~34 performance with critical wavelength 381 nm.

Phase	INCI Name [INN/USAN] (Other Information)	Trade Name	% Wt	Function
A	Ethylhexyl Salicylate [Octisalate]		4.90	UV Filter/Sunscreen Agent/Carrier System
	Ethylhexyl Methoxycrylene	SolaStay® S1	3.80	Photostabilizer
	Butyloctyl Salicylate	HallBrite® BHB	6.80	Emollient/Sunscreen Solvent
	Glycine Soja (Soybean) Oil, Polyglyceryl-3 Diisostearate, Oryza Sativa (Rice) Germ Extract, Oryza Sativa (Rice) Extract	BLUE Oléoactif®	1.00	Active Ingredient
	Diisobutyl Adipate	Halltress® DIBA Special	6.00	Emollient/Sunscreen Solvent
B	Diethylamino Hydroxybenzoyl Hexyl Benzoate		4.00	UV Filter/Sunscreen Agent
	Bis-Ethylhexyloxyphenol Methoxyphenyl Triazine		3.00	UV Filter/Sunscreen Agent
	Butyl Methoxydibenzoylmethane [Avobenzone]		4.50	UV Filter/Sunscreen Agent
C	VP/Eicosene Copolymer		2.00	Film Former
	Cetyl Palmitate, Sorbitan Palmitate, Sorbitan Olivatate	Oliwax® LC	1.50	Stabilizing Agent/Liquid Crystal Promoter
	Glyceryl Stearate	HallStar® GMS Pure	1.00	Emulsifier
	Cetearyl Olivatate, Sorbitan Olivatate	Olivem® 1000	2.00	Self-Emulsifier/Liquid Crystal Maker
D	Water (Aqua)		Up to 100	Volatile Carrier
	Disodium EDTA		0.05	Chelating Agent
E	Glycerin		3.00	Humectant
	Xanthan Gum (pharma grade)		0.20	Thickener (Aqueous)
F	Potassium Cetyl Phosphate		1.40	Emulsifier
G	Preservative		a.n.	Preservative
	Dimethicone (5 cSt)		3.00	Emollient
	Silica (spherical, 12 µm)		2.00	Deoiling Agent
	Citric Acid		a.n.	pH Adjuster

PREPARATIVE PROCEDURE

1. To a secondary vessel add phase A and start mixing. Add phase B and heat to 80°C and then add phase C.
2. To the main vessel add phase D, start mixing and add premixture of phase E.
3. Heat phase DE to 75 - 80°C, and add phase F with mixing.
4. When both phases are homogeneous and at their designated temperatures, slowly add phase ABC to phase DEF with prop mixing.
5. After 5 minutes start cooling batch and when batch is < 50°C add phase E one by one with mixing
6. Continue mixing until batch is at room temperature, replacing any water lost to evaporation and mixing until smooth.
7. Adjust pH with 10% Citric acid to 5.0 - 5.0

PRODUCT CHARACTERISTICS (25°C)

Appearance (25°C): light yellow lotion

Viscosity (20 rpm, Brk, RV DV-II, T-D, after 24h at room temperature; mPa·s) 10000 - 16000