

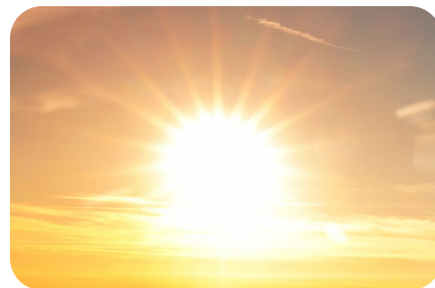
LOW VOC SUNSCREEN SPRAY

SAMPLE FORMULATION

Using Solstice® Enhance
and Solstice® Propellant

HELP SHIELD YOURSELF FROM UV RADIATION WITH AN EARTH-FRIENDLY ALTERNATIVE

Solstice Propellant (HFO-1234ze(E)), a breakthrough for aerosol-based products, and Solstice Enhance (HFO-1233zd(E)), a multifunctional solvent and carrier fluid, offer exciting possibilities for formulators. As nonflammable¹ alternatives to hydrocarbons and high global warming potential (GWP) hydrofluorocarbons, they are non-ozone-depleting, VOC-exempt,² with an Earth-friendly ultra-low GWP of one or less.



PHASE	TRADE NAME	INCI	WT%
Concentrate	PARSOL® 1789	Avobenzene	3
	PARSOL® HMS	Homosalate	15
	PARSOL® EHS	Octisalate	5
	PARSOL® 340	Octocrylene	10
	HallStar® DIPA	Diisopropyl Adipate	5
	WetFilm™	Trimethylpentanediol; Adipic Acid; Glycerin Crosspolymer	1
	dl-Alpha Tocopheryl Acetate	Tocopheryl Acetate	0.2
	Fragrance	Fragrance	0.4
	Solstice Enhance	Chlorotrifluoropropene	60.4
	TOTAL		100
Aerosolized	Concentrate		70
	Solstice Propellant	Tetrafluoropropene	30
	Total		100

¹ ASTM E-681, EU AII

² Solstice Enhance: VOC-exempt (U.S. EPA), Solstice Propellant: VOC-exempt (U.S. EPA and CARB); negligible contribution to smog formation

FORMULATION PROCEDURE

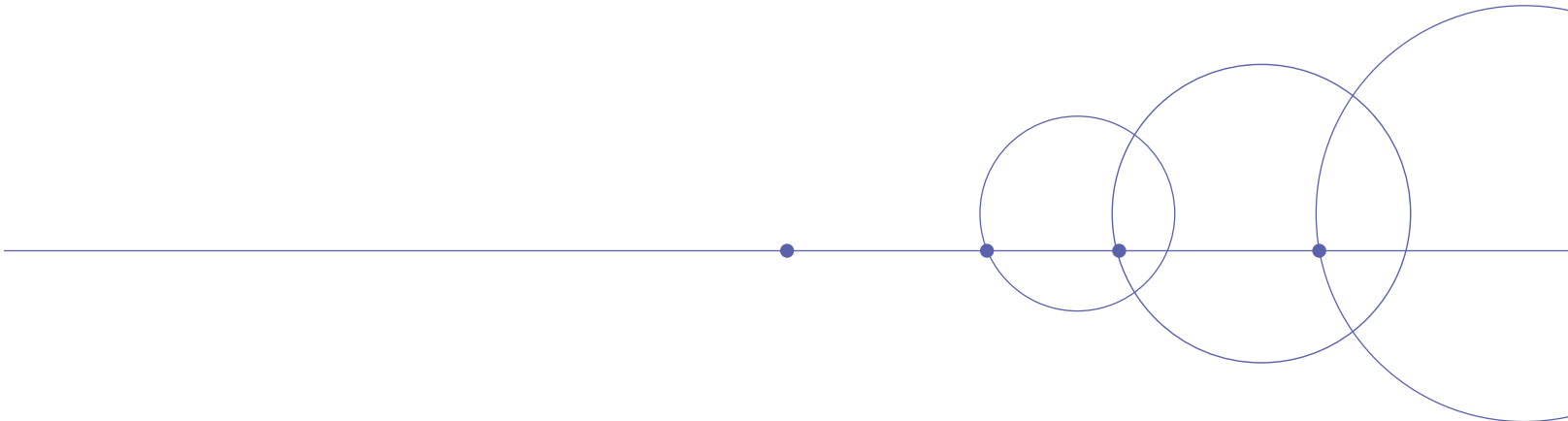
Pre-step: Chill Solstice Enhance (below 19°C) before combining with the formulation. Store in refrigerator.

Concentrate:

1. Weigh PARSOL 1789, PARSOL HMS, PARSOL EHS, PARSOL 340, Hallstar DIPA, and Wetfilm in a beaker.
2. Start heating to 70-75°C and mix with a stir bar to solubilize.
3. Once uniform, cool down to room temperature and add dl-Alpha Tocopheryl Acetate and Fragrance.
4. In a sealable vessel, add Solstice Enhance and mix until uniform.

Aerosolized:

1. Fill liquid concentrate into aluminum/ plastic cans in the order of addition.
2. Crimp valve on can.
3. Charge with Solstice Propellant.
4. Shake the can vigorously until uniform.



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To learn more, contact us at:
<https://go.solstice.com/solvents-propellants-contact>

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