SAMPLE FORMULATION

Using Solstice® Enhance and Solstice® Propellant



Sherbet¹ Moisturizer

A unique crackling sensation in this body moisturizer delivers a fun product application experience

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 nonflammable alternatives to hydrocarbons and high global warming potential (GWP) hydrofluorocarbons, they are non-ozone-depleting, VOC-exempt, with an **Earth-friendly** ultra-low GWP of one or less.

PHASE	TRADE NAME	INCI	WT%
Concentrate	DI Water	Water	83.2
	Glycerin	Glycerin	3
	FENTACARE® BTAC DPG 70	Behentrimonium Chloride; Dipropylene Glycol	3
	Promulgen™ D	Ceteareth-20; Cetearyl Alcohol	2
	AHCOHOL™ 1618 TA	Cetearyl Alcohol	5
	Argan Oil	Argania Spinosa Kernel Oil	2
	XIAMETER™ PMX-1184 Silicone Fluid	Dimethicone; Trisiloxane	1
	Citric Acid (10%)/water	Citric Acid	(Adjust pH to 4.5)
	euxyl® PE 9010	Phenoxyethanol; Ethylhexylglycerin	0.7
	Fragrance	Fragrance	0.1
		TOTAL	100
Aerosolized	Concentrate		50
	Solstice Propellant	Tetrafluoropropene	10
	Solstice Enhance	Chlorotrifluoropropene	40
		TOTAL	100

 $^{^{1}}$ Not for human consumption

FORMULATION PROCEDURE:

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

Concentrate:

- In a main beaker, weigh Water and Glycerin. Start heating to 70-80°C. Add BTAC DPG 70 and mix until uniform.
- In a separate beaker, weigh the oil phase (Promulgen D, AHCOHOL 1618, Argan Oil) and start heating to 70-80°C.
- Once both phases are at 70-80°C, add the oil phase to the main beaker and homogenize for 1 min.
- Mix the batch with a paddle mixer.
 Cool down the batch to room temperature and then add the rest of the ingredients in the order of addition.

Aerosolized:

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

² ASTM F-681 FU A11

³ Solstice Enhance: VOC-exempt (U.S. EPA), Solstice Propellant: VOC-exempt (U.S. EPA and CARB); negligible contribution to smog formation

For more information:

call 800-631-8138 (U.S. and Canada) or your local sales office.

www.hwll.co/personalcare

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