



## SUNCARE CREAM

### Example Formulation

#### Description

An example of a long-lasting suncare cream formulation based on a water-in-oil emulsion with medium viscosity is described. The formula provides a pleasant texture and moisture retention with the film-forming properties of Ellamera™ by Kraton. This example formulation does not contain chemical sunscreen; it is based on physical sun blocking agents such as hydroxyapatite, titanium dioxide and zinc oxide.

#### Physical Properties

Appearance	Fluid
Colour:	White
Odour:	Fragrance
Solubility:	Not soluble in water
SPF	20 (est.)

**COMPOSITION:**

INCI	Qty. %	TRADE NAME	FUNCTION
Water	33,00	Water	Solvent
Isododecane	35,50	Isododecane	Solvent
Hydroxyapatite	5,00	Apalight EMS	Matte agent and UV sunscreen booster
Titanium Dioxide	5,00	Titanium Dioxide ST-410WB	UV sunscreen
Hydrogenated Styrene/Isoprene Copolymer	4,00	Ellamera RAD THICK 501	Film former
Caprylic/Capric Triglyceride/stearalkonium Bentonite/Propylene Carbonate	3,00	MIGLYOL GEL T	Thickening and Emollient
Cetyl Diglyceryl Tris(Trimethylsiloxy) Silyl ethyl Dimethicone	3,00	DOWSIL ES 5600	Emulsifier
Xylitol	2,50	XIVIA XYLITOL	Humectant
Zinc Oxide	2,00	ZINC OXIDE PHARMA	UV sunscreen
Glycerin	2,00	GLYCERIN	Humectant
Polyethylene Wax	1,80	PERFORMALENE 400	Wax
Ethyl Hexyl Palmitate	1,00	DUB PO	Emollient
Sorbitan Isostearate	1,00	SPAN 120	Emulsifier
Hexandiol	0,50	HYDROLITE 6	Preservative
Sorbitan Caprylate	0,50	VELSAN SC	Preservative
Pentaerythryl tetra di butyl hydroxyhydrocinnamate	0,10	Tinogard TT DD	Antioxidant
Frangrance	0,10	Fragrance	Fragrance

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\*\* Isododecane can be substituted with Hemisqualane or C15-19 Alkane.

## USED EQUIPMENT:

- Top stirring laboratory mixer
- Heating plate
- Ultra Turrax homogenizer
- Powder mixer

## PREPARATION:

### **Phase A**

Ellamera RAD THICK 501	4,00
DUB PO	1,00
Isododecane	35,50
Performalene 400	1,80
Tinogard TT	0,10

### **Phase B**

DOWSIL ES 5600	3,00
SPAN 120	1,00
Velsan SC	0,50
Miglyol gel T	3,00

### **Phase C**

Titanium Dioxide ST-410WB	5,00
Zinc Oxide	2,00
Apalight MS	5,00

### **Phase D**

Water	33,00
Xylitol	2,50
Glycerin	2,00
Hydrolite 6	0,50

### **Phase E**

Fragrance	0,10
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Add Phase A ingredients in a beaker and heat for 20 minutes on 90°C and mix with a laboratory mixer at 400RPM for about 20 minutes until a clear solution appears.

Add Phase B ingredients to a beaker and gently homogenize, then pour mixture into Phase A beaker while stirring.

Mix Phase C ingredients together using a powder mixer and add Phase C mixture to beaker containing phases A+B while stirring for a homogenous mixture.

Cool down the A+B+C mixture to 60 deg. C and check the isododecane content via weigh scale and correct if necessary.

Mix Phase D ingredients together until you get a clear solution.

Add Phase D solution to the A+B+C beaker while stirring.

Finally, homogenise using the Ultra Turrax for a second time and cool down to about 40 °C with slow mixing.

In the final step, add fragrance and mix until cooled down to room temperature.

## PREPARATION NOTES:

- Keep the mixing on a relatively slow speed ( $\pm$  400 RPM) to prevent air bubbles from forming
- Control the evaporation of the Isododecane before to add the water phase

## PACKAGING

The example formulation for a suncare cream is formulated with isododecane and needs packaging that protects the evaporation of the volatile solvent during storage and transportation.

Test the compatibility with packaging material when using fragrance.

## SAFETY NOTES:

Always be attentive when using mechanical equipment

Manage all the ingredients with gloves and correct PPE

Isododecane can evaporate and always better to cover the vessel and use the good ventilation

Read the safety document from all the ingredients prior to formulating.

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### FOR FURTHER INFORMATION

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