

Interpolymer offers  
several suggested formulations for  
Syntran<sup>®</sup> PC 5227 for Sun Care.

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## SUN CARE

- SPF 15 Skin and Sun Crème F-18-81
- SPF 15 Spray Gel Sunscreen F-24-02
- SPF 30 Skin and Sun Crème F-24-03
- SPF 45 Skin and Sun Crème F-24-07 \*\*
- Low Viscosity SPF 15+ Crème F-24-26 \*\*
- Low Viscosity SPF 15+ Crème F-24-27
- SPF 30 Skin and Sun Crème F-24-37 \*\*
- SPF 30 Skin and Sun Crème F-24-38
- High SPF Lotion F-24-88
- Skin Moisturizer with SPF 20+ F-24-103
- Broad Spectrum SPF Crème F-24-134 \*\*
- Oil Free Skin Lotion with SPF 20+ F-24-160
- Broad Spectrum SPF 15 Crème F-24-163
- SPF 30+ Crème F-24-165
- SPF 20+ Sunscreen Spray F-24-167 \*\*

\*\* Samples readily available

## SPF 15 SKIN AND SUN CREME

### Formulation F-18-81.5227

Economical w/o emulsion crème with novel polymer designed to boost organic UV absorbers to perform at a level of SPF 15. Superior moisturizing formula spreads easily and rubs in quickly. Satin smooth skin feel. Great for dry or chapped skin. Very low irritation potential.

	<u>INCI Designation</u>	<u>Weight %</u>
<b>Phase A—Heat to 75°C</b>		
Distilled Water	Water	61.32
Dissolvine Na2S (Akzo Nobel)	Disodium EDTA	0.05
Propylene Glycol	Propylene Glycol	2.00
TEA 99%	Triethanolamine	0.10
<b>Phase B—Add at 75°C</b>		
Finsolv TN (Finetex)	C12-15 Alkyl Benzoate	3.00
Finsolv G-2 (Finetex)	C16-17 Alkyl Benzoate	9.00
Protachem SMO (Protameen)	Sorbitan Oleate	0.20
Escalol 557 (ISP)	Octinoxate	2.25
Escalol 567 (ISP)	Oxybenzone	1.00
Escalol 587 (ISP)	Octisalate	1.00
Crodafos CES (Croda)	Cetearyl Alcohol (and) Ceteth-10 Phosphate (and) Dicapryl Phosphate	4.00
Cetearyl Alcohol 50/50(RITA)	Cetearyl Alcohol	4.00
Crodafos CS20 Acid (Croda)	Cetearyl Alcohol (and) Ceteth-20 Phosphate (and) Dicapryl Phosphate	1.33
<b>Phase C—Add at 60°C</b>		
<b>SYNTRAN® PC 5227</b>	<b>Polyacrylate-15 (and) Polyacrylate-17</b>	<b>10.00</b>
<b>Phase D—Add at 45°C</b>		
Liquid Germall Plus (ISP)	Diazolidinyl Urea, IPBC	0.60
Fragrance	Fragrance	0.15
	YIELD:	100.00

### Procedure

Combine Phase A ingredients and heat to 75° C. Melt all ingredients in Phase B. Add Phase B to Phase A @ 75°C. Stir with high shear and cool. At 60°C add Phase C. At 45°C add Phase D. Adjust pH 6-7.

11/23/2005

## SPF 15 SPRAY GEL SUNSCREEN

### Formulation F-24-02.5227

**Alcohol-free** and **silicone-free** high SPF sunscreen spray gel. This simple yet elegant aqueous formula is the most economical *sprayable* sun protection product available today. Patented **SYNTRAN**<sup>®</sup> technology is proven to boost SPF requiring less organic sunscreen to achieve high SPF. Easy rub-in, non-whitening formula dries to invisible tack-free film.

	<u>INCI Designation</u>	<u>Weight %</u>
<b>Phase A—Heat to 75°C</b>		
Distilled Water	Water	73.15
Dissolvine Na2S (Akzo Nobel)	Disodium EDTA	0.05
Butylene Glycol	Butylene Glycol	2.00
Structure 3001 (National Starch)	Acrylates/Ceteth-20 Itaconate Copolymer	2.35
<b>Phase B—heat tot 75°C</b>		
Protachem SMO (Protameen)	Sorbitan Oleate	0.50
Escalol 557 Octinoxate (ISP)	Octinoxate	7.50
Escalol 567 Oxybenzone (ISP)	Oxybenzone	3.00
Escalol 587 Octisalate (ISP)	Octisalate	3.00
Procol CS-20D (Protameen)	Cetearyl Alcohol,Cetereth-20	0.75
<b>Phase C—Add at 55-60°C</b>		
AMP-95 (Angus)	Amino Methyl Propanol	0.40
<b>SYNTRAN<sup>®</sup> PC 5227</b>	<b>Polyacrylate-15 (and) Polyacrylate-17</b>	7.00
<b>Phase D—Add at 45°C</b>		
Liquid Glydant Plus (Lonza)	DMDMH, IBPC	0.30
	YIELD:	<u>100.00</u>

### Procedure

Combine Phase A ingredients and heat to 75° C. In a separate vessel, melt all ingredients in Phase B. Add Phase B to Phase A @ 75°C. Homomix until smooth and homogeneous. Cool to 55-60°C add AMP-95. Stir until product thickens. Add Syntran PC 5227, continue to stir until smooth and homogeneous. Cool to 45°C add Phase D. Continue to stir with side sweep until cool.

Adjust pH 8.00 – 8.60.

Viscosity: 200-800cps

4/2006

## SPF 30 SKIN AND SUN CRÈME

### Formulation F-24-03.5227

Economical oil and water emulsion crème with novel polymer designed to boost organic UV absorbers to perform at a level of SPF 30. Superior moisturizing formula spreads easily and rubs in quickly. Satin smooth skin feel. Great for dry or chapped skin. Low irritation potential.

	<u>INCI Designation</u>	<u>Weight %</u>
<b>Phase A—Heat to 75°C</b>		
Distilled Water	Water	64.13
Dissolvine Na2S (Akzo Nobel)	Disodium EDTA	0.05
Butylene Glycol	Butylene Glycol	2.00
Structure 3001 (National Starch)	Acrylates/Ceteth-20 Itaconate Copolymer	2.00
<b>Phase B—Add at 75°C</b>		
Finsolv G-2 (Finetex)	C16-17 Alkyl Benzoate	3.00
Protachem SMO (Protameen)	Sorbitan Oleate	0.20
Escalol 557 Octinoxate (ISP)	Octinoxate	7.50
Escalol 567 Oxybenzone (ISP)	Oxybenzone	3.00
Escalol 587 Octisalate (ISP)	Octisalate	3.00
Crodafos CES (Croda)	Cetearyl Alcohol (and) Ceteth-10 Phosphate (and) Dicapryl Phosphate	5.00
Cetyl Alcohol	Cetyl Alcohol	1.40
Stearyl Alcohol	Stearyl Alcohol	0.60
<b>Phase C—Add at 50°C</b>		
AMP-95 (Angus)	Amino Methyl Propanol	0.42
<b>SYNTRAN® PC 5227</b>	<b>Polyacrylate-15 (and) Polyacrylate-17</b>	7.00
<b>Phase D—Add at 45°C</b>		
Liquid Germall Plus (ISP)	Diazolidinyl Urea, IPBC	0.60
Fragrance	Fragrance	0.10
	YIELD:	100.00

### Procedure

Combine Phase A ingredients and heat to 75° C. Melt all ingredients in Phase B. Add Phase B to Phase A @ 75°C. Stir with high shear and cool. At 50°C add Phase C. At 45°C add Phase D. Homomix until smooth and homogenous. Continue to stir with side sweep until cool.

Adjust pH 7.0-7.5.

4/2006

## SPF 45 SKIN AND SUN CRÈME WITH TiO<sub>2</sub>

### Formulation F-24-07.5227

Water and oil emulsion crème with novel polymer designed to boost organic UV absorbers to perform at a level of SPF 45+. Superior moisturizing formula spreads easily and rubs in quickly. Satin smooth skin feel. Great for dry or chapped skin. Lower irritation potential.

	<u>INCI Designation</u>	<u>Weight %</u>
<b>Phase A—Heat to 75°C</b>		
Distilled Water	Water	56.62
Dissolvine Na <sub>2</sub> S (Akzo Nobel)	Disodium EDTA	0.05
Butylene Glycol	Butylene Glycol	2.00
Structure 3001 (National Starch)	Acrylates/Ceteth-20 Itaconate Copolymer	2.00
<b>Phase B—Add at 75°C</b>		
Finsolv G-2 (Finetex)	C16-17 Alkyl Benzoate	3.00
Protachem SMO (Protameen)	Sorbitan Oleate	0.20
Escalol 557 Octinoxate (ISP)	Octinoxate	7.50
Escalol 567 Oxybenzone (ISP)	Oxybenzone	5.00
Escalol 587 Octisalate (ISP)	Octisalate	5.00
Titanium Dioxide USP/FCC (Universal Preserv-a-chem)	TiO <sub>2</sub>	3.00
Crodafos CES (Croda)	Cetearyl Alcohol (and) Ceteth-10 Phosphate (and) Dicapryl Phosphate	5.00
Cetyl Alcohol	Cetyl Alcohol	1.40
Stearyl Alcohol	Stearyl Alcohol	0.60
<b>Phase C—Add at 55°C</b>		
AMP-95 (Angus)	Amino Methyl Propanol	0.42
<b>SYNTRAN® PC 5227</b>	<b>Polyacrylate-15 (and) Polyacrylate-17</b>	7.50
<b>Phase D—Add at 45°C</b>		
Liquid Germall Plus (ISP)	Diazolidinyl Urea, IPBC	0.60
Fragrance	Fragrance	0.10
	YIELD:	<u>100.00</u>

### Procedure

Combine Phase A ingredients and heat to 75° C. Melt all ingredients in Phase B. Add Phase B to Phase A @ 75°C. Stir with high shear and cool. At 55°C add Phase C. At 45°C add Phase D. Homomix until smooth and homogenous. Continue to stir with side sweep until cool.

Adjust pH 6.0-7.0.

4/2006

## LOW VISCOSITY SPF 15+ CRÈME

### Formulation F-24-26

Low viscosity o/w emulsion crème with novel polymer designed to boost organic UV absorbers to perform at a level of SPF 15+. Superior moisturizing formula spreads easily and rubs in quickly. Satin smooth skin feel. Great for dry or chapped skin.

	<u>INCI Designation</u>	<u>Weight %</u>
<b>Phase A-1 —Heat to 75°C</b>		
Distilled Water	Water	59.95
Dissolvine Na2S (Akzo Nobel)	Disodium EDTA	0.10
Veegum Ultra (RT Vanderbuilt)	Magnesium Aluminum Silicate	0.50
<b>Phase A-2</b>		
Butylene Glycol	Butylene Glycol	3.00
Ticaxan Xanthan NF (TIC Gum)	Xanthan Gum	0.50
<b>Phase B—Add at 75°C</b>		
Finsolv G-2 (Finetex)	C16-17 Alkyl Benzoate	2.00
Stearic Acid 3X	Stearic Acid	3.00
Escalol 557 (ISP)	Octinoxate	7.50
Escalol 567 (ISP)	Oxybenzone	3.00
Escalol 587 (ISP)	Octisalate	3.00
Lipo GMS 450 (Lipo)	Glyceryl Stearate	1.50
Ceraphyl 368 (ISP)	Ethylhexyl Palmitate	3.00
Cetyl Alcohol	Cetyl Alcohol	1.00
Stearyl Alcohol (Protameen)	Stearyl Alcohol	0.50
<b>Phase C—Add at 75°C</b>		
TEA 99%	Triethanolamine	1.00
<b>Phase D—Add at 60°C</b>		
<b>SYNTRAN® PC 5227</b>	<b>Polyacrylate-15, Polyacrylate-17</b>	<b>10.00</b>
<b>Phase E—Add at 45°C</b>		
Liquid Glydant Plus (Lonza)	DMDM Hydantoin, IPBC	0.35
Fragrance	Fragrance	0.10
	YIELD:	<hr/> 100.00

### Procedure

Combine Phase A-1 ingredients and heat to 75° C. Stir for 10 minutes. Premix Phase A-2 and add to A-1. Batch will thicken, adjust stirring to avoid aeration. In a separate vessel add all ingredients in Phase B, heat to 75°C until melted. Add Phase B to Phase A @ 75°C. Add Phase C at 75°C. Stir with high shear and cool. At 60°C add Phase D. At 45°C add Phase E. Adjust to pH 7.8-8.2

## LOW VISCOSITY SPF 15+ CRÈME

### Formulation F-24-27

Low viscosity o/w emulsion crème with novel polymer designed to boost organic UV absorbers to perform at a level of SPF 15+. Superior moisturizing formula spreads easily and rubs in quickly. Satin smooth skin feel. Great for dry or chapped skin.

	<u>INCI Designation</u>	<u>Weight %</u>
<b>Phase A-1 —Heat to 75°C</b>		
Distilled Water	Water	56.15
Dissolvine Na2S (Akzo Nobel)	Disodium EDTA	0.10
Veegum Ultra (RT Vanderbilt)	Magnesium Aluminum Silicate	0.50
<b>Phase A-2</b>		
Butylene Glycol	Butylene Glycol	2.00
Ticaxan Xanthan NF (TIC Gum)	Xanthan Gum	0.50
<b>Phase B—Add at 75°C</b>		
Finsolv G-2 (Finetex)	C16-17 Alkyl Benzoate	2.00
Prolipid 141 (ISP)	Glyceryl Stearate, Behenyl Alcohol Palmitic Acid, Stearic Acid, Lecithin, Lauryl Alcohol, Myristyl Alcohol, Cetyl Alcohol	5.00
Escalol 557 (ISP)	Octinoxate	7.50
Escalol 567 (ISP)	Oxybenzone	3.00
Escalol 587 (ISP)	Octisalate	3.00
Lipo GMS 450 (Lipo)	Glyceryl Stearate	1.50
Ceraphyl 368 (ISP)	Ethylhexyl Palmitate	3.00
<b>Phase C—Add at 75°C</b>		
TEA 99%	Triethanolamine	0.30
<b>Phase D—Add at 55°C</b>		
DC 245 Fluid (Dow Corning)	Cyclopentasiloxane	5.00
<b>SYNTRAN® PC 5227</b>	<b>Polyacrylate-15, Polyacrylate-17</b>	10.00
<b>Phase E—Add at 45°C</b>		
Liquid Glydant Plus (Lonza)	DMDM Hydantoin, IPBC	0.35
Fragrance	Fragrance	0.10
	YIELD:	<hr/> 100.00

### Procedure

Combine Phase A-1 ingredients and heat to 75° C. Stir for 10 minutes. Premix Phase A-2 and add to A-1. Batch will thicken, adjust stirring to avoid aeration. In a separate vessel add all ingredients in Phase B, heat to 75°C until melted. Add Phase B to Phase A @ 75°C. Add Phase C at 75°C. Stir with high shear and cool. At 55°C separately add Phase D ingredients. Homomix. Cool to 45°C, add Phase E. Final pH 7.6-8.0

## ECONOMICAL SPF 30 SKIN AND SUN CRÈME

### Formulation F-24-37

Economical w/o emulsion crème with novel polymer designed to boost organic UV absorbers to perform at a level of SPF 30. Superior moisturizing formula spreads easily and rubs in quickly. Satin smooth skin feel. Great for dry or chapped skin. Low irritation potential.

	<u>INCI Designation</u>	<u>Weight %</u>
<b>Phase A—Heat to 75°C</b>		
Distilled Water	Water	59.95
Dissolvine Na2S (Akzo Nobel)	Disodium EDTA	0.05
Propylene Glycol	Propylene Glycol	2.00
Ticaxan Xanthan Gum NF (TIC Gum)	Xanthan Gum	0.15
<b>Phase B—Add at 75°C</b>		
<b>SYNTRAN® PC 5227</b>	<b>Polyacrylate-15 (and) Polyacrylate-17</b>	<b>10.00</b>
<b>Phase C—Add at 75°C</b>		
Finsolv TN (Finetex)	C12-15 Alkyl Benzoate	3.00
Protachem SMO (Protameen)	Sorbitan Oleate	0.25
Escalol 557 (ISP)	Octinoxate	7.50
Escalol 567 (ISP)	Oxybenzone	3.00
Escalol 587 (ISP)	Octisalate	3.00
Crodafos CES (Croda)	Cetearyl Alcohol (and) Ceteth-10 Phosphate (and) Dicapryl Phosphate	6.00
Crodacol CS-50 (Croda)	Cetearyl Alcohol	4.00
TEA 99%	Triethanolamine	0.35
<b>Phase D—Add at 45°C</b>		
Liquid Germall Plus (ISP)	Diazolidinyl Urea, IPBC	0.60
Fragrance	Fragrance	0.15
	YIELD:	<u>100.00</u>

### Procedure

Combine Water and Dissolvine and begin heating to 75°C. Premix the propylene glycol and Xanthan gum. Add premix to heated water and stir until gum is adequately dispersed. At 75°C, just prior to addition of oil phase, add **SYNTRAN 5227**. In a separate vessel melt all Phase C ingredients. Add Phase C to Phase A/B @ 75°C. Stir with high shear and cool slowly. Homomix until smooth and homogeneous. At 45°C add Phase D. Continue to stir with side sweep until cool. Adjust pH 6.5 - 7.2

## ECONOMICAL SPF 30 SKIN AND SUN CREME

### Formulation F-24-38

Economical w/o emulsion crème with novel polymer designed to boost organic UV absorbers to perform at a level of SPF 30. Superior moisturizing formula spreads easily and rubs in quickly. Satin smooth skin feel. Great for dry or chapped skin. Low irritation potential.

	<u>INCI Designation</u>	<u>Weight %</u>
<b>Phase A—Heat to 75°C</b>		
Distilled Water	Water	59.95
Dissolvine Na2S (Akzo Nobel)	Disodium EDTA	0.05
Propylene Glycol	Propylene Glycol	2.00
<b>Phase B—Add at 75°C</b>		
<b>SYNTRAN® PC 5227</b>	<b>Polyacrylate-15 (and) Polyacrylate-17</b>	10.00
<b>Phase C—Add at 75°C</b>		
Finsolv TN (Finetex)	C12-15 Alkyl Benzoate	3.00
Protachem SMO (Protameen)	Sorbitan Oleate	0.25
Escalol 557 (ISP)	Octinoxate	7.50
Escalol 567 (ISP)	Oxybenzone	3.00
Escalol 587 (ISP)	Octisalate	3.00
Crodafos CES (Croda)	Cetearyl Alcohol (and) Ceteth-10 Phosphate (and) Dicapryl Phosphate	6.00
Crodacol CS-50 (Croda)	Cetearyl Alcohol	4.00
Lecinol S-10 (Barnet)	Hydrogenated Lecithin	0.15
TEA 99%	Triethanolamine	0.35
<b>Phase D—Add at 45°C</b>		
Liquid Germall Plus (ISP)	Diazolidinyl Urea, IPBC	0.60
Fragrance	Fragrance	0.15
	YIELD:	100.00

### Procedure

Combine Phase A ingredients and heat to 75°C. At 75°C, just prior to addition of Oil phase, add **SYNTRAN 5227**. In a separate vessel melt all Phase C ingredients, stir until homogeneous. Add Phase C to Phase A/B @ 75°C. Stir with high shear and cool slowly. Homomix until smooth and homogeneous. At 45°C add Phase D. Continue to stir with side sweep until cool. Adjust pH 6.5 - 7.2

## HIGH SPF LOTION

### Formulation F-24-88

Unique low viscosity lotion with novel SPF boosting polymers. Provides high SPF protection using a combination of organic and inorganic sunscreens. High protection with low organic actives. Low irritation potential. Moisturizing formula spreads easily and rubs in quickly.

	<u>INCI Designation</u>	<u>Weight %</u>
<b>Phase A-1 —Heat to 75°C</b>		
Distilled Water	Water	57.85
Dissolvine Na2S (Akzo Nobel)	Disodium EDTA	0.05
<b>Phase A-2</b>		
Butylene Glycol	Butylene Glycol	2.00
Ticaxan Xanthan NF (TIC Gum)	Xanthan Gum	0.25
<b>Phase A-3</b>		
<b>SYNTRAN® PC 5227</b>	<b>Polyacrylate-15 (and) Polyacrylate-17</b>	3.00
<b>Phase B—Add at 75°C</b>		
Finsolv G-2 (Finetex)	C14-16 Alkyl Benzoate	3.00
Crodafos CES (Croda)	Cetearyl Alcohol (and) Ceteth-10 Phosphate (and) Dicapryl Phosphate	4.00
Procetyl AWS (Croda)	PPG-5-Ceteth-20	0.50
Escalol 577 (ISP)	Octinoxate	7.50
Escalol 567 (ISP)	Oxybenzone	5.00
Escalol 587 (ISP)	Octisalate	5.00
Tioveil FIN (Uniqema)	Titanium Dioxide Dispersion	4.00
TEA 99%	Triethanolamine	0.15
<b>Phase C—Add at 75°C</b>		
<b>SYNTRAN® PC 5400</b>	<b>Ammonium Acrylates Copolymer</b>	3.00
<b>Phase D—Add at 60°C</b>		
DC 245 Fluid (Dow Corning)	Cyclopentasiloxane	2.00
DC 200 Fluid 350 cst (Dow Corning)	Dimethicone	2.00
<b>Phase E—Add at 45°C</b>		
Liquid Germall Plus (ISP)	Propylene Glycol, Diazdidinyl Urea, IPBC	0.60
Fragrance	Fragrance	0.10
	<b>YIELD:</b>	<hr/> 100.00

pH 7.0 – 7.5

### Procedure

Combine Phase A-1 ingredients and begin heating to 75°C. Premix Phase A-2 and add to A-1. Batch will thicken, adjust stirring to avoid aeration. At 75°C add Phase A-3. In a separate vessel add all Phase B ingredients, heat to 75°C until melted. Add Phase B to Phase A @ 75°C. Stir until homogeneous. Add Phase C. Cool to 55-60°C. Add Phase D ingredients at 60°C. Homomix. Cool slowly to 45°C, add Phase E. Adjust pH to 7.0-7.5 with TEA, if necessary. 1/07  
*In Vitro SPF = 50+; Boot score = 2.*

## SKIN MOISTURIZER with SPF 20+

### Formulation F-24-103

Moisturizing lotion with patented Olefin/Graft polymer technology designed to boost organic UV absorbers to perform at a level of SPF 20+. Superior moisturizing formula spreads easily and rubs in quickly. Satin smooth skin feel. Instantly makes dry skin more supple and hydrated. **SYNTRAN® PC 5227** also imparts enhanced moisturization, softness and unique rub-in and re-fattening qualities to skin. Low irritation potential.

	<u>INCI Designation</u>	<u>Weight %</u>
<b>Phase A-1—Heat to 75°C</b>		
Distilled Water	Water	61.95
Dissolvine Na2S (Akzo Nobel)	Disodium EDTA	0.05
Ultrez 21 (Noveon)	Acrylates/C10-30 Alkyl Acrylates Crosspolymer	0.30
<b>Phase A-2 – Add at 45°C</b>		
Butylene Glycol	Butylene Glycol	4.00
Ticaxan Xanthan Gum NF (TIC Gum)	Xanthan Gum	0.25
<b>Phase A-3—Add at 75°C</b>		
Optiphen (ISP)	Phenoxyethanol, Caprylyl Glycol	0.75
<b>Phase B—Add at 75°C</b>		
Protachem CTG (Protameen)	Caprylic/Capric Triglyceride	1.00
Protachem OP (Protameen)	Ethylhexyl Palmitate	2.00
Ceraphyl SLK (ISP)	Isodecyl Neopentanoate	3.00
Procetyl AWS (Croda)	PPG-5-Ceteth-20	1.00
Lipovol A (LIPO)	Persea Gratissima (Avocado) Oil	1.00
Escalol 557 (ISP)	Octinoxate	5.00
Escalol 567 (ISP)	Oxybenzone	2.00
Escalol 587 (ISP)	Octisalate	2.00
Crodafos CES (Croda)	Cetearyl Alcohol (and) Ceteth-10 Phosphate (and) Dicaprylyl Phosphate	3.00
<b>Phase C-1—Add at 55°C</b>		
DC 245 Fluid (Dow Corning)	Cyclopentasiloxane	3.00
DC 200 Fluid 350 cst (Dow Corning)	Dimethicone	3.00
<b>Phase C-2—Add at 55°C</b>		
TEA 99%	Triethanolamine	0.50
<b>SYNTRAN® PC 5227</b>	<b>Polyacrylate-15 (and) Polyacrylate-17</b>	6.00
<b>Phase D—Add at 45°C</b>		
Fragrance	Fragrance	0.20
	YIELD:	<hr/> 100.00

### Procedure

Combine Phase A-1 ingredients and begin heating to 45°C. Premix Phase A-2 and add to A-1 at 45°C. Batch will thicken, adjust stirring to avoid aeration. Continue heating to main vessel to 75°C. At 75°C add Phase A-3 ingredients. Stir until smooth and homogeneous. In a separate vessel add all Phase B ingredients and heat to 75°C until melted. Add Phase B to Phase A @ 75°C. Cool batch to 55°C, add Phase C-1 ingredients. Homomix batch until uniform. Individually add each Phase C-2 ingredient, stir between additions until batch is smooth and homogeneous. Cool batch to 45°C add Phase D. Adjust pH to 6.3 – 6.8

## BROAD SPECTRUM SPF CRÈME

### Formulation F-24-134

Stable crème with **SYNTRAN® PC 5227** boosts SPF and enhances moisturization and film forming properties. Superior moisturizing formula spreads easily and rubs in quickly. Satin smooth skin feel. Great for dry or chapped skin.

	<u>INCI Designation</u>	<u>Weight %</u>
<b>Phase A-1 —Heat to 75°C</b>		
Distilled Water	Water	60.90
Dissolvine Na2S (Akzo Nobel)	Disodium EDTA	0.10
Ultrez 21 (Noveon)	Acrylates C10-30 Alkyl Acrylates Copolymer	0.30
<b>Phase A-2</b>		
Butylene Glycol	Butylene Glycol	3.00
Ticaxan Xanthan NF (TIC Gum)	Xanthan Gum	0.10
<b>Phase A-3</b>		
Microcare PHG (Actichem)	Phenoxyethanol, Caprylyl Glycol	1.00
<b>Phase B—Add at 75°C</b>		
Protachem CTG (Protameen)	Caprylic/Capric Triglyceride	1.00
Protachem ISP (Protameen)	Isostearyl Palmitate	1.00
Ceraphyl SLK (ISP)	Isodecyl Neopentanoate	3.00
Procetyl AWS (Croda)	PPG-5-Ceteth-20	1.00
Parsol 1789 (DSM)	Avobenzene	3.00
Escalol 587 (ISP)	Octisalate	5.00
Escalol 567 (ISP)	Oxybenzone	6.00
Parsol 340 (DSM)	Octocrylene	1.50
Cetyl Alcohol (Protameen)	Cetyl Alcohol	1.50
<b>Phase C-1 —Add at 60°C</b>		
DC 245 Fluid (Dow Corning)	Cyclopentasiloxane	3.00
DC 200 Fluid 350 cst (Dow Corning)	Dimethicone	2.00
<b>Phase C-2 —Add at 60°C</b>		
TEA 99%	Triethanolamine	0.40
<b>Phase D—Add at 60°C</b>		
<b>SYNTRAN® PC 5227</b>	<b>Polyacrylate-15, Polyacrylate-17</b>	6.00
<b>Phase E—Add at 45°C</b>		
Fragrance #54422 (Belle-aire)	Fragrance	0.20
	YIELD:	<hr/> 100.00

pH 6.30 – 6.60

### Procedure

Combine Phase A-1 ingredients and begin heating to 75°C. Stir until Ultrez is hydrated. Premix Phase A-2 and add to A-1. Batch will thicken, adjust stirring to avoid aeration. At 75°C add Phase A-3. In a separate vessel add all ingredients in Phase B, heat to 75°C until melted. Add Phase B to Phase A @ 75°C. Cool to 60°C. Individually add Phase C-1 ingredients at 60°C. **Homomix.** Add Phase C-2 and stir until batch thickens and is homogeneous. Slowly add Phase D ingredient, stir until smooth and homogeneous (may require high shear). Cool slowly to 45°C, add Phase E. Adjust pH to 6.3-6.6 with TEA, if necessary. **In Vitro SPF = 50+**

## OIL FREE SKIN LOTION with SPF 20+

### Formulation F-24-160

Elegant Oil Free lotion with patented Olefin/Graft polymer technology designed to boost organic UV absorbers to perform at a level of SPF 20+. Superior moisturizing formula spreads easily and rubs in quickly. Satin smooth skin feel. Instantly makes dry skin more supple and hydrated.

**SYNTRAN® PC 5227** also imparts enhanced moisturization, softness and unique rub-in and re-fatting qualities to skin. Low irritation potential.

	<u>INCI Designation</u>	<u>Weight %</u>
<b>Phase A-1—Heat to 75°C</b>		
Distilled Water	Water	62.00
Dissolvine Na2S (Akzo Nobel)	Disodium EDTA	0.05
Ultrez 21 (Noveon)	Acrylates/C10-30 Alkyl Acrylate Crosspolymer	0.30
<b>Phase A-2 – Add at 45°C</b>		
Butylene Glycol	Butylene Glycol	4.00
Ticaxan Xanthan Gum NF (TIC Gum)	Xanthan Gum	0.20
<b>Phase A-3—Add at 75°C</b>		
Microcare PHG (Actichem)	Phenoxyethanol, Caprylyl Glycol	0.75
<b>Phase B—Add at 75°C</b>		
Protachem CTG (Protameen)	Caprylic/Capric Triglyceride	1.00
Protachem OP (Protameen)	Ethylhexyl Palmitate	2.00
Ceraphyl SLK (ISP)	Isodecyl Neopentanoate	3.00
Procetyl AWS (Croda)	PPG-5-Ceteth-20	1.00
Escalol 557 (ISP)	Octinoxate	5.00
Escalol 567 (ISP)	Oxybenzone	2.00
Escalol 587 (ISP)	Octisalate	2.00
Crodafos CES (Croda)	Cetearyl Alcohol (and) Ceteth-10 Phosphate (and) Dicetyl Phosphate	3.00
<b>Phase C-1—Add at 55°C</b>		
DC 245 Fluid (Dow Corning)	Cyclopentasiloxane	4.00
DC 200 Fluid 350 cst (Dow Corning)	Dimethicone	3.00
<b>Phase C-2—Add at 55°C</b>		
TEA 99%	Triethanolamine	0.50
<b>SYNTRAN® PC 5227</b>	<b>Polyacrylate-15 (and) Polyacrylate-17</b>	6.00
<b>Phase D—Add at 45°C</b>		
Fragrance #55442 (Belle-aire)	Fragrance	0.20
	YIELD:	100.00

### Procedure

Combine Phase A-1 ingredients and begin heating to 45°C. Premix Phase A-2 and add to A-1 at 45°C. Batch will thicken, adjust stirring to avoid aeration. Continue heating to main vessel to 75°C. At 75°C add Phase A-3 ingredients. Stir until smooth and homogeneous. In a separate vessel add all Phase B ingredients and heat to 75°C until melted. Add Phase B to Phase A @ 75°C. Cool batch to 55°C, add Phase C-1 ingredients. Homomix batch until uniform. Individually add each Phase C-2 ingredient, stir between additions until batch is smooth and homogeneous. Cool batch to 45°C add Phase D. Adjust pH to 6.2 – 6.5

3/07

## BROAD SPECTRUM SPF 15 CRÈME

### Formulation F-24-163

Broad Spectrum SPF creme with patented olefin graft polymer technology designed to boost organic UV absorbers to perform at a level of SPF 20+. Superior moisturizing formula spreads easily and rubs in quickly. Satin smooth skin feel. Instantly makes dry skin more supple and hydrated. **SYNTRAN® PC 5227** also imparts enhanced moisturization, softness and unique rub-in and re-fatting qualities to skin. Low irritation potential.

	<u>INCI Designation</u>	<u>Weight %</u>
<b>Phase A-1—Heat to 75°C</b>		
Deionized Water	Water	63.60
Dissolvine Na2S (Akzo Nobel)	Disodium EDTA	0.05
Ultrez 21 (Noveon)	Acrylates C10-30 Alkyl Acrylates Copolymer	0.30
<b>Phase A-2 – Add at 45°C</b>		
Butylene Glycol	Butylene Glycol	4.00
Ticaxan Xanthan Gum NF (TIC Gum)	Xanthan Gum	0.20
<b>Phase A-3—Add at 75°C</b>		
Microcare PHG (Actichem)	Phenoxyethanol, Caprylyl Glycol	0.75
<b>Phase B—Add at 75°C</b>		
Protachem CTG (Protameen)	Caprylic/Capric Triglyceride	1.00
Protachem OP (Protameen)	Ethylhexyl Palmitate	2.00
Ceraphyl SLK (ISP)	Isodecyl Neopentanoate	3.00
Procetyl AWS (Croda)	PPG-5-Ceteth-20	1.00
Parsol 1789 (DSM)	Avobenzene	2.00
Escalol 567 (ISP)	Oxybenzone	1.50
Escalol 587 (ISP)	Octisalate	3.00
Parsol 340 (DSM)	Octocrylene	1.00
Crodafos CES (Croda)	Cetearyl Alcohol (and) Ceteth-10 Phosphate (and) Dicetyl Phosphate	3.00
<b>Phase C-1—Add at 55°C</b>		
DC 245 Fluid (Dow Corning)	Cyclopentasiloxane	4.00
DC 200 Fluid 350 cst (Dow Corning)	Dimethicone	3.00
<b>Phase C-2—Add at 55°C</b>		
TEA 99%	Triethanolamine	0.40
<b>SYNTRAN® PC 5227</b>	<b>Polyacrylate-15 (and) Polyacrylate-17</b>	6.00
<b>Phase D—Add at 45°C</b>		
Fragrance	Fragrance	0.20
	YIELD:	<u>100.00</u>

### Procedure

Combine Phase A-1 ingredients and begin heating to 45°C. Premix Phase A-2 and add to A-1 at 45°C. Batch will thicken, adjust stirring to avoid aeration. Continue heating to main vessel to 75°C. At 75°C add Phase A-3 ingredients. Stir until smooth and homogeneous. In a separate vessel add all Phase B ingredients and heat to 75°C until melted. Add Phase B to Phase A @ 75°C. Cool batch to 55°C, add Phase C-1 ingredients. Homomix batch until uniform. Individually add each Phase C-2 ingredient, stir between additions until batch is smooth and homogeneous. Cool batch to 45°C add Phase D. Adjust pH to 6.2 – 6.5

Invitro SPF = 20+

05/07

## SPF 30+ CRÈME

### Formulation F-24-165

Elegant, rich formula containing patented olefin graft polymer technology designed to boost organic UV absorbers to perform at a level of SPF 25+. Superior moisturizing formula spreads easily and rubs in quickly. Satin smooth skin feel. Instantly makes dry skin more supple and hydrated. **SYNTRAN® PC 5227** also imparts enhanced moisturization, softness and unique rub-in and re-fatting qualities to skin.

	<u>INCI Designation</u>	<u>Weight %</u>
<b>Phase A-1—Heat to 75°C</b>		
Deionized Water	Water	54.20
Dissolvine Na2S (Akzo Nobel)	Disodium EDTA	0.10
Ultrez 10 (Noveon)	Carbomer	0.30
<b>Phase A-2 – Add at 45°C</b>		
Butylene Glycol	Butylene Glycol	3.00
Ticaxan Xanthan Gum NF (TIC Gum)	Xanthan Gum	0.25
<b>Phase A-3—Add at 75°C</b>		
Microcare PHG (Thor)	Phenoxyethanol, Caprylyl Glycol	1.00
<b>Phase B—Add at 75°C</b>		
Cetyl Alcohol (Protameen)	Cetyl Alcohol	2.00
Protachem CTG (Protameen)	Caprylic/Capric Triglyceride	2.00
Finsolv G-2 (Finetex)	C15-17 Alkyl Benzoate	3.00
Procetyl AWS (Croda)	PPG-5-Ceteth-20	1.00
Escalol 557 (ISP)	Octinoxate	7.50
Escalol 567 (ISP)	Oxybenzone	5.00
Escalol 587 (ISP)	Octisalate	5.00
Crodafos CES (Croda)	Cetearyl Alcohol (and) Ceteth-10 Phosphate (and) Dicaprylyl Phosphate	2.00
<b>Phase C-1—Add at 55°C</b>		
DC 245 Fluid (Dow Corning)	Cyclopentasiloxane	4.00
DC 200 Fluid 350 cst (Dow Corning)	Dimethicone	3.00
<b>Phase C-2—Add at 55°C</b>		
TEA 99%	Triethanolamine	0.50
<b>SYNTRAN® PC 5227</b>	<b>Polyacrylate-15 (and) Polyacrylate-17</b>	6.00
<b>Phase D—Add at 45°C</b>		
Fragrance	Fragrance	0.15
	YIELD:	100.00

### Procedure

Combine Phase A-1 ingredients and begin heating to 45°C. Premix Phase A-2 and add to A-1 at 45°C. Batch will thicken, adjust stirring to avoid aeration. Continue heating to main vessel to 75°C. At 75°C add Phase A-3 ingredients. Stir until smooth and homogeneous. In a separate vessel add all Phase B ingredients and heat to 75°C until melted. Add Phase B to Phase A @ 75°C. Cool batch to 55°C, add Phase C-1 ingredients. Homomix batch until uniform. Individually add each Phase C-2 ingredient, stir between additions until batch is smooth and homogeneous. Cool batch to 45°C add Phase D. Adjust pH to 6.2 – 6.5.

In Vitro SPF = 40

05/07

## SPF 20+ SUNSCREEN SPRAY

### Formulation F-24-167

Sprayable sunscreen emulsion containing patented olefin graft polymer technology designed to boost organic UV absorbers to perform at a level of SPF 20+. Instantly makes dry skin more supple and hydrated. **SYNTRAN® PC 5227** also imparts enhanced moisturization, softness and unique rub-in and re-fatting qualities to skin.

	<u>INCI Designation</u>	<u>Weight %</u>
<b>Phase A-1—Heat to 65°C</b>		
Deionized Water	Water	68.32
Dissolvine Na2S (Akzo Nobel)	Disodium EDTA	0.05
Ritapan DL (RITA)	Panthenol	0.50
<b>Phase A-2 – Add at 45°C</b>		
Butylene Glycol	Butylene Glycol	3.00
Ticaxan Xanthan Gum NF (TIC Gum)	Xanthan Gum	0.35
<b>Phase A-3—Add at 65°C</b>		
TEA 99%	Triethanolamine	0.03
<b>Phase B—Add at 65°C</b>		
Procol CS-20 (Protameen)	Cetareth-20	0.60
Ceraphyl SLK (ISP)	Isodecyl Neopentanoate	2.00
Procetyl AWS (Croda)	PPG-5-Ceteth-20	1.00
Protachem ISP (Protameen)	Isostearyl Palmitate	1.00
Escalol 557 (ISP)	Octinoxate	6.00
Escalol 567 (ISP)	Oxybenzone	4.00
Escalol 587 (ISP)	Octisalate	3.00
Microcare PHG (Actichem)	Phenoxyethanol, Caprylyl Glycol	1.00
Dow Corning 345 Fluid (Dow Corning)	Cyclomethicone	3.00
<b>Phase C—Add at 55°C</b>		
<b>SYNTRAN® PC 5227</b>	<b>Polyacrylate-15 (and) Polyacrylate-17</b>	5.00
<b>SYNTRAN® PC 5400</b>	<b>Ammonium Acrylates Copolymer</b>	1.00
<b>Phase D—Add at 45°C</b>		
Fragrance	Fragrance	0.15
	YIELD:	<u>100.00</u>

### Procedure

Combine Phase A-1 ingredients and begin heating to 45°C. Premix Phase A-2 and add to A-1 at 45°C. Batch will thicken, adjust stirring to avoid aeration. Continue heating vessel to 65°C. At 65°C add Phase A-3 ingredient. Stir until smooth and homogeneous. In a separate vessel add all Phase B ingredients and heat to 65°C until melted. Add Phase B to Phase A @ 65°C. Cool batch to 55°C, individually add each Phase C ingredient, stir between additions until batch is smooth and homogeneous. Cool batch to 45°C add Phase D. Homomix batch until uniform. Adjust pH to 7-7.5.

In Vitro SPF = 30

05/07