

# **Section XI**

## **Sun Care Products**

After Sun Gel

This non tacky, smooth clear gel contains the combination of super moisturizers, and humectants (Aloe Vera Gel, Liponic EG-1, Unimoist U-125 and Hyaluronic Acid) to counteract the drying effects of the sun. It is suitable for all skin types, including sensitive.

<u>Sequence:</u>	<u>Raw Material/INCI Name:</u>	<u>Wt%</u>
1	Deionized Water	40.12
1	Aloe Vera Gel	4.00
1	Uniphen P-23	0.30
2	Liponic EG-1/Glycereth-26	2.00
2	Hypan SA-100H/Acrylic Acid/Acrylonitrogens Copolymer	0.15
3	Deionized Water	1.00
3	Triethanolamine, 99%	0.23
4	Carbopol ETD 2001/Carbomer (2% sol'n)	22.50
5	Deionized Water	1.00
5	Triethanolamine, 99%	0.45
6	Lubrajel MS	20.00
6	Unimoist U-125	1.50
7	Gorgonian Extract BG*	0.50
8	Deionized Water	1.00
8	Unicide U-13/Imidazolidinyl Urea	0.25
9	Hyaluronic Acid (1% sol'n)	5.00

\*Patent #4,849,410 (and) 4,745,104

Procedure:

- Combine Sequence #1 ingredients and heat to 80C while mixing on overhead mixer at medium/high speed with propeller blade at bottom of vessel to avoid aeration of batch.
- Mix Sequence #2 ingredients into a slurry and add to Sequence #1 with medium/high mixing while holding batch temperature at 80C.
- Premix Sequence #3 and add to batch at 80C on overhead mixer at medium/high speed for approximately 15-20 minutes or until Hypan is completely hydrated and clear (without fish eyes).
- Heat Sequence #4 to 60C and add to batch while mixing at medium/high speed. Hold temperature at 75C.
- Premix Sequence #5 and add to batch at medium/high speed. Continue mixing while holding temperature at 75C until mixture is completely into solution and clear (5-15 minutes). Cool batch to 60C after completely into solution.
- Add Sequence #6 to batch at medium speed. Cool to 40C.
- At 40C add Sequence #7 to batch with low speed mixing using propeller blade. Lower temperature to 35C.
- Premix Sequence #8 and add to batch held at 35C mixing with overhead mixer at low speed. Cool to room temperature.
- At room temperature, add Sequence #9 to batch.

Specifications:

pH: 5.9+-0.2

Viscosity: 367,000 cps+-10% T-E @ 0.6 rpm

SOURCE: Lipo Chemicals Inc.: Formula No. 935

After Sun Lotion

A smooth, soothing lotion for use after sun-bathing to restore moisture, and to add natural oils to the skin, whilst reducing the erythema caused very excessive UV exposure. The inclusion of Lipex Canola-U brings natural antioxidants and anti-inflammatory components to the UV-stressed skin. Akogel has a slightly cooling effect and helps to soften and smooth the skin to prevent dryness and flaking.

<u>Raw Material/INCI Name:</u>	<u>Wt%</u>
A. Arlatone 985/Polyoxyethylene stearyl stearate	4.0
Brij 721/Steareth-21	2.0
Jarcol I-20/Octyldodecanol	6.0
Akogel/Hydrogenated vegetable oil	6.0
Lipex Canola-U/Canola oil unsaponifiables	4.0
B. Atlas G-2330/Sorbeth-30	2.5
Water	75.0
Phenonip/Esters of p-hydroxybenzoic acid	0.45
C. Perfume	0.05

**Procedure:**

1. Heat the phases A and B to 75C.
2. Add the oily phase A to the water phase B whilst stirring thoroughly.
3. Cool down to 55C, homogenize.
4. Cool down to 35C, add C.
5. Cool down to room temperature whilst stirring.

**Rheological Characteristics:**

Viscosity after one week at 20C (Bohlin Rheometer VOR):  
 10 Pas at shear rate of 1.0 s<sup>-1</sup>  
 1.1 Pas at shear rate of 30.0 s<sup>-1</sup>

**SOURCE: Jarchem Industries, Inc.: Suggested Formulation**

After Sun Lotion

<u>Raw Materials:</u>	<u>Wt%</u>
A. Miglyol 840 (Propylene Glycol Dicaprylate/Dicaprate)	10
Imwitor 380 (Glyceryl Cocoate/Citrate/Lactate)	5
Imwitor 900 (Glyceryl monostearate)	3
Imwitor 928 (Glyceryl Cocoate)	3
Propylene glycol monostearate	1
Plurol Stearique (Polyglyceryl-6 Distearate)	1
B. D-Panthenol	2
Allantoin	0.3
Keltrol F (Xanthane)	0.5
Preservative	q.s.
Water ad	100
C. Vitamin E	0.5
Fragrance	q.s.

Preparation:

A is mixed together and heated up to 75-80C. B is stirred homogeneously and brought to the same temperature. B is emulsified into A. Subsequently emulsion is stirred cold down to about 30C and then C is added.

Sun Protection Cream, SPF 6

<u>Raw Materials:</u>	<u>Wt%</u>
A. Softisan Gel	10
Mineral oil	12
Imwitor 780K (Isostearyl Diglyceryl Succinate)	4
Softigen 701 (Glyceryl Ricinoleate)	4
Paraffin	4
Neo Heliopan E1000 (Isopropyl Methoxycinnamate (and) Ethyl-Diisopropylcinnamate)	4
Elfacos ST 9 (PEG-45 Dodecyl Glycol Copolymer)	1
B. Magnesium Sulphate	1
Preservative	q.s.
Water ad	100
C. Fragrance	q.s.

Preparation:

A is put together and heated up to approx. 75C. B is brought to the same temperature. Then A is homogenized and B emulsified into A. Then the mixture is stirred cold to 30C and after that C is added.

SOURCE: Huls Aktiengesellschaft: Suggested Formulations

After Sun Lotion (Iricalmin)

This modern after sun lotion with Iricalmin regenerates the protective lipid layer of the skin and has anti-irritant activity. In addition Iricalmin has moisturizing properties. The alcohol in the formulation gives an agreeable cooling effect.

<u>Ingredients/INCI Name:</u>	<u>Wt%</u>
A) Tego Care 450/Polyglyceryl-3 Methylglucose Distearate	1.50
Lanette O/Cetearyl Alcohol	1.15
Cutina GMS V/Glyceryl Stearate	1.15
Cetiol 868/Octyl Stearate	8.00
Fitoderm/Squalane	5.00
Bisabolol/Bisabolol	0.20
Wacker-Belsil CM 040/Cyclomethicone	2.00
B) Deionized Water	65.10
Keltrol/Xanthan Gum	0.10
C) Glycerin/Glycerin	5.00
Phenonip	0.50
Iricalmin/Water, Wheat (Tritium Vulgare) Germ Extract, Saccharomyces Cerevisiae Extract, Sodium Hyaluronate	5.00
D) Ethyl Alcohol 96%/Alcohol	5.00
Fragrance/Rivalia 0/221212	0.30

**Procedure:**

Heat the ingredients of fatty phase A) to 70C.

Heat the ingredients of water phase B) to 75C.

Under stirring add phase B) to phase A), cool to 50C, homogenize and cool to 30C.

Then add phase C) and stir cold. Finally incorporate phase D).

**SOURCE:** Pentapharm Ltd.: Application No. C 029.0/05.99

After Sun Soother with Aloe Vera

A refreshing creamy lotion which soothes, cools and moisturizes sun-dried skin.

<u>Ingredients:</u>	<u>Wt%</u>
A. Water	86.23
Phospholipid SV	3.0
Propylene Glycol	2.0
B. Monafax MAP 160	1.0
Cetyl Alcohol	2.0
Hexyl Laurate	1.0
Monasil PCA	2.0
C. AMP (95%)	0.35
D. Titanium Dioxide	0.4
E. Aloe Vera Gel 1:1	2.0

Procedure:

Combine Part A while heating to 70C. Separately, mix Part B while heating to 70C. Add Part B to Part A slowly with rapid agitation. Add Part C. Add Part D, homogenize, cool to 50C. Add aloe vera, color, fragrance and preservative. Package.

Typical Properties:

Appearance: White flowable lotion

Viscosity: 23,400 cP

pH: 6.1

Formula F-836

Sunscreen Stick

The following formulation produces a waterproof sunscreen stick which has a SPF factor of approximately 10-20.

<u>Ingredients:</u>	<u>Wt%</u>
Monalac ML (Refined Milk Lipid)	75.0
Ozokerite #1	15.0
Octyl Methoxycinnamate	7.0
Benzophenone-3	3.0
Fragrance	q.s.

Procedure:

Blend the Monalac ML and Ozokerite #1 together at 65-75C. Avoid air entrainment. When uniform, add other ingredients one at a time and continue blending until clear. Reduce heat, add fragrance, antioxidant (optional) and preservative and pour at 50-60C into package. A rich, smooth, protective and non-greasy skin covering will be provided.

Formula F-835

SOURCE: Mona Industries, Inc.: Formulas F-836 and F-835

**Daily UV Protection Lotion**

Chemical sunscreens and titanium dioxide provide moderate UV protection in this lotion. Petrolatum adds moisturizing properties, yet the lotion is not greasy and has a dry afterfeel.

**Ingredient/Trade Name:**

	<u>Wt%</u>
A: Octyl Dimethyl PABA/Escalol 507	4.00
Glyceryl Stearate (and) PEG-100 Stearate/Arlacel 165	3.50
Benzophenone-3/Escalol 567	3.00
Titanium Dioxide (and) Mineral Oil (and) Caprylic/ Capric Triglyceride/Tioveil MOTG	3.00
Petrolatum/Snow Petrolatum	2.00
Polysorbate 20/T-Maz 20	2.00
Lauryl Lactate/Ceraphyl 31	2.00
Cetyl Alcohol	1.00
Cyclomethicone/DC 344 Fluid	1.00
B: Deionized Water	74.65
Propylene Glycol	2.50
Carbomer/Carbopol Ultrez 10	0.20
C: Triethanolamine	0.15
D: Propylene Glycol (and) Diazolidinyl Urea (and) Methylparaben (and) Propylparaben/Germaben II-E	1.00
Fragrance	q.s.

Stir the part B ingredients together and heat to 75C. Heat part A to 80C with gentle mixing until all the solids have dissolved. Add part A to B with stirring. Continue mixing while allowing the mixture to cool. After 30 minutes, add part C. Let this mixture slowly cool with continued stirring. At 40C, add part D. Continue mixing to 30C.

**Waterproof Natural Sunblock****Approx. SPF 15**

This rich, waterproof sunblock cream is extremely light and goes on smoothly. It rubs in quickly without whitening and leaves a dry afterfeel. Mineral oil adds moisturization and enhances the cream's lightness.

**Ingredient/Trade Name:**

	<u>Wt%</u>
A: Deionized Water	71.90
Carbomer/Carbopol 2984	0.20
B: Titanium Dioxide (and) Isopropyl Myristate/ Tioveil IPM	12.50
Mineral Oil/Drakeol 7	3.00
Myristyl Myristate/Ceraphyl 424	2.70
Cetyl Alcohol	2.70
Glyceryl Stearate (and) PEG-100 Stearate/Arlacel 165	2.00
Tricontanyl PVP/Ganex WP-660	2.00
Oleth-20/Volpo 20	1.20
C: Sodium Hydroxide (10% solution)	0.80
D: Propylene Glycol (and) Diazolidinyl Urea (and) Methylparaben (and) Propylparaben/Germaben II-E	1.00
Fragrance	q.s.

Disperse the carbomer in rapidly stirred deionized water. Heat to 75C. Heat part B to 80C with gentle mixing until all the organic solids have dissolved. Add part B to A with stirring. After 5 minutes, add part C and continue mixing while allowing the mixture to cool. At 40C, add part D. Continue stirring to 30C

SOURCE: Penreco: Formulas 597-109-B & 597-110

**Moisturizing Sunscreen**

Emollients in this rich sunscreen help to leave the skin feeling soft, smooth, and moisturized

<u>Ingredient/Trade Name:</u>	<u>Wt%</u>
A: Octyl Methoxycinnamate/Escalol 557	7.50
Octyl Salicylate/Uvinul O-18	5.00
Benzophenone-3/Escalol 567	3.00
Mineral Oil/Drakeol 7	2.50
Stearic Acid	2.00
Cetearyl Alcohol (and) Polysorbate 60/Lipowax P	1.50
Hexyl Laurate/Cetiol A	1.00
Butyl Myristate/Bumyr	1.00
Cetyl Palmitate	1.00
Glyceryl Stearate (and) PEG-100 Sterate/Arlacel 165	0.50
B: Deionized Water	66.00
Butylene Glycol	1.50
Carbomer/Carbopol ETD 2001	0.25
Tetrasodium EDTA/Hamp-Ene 220	0.05
C: Triethanolamine	0.60
D: Propylene Glycol (and) Diazolidinyl Urea (and) Methylparaben (and) Propylparaben/Germaben II Fragrance	1.00 0.20

**Procedure:**

Disperse the Carbopol in rapidly agitated DI water. Add the remaining part B ingredients and heat to 80C with stirring. Heat part A to 80C with gentle mixing until all the solids have dissolved. Add part A to B with stirring and continue mixing while allowing the mixture to cool. After stirring for 20 minutes, add part C. Let the mixture cool with continued stirring. At 40C, add part D. Continue mixing to 30C.

**SOURCE: Penreco: Formula 597-105**



**Natural Everyday Sunblock**

This light, smooth cream has nice emolliency and spreads easily. It incorporates both titanium dioxide and zinc oxide as the natural sunblocks.

<u>Ingredient/Trade Name:</u>	<u>Wt%</u>
A: Deionized Water	55.50
Propylene Glycol	2.50
Water (and) Titanium Dioxide/Tioveil AQ-G	10.00
B: Zinc Oxide (and) Isopropyl Myristate/Spectraveil IPM	10.00
Mineral Oil/Drakeol 7	7.00
Cyclomethicone/DC 344 Fluid	2.50
Apricot Kernel Oil	2.50
Stearath-21/Brij 721S	2.50
Glyceryl Stearate/Cerasynt GMS	2.00
PPG-15 Stearyl Ether/Arlamol E	2.00
Cetyl Alcohol/Lanette 16	1.50
Isocetyl Alcohol/Eutanol G-16	1.00
C: Propylene Glycol (and) Diazolidinyl Urea (and) Methylparaben (and) Propylparaben/Germaben II-E	1.00
Fragrance	q.s.

**Procedure:**

Mix the part A ingredients and heat to 70-75C with stirring. Heat part B (except for the Spectraveil) to 75-80C with gentle stirring until all the solids have dissolved. Add the Spectraveil to part B, mix well, then add part B to A with stirring. Continue stirring while allowing the mixture to cool. Add part C at 40C. Continue mixing to 30C.

**Sunscreen Gelee**

This light, smooth anhydrous gelee contains mineral oil and other emollients which help moisturize the skin while exposed to the sun.

<u>Ingredient/Trade Name:</u>	<u>Wt%</u>
Mineral Oil/Drakeol 7	55.00
Polyethylene/Epolene N-21	9.75
Isopropyl Palmitate	9.00
Octyl Methoxycinnamate/Escalol 557	7.00
Super Petrolatum	5.25
Kukui Nut Oil	4.00
Maleated Soybean Oil/Ceraphyl GA-D	3.00
Cetearyl Alcohol (and) Ceteareth-20/Lipowax D	3.00
Macadamia Nut Oil	2.00
Peanut Oil	1.00
Dimethicone/DC 200 Fluid 2 cSt	0.95
BHT	0.05
Fragrance	q.s.

**Procedure:**

Heat all ingredients except fragrance to 75-80C with stirring until homogeneous. Allow the mixture to cool and add fragrance just before solidification occurs. Continue gentle mixing during cooling to give a creamy, light gel. Package at 30C.

**SOURCE: Penreco: Suggested Formulations**

**O/W-Sun Screen Milk**  
Manufacturing at room temperature

<u>Recipe:</u>	<u>Wt%</u>
A Hostaphat KL 340 N/Trilaureth-4 Phosphate	3.00
Mineral oil, high viscosity	10.00
Isopropyl palmitate	5.00
B Neo-Heliopan E 1000/Isoamyl p-Methoxycinnamate	8.50
Neo-Heliopan BB/Benzophenone-3	1.50
C Carbopol 980/Carbomer	0.50
D Glycerin	3.00
Caustic soda solution (10%)	2.00
Water	66.20
Preservative	q.s.
E Fragrance	0.30

**Procedure:**

1. Add solution B to A, then add C.
2. Stir D into 1, then add E.
3. Homogenize the emulsion.

Formula A VI/7007

**O/W-Sun Blocker**

<u>Recipe:</u>	<u>Wt%</u>
A Hostacerin DGL/Polyglyceryl-2 PEG-10 Laurate	1.00
Hostacerin DGSE/Polyglyceryl-2 PEG-4 Stearate	4.00
Mineral oil, low viscosity	10.00
Isopropyl palmitate	5.00
Eusolex 6300/4-Methylbenzylidene Camphor	5.00
D-Panthenol	0.50
B PNC 400/Sodium Carbomer	1.30
C Eusolex 232/Phenylbenzimidazole Sulfonic Acid	5.00
D Tris(hydroxymethyl)-aminomethane	2.21
Water	65.69
Preservative	q.s.
E Fragrance	0.30

**Procedure:**

1. Melt A at approx. 70C, then add B.
2. Dissolve C in D at approx. 70C.
3. Stir 2 into 1 and stir until cool.
4. At approx. 35C add E to 3.
5. Homogenize the emulsion.

Formula A VI/7204

**SOURCE: Hoechst Aktiengesellschaft: Guide Recipes**

**Physical Sunscreen Body Lotion**

This sunscreen lotion provides a light, soft, smooth and non-tacky feel for daily use. This unique after-feel results from SFE839 elastomer dispersion, SF1642 silicone alkyl copolymer and SF1528 silicone emulsifier. All three ingredients are both functional ingredients and aesthetic ingredients. SF1528 silicone emulsifier gives a stable water in oil emulsion where SFE839 elastomer dispersion and SF1642 silicone alkyl copolymer act as thickening agents. In addition, SFE839 elastomer dispersion is a detackifier and gives substantivity to the formulation.

<u>Ingredient/Function:</u>	<u>Wt%</u>
<b>Part A:</b>	
Cyclopentasiloxane (and) Dimethicone Copolyol(SF1528) (1)/Emulsifier	10.0
Cyclopentasiloxane(SF1202)(1)/Emollient	16.0
Cyclopentasiloxane (and) Dimethicone/Vinyl Dimethicone Crosspolymer(SFE839)(1)/Emollient, Thickener	3.0
Sorbitan Oleate/Emulsifier	0.5
<b>Part B:</b>	
Titanium Dioxide (2)/Physical Sunscreen	5.0
<b>Part C:</b>	
C30-45 Alkyl Dimethicone(SF1642)(1)/Thickener	1.0
<b>Part D:</b>	
Butylene Glycol/Humectant	2.0
NaCl/Stabilizer	0.5
Quaternium-15/Preservative	0.1
Water/Diluent	61.9

**Procedure:**

1. Combine SF1528, SFE839, SF1202 and mix until uniform, then add Sorbitan Oleate.
2. Slowly add TiO<sub>2</sub> to Oil Phase. Mix until uniform.
3. Heat the batch to 65C.
4. Melt SF1642 and add to 3.
5. Separately mix together water, butylene glycol, NaCl, and preservative.
6. Slowly add water phase to oil phase and continue mixing for 30 min.
7. Homogenize and package.

**Trade Names/Suppliers:**

- (1) GE Silicones
- (2) UV-Titan X161, Presperse Inc.

**SOURCE:** GE Silicones: Personal Care Formulary: Formula SC107

**Self Tanning Cream for Bright Skin (Erythrulose)**

The emulsifying system of this cream is of high-quality vegetable origin. Erythrulose and Dihydroxyacetone give an even, long lasting and naturally looking tan. The UV-filters protect the skin from photodamage and consequent premature aging.

**Ingredients/INCI Name:**

	<u>Wt%</u>
A) Emulgade PL68/50/Cetearyl Glucoside, Cetearyl Alcohol	2.50
Lanette O/Cetearyl Alcohol	2.50
Miglyol 812/Caprylic/Capric Triglyceride	8.00
Cetiol 868/Octyl Stearate	4.00
Abil-350/Dimethicone	0.50
Parsol MCK/Octyl Methoxycinnamate	2.00
Parsol 1789/Butyl Methoxydibenzoylmethane	1.00
B) Deionized Water	63.60
Keltrol/Xanthan Gum	0.10
C) Glycerin/Glycerin	5.00
Phenonip	0.50
D) Deionized Water	5.00
Erythrulose/Erythrulose	3.50
Dihydroxyacetone/Dihydroxyacetone	1.50
E) Fragrance/Rivalia 0/221212	0.30

**Procedure:**

Heat the ingredients of fatty phase A) to 70C.

Heat the ingredients of water phase B) to 75C.

Under stirring add phase B) to phase A), cool to 50C, homogenize and cool to 30C.

Then add phase C) and stir cold. Finally incorporate phases D) and E) one after the other and adjust the pH to 4.5.

**SOURCE: Pentapharm Ltd.: Application No. A 057.0/05.99**

Self Tanning Body Lotion (Erythrulose/Phytaluronate)

Erythrulose and Dihydroxyacetone in this body lotion is the ideal combination for a natural, uniform and long lasting tan. Phytaluronate adds moisture to the skin and in combination with glycerin combats the drying out.

<u>Ingredients/INCI Name:</u>	<u>Wt%</u>
A) Emulgade PL68/50/Cetearyl Glucoside, Cetearyl Alcohol	1.50
Lanette O/Cetearyl Alcohol	1.50
Miglyol 812/Caprylic/Capric Triglyceride	8.00
Cetiol 868/Octyl Stearate	4.00
Abil-350/Dimethicone	0.50
B) Deionized Water	66.60
Keltrol/Xanthan Gum	0.10
Phytaluronate/Locust Bean (Ceratonia Siliqua) Gum	3.00
C) Glycerin/Glycerin	5.00
Phenonip	0.50
D) Deionized Water	5.00
Erythrulose/Erythrulose	3.00
Dihydroxyacetone/Dihydroxyacetone	1.00
E) Fragrance/Rivalia 0/221212	0.30

**Procedure:**

Heat the ingredients of fatty phase A) to 70C.

Heat the ingredients of water phase B) to 75C.

Under stirring add phase B) to phase A), cool to 50C, homogenize and cool to 30C.

Then add phase C) and stir cold. Finally incorporate phases D) and E) one after the other and adjust the pH to 4.5.

SOURCE: Pentapharm Ltd.: Application No. C 030.0/05.99

Self Tanning Lotion

An oil-in-water Self Tanning Lotion containing Bentone Gel TN and Bentone LT rheological additives.

<u>Ingredients:</u>	<u>Wt%</u>
Glyceryl Stearate, PEG-100 Stearate	4.0
Caprylic/Capric Triglyceride	5.0
Propylene Glycol	4.0
Cetearyl Alcohol	1.2
Dihydroxy Acetone	5.0
C12-15 Alkyl Benzoate	4.0
Bentone Gel TN	2.5
Bentone LT (3% dispersion)	8.0
Methyl Paraben	0.1
Propyl Paraben	0.1
Citric Acid	qs to pH 4
Demineralized Water	bal to 100%
 Bentone LT dispersion:	
Bentone LT	3.0
Deionized Water	97.0

Method of Manufacture:

1. Prepare a dispersion of the Bentone LT in water. (see below)
2. Disperse the two preservatives in 90% of the water, add the Propylene Glycol and the Bentone LT premix.
3. Heat to 75-80C.
4. Mix the liquid oil and the ester, and thoroughly disperse the Bentone Gel TN in the mixture. Add the Cetearyl Alcohol and emulsifier to the mix.
5. Heat to 75-80C.
6. Add the two phases together with high-shear stirring.
7. At 50C, transfer to a propeller stirrer and continue to cool.
8. Mix the Dihydroxyacetone with the remaining 10% of the water.
9. At 40C add the DHA premix.
10. At 25C check the pH and adjust if necessary with Citric Acid to pH 4.

Preparation of Bentone LT Dispersion:

1. Prepare a 3% dispersion of Bentone LT additive in deionized water using a rotor-stator or similar high-shear mixer (e.g. Silverson). Start the mixer in the water, steadily add the Bentone LT to the vortex and stir until completely dispersed. (15-20 mins).
2. Allow the premix to stand to let any entrapped air escape.

The Dihydroxy Acetone has a pH of about 4.0 and therefore present a problem for many aqueous thickeners. Bentone LT additive, however, provides stable viscosity build. Additionally, the even distribution and spreadability of the lotion together with its silky residual feel are imparted by the Bentone TN additive.

SOURCE: Rheox, Inc.: Elementis Specialties: Suggested Formula

Self Tanning Milk (O/W)

<u>Raw Materials:</u>	<u>Wt%</u>
A Emulsifier E 2155 (Stearyl Alcohol (and) Steareth-7 (and) Steareth-10)	2.00
Teginacid H (Glyceryl Stearate (and) Ceteth-20)	2.00
Luvitol EHO (Cetearyl Octanoate)	10.00
Imwitor 900 (Glyceryl Stearate)	3.00
Cetiol (Oleyl Oleate)	5.00
Lunacera M (Microwax)	1.00
Miglyol 812 neutral oil (Caprylic/Capric Triglyceride)	3.00
B Propanediol-1,2 (Art. No. 107478) (Propylene Glycol)	4.00
Preservatives	q.s.
Water, demineralized	ad 100.00
C Dihydroxyacetone (Art. No. 110150)	5.00
Water, demineralized	10.00

Procedure:

Heat phase A to 75C, phase B to 80C. Add phase B slowly to phase A while stirring. Homogenize. Cool down while stirring and add phase C at 40C.

Note:

pH24C=3.6

Viscosity 15,000 mPas (Brookfield RVT, Sp. C, 10 rpm) at 24C

Samples contain as preservatives:

0.05% Propyl-4-hydroxybenzoate (Merck Art. No. 107427)

0.15% Methyl-4-hydroxybenzoate (Merck Art. No. 106757)

SOURCE: Rona-Merck: Formulation 03-07/K

Leave-On Hair Treatment Spray with Sunscreen

A light hair and scalp treatment containing Lipamide MEAA and Lipoquat R for conditioning and shine, with Unitrienol T-27 for oil control. The Unipabol U-17 helps protect the hair from UV induced color damage.

<u>Sequence:</u>	<u>Raw Material/INCI Name:</u>	<u>Wt%</u>
1	Liponic EG-1/Glycereth-26	3.00
1	Lipamide MEAA/Acetamide MEA	3.50
1	Lipoquat R/Ricinoleamidopropyl Ethyldimonium Ethosulfate	0.50
2	Deionized Water	3.00
2	Unipabol U-17/PEG-25 PABA	7.50
3	SD Alcohol 40-B (190 proof)	73.50
4	Unitrienol T-27/Farnesyl Acetate (and) Farnesol (and) Panthenyl Triacetate	2.00
4	Lipovol J/Jojoba (Buxus Chinensis) Oil	1.00
4	Liponate NPGC-2/Neopentyl Glycol Dicaprylate/Dicaprate	6.00

Procedure:

1. Premix Sequence #1 ingredients at ambient temperature on overhead mixer at low/medium speed.
2. Premix Sequence #2 and add to Sequence #1 at low/medium speed.
3. Add combined Sequence #1 and Sequence #2 to Sequence #3 on overhead mixer at medium/low speed.
4. Add premixed Sequence #4 to batch at medium speed until solution is clear and homogeneous.

SOURCE: Lipo Chemicals Inc.: Formulation No. 1005

Solar Protection with Cherry Pit Oil

<u>Stage:</u>	<u>Material:</u>	<u>Wt%</u>
<b>Oil Phase:</b>		
1	AEC Cherry Pit Oil	7.500
2	AEC Hydroxyoctacosanyl Hydroxystearate	5.000
3	AEC Methoxy PEG 22 Dodecylglycol Copolymer	2.000
4	AEC PEG 45 Dodecylglycol Copolymer	4.000
5	Tioveil TG	12.500
6	Cocoa Butter, Refined	5.000
7	AEC Diisostearyl Trimethylolpropane Siloxy Silicate	3.000
8	AEC Dimethicone V100	2.000
<b>Aqueous Phase:</b>		
9	Water; Pure	53.250
10	Propylene Glycol USP	5.000
11	Preservative as required	0.400
<b>Cooling Cycle:</b>		
12	Fragrance; Cherry AG6328	0.350

**Mixing Instructions:**

NOTE: The Aqueous is added to the Oil Phase. The product is a w/o emulsion and is water resistant. Weigh the items of the Oil Phase into a jacketed vessel and heat to 80/85C with stirring, ensure the Tioveil TG is fully dispersed before slowly adding the Aqueous Phase while vigorously mixing. Once addition is complete the emulsion is cooled with slow speed stirring, the perfume added and the product given a final high shear mix. IN-VITRO TEST RESULTS: SPF: 14.5/MAR: 0.64  
Formula Ref.: 749\*

Broad Spectrum Protection Cream

<u>Stage:</u>	<u>Material:</u>	<u>Wt%</u>
<b>Oil Phase:</b>		
1	Spectraveil TG 40% Dispersion	18.000
2	Cetearyl Octanoate	3.000
3	AEC Dimethicone V100	1.000
4	Beeswax; White Pellets	3.500
<b>Aqueous Phase:</b>		
5	Water; Pure	62.700
6	Xanthan Gum	0.200
7	Veegum Regular	1.000
8	Arlatone 2121	5.500
9	Sodium Lactate 60%	0.300
10	Tioveil AQ N	4.000
11	Add preservative(s) & colour to suit	0.500
<b>Cooling Cycle:</b>		
12	Fragrance	0.300

**Mixing Instructions:**

This is an o/w emulsion, the two phases are heated separately to 75C and the Oil Phase added slowly to the Aqueous with high shear mixing. Once addition is complete the emulsion is cooled with slow speed stirring and given a final high shear mix when cold.

Formula Ref.: 528\*

SOURCE: A&E Connock Ltd.: Suggested Formulations



Solar Protection Cream

<u>Stage:</u>	<u>Material:</u>	<u>Wt%</u>
<u>Oil Phase:</u>		
1	AEC Dimethicone V100	2.000
2	AEC Hydroxyoctacosanyl Hydroxystearate	5.000
3	AEC Methoxy PEG 22 Dodecylglycol Copolymer	2.000
4	AEC PEG 45 Dodecylglycol Copolymer	4.000
5	Tioveil FIN	12.500
6	Cocoa Butter, Refined	3.000
7	Octyl Palmitate	5.000
8	AEC Diisostearyl Trimethylolpropane Siloxy Silicate	7.500
<u>Aqueous Phase:</u>		
9	Water; Pure	53.350
10	Preservative as required	0.400
11	Propylene Glycol USP	5.000
<u>Cooling Cycle:</u>		
12	Fragrance	0.250
<u>Mixing Instructions:</u>		

NOTE: The Aqueous is added to the Oil Phase. The product is a w/o emulsion and is water resistant. Weigh the items of the Oil Phase into a jacketed vessel and heat to 80/85C with stirring, ensure the Tioveil TG is fully dispersed before slowly adding the Aqueous Phase while vigorously mixing. Once addition is complete the emulsion is cooled with slow speed stirring, the perfume added and the product given a final high shear mix. Formula Ref.: 780\*2

Solar Protection Lotion

<u>Stage:</u>	<u>Material:</u>	<u>Wt%</u>
<u>Oil Phase:</u>		
1	AEC Diisostearyl Trimethylolpropane Siloxy Silicate	5.000
2	AEC Dimethicone V100	1.500
3	Amphisol K	0.500
4	Tioveil FIN	12.500
5	AEC Hydroxyoctacosanyl Hydroxystearate	3.500
6	AEC Sorbitan Palmitate	3.500
<u>Aqueous Phase:</u>		
7	Water; Pure	68.050
8	Xanthan Gum	0.200
9	Veegum Ultra	0.800
10	AEC Polysorbate 20	3.500
11	Sodium Lactate 60%	0.300
12	Preservative as required	0.400
<u>Cooling Cycle:</u>		
13	Fragrance	0.250
<u>Mixing Instructions:</u>		

This is an o/w emulsion, the two phases are heated separately to 75C and the Oil Phase added slowly to the Aqueous with high shear mixing. Once addition is complete the emulsion is cooled with slow speed stirring and given a final high shear mix when cold.

Formula Ref.: 781\*2

SOURCE: A&E Connock Ltd.: Suggested Formulations

Soothing After Sun Lotion

This emollient lotion contains actives to soothe sunburned skin. Petrolatum helps moisturize dry skin exposed to the sun.

<u>Ingredient/Trade Name:</u>	<u>Wt%</u>
A: Deionized Water	78.10
Aloe Vera Gel/Activera 104	2.00
Glycerin	1.00
Acrylates/Octylacrylamide Copolymer/Dermacryl LT	1.00
Triethanolamine	1.00
Carbomer/Carbopol 941	0.20
Methylparaben	0.20
Tetrasodium EDTA/Hamp-Ene 220	0.05
B: Dioctyl Malate/Ceraphyl 45	3.50
PEG-7 Glyceryl Cocoate/Cetiol HE	3.30
Petrolatum/Snow Petrolatum	2.50
Glyceryl Stearate/Cerasynt GMS	2.00
PEG-40 Stearate/Myrj 52-S	1.00
Shea Butter Unsaponifiables (and) Decosahecanoic Acid (and) Eicosapentaenoic Acid (and) Tocopheryl Acetate (and) Corn Oil Unsaponifiables/Destressine 2000	1.00
Retinyl Palmitate/Vitamin A Palmitate	0.50
Propylparaben	0.15
C: Imidazolidinyl Urea/Germall 115	0.30
Fragrance	0.20

**Procedure:**

Disperse the Carbopol and Dermacryl in rapidly agitated DI water. Add the triethanolamine and heat to 75C with stirring. Add the remaining part A ingredients and continue stirring and heating to 75C. Heat part B to 80C with gentle mixing until all the solids have dissolved. Add part B to A with stirring and continue mixing while allowing the mixture to cool. At 40C, add part C. Continue gentle stirring to 30C.

SOURCE: Penreco: Formula 597-107

Sunblock with TiO<sub>2</sub>**Formula A:**

<u>Raw Material/CTFA Name:</u>	<u>Wt%</u>
Schercemol DID/Diisopropyl Dimer Dilinoleate	10.0
Schercemol CO/Cetyl Octanoate	1.5
Arlacel 60/Sorbitan Stearate	3.0
Schercemol GMIS/Glyceryl Isostearate	1.0
Dow Corning 193/Dimethicone Copolyol	1.0
Tioveil TG/Titanium Dioxide (and) Caprylic Capric Triglyceride	12.5
Promulgen D/Cetearyl Alcohol (and) Cetareth-20	1.0
Dow Corning 556 Fluid/Phenyl Trimethicone	1.5

**Formula B:**

<u>Raw Material/CTFA Name:</u>	<u>Wt%</u>
Deionized Water	52.7
Veegum 4% Aq. Soln./Magnesium Aluminum Silicate	10.0
Keltrol F/Xanthan Gum	0.3
Propylene Glycol	2.0
Tween 60/Polysorbate 60	3.0
Preservative	q.s.

**Procedure:**

Heat both phases to 70C. Add water phase to oil phase with thorough agitation. Cool to room temperature. Homogenize briefly.

**SOURCE:** Scher Chemicals, Inc.: Formula SK 85

Sun Care SPF 15  
PABA Free, Oil Free

<u>Ingredients/CTFA Name:</u>	<u>Wt%</u>
A-A1 Schercemol CO/Cetyl Octanoate	10.00
Schercemol DISD/Diisostearyl Dimer Dilinoleate	1.00
Schercemol TISC/Triisostearyl Citrate	5.00
Silicone fl. 350 cps	0.20
Cetyl Alcohol	1.50
Schercemol GMIS/Glyceryl Isostearate	4.00
Amphisol/Cetyl Phosphate (and) DEA Cetyl Phosphate	2.50
A2 Parsol MCX/Octyl Methoxycinnamate	7.50
Dipsal/Dipropylene Glycol Salicylate	5.00
B-B1 Deionized Water	48.40
Carbopol 940 2% Aq. Sol.	10.00
B2 Glycerin	3.00
B3 Triethanolamine	0.20
C- Germaben II	1.00
D- Aloe Vera Extract	0.50
E- Fragrance	0.20

**Procedure:****Phase B:**

In the main beaker, disperse B1 together at 75-85C.

Add Glycerin.

Add Triethanolamine to neutralize the Carbopol gel.

Mix until a smooth gel is obtained.

**Phase A:**

Blend Phase A1 at 85C.

Once completely clear add A2.

Blend Phase A together until a homogeneous oil phase is obtained.

Add Phase A to Phase B with continuous mixing at 80-85C for fifteen minutes.

Cool batch to 60C with continuous mixing then add Phase C.

Continue to cool batch to 30C, then add Phase D and Phase E in sequence

Continue to cool batch with mixing to 25-28C

**SOURCE:** Scher Chemicals, Inc.: Formulation SK 144

Sun Lotion with TiO<sub>2</sub>

<u>Raw Materials:</u>	<u>Parts By Weight</u>
<u>Part I:</u>	
Water	560.0
Carbomer 934 (1)	2.0
<u>Part II:</u>	
Rosswax 2540 (2)	10.0
GMS SE (3)	4.0
Dow Corning 344 (4)	4.0
Jojoba Oil (5)	4.0
Escalol 507 (6)	32.0
Arlacel C (7)	3.0
<u>Part III:</u>	
TiO <sub>2</sub> Sperse BG (8)	20.0
<u>Part IV:</u>	
Fragrance (9)	q.s.
<u>Part V:</u>	
Germaben II (10)	6.0
<u>Part VI:</u>	
Triethanolamine (11)	4.0

Procedure:

Heat the water in Part I to 140F with agitation and slowly add the Carbomer 934 til mixed. In a separate heated vessel heat all the ingredients in Part II to 140F with agitation. Next add Part II to Part I mixing thoroughly while maintaining 140F. Now add Part III, then Part IV, then Part V and finally add Part VI slowly. Continue to maintain good agitation. Cool to 130F and package.

Suppliers:

- (1) B.F. Goodrich
- (2) Frank B. Ross Co., Inc.
- (3) Stepan Chemical
- (4) Dow Corning
- (5) Arista Industries
- (6) ISP Van Dyk
- (7) ICI Surfactants
- (8) Collaborative Labs
- (9) Novarome
- (10) ISP Sutton Labs
- (11) Mutchler Chemical

**SOURCE:** Frank B. Ross Co., Inc.: Suggested Formulation

**Sun Protection Cream (W/O)**  
**SPF 22 (Sun Protection Factor, Colipa Method with 5 Volunteers)**

<u>Raw Materials:</u>	<u>Wt%</u>
A: Eusolex OCR (Art. No. 1.05377) (Octocrylene)	3.00
Eusolex 9020 (Art. No. 1.05844) (Butyl Methoxydi-benzoylmethane)	1.50
Eifacos E 200 (Methoxy PEG-22/Dodecyl Glycol Copolymer)	1.00
Eifacos ST 9 (PEG-45/Dodecyl Glycol Copolymer)	3.00
Eifacos C 26 (Hydroxyoctacosanyl Hydroxystearate)	5.00
Paraffin Oil Liquid (Art. No. 1.07162) (Mineral Oil)	8.00
Isopropyl Stearate	9.00
DL- $\alpha$ -Tocopherol acetate (Art. No. 5.00952) (Tocopheryl Acetate)	0.50
B: Eusoflex 232 (Art. No. 1.05372) (Phenylbezimidazole Sulfonic Acid)	2.00
Tris(hydroxymethyl)-aminomethane (Art. No. 1.08386) (Tromethamine)	0.89
Tritiplex III (Art. No. 1.08421) (Disodium EDTA)	0.10
Allantoin (Art. No. 1.01015)	0.10
Glycerine (Art. No. 1.04093)	3.00
Preservatives	q.s.
Water, demineralized	ad 100.00

**Procedure:**

To neutralize Eusolex 232 dissolve Tris(hydroxymethyl)-aminomethane in the water of phase B and add Eusolex 232 while stirring. When uniform add the remaining ingredients of phase B and heat to 80C. Heat phase A to 75C. Add phase B slowly to phase A while stirring. Homogenize and cool down while stirring.

**Note:**

Viscosity 41,000 mPas (Brookfield RVT, Sp. C, 5 rpm) at 24C  
 Samples contain as preservatives:  
 0.050% Propyl-4-hydroxybenzoate (Merck Art. No. 107427)  
 0.150% Methyl-4-hydroxybenzoate (Merck Art. No. 106757)

**SOURCE: Rona-Merck: Formulation 04-02/K**

**Sun Protection Gel (aqueous)**  
**SPF 10 (Sun Protection Factor, FDA-Method with 5 Volunteers)**

<u>Raw Materials:</u>	<u>Wt%</u>
A Eusolex 232 (Art. No. 105372) (Phenylbenzimidazole Sul- fonic Acid)	4.00
Tris-(hydroxymethyl)-aminomethane (Art. No. 108386) (Tromethamine)	1.77
Allantoin (Art. No. 101015)	0.20
Sorbitol F liquid (Art. No. 102993)	5.00
Preservatives	q.s.
Water, demineralized	ad 100.00
 B Perfume 72979	 0.30
Arlatone 980 (PEG-35-Hydrogenated Castor Oil)	1.00
 C Carbomer 940	 1.50
Water, demineralized	36.10
 D Tris(hydroxymethyl)-aminomethane (Art. No. 108386) (Tromethamine)	 2.40
Water, demineralized	10.00

**Procedure:**

To neutralize Eusolex 232 dissolve Tris(hydroxymethyl)-aminomethane in the water of phase A and add Eusolex 232 while stirring. When uniform add the remaining ingredients of Phase A. Heat to 70C until homogeneous and cool while stirring. Blend ingredients of phase B. Disperse Carbomer 940 in the water of phase C and homogenize. Dissolve the Tris(hydroxymethyl)-aminomethane in the water of phase D. Combine phases C and D and homogenize. Incorporate phases A and B. Homogenize again.

**Note:**

Transparent gel

Viscosity 35,000 mPas (Brookfield RVT, Sp. C, 5 rpm) at 25C  
pH22C=6.7

Samples contain as preservatives:

0.20% Methyl-4-hydroxybenzoate (Merck-Art.-No. 6757)

**SOURCE: Rona-Merck: Formulation 32-02/E**

Sun Protection Lotion (O/W)  
SPF 23 (Sun Protection Factor, Colipa Method with 5 Volunteers)

<u>Raw Materials:</u>	<u>Wt%</u>
A Euscler T-2000 (Art. No. 1.05373) (Micron. Titanium Dioxide)	10.00
Emulsifier E-2155 (Stearyl Alcohol (and) Steareth-7 (and) Steareth-10)	3.00
Teginacid H (Glyceryl Stearate (and) Ceteth-20)	3.00
Luvitol EHO (Cetearyl Octanoate)	10.50
Imwitor 900 (Glyceryl Stearate)	3.00
Cetiol (Oleyl Oleate)	4.00
Lunacera M (Microwax)	1.00
Miglyol 812 neutral oil (Caprylic/Capric Triglyceride)	4.00
B Propanediol-1,2 (Art.-No. 1.07478) (Propylene Glycol)	4.00
Allantoin (Art.-No. 1.01015)	0.20
Preservatives	q.s.
Water, demineralized	ad 100.00

**Procedure:**

Heat phase A to 75C and phase B to 80C. Add phase B slowly to phase A while stirring, homogenize and cool down while stirring.

**Note:**

Viscosity 24,600 mPas (Brookfield RVT Sp. C, 10 rpm) at 24C

Samples contain as preservatives:

0.05% Propyl-4-hydroxybenzoate (Art. No. 1.07427)

0.15% Methyl-4-hydroxybenzoate (Art. No. 1.06757)

Formulation 03-36/K

Self Tanning Milk (W/O)

<u>Raw Materials:</u>	<u>Wt%</u>
A Dow Corning 3225 C	23.600
B Dihydroxyacetone (Art.-No. 10150)	5.000
Propanediol-1,2 (Art.-No. 7478)	35.900
Preservatives	q.s.
Water, demineralized	ad 100.000

**Procedure:**

Dissolve phase B and add it to phase A.

**Note:**

Transparent, oil-free W/O

Adjusting of transparency through variation of ratio water/propanediol-1,2.

Viscosity 12,000 mPas (Brookfield RVT, Sp.4, 10 rpm) at 24C

Samples contain as preservatives:

0.05% Propyl-4-hydroxybenzoate (Merck-Art.-No. 7427)

0.15% Methyl-4-hydroxybenzoate (Merck-Art.-No. 6757)

Formulation 01-01/L

**SOURCE: Rona-Merck: Suggested Formulations**



Sun Protection Lotion (W/O)SPF 20 (Sun Protection Factor, Colipa Method with 5 Volunteers)

<u>Raw Materials:</u>	<u>Wt%</u>
A Eusolex T 2000 (Art.-No. 105373) (Micron. Titandioxid)	3.00
Eusolex 6300 (Art.-No. 1.05385) (4-Methylbenzylidene Camphor)	2.00
Abil WE 09 (Polyglyceryl-4 Isostearate (and) Cetyl Dimethicone Copolyol (and) Hexyl Laurate)	5.00
Jojoba Oil (Jojoba (Buxus Chinensis) Oil)	6.00
Cetiol V (Decyl Oleate)	6.00
Prisorine 2021 (Isopropyl Isostearate)	4.50
Castor Oil (Ricinus Communis)	1.00
Lunacera M (Microwax)	1.80
Miglyol 812 Neutral Oil (Caprylic/Capric Triglyceride)	4.50
DL- $\alpha$ -Tocopherolacetate (Art.-No. 5.00952) (Tocopheryl Acetate)	1.00
Vitamin-A-palmitate (Retinyl Palmitate)	0.50
 B Eusolex 232 (Art.-No. 105372) (Phenylbenzimidazole Sulfonic Acid)	 2.00
Tris(hydroxymethyl)-aminomethane (Art.-No. 1.08386) (Tromethamine)	0.90
Glycerol (about 87%) (Art. No. 1.04091)	2.00
Sodium Chloride (Art. No. 1.06400)	0.40
Allantoin (Art.-No. 1.01015)	0.20
Preservatives	q.s.
Water, demineralized	ad 100.00

**Procedure:**

To neutralize Eusolex 232 dissolve Tris(hydroxymethyl)-aminomethane in the water of phase B and add Eusolex 232 while stirring. When uniform add the remaining ingredients of phase B and heat to 80C. Heat phase A to 75C. Add phase B slowly to phase A while stirring. Homogenize and cool down while stirring.

**Notes:**

Viscosity 24,600 mPas (Brookfield RVT, Sp. C) at 24C

Samples contain as preservatives:

0.05% Propyl-4-hydroxybenzoate (Art. No. 1.07427)

0.15% Methyl-4-hydroxybenzoate (Art. No. 1.06757)

**SOURCE:** Rona-Merck: Formulation 39-44/E

Sunscreen Cream W/O, fatty

<u>Raw Materials:</u>	<u>Wt%</u>
A. Miglyol 840 Gel B	20
Softisan 649	5
Imwitor 780K (Isostearyl Glyceryl Succinate)	5
Mineral Oil	8
Neo Heliopan E 1000	3
Paraffin	3
B. Magnesium Sulphate	2
Preservative	q.s.
Water ad	100
C. Fragrance	q.s.

Preparation:

A is homogeneously stirred and heated up to approx. 75C. B is brought to the same temperature and emulsified into A. C is added at about 30C.

Sunscreen Cream, W/O-type

<u>Raw Materials:</u>	<u>Wt%</u>
A. Miglyol Gel B	24
Softisan 649	12
Imwitor 780K (Isostearyl Glyceryl Succinate)	5
Softigen 701 (Glyceryl Ricinoleate)	1.5
Petrolatum	20
Paraffin	8
Neo Heliopan E 1000 (sun filter)	2.5
B. Preservative	q.s.
Water ad	100
C. Fragrance	q.s.

Preparation:

A is blended, heated to about 75C and homogenized. B is brought to the same temperature and emulsified into A. After that emulsion is cooled down to about 30C and C is added.

SOURCE: Huls Aktiengesellschaft: Suggested Formulations

Sunscreen LotionConcept Statement:

Smooth, elegant and effective sunscreen using Pationic SCL for skin conditioning.

Ingredients/Function:

	<u>Wt%</u>
1. Distilled/Deionized Water	70.70
2. Acritamer 941 (Carbomer)/Thickener	0.15
3. NaOH (20% Soln.)/pH Adjustment	q.s.
4. Propylene Glycol/Humectant	2.00
5. Tetrasodium EDTA/Chelate	0.05
6. Methylparaben/Preservative	0.20
7. Pationic SCL (Sodium Cocoyl Lactylate)/Lactylate	0.50
8. Rita Cetearyl Alcohol 50/50 (Cetearyl Alcohol)/ Emulsifier	1.60
9. Rita GMS (Glyceryl Stearate)/Emulsifier	4.00
10. Octyl Methoxycinnamate/Sunscreen	7.00
11. Benzophenone-3/Sunscreen	2.00
12. Octyl Salicylate/Sunscreen	3.50
13. C12-15 Alkyl Benzoate/Emollient	5.00
14. Rita IPF (Isopropyl Palmitate)/Emollient	2.00
15. Shebu Refined (Shea Butter)/Emollient	1.00
16. Propylparaben/Preservative	0.10
17. DMDM Hydantoin/Preservative	0.20

Compounding Procedure:

Slowly disperse item 2 into item 1. Add item 3 to neutralize pH to 6.5-7.0 and add items 4-6. Heat to 80C. Combine items 7 to 16 and heat to 80C. Add oil phase to water phase with agitation. Cool to 40C and add item 17.

LI Ref. No. 124-71

After Sun Rich Moisturizing LotionConcept Statement:

A glossy white lotion which adds rich moisture to the skin with Pationic SSL, Ritaloe, Ritamectant PCA and Rita HA C-1-C.

Ingredients/Function:

	<u>Wt%</u>
1. Distilled/Deionized Water	77.40
2. Propylene Glycol	4.00
3. Ritaloe 20X (Aloe Vera)/Moisturizer	1.00
4. Tetrasodium EDTA	0.10
5. Pationic SSL (Sodium Stearoyl Lactylate)/Lactylate	1.00
6. Rita Cetearyl Alcohol 50/50 (Cetearyl Alcohol)/ Emulsifier	2.00
7. Rita GMS (Glyceryl Stearate)/Emulsifier	2.00
8. Rita IPF (Isopropyl Palmitate)/Emollient	7.00
9. Shebu Refined (Shea Butter)/Emollient	1.00
10. Ritasil 190 (Dimethicone Copolyol)/Lubricant	0.50
11. Hydrogenated Coconut Oil/Emollient	2.00
12. Lanodent DM (DMDM Hydantoin)/Preservative	0.50
13. Ritamectant PCA (Sodium PCA)/Moisturizer	1.00
14. Rita HA C-1-C (Sodium Hyaluronate)/Moisturizer	0.50

Compounding Procedure:

Combine items 1 to 4 and heat to 80C. Combine items 5 to 11 and heat to 80C. Add oil phase to water phase with agitation. Cool to 40C and add items 12 to 14.

LI Ref. No. 124-76B

SOURCE: R.I.T.A. Corp.: Sun Care Formulations

**Sunscreen Lotion**  
Soft lotion, water resistant

<u>Ingredients:</u>	<u>Wt%</u>
A Stearic Acid	6.00
Cetyl Alcohol	1.00
Isopropyl Myristate	1.00
Luviskol VA 64/PVP	2.00
Eusolex 8020/Isopropyl Dibenzoylmethane	5.00
Eusolex 4360/Benzophenone-3	2.50
Wacker-Belsil DM 350/Dimethicone	3.50
 B Water	 62.00
Tylose H 4000 P/Hydroxyethylcellulose	0.50
 C Triethanolamine	 2.50
Wacker-Belsil CM 040/Cyclomethicone	16.00
 Preservative, fragrances, pigments	 q.s.

Dissolve Tylose in water and heat to 80-85C. Heat A to 80C and stir into B, cool to 45C and add C, stir cold.  
Formulation 723 AH

**Suntan Cream**  
Creamy. Easy to distribute, good absorption.

<u>Ingredients:</u>	<u>Wt%</u>
A Wacker-Belsil DM 100/Dimethicone	2.50
Cetyl Alcohol	2.00
Stearic Acid	4.00
Eusolex 6300/Methylbenzylidene Camphor	3.00
Wacker-Belsil TMS 3069 VP/Dimethicone, Trimethylsiloxysilicate	5.00
 B Glycerine	 1.50
Triethanolamine	0.90
Water	80.10
 Preservative, fragrances, pigments	 q.s.

Heat A and B each to 80C. Stir A into B and stir cold.  
Formulation 435/2 AH

SOURCE: Wacker-Chemie GmbH: Formulas for Beauty

Suntan Oil

This oil goes on smoothly and leaves the skin feeling soft and supple. Mineral oil adds moisturizing benefits to the skin while esters add dryness.

<u>Ingredient/Trade Name:</u>	<u>Wt%</u>
Mineral Oil/Drakeol 7	64.65
Octyl Palmitate/Ceraphyl 368	18.00
Octyldodecyl Neopentanoate/Elefac I-205	7.80
Octyl Methoxycinnamate/Escalol 557	3.00
Octyl Salicylate/Escalol 587	3.00
Macadamia Nut Oil	1.00
Kukui Nut Oil	1.00
Sweet Almond Oil	1.00
Fragrance	0.40
Isopropylparaben (and) Isobutylparaben (and) Butylparaben/Liquapar Oil	0.15

Procedure:

Heat all ingredients except fragrance to 40C with stirring. Hold at this temperature until the mixture is homogeneous. Let cool to 35C. Add fragrance with stirring.  
Formula 597-77

Sunscreen with TiO2

This creamy lotion goes on smoothly and rubs in easily. Mineral oil and petrolatum add moisturization, and no white residue is left behind after application.

<u>Ingredient/Trade Name:</u>	<u>Wt%</u>
A: Mineral Oil/Drakeol 9	7.00
Petrolatum/Amber Petrolatum	6.00
Cetearyl Alcohol (and) Polysorbate 60/Lipowax P	4.00
Isostearyl Isostearate/Prisorine 2039	1.70
Cocoa Butter	0.10
Tocopheryl Acetate/Vitamin E Acetate	0.10
Propylparaben	0.10
B: Deionized Water	74.05
Water (and) Titanium Dioxide/Tioveil AQ-G	5.00
Magnesium Aluminum Silicate/Veequm Ultra	1.75
Methylparaben	0.10
C: Diazolidinyl Urea/Germall II	0.10
Fragrance	q.s.

Procedure:

Heat part A to 80-85C with gentle mixing until all the solids have dissolved. Heat Part B to 75-80C with stirring. Add part A to B with stirring and continue mixing while allowing the mixture to cool. At 40C, add part C. Continue stirring to 30C.  
Formula 597-87

**SOURCE: Penreco: Suggested Formulations**

**Waterproof SPF 30 Sunscreen**

This sunscreen formula containing Croda's new conditioning and emulsifying system Crodafos CES was clinically tested by AMA Laboratories for its Sun Protection Factor (SPF) and shown to have a static SPF of 31.66 and a Waterproof SPF of 30.31. The ability of Crodafos CES to increase oil deposition and improve wash-off resistance appears to enhance the formula's sunscreen performance and contribute to the high SPF.

<u>Ingredients:</u>	<u>Weight%</u>
Deionized Water	63.23
Carbopol 981	0.13
Crodafos CES (Cetearyl Alcohol (and) Cetearyl Phosphate)	6.50
Benzophenone-3	5.00
Octyl Methoxycinnamate	7.50
Octyl Salicylate	5.00
Menthyl Anthranilate	5.00
Crodamol OS (Octyl Stearate)	5.00
NaOH-10% Soln.	1.54
BHT	0.10
Propylene Glycol (and) Diazolidinyl Urea (and) Methyl Paraben (and) Propyl Paraben	1.00

pH=5.8+-0.5

Viscosity=17,000 cps+-10% (RVT Spindle TB, 10 rpm @ 25C).

Static SPF=31.66                      Waterproof SPF=30.31

**Procedure:**

Dust Carbopol into the deionized water while stirring rapidly. Mix well for good hydration. Begin heating to 75-80C. Add Crodafos CES and mix well until all is melted and homogeneous. Add Benzophenone-3, Octyl Methoxycinnamate, Octyl Salicylate, Menthyl Anthranilate and Crodamol OS individually and with good mixing. Continue mixing at 75-80C, until homogeneous. Begin slow cooling and at 60C add NaOH solution. Cool to 45C and add BHT and preservative.

N.A.T.C Approved

SOURCE: Croda Inc.: Formulation SC-260

**Water-Resistant Sunscreen Lotion Using Avalure AC 118,  
Pemulen TR-2 & Carbopol Ultrez 10 Polymers  
SPF 24/A0005**

This high SPF sunscreen lotion provides long-lasting UV protection and has excellent water-resistant properties provided by Avalure AC 118 film-forming polymer and Pemulen TR-2 polymeric emulsifier.

**INCI-CTFA Name/Trade Name:****Part A:**

	<u>Wt%</u>
1. Deionized Water	66.10
2. Carbopol Ultrez 10 Polymer/Carbomer	0.25
3. Methocel E4M/Hydroxypropyl Methylcellulose	0.10
4. Propylene Glycol	1.00
5. Nuosept C/Polymethoxy Bicyclic Oxazolidine	0.40
6. Disodium EDTA	0.05
7. Crovol A-40/PEG-20 Almond Glycerides	0.40

**Part B:**

8. Neo Heliopan, Type AV/Octyl Methoxycinnamate	7.50
9. Neo Heliopan, Type OS/Octyl Salicylate	5.00
10. Neo Heliopan, Type BB/Oxybenzone	6.00
11. Finsolv TN/C12-15 Alcohols Benzoate	5.00
12. Pemulen TR-2 Polymer	0.25

**Part C:**

13. AMP-95/Aminomethyl Propanol	0.30
14. Avalure AC 118 Polymer/Acrylates Copolymer	7.50
15. Fragrance #99189 "Twister"	0.15

**Properties:**

Appearance: Milky white emulsion

pH: 6.0-6.5

Viscosity (cP): 18,000-24,000

SPF: 24

Stability: Passed 45C, accelerated 1 month  
Passed freeze/thaw-3 cycles

**Preparation Procedure:**

1. Part A: Disperse Carbopol Ultrez 10 polymer and Methocel E4M in warm deionized water (40-50C). Reduce mixing speed after polymers are dispersed.
2. When uniform, add other Part A ingredients and mix until uniform.
3. Part B: Combine first four ingredients in Part B in a separate vessel. Heat and mix until oxybenzone has dissolved.
4. Cool Part B to 45C. Disperse Pemulen TR-2 in Part B and mix until well dispersed.
5. With vigorous agitation, add Part B to Part A. Mix for 20 minutes or until a smooth, non-grainy dispersion is apparent.
6. Add AMP-95 to batch; mix until a smooth product is obtained.
7. Add Avalure AC 118 and fragrance to batch. Mix until uniform.

**SOURCE: BFGoodrich Specialty Chemicals: Formulation A0005**

Water Resistant Sunscreen with SPF 15

SC1318, silicone resin ester, is a substantive emollient, forming a durable, water resistant film which holds the active ingredient on the skin. This SPF 15 sunscreen stays with you while you are active.

<u>Ingredient/Function:</u>	<u>Wt%</u>
<b>Part A:</b>	
Deionized Water/Diluent	74.13
Tetrasodium EDTA/Preservative	0.05
PEG-8/Humectant	4.00
Phenoxyethanol (and) Methylparaben (and) Butylparaben (and) Ethylparaben (and) Propylparaben (1)/Preservative	0.25
Magnesium Aluminum Silicate/Slip/Feel	0.25
<b>Part B:</b>	
Diisostearoyl Trimethylolpropane Siloxysilicate (SF1318) (2)/Film-former/Emollient	7.00
Octyl Methoxycinnamate/UV absorber	7.00
Octyl Salicylate/UV absorber	3.00
Benzophenone-3/UV absorber	3.00
Acrylates/C10-30 Alkyl Acrylate Crosspolymer (3)/ Emulsifier/Thickener	0.30
Carbomer (4)/Thickener	0.15
Sorbitan Oleate/Emulsifier	0.20
<b>Part C:</b>	
Fragrance	0.12
<b>Part D:</b>	
Triethanolamine 99%/Neutralizer	0.55

**Procedure:**

1. Heat water of Part A to 75C. Add remaining ingredients in order with moderate propeller agitation, making sure that all parabens have dissolved. Mix for 15 minutes, while cooling to 50C.
2. Combine Part B with sweep agitation at ambient temperature. Mix until a smooth "paste" is obtained.
3. Add Part B at room temperature to Part A (at 50C) with rapid propeller agitation. Mix for 30 minutes, or longer to ensure that the polymers are completely dispersed.
4. Cool with agitation to 45C. Add Part C to batch with moderate propeller agitation. Mix 10 minutes.
5. Add Part D to batch at 40C. Mix with moderate agitation for 20 minutes. Cool to room temperature.
6. The pH should be 6-7.

**Trade Names/Suppliers:**

- (1) Phenonip, Nipa
- (2) GE Silicones
- (3) Pemulen TR-1, B.F. Goodrich
- (4) Carbopol 2984, B.F. Goodrich

SOURCE: GE Silicones: Personal Care Formulary: Formula SC 100



1\* Protection (Organic) SPF 2

<u>Stage:</u>	<u>Material:</u>	<u>Wt%</u>
<u>Oil Phase:</u>		
1	Light Mineral Oil	5.000
2	Cetearyl Octanoate	2.000
3	AEC Dimethicone V100	1.000
4	Cocoa Butter, Refined	0.300
5	Beeswax; White Pellets	1.000
6	AEC Sorbitan Palmitate	3.000
7	Cetearyl Alcohol	1.500
8	Octyl Dimethyl PABA	2.000
9	AEC Benzophenone-3	0.000
<u>Aqueous Phase:</u>		
10	Water; Pure	75.400
11	Xanthan Gum	0.200
12	Veegum Regular	1.500
13	Glycerine BP	3.000
14	AEC Polysorbate 20	3.000
15	Sodium Lactate 60%	0.300
16	Add preservative(s) & color to suit	0.500
<u>Cooling Cycle:</u>		
17	Fragrance	0.300

Formula Ref.: 45\*

1\* Protection (Organic) SPF 4

<u>Stage:</u>	<u>Material:</u>	<u>Wt%</u>
<u>Oil Phase:</u>		
1	Light Mineral Oil	5.000
2	Cetearyl Octanoate	2.000
3	AEC Dimethicone V100	1.000
4	Cocoa Butter, Refined	0.300
5	Beeswax; White Pellets	1.000
6	AEC Sorbitan Palmitate	3.000
7	Cetearyl Alcohol	1.500
8	Octyl Dimethyl PABA	4.000
9	AEC Benzophenone-3	0.000
<u>Aqueous Phase:</u>		
10	Water; Pure	73.500
11	Xanthan Gum	0.200
12	Veegum Regular	1.500
13	Glycerine BP	3.000
14	AEC Polysorbate 20	3.000
15	Sodium Lactate 60%	0.300
16	Add preservative(s) & colour to suit	0.500
<u>Cooling Cycle:</u>		
17	Fragrance	0.200

Mixing Instructions:

Heat the Oil Phase to 70C.

Disperse the Xanthan Gum and Veegum in the Water and heat to 70C, adding the remaining Aqueous Phase ingredients while doing so and with continuous stirring.

When both phases are to temperature slowly add the Oils to the water while mixing.

Cool to 35C with stirring and add perfume. Remix briefly with a Silverson type mixer when cool. pH=5.5-6.5 approx.

SOURCE: A&amp;E Connock Ltd.: Formula Ref.: 45\* and 46\*

1\* Protection (Organic) SPF 6

<u>Stage:</u>	<u>Material:</u>	<u>Wt%</u>
Oil Phase:		
1	Light Mineral Oil	5.000
2	Cetearyl Octanoate	2.000
3	AEC Dimethicone V100	1.000
4	Cocoa Butter, Refined	0.300
5	Beeswax, White Pellets	1.000
6	AEC Sorbitan Palmitate	3.000
7	Cetearyl Alcohol	1.500
8	Octyl Dimethyl PABA	5.000
9	AEC Benzophenone-3	0.500
Aqueous Phase:		
10	Water; Pure	72.000
11	Xanthan Gum	0.200
12	Veegum Regular	1.500
13	Glycerine BP	3.000
14	AEC Polysorbate 20	3.000
15	Sodium Lactate 60%	0.300
16	Add preservative(s) & colour to suit	0.500
Cooling Cycle:		
17	Fragrance	0.200

1\* Protection (Organic) SPF 8

<u>Stage:</u>	<u>Material:</u>	<u>Wt%</u>
Oil Phase:		
1	Light Mineral Oil	5.000
2	Cetearyl Octanoate	2.000
3	AEC Dimethicone V100	1.000
4	Cocoa Butter, Refined	0.300
5	Beeswax; White Pellets	1.000
6	AEC Sorbitan Palmitate	3.000
7	Cetearyl Alcohol	1.500
8	Octyl Dimethyl PABA	4.000
9	AEC Benzophenone-3	2.000
Aqueous Phase:		
10	Water; Pure	71.500
11	Xanthan Gum	0.200
12	Veegum Regular	1.500
13	Glycerine BP	3.000
14	AEC Polysorbate 20	3.000
15	Sodium Lactate 60%	0.300
16	Add preservative(s) & colour to suit	0.500
Cooling Cycle:		
17	Fragrance	0.200

Mixing Instructions:

Heat the Oil Phase to 70C.

Disperse the Xanthan Gum and Veegum in the Water and heat to 70C, adding the remaining Aqueous Phase ingredients while doing so and with continuous stirring.

When both phases are to temperature slowly add the Oils to the Water while mixing.

Cool to 35C with stirring and add perfume. Remix briefly with a Silverson type mixer when cool. pH=5.5-6.5 approx.

SOURCE: A&E Connock Ltd.: Formula Ref.: 47\* and 48\*

3 Star Sun Protection SPF 2

<u>Stage Materials:</u>	<u>Wt%</u>
<u>Stage:</u>	
<u>Oil Phase:</u>	
1 Octyl Palmitate	5.000
2 Cetearyl Octanoate	5.000
3 AEC Dimethicone V100	3.000
4 Tenox 2	0.010
5 Beeswax; White Pellets	3.500
6 AEC Sorbitan Palmitate	3.000
 <u>Aqueous Phase:</u>	
7 Water; Pure	67.390
8 Xanthan Gum	0.200
9 Veegum Regular	2.000
10 Propylene Glycol USP	5.000
11 AEC Polysorbate 20	3.000
12 Tioveil AQ N	2.000
13 Add preservative(s) & colour to suit	0.500
14 Sodium Lactate 60%	0.300
 <u>Cooling Cycle:</u>	
15 Fragrance	0.100

Mixing Instructions:

Heat the Oil Phase to 70C.

Disperse the Xanthan Gum and Veegum in the Water and heat to 70C, adding the remaining Aqueous Phase ingredients while doing so and with continuous stirring.

When both phases are to temperature slowly add the Oils to the water while mixing.

Cool to 35C with stirring and add perfume. Remix briefly with a Silverson type mixer when cool.

pH=5.5-6.5 approx.

SOURCE: A&E Connock Ltd.: Formula Ref.: 35\*

3 Star Sun Protection SPF4

<u>Stage Material:</u>	<u>Wt%</u>
<u>Stage:</u>	
<u>Oil Phase:</u>	
1 Octyl Palmitate	5.000
2 Cetearyl Octanoate	5.000
3 AEC Dimethicone V100	3.000
4 Tenox 2	0.010
5 Beeswax; White Pellets	3.500
6 AEC Sorbitan Palmitate	3.000
<u>Aqueous Phase:</u>	
7 Water; Pure	65.390
8 Xanthan Gum	0.200
9 Veegum Regular	2.000
10 Propylene Glycol USP	5.000
11 AEC Polysorbate 20	3.000
12 Tioveil AQ N	4.000
13 Add preservative(s) & colour to suit	0.500
14 Sodium Lactate 60%	0.300
<u>Cooling Cycle:</u>	
15 Fragrance	0.100

Mixing Instructions:

Heat the Oil Phase to 70C.

Disperse the Xanthan Gum and Veegum in the Water and heat to 70C, adding the remaining Aqueous Phase ingredients while doing so and with continuous stirring.

When both phases are to temperature slowly add the Oils to the Water while mixing.

Cool to 35C with stirring and add perfume. Remix briefly with a Silverson type mixer when cool.

pH=5.5-6.5 approx.

SOURCE: A&E Connock Ltd.: Formula Ref.: 36\*

3 Star Sun Protection SPF 6

<u>Stage:</u>	<u>Material:</u>	<u>Wt%</u>
<b>Oil Phase:</b>		
1	Octyl Palmitate	5.000
2	Cetearyl Octanoate	5.000
3	AEC Dimethicone V100	3.000
4	Tenox 2	0.010
5	Beeswax; White Pellets	3.500
6	AEC Sorbitan Palmitate	3.000
<b>Aqueous Phase:</b>		
7	Water; Pure	63.390
8	Xanthan Gum	0.200
9	Veegum Regular	2.000
10	Propylene Glycol USP	5.000
11	AEC Polysorbate 20	3.000
12	Tioveil AQ N	6.000
13	Add preservative(s) & colour to suit	0.500
14	Sodium Lactate 60%	0.300
<b>Cooling Cycle:</b>		
15	Fragrance	0.100

**Mixing Instructions:**

Heat the Oil Phase to 70C.

Disperse the Xanthan Gum and Veegum in the Water and heat to 70C, adding the remaining Aqueous Phase ingredients while doing so and with continuous stirring.

When both phases are to temperature slowly add the Oils to the Water while mixing.

Cool to 35C with stirring and add perfume. Remix briefly with a Silverson type mixer when cool.

pH=5.5-6.5 approx.

SOURCE: A&E Connock Ltd.: Formula Ref.: 37\*

3 Star Sun Protection SPF 8

<u>Stage:</u>	<u>Material:</u>	<u>Wt%</u>
<b>Oil Phase:</b>		
1	Octyl Palmitate	5.000
2	Cetearyl Octanoate	5.000
3	AEC Dimethicone V100	3.000
4	Tenox 2	0.010
5	Beeswax; White Pellets	3.500
6	AEC Sorbitan Palmitate	3.000
<b>Aqueous Phase:</b>		
7	Add preservative(s) & colour to suit	0.500
8	Water; Pure	61.390
9	Xanthan Gum	0.200
10	Veegum Regular	2.000
11	Propylene Glycol USP	5.000
12	AEC Polysorbate 20	3.000
13	Tioveil AQ N	8.000
14	Sodium Lactate 60%	0.300
<b>Cooling Cycle:</b>		
15	Fragrance	0.100

**Mixing Instructions:**

Heat the Oil Phase to 70C.

Disperse the Xanthan Gum and Veegum in the Water and heat to 70C, adding the remaining Aqueous Phase ingredients while doing so and with continuous stirring.

When both phases are to temperature slowly add the Oils to the Water while mixing.

Cool to 35C with stirring and add perfume. Remix briefly with a Silverson type mixer when cool.

pH=5.5-6.5 approx.

SOURCE: A&E Connock Ltd.: Formula Ref.: 38\*

3 Star Sun Protection SPF 15

<u>Stage:</u>	<u>Material:</u>	<u>Wt%</u>
<b>Oil Phase:</b>		
1	Octyl Palmitate	5.000
2	Cetearyl Octanoate	5.000
3	AEC Dimethicone V100	3.000
4	Tenox 2	0.010
5	Beeswax; White Pellets	3.500
6	AEC Sorbitan Palmitate	3.000
<b>Aqueous Phase:</b>		
7	Water; Pure	54.390
8	Xanthan Gum	0.200
9	Veegum Regular	2.000
10	Propylene Glycol USP	5.000
11	AEC Polysorbate 20	3.000
12	Sodium Lactate 60%	0.300
13	Tioveil AQ N	15.000
14	Add preservative(s) & colour to suit	0.500
<b>Cooling Cycle:</b>		
15	Fragrance	0.100

**Mixing Instructions:**

Heat the Oil Phase to 70C.

Disperse the Xanthan Gum and Veegum in the Water and heat to 70C, adding the remaining Aqueous Phase ingredients while doing so and with continuous stirring.

When both phases are to temperature slowly add the Oils to the Water while mixing.

Cool to 35C with stirring and add perfume. Remix briefly with a Silverson type mixer when cool.

pH=5.5-6.5 approx.

SOURCE: A&E Connock Ltd.; Formula Ref.: 39\*