Sun Care Formulary

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pure in cosmetics

ELEMENTIS
SPECIALTIES

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OIL IN WATER FORMULATIONS

Inorganic Sunscreen with BENTONE GEL® TN V, BENTONE® LT and NANOX™ 200

KR8/117

Advantages

The presence of BENTONE GEL® TN V and BENTONE® LT, rheological additives in this system:

- Give body, yet allow easy and even distribution, due to the increased thixotropic nature
- Produce a stable viscosity with an increase in temperature
- Reinforce emulsion stability, and improve storage stability
- Enhance SPF

The presence of NANOX™ 200, ultrafine Zinc Oxide in this system:

- In-Vitro SPF 14.13 +/- 2.93

Ingredient	Supplier	% w/w
PHASE A		
BENTONE GEL® TN V (C12-15 Alkyl Benzoate and Stearalkonium Hectorite and Propylene Carbonate)	**ELEMENTIS Specialties**	**10.0**
Tegosoft CT (Caprylic/Capric Triglyceride)	Evonik Degussa	5.0
Cithrol GMS A/S PAST (Glyceryl Stearate and PEG-100 Stearate)	Croda	4.0
Tegosoft TN (C12-15 Alkyl Benzoate)	Evonik Degussa	4.0
Tego Alkanol 1618 (Cetearyl Alcohol)	Evonik Degussa	1.2
Paratexin P (Propyl Paraben)	S. Black Group	0.1
PHASE B		
NANOX™ 200 (Zinc Oxide)	**ELEMENTIS Specialties**	**5.5**
T 805 (Titanium Dioxide)	Evonik Degussa	2.5
PHASE C		
BENTONE® LT (Hectorite and Hydroxyethylcellulose)	**ELEMENTIS Specialties**	**0.24**
Deionised Water		63.36
PHASE D		
Propylene Glycol		4.0
Paratexin M (Methyl Paraben)	S. Black Group	0.1

Mixing Procedure

1. Heat Phase A together to 75°C.
2. When heated transfer to Silverson homogeniser and add Phase B gradually, ensuring thorough dispersion.
3. Using high shear mix together Phase C.
4. Add Phase D to Phase C and heat to 75°C.
5. With Silverson homogenising add Phase A + B to Phase C + D, and continue to mix for 20 minutes.
6. Transfer to a propeller stirrer and commence cooling.

Advantages

The presence of BENTONE GEL® OP V, rheological additive in this system:

- Gives body, yet allow easy and even distribution, due to the increased thixotropic nature
- Produces a stable viscosity with an increase in temperature
- Reinforces emulsion stability, and improve storage stability
- Enhances SPF
- Enhances UVA/UVB Ratio and Critical Wavelength
- Imparts water proofing effect

The presence of NANOX™ 200, ultrafine Zinc Oxide in this system:

- In-Vitro SPF 13.84 +/- 4.88

Ingredient	Supplier	% w/w
PHASE A		
BENTONE GEL® OP V (Ethylhexyl Palmitate and Stearalkonium Hectorite and Propylene Carbonate)	**ELEMENTIS Specialties**	**3.0**
Tegosoft TN (C_{12-15} Alkyl Benzoate)	Evonik Degussa	10.0
Tegosoft Liquid (Cetearyl Ethylhexanoate)	Evonik Degussa	5.0
Tego Alkanol (Cetyl Alcohol)	Evonik Degussa	3.0
Tego SMS (Sorbitan Stearate)	Evonik Degussa	2.2
Beeswax	A&E Connock	0.5
PHASE B		
NANOX™ 200 (Zinc Oxide)	**ELEMENTIS Specialties**	**7.0**
T 805 (Titanium Dioxide)	Evonik Degussa	1.2
PHASE C		
Deionised Water		56.6
Vegetable Glycerin		8.0
Crillet 3 Super (Polysorbate 60)	Croda	3.3
PHASE D		
Phenoxetol (Phenoxyethanol)	Clariant	0.2

Mixing Procedure

1. Heat Phase A together to 75°C.
2. Transfer to a Silverson homogeniser, and with mixing gradually add Phase B. Mix until fully dispersed.
3. In a separate container warm Phase C to 75°C.
4. Using high shear mixing (e.g. Silverson homogeniser), slowly add Phase A + B to Phase C.
5. Continue to mix for several minutes.
6. Transfer to propeller stirrer and commence cooling.
7. Under 35°C add Phase D.
8. Mix until uniform.

Inorganic Sunscreen with BENTONE GEL® PTIS V and NANOX™ 200
KR9/097

Advantages

The presence of BENTONE GEL® PTIS V, rheological additive in this system:

- Gives body, yet allow easy and even distribution, due to the increased thixotropic nature
- Offers improved skin feel and better dispersion and suspension of actives
- Enhances SPF

The presence of NANOX™ 200, ultrafine Zinc Oxide in this system:

- In-Vitro SPF 15.18 +/- 3.36

Ingredient	Supplier	% w/w
PHASE A		
BENTONE GEL® PTIS V (Pentaerythrityl Tetraisostearate and Disteardimonium Hectorite and Propylene Carbonate)	**ELEMENTIS Specialties**	**3.0**
Tegosoft TN (C_{12-15} Alkyl Benzoate)	Evonik Degussa	10.0
Tegosoft Liquid (Cetearyl Ethylhexanoate)	Evonik Degussa	5.0
Tego Alkanol (Cetyl Alcohol)	Evonik Degussa	3.0
Tego SMS (Sorbitan Stearate)	Evonik Degussa	2.2
Beeswax	A&E Connock	0.5
PHASE B		
NANOX™ 200 (Zinc Oxide)	**ELEMENTIS Specialties**	**7.0**
T 805 (Titanium Dioxide)	Evonik Degussa	1.2
PHASE C		
Deionised Water		56.6
Vegetable Glycerin		8.0
Crillet 3 Super (Polysorbate 60)	Croda	3.3
PHASE D		
Phenoxetol (Phenoxyethanol)	Clariant	0.2

Mixing Procedure

1. Heat Phase A together to 75°C.
2. Transfer to a Silverson homogeniser, and with mixing gradually add Phase B. Mix until fully dispersed.
3. In a separate container warm Phase C to 75°C.
4. Using high shear mixing (e.g. Silverson homogeniser), slowly add Phase A + B to Phase C.
5. Continue to mix for several minutes.
6. Transfer to propeller stirrer and commence cooling.
7. Under 35°C add Phase D.
8. Mix until uniform.

Inorganic Sunscreen with BENTONE GEL® TN V and NANOX™ 200
KR7/017

Advantages

The presence of BENTONE GEL® TN V, rheological additive in this system:

- Gives body, yet allow easy and even distribution, due to the increased thixotropic nature
- Produces a stable viscosity with an increase in temperature
- Reinforces emulsion stability, and improve storage stability
- Enhances SPF
- Enhances UVA/UVB Ratio and Critical Wavelength
- Imparts water proofing effect

The presence of NANOX™ 200, ultrafine Zinc Oxide in this system:

- In-Vitro SPF 13.16 +/- 1.36

Ingredient	Supplier	% w/w
PHASE A		
BENTONE GEL® TN V (C12-15 Alkyl Benzoate and Stearalkonium Hectorite and Propylene Carbonate)	**ELEMENTIS Specialties**	**3.0**
Tegosoft TN (C_{12-15} Alkyl Benzoate)	Evonik Degussa	10.0
Tegosoft Liquid (Cetearyl Ethylhexanoate)	Evonik Degussa	5.0
Tego Alkanol (Cetyl Alcohol)	Evonik Degussa	3.0
Tego SMS (Sorbitan Stearate)	Evonik Degussa	2.2
Beeswax	A&E Connock	0.5
PHASE B		
NANOX™ 200 (Zinc Oxide)	**ELEMENTIS Specialties**	**7.0**
T 805 (Titanium Dioxide)	Evonik Degussa	1.2
PHASE C		
Deionised Water		56.6
Vegetable Glycerin		8.0
Crillet 3 Super (Polysorbate 60)	Croda	3.3
PHASE D		
Phenoxetol (Phenoxyethanol)	Clariant	0.2

Mixing Procedure

1. Heat Phase A together to 75°C.
2. Transfer to a Silverson homogeniser, and with mixing gradually add Phase B. Mix until fully dispersed.
3. In a separate container warm Phase C to 75°C.
4. Using high shear mixing (e.g. Silverson homogeniser), slowly add Phase A + B to Phase C.
5. Continue to mix for several minutes.
6. Transfer to propeller stirrer and commence cooling.
7. Under 35°C add Phase D.
8. Mix until uniform.

Organic Sun Lotion with BENTONE GEL® EUG V

KR7/184

Advantages

The presence of BENTONE GEL® EUG V, rheological additive in this system:

- Creates a light-feel, low viscosity lotion
- Gives body, yet allows easy spreading, due to the increased thixotropic nature
- Promotes even distribution
- Produces a stable emulsion at increased temperatures
- Reinforces emulsion stability, and improves storage stability
- Enhances SPF to an in-vitro SPF of 38.93 +/- 4.91

Ingredient	Supplier	% w/w
PHASE A		
BENTONE GEL® EUG V (Octyldodecanol and Disteardimonium Hectorite and Propylene Carbonate)	**ELEMENTIS Specialties**	**3.0**
Tegosoft CT (Caprylic/Capric Triglyceride)	Evonik Degussa	4.0
Eutanol G (Octyldodecanol)	Cognis	2.5
PHASE B		
Dow Corning 345 Fluid (Cyclomethicone)	Dow Corning	10.0
Parsol MCX (Ethylhexyl Methoxycinnimate)	Roche Vitamins	5.5
Multiwax W-835 (Microcrystalline Wax)	Crompton Corporation	3.0
Tegosoft TN (C_{12-15} Alkyl Benzoate)	Evonik Degussa	2.0
Dow Corning 5200 Formulation Aid (Lauryl PEG/PPG-15/15 Methicone)	Dow Corning	2.0
Parsol 1789 (Butyl Methoxybenzoylmethane)	Roche Vitamins	1.6
PHASE C		
Deionised Water		57.3
Vegetable Glycerin		7.0
Sodium Chloride		2.0
PHASE D		
Phenoxetol (Phenoxyethanol)	Clariant	0.1

Mixing Procedure

1. Mix Phase A with propeller stirring and warm to 40°C.
2. Add Phase A to Phase B together and warm to 75°C.
3. Mix Phase C together, using a propeller stirrer, and heat to 75°C.
4. Using high shear mixing (e.g. Silverson homogeniser), slowly add Phase A + B to Phase C.
5. Continue to mix for several minutes.
6. Transfer to propeller stirrer and commence cooling.
7. Under 35°C add Phase D.
8. Mix until uniform.

Organic Sunscreen with BENTONE GEL® HSO V

KR8/115

Advantages

The presence of BENTONE GEL® HSO V, rheological additive in this system:

- Gives body, yet allows easy spreading, due to the increased thixotropic nature
- Promotes even distribution
- Produces a stable emulsion at increased temperatures
- Reinforces emulsion stability, and improves storage stability
- Enhances SPF to an in-vitro SPF of 14.23 +/- 5.27

Ingredient	Supplier	% w/w
PHASE A		
BENTONE GEL® HSO V (Helianthus Annuus Seed Oil and Disteardimonium Hectorite and Propylene Carbonate)	**ELEMENTIS Specialties**	**12.0**
Tegosoft Liquid (Cetearyl Ethylhexanoate)	Evonik Degussa	7.5
Polarwax NF (Cetearyl Alcohol and Polysorbate 60)	Croda	4.2
Tegosoft M (Isopropyl Myristate)	Evonik Degussa	3.0
Eusolex 2292 (Ethylhexyl Methoxycinnimate and BHT)	Merck	2.5
PHASE B		
Dow Corning 345 Fluid (Cyclomethicone)	Dow Corning	10.0
Parsol MCX (Ethylhexyl Methoxycinnimate)	Roche Vitamins	5.5
Multiwax W-835 (Microcrystalline Wax)	Crompton Corporation	3.0
Tegosoft TN (C_{12-15} Alkyl Benzoate)	Evonik Degussa	2.0
Dow Corning 5200 Formulation Aid (Lauryl PEG/PPG-15/15 Methicone)	Dow Corning	2.0
Parsol 1789 (Butyl Methoxybenzoylmethane)	Roche Vitamins	1.6
PHASE C		
Deionised Water		66.8
Vegetable Glycerin		3.0
PHASE D		
Phenoxetol (Phenoxyethanol)	Clariant	0.2

Mixing Procedure

1. Heat Phase A together to 75°C.
2. In a separate container warm Phase B to 75°C.
3. Using high shear mixing (e.g. Silverson homogeniser), slowly add the Phase A to Phase B.
4. Continue to mix for several minutes.
5. Transfer to propeller stirrer and commence cooling.
6. Under 35°C add Phase C.
7. Mix until uniform.

Organic Sunscreen with BENTONE GEL® PTIS V
KR9/096

Advantages

The presence of BENTONE GEL® PTIS V, rheological additive in this system:

- Enhances SPF to an in-vitro SPF of 30.32 +/- 4.06
- Offers emollience
- Improves the application properties

Ingredient	Supplier	% w/w
PHASE A		
BENTONE GEL® PTIS V (Pentaerythrityl Tetraisostearate and Disteardimonium Hectorite and Propylene Carbonate)	**ELEMENTIS Specialties**	**3.0**
Cosmowax EM5483 PAST (Cetearyl Alcohol and Ceteareth-20)	Croda	7.5
Eusolex 2292 (Ethylhexyl Methoxycinnimate and BHT)	Merck	7.5
Cithrol GMS A/S PAST (Glyceryl Stearate and PEG-100 Stearate)	Croda	7.0
Tegosoft CT (Caprylic/Capric Triglyceride)	Evonik Degussa	6.0
Tegosoft TN (C_{12-15} Alkyl Benzoate)	Evonik Degussa	4.0
Eusolex 4360 (Benzophenone-3)	Merck	3.0
PHASE B		
Deionised Water		57.9
PHASE C		
Propylene Glycol		4.0
Phenoxetol (Phenoxyethanol)	Clariant	0.2

Mixing Procedure

1. Heat Phase A to 75°C.
2. Heat Phase B to 75°C.
3. With Silverson homogenising add Phase A to Phase B and continue to mix at high speed for 20 minutes.
4. Transfer to propeller stirrer and commence cooling.
5. Under 35°C add Phase C.
6. Mix until uniform.

Organic Sunscreen with BENTONE GEL® TN V

KR8/005

Advantages

The presence of BENTONE GEL® TN V, rheological additive in this system:

- Enhances SPF to an in-vitro SPF of 30.41 +/- 2.07
- Imparts a degree of water proofing
- Gives body, yet allows easy spreading, due to the increased thixotropic nature
- Promotes even distribution

Ingredient	Supplier	% w/w
PHASE A		
BENTONE GEL® TN V (C_{12-15} Alkyl Benzoate and Stearalkonium Hectorite and Propylene Carbonate)	**ELEMENTIS Specialties**	**3.0**
Cosmowax EM5483 PAST (Cetearyl Alcohol and Ceteareth-20)	Croda	7.5
Eusolex 2292 (Ethylhexyl Methoxycinnimate and BHT)	Merck	7.5
Cithrol GMS A/S PAST (Glyceryl Stearate and PEG-100 Stearate)	Croda	7.0
Tegosoft CT (Caprylic/Capric Triglyceride)	Evonik Degussa	6.0
Tegosoft TN (C_{12-15} Alkyl Benzoate)	Evonik Degussa	4.0
Eusolex 4360 (Benzophenone-3)	Merck	3.0
PHASE B		
Deionised Water		57.9
PHASE C		
Propylene Glycol		4.0
Phenoxetol (Phenoxyethanol)	Clariant	0.2

Mixing Procedure

1. Heat Phase A to 75°C.
2. Heat Phase B to 75°C.
3. With Silverson homogenising add Phase A to Phase B and continue to mix at high speed for 20 minutes.
4. Transfer to propeller stirrer and commence cooling.
5. Under 35°C add Phase C.
6. Mix until uniform.

Organic Sunscreen with BENTONE GEL® TN V and NANOX™ 200
KR4/026

Advantages

The presence of BENTONE GEL® TN V, rheological additive in this system:

- Improves emulsion stability and imparts viscosity and body

The presence of NANOX™ 200, ultrafine Zinc Oxide in this system:

- In-Vitro SPF 13.16 +/- 1.36
- Enhances UVA/UVB Ratio and Critical Wavelength

Ingredient	Supplier	% w/w
PHASE A		
Deionised Water		50.55
Glycerin	KIC Group	8.0
Crillet 3 Super (Polysorbate 60)	Croda	4.4
PHASE B		
BENTONE GEL® TN V (C_{12-15} Alkyl Benzoate and Stearalkonium Hectorite and Propylene Carbonate)	**ELEMENTIS Specialties**	**3.0**
Tegosoft TN (C_{12-15} Alkyls Benzoate)	Evonik Degussa	10.0
Crodamol CAP (Cetearyl Ethylhexanoate and Isopropyl Myristate)	Croda	9.0
Tego SMS (Sorbitan Stearate)	Evonik Degussa	3.3
Tego Alkanol 16 (Cetyl Alcohol)	Evonik Degussa	3.0
Parsol MCX (Ethylhexyl Methoxycinnamate)	Roche Vitamins	2.05
White Beeswax	A&E Connock	0.5
PHASE C		
NANOX™ 200 (Zinc Oxide)	**ELEMENTIS Specialties**	**6.0**
PHASE D		
Phenoxetol (Phenoxyethanol)	Clariant	0.2

Mixing Procedure

1. Heat Phase A together to 74°C.
2. In a separate vessel place Phase B and heat to 76°C.
3. Gradually add Phase C with Silverson homogenising to Phase B and maintain temperature at 76°C, and mix for 20 minutes.
4. With Silverson homogenising add Phase A to Phase B+C and continue mixing for 20 minutes.
5. Force cool with propeller stirring to 35° C and add Phase D.
6. Stir till homogeneous.

WATER IN OIL FORMULATIONS

Cold Process Sunscreen with NANOX™ 200

S. Black: 3485

Advantages

The presence of NANOX™ 200, ultrafine Zinc Oxide in this system:

- In-Vitro SPF
- Enhances Critical Wavelength, UVA/UVB Ratio and Boots Star Rating

Ingredient	Supplier	% w/w
PHASE A		
Ceralution C (Aqua, Capric/Caprylic Triglyceride, Glycerin, Ceteareth-25, Sodium Dicocoylethylenediamine PEG-15 Sulfate, Sodium Lauroyl Lactylate, Behenyl Alcohol, Glyceryl Stearate, Glyceryl Stearate Citrate, Gum Arabic, Xanthan Gum, Phenoxyethanol, Methylparaben, Ethylparaben)	Sasol	15.0
PHASE B		
Eusolex 2292 (Octyl Methoxycinnamate and BHT)	Merck	7.5
Eusolex 4360 (Benzophenone-3)	Merck	4.0
Isofol 20 (Octyldodecanol)	Sasol	1.0
Eusolex 9020 (Butyl Methoxybenzoylmethane)	Merck	1.0
Softisan 100 (Hydrogenated Coco-Glycerides)	Sasol	1.0
Cosmacol ESI (Tridecyl Salicylate)	Sasol	1.0
Tocopheryl Acetate	S. Black Group	0.6
PHASE C		
Deionised Water		50.9
Ethanol DEB 96 (Alcohol Denat.)		6.0
Keltrol CG SF (Xanthan Gum)	CP Kelco	1.0
Paratexin FPX (Phenoxyethanol, Methylparaben, Ethylparaben, Propylparaben, Butylparaben, Isobutylparaben)	S.Black Group	1.0
PHASE D		
NANOX™ 200 (Zinc Oxide)	**ELEMENTIS Specialties**	**10.0**

Mixing Procedure

1. Premix Phase B with gentle heating, if required.
2. Add Phase B to Phase A and mix until homogenous.
3. Premix Phase C. Ensure that the product is fully homogenous.
4. Add Phase C to Phase A+B with stirring.
5. Add Phase D to Phase A+B+C with mixing, until homogeneous.

Inorganic Sunscreen with BENTONE GEL® IHD V and NANOX™ 200
KR8/104

Advantages

The presence of BENTONE GEL® IHD V, rheological additive in this system:

- Gives body, yet allow easy and even distribution, due to the increased thixotropic nature
- Produces a stable viscosity with an increase in temperature
- Reinforces emulsion stability, and improve storage stability
- Enhances SPF

The presence of NANOX™ 200, ultrafine Zinc Oxide in this system:

- In-Vitro SPF 20.29 +/- 4.81

Ingredient	Supplier	% w/w
PHASE A		
BENTONE GEL® IHD V (Isohexadecane and Disteardimonium Hectorite and Propylene Carbonate)	**ELEMENTIS Specialties**	**8.0**
Tegosoft OS (Ethylhexyl Stearate)	Evonik Degussa	13.5
Isohexadecane	Bayer	8.0
Tegosoft M (Isopropyl Myristate)	Evonik Degussa	5.0
Abil EM 90 (Cetyl PEG/PPG-10-1 Dimethicone)	Evonik Degussa	1.8
Isolan GO 33 (Polyglyceryl 3-Oleate)	Evonik Degussa	1.75
PHASE B		
NANOX™ 200 (Zinc Oxide)	**ELEMENTIS Specialties**	**13.5**
T 805 (Titanium Dioxide)	Evonik Degussa	2.35
PHASE C		
Deionised Water		41.4
Sodium Chloride		0.75
Magnesium Sulphate Heptahydrate		0.75
PHASE D		
1, 3-Butylene Glycol	Siber Hegner	3.0
Phenoxetol (Phenoxyethanol)	Clariant	0.2

Mixing Procedure

1. Heat Phase A together to 75°C.
2. Transfer to a Silverson homogeniser, and with mixing gradually add Phase B. Mix until fully dispersed.
3. In a separate container warm Phase C to 75°C.
4. Using high shear mixing (e.g. Silverson homogeniser), slowly add Phase C to Phase A + B.
5. Continue to mix for several minutes.
6. Transfer to propeller stirrer and commence cooling.
7. Under 35°C add Phase D.
8. Mix until uniform.

Inorganic Sunscreen with BENTONE GEL® OP V and NANOX™ 200
KR8/105

Advantages

The presence of BENTONE GEL® OP V, rheological additive in this system:

- Gives body, yet allow easy and even distribution, due to the increased thixotropic nature
- Produces a stable viscosity with an increase in temperature
- Reinforces emulsion stability, and improve storage stability
- Enhances SPF

The presence of NANOX™ 200, ultrafine Zinc Oxide in this system:

- In-Vitro SPF 21.29 +/- 5.15

Ingredient	Supplier	% w/w
PHASE A		
BENTONE GEL® OP V (Ethylhexyl Palmitate and Stearalkonium Hectorite and Propylene Carbonate)	**ELEMENTIS Specialties**	**8.0**
Tegosoft OS (Ethylhexyl Stearate)	Evonik Degussa	13.5
Isohexadecane	Bayer	8.0
Tegosoft M (Isopropyl Myristate)	Evonik Degussa	5.0
Abil EM 90 (Cetyl PEG/PPG-10-1 Dimethicone)	Evonik Degussa	1.8
Isolan GO 33 (Polyglyceryl 3-Oleate)	Evonik Degussa	1.75
PHASE B		
NANOX™ 200 (Zinc Oxide)	**ELEMENTIS Specialties**	**13.5**
T 805 (Titanium Dioxide)	Evonik Degussa	2.35
PHASE C		
Deionised Water		41.4
Sodium Chloride		0.75
Magnesium Sulphate Heptahydrate		0.75
PHASE D		
1, 3-Butylene Glycol	Siber Hegner	3.0
Phenoxetol (Phenoxyethanol)	Clariant	0.2

Mixing Procedure

1. Heat Phase A together to 75°C.
2. Transfer to a Silverson homogeniser, and with mixing gradually add Phase B. Mix until fully dispersed.
3. In a separate container warm Phase C to 75°C.
4. Using high shear mixing (e.g. Silverson homogeniser), slowly add Phase C to Phase A + B.
5. Continue to mix for several minutes.
6. Transfer to propeller stirrer and commence cooling.
7. Under 35°C add Phase D.
8. Mix until uniform.

Inorganic Sunscreen with BENTONE GEL® TN V and NANOX™ 200
KR8/106

Advantages

The presence of BENTONE GEL® TN V, rheological additive in this system:

- Gives body, yet allow easy and even distribution, due to the increased thixotropic nature
- Produces a stable viscosity with an increase in temperature
- Reinforces emulsion stability, and improve storage stability
- Enhances SPF

The presence of NANOX™ 200, ultrafine Zinc Oxide in this system:

- In-Vitro SPF 23.32 +/- 6.47

Ingredient	Supplier	% w/w
PHASE A		
BENTONE GEL® TN V (C_{12-15} Alky Benzoate and Stearalkonium Hectorite and Propylene Carbonate)	**ELEMENTIS Specialties**	**8.0**
Tegosoft OS (Ethylhexyl Stearate)	Evonik Degussa	13.5
Isohexadecane	Bayer	8.0
Tegosoft M (Isopropyl Myristate)	Evonik Degussa	5.0
Abil EM 90 (Cetyl PEG/PPG-10-1 Dimethicone)	Evonik Degussa	1.8
Isolan GO 33 (Polyglyceryl 3-Oleate)	Evonik Degussa	1.75
PHASE B		
NANOX™ 200 (Zinc Oxide)	**ELEMENTIS Specialties**	**13.5**
T 805 (Titanium Dioxide)	Evonik Degussa	2.35
PHASE C		
Deionised Water		41.4
Sodium Chloride		0.75
Magnesium Sulphate Heptahydrate		0.75
PHASE D		
1, 3-Butylene Glycol	Siber Hegner	3.0
Phenoxetol (Phenoxyethanol)	Clariant	0.2

Mixing Procedure

1. Heat Phase A together to 75°C.
2. Transfer to a Silverson homogeniser, and with mixing gradually add Phase B. Mix until fully dispersed.
3. In a separate container warm Phase C to 75°C.
4. Using high shear mixing (e.g. Silverson homogeniser), slowly add Phase C to Phase A + B.
5. Continue to mix for several minutes.
6. Transfer to propeller stirrer and commence cooling.
7. Under 35°C add Phase D.
8. Mix until uniform.

Water in Oil Suncream with BENTONE GEL® IPM V and NANOX™ 200
KR8/106

Advantages

The presence of BENTONE GEL® TN V, rheological additive in this system:

- Improves emulsion stability and imparts viscosity and body

The presence of NANOX™ 200, ultrafine Zinc Oxide in this system:

- In-Vitro SPF 44.74 +/- 7.20

Ingredient	Supplier	% w/w
PHASE A		
BENTONE GEL® IPM V (Isopropyl Myristate and Stearalkonium Hectorite and Propylene Carbonate)	**ELEMENTIS Specialties**	**2.5**
Tegosoft OS (Ethylhexyl Stearate)	Evonik Degussa	13.5
Isohexadecane	Bayer	8.0
Parsol MCX (Ethylhexyl Methoxycinnamate)	Roche Vitamins	6.0
Lexol IPM-NF (Isopropyl Myristate)	Inolex	5.0
Tegin 4100 Pellets (Glyceryl Stearate)	Evonik Degussa	2.5
Abil EM 90 (Cetyl PEG/PPG 10-1 Dimethicone)	Evonik Degussa	2.5
Îsolan GO 33 (Polyglyceryl 3-Oleate)	Evonik Degussa	1.75
PHASE B		
NANOX™ 200 (Zinc Oxide)	**ELEMENTIS Specialties**	**10.0**
PHASE C		
Deionised Water		43.55
Sodium Chloride		0.75
Magnesium Sulphate Heptahydrate		0.75
PHASE D		
1, 3-Butylene Glycol	Siber Hegner	3.0
Phenoxetol (Phenoxyethanol)	Clariant	0.2

Mixing Procedure

1. Heat Phase A together to 75°C.
2. Silverson homogeniser Phase B into Phase A for 20 minutes.
3. In a separate vessel add Phase C and heat to 75° C.
4. Using a Silverson homogeniser add Phase A + B into Phase C. Continue to mix for 20 minutes.
5. Cool slowly, using a propeller stirrer, to 35°C.
6. Add Phase D and stir until homogenous.