Distinctive® Emul-Lipid BA

INCI: Polyglyceryl-10 Mono/Dioleate (and) Polyglyceryl-3 Oleate (and) Glycerin (and) Phosphatidylglycerol

June 4, 2015 rev.

DC3897

Bio-Active, Cold-Process Emulsifier

Distinctive® Emul-Lipid BA is a unique, "*bio-mimetic",* oil-in-water emulsifier, offering a natural choice for improving product stability and performance while minimizing the potential of bio-incompatibility and irritation. It is derived from plant origin and can be formulated into a wide variety of o/w emulsions. Distinctive® Emul-Lipid BA is recommended for use in thin/low-viscosity emulsions where stability may be challenging. In addition, this emulsifier offers unique biological interactions for anti-aging, calming irritated skin, and skin hydration applications enabling the creation of base formulations which re-balance skin's natural regenerative processes, and support delivery of actives ingredients.

Distinctive® Emul-Lipid BA contains Phosphatidylglycerol (PG), an important constituent of cell membranes typically found in animal tissue at levels between 1-11% of the total lipid content. Research suggests PG offers a regenerative signaling pathway that prompts skin cells regulate cell proliferation and differentiation. It is this key, bio-identical constituent that helps make Distinctive® Emul-Lipid BA highly skin compliant and allows it to replenish naturally occurring components to the skin, rebalancing cellular homeostasis and restoring barrier function to protect against drying and environmental stress.

BENEFITS

- Hydrating/Moisturizing
- Cosmetic anti-aging benefits
- Unique sensory properties
- Unique "mini-emulsification" properties
- Cold-process emulsifier
- Rebalances cellular homeostasis
- Glycerol chemistry (PEG-free)
- Highly skin compliant
- 100% Plant Origin (Non-GMO)
- Soothing

APPLICATIONS

- Creams & Lotions
- Cleansers
- Hair care
- Sensitive skin
- Anti-aging
- Color cosmetics

TYPICAL PROPERTIES

Appearance	Liquid
Color	Dark Yellow to Light Brown
Odor	Characteristic
Specific Gravity	0.99 – 1.10
Loss on Drying (2 hrs, 2 grams, 105°C)	< 5.00

RESOURCES OF NATURE

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FORMULATION GUIDELINES

Recommended use level:2-6% to oil phase
Approx. HLB = 9
Emulsifies a wide range of oils.

Emulsifies high oil phases >30%
Compatible with organic UV filers
Formulate between pH 4.5 - 6.5
Not compatible with cationics

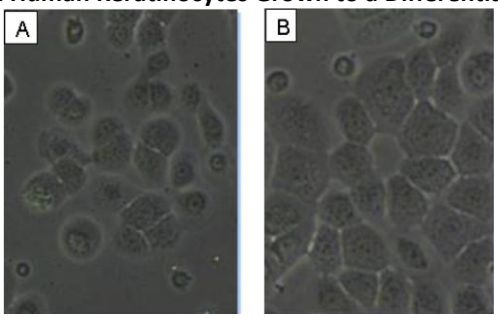
IN-VITRO STUDIES : Emul-lipid BA vs. Emul-lipid Control (No PG)

Human Gene Expression of Distinctive® Emul-lipid BA

TABLE II	Modulation of wnt pathway genes by 0.05% EMU-BA with phosphatidylglycerol, as compared to EMU-CTR (without phosphatidylglycerol).		
Position on array	Symbol	Fold Regulation vs. EMU CTR	Comments
C06	FRAT1	3.6	Activator of Wnt canonical signaling through inhibition of GSK-3.
C10	FZD2	2.0	Increased in differentiated tissues (Choi et al., 2008). Accordingly, Frizzled 2 increases the intracellular Ca^{2+} level, consistently with the role of this ion in keratinocyte differentiation (Niu et al., 2012).
D03	FZD8	7.3	Frizzled 8 decreases with age in progenitor cells. Its upregulation may "rejuvenate" these cells, making them more capable of tissue regeneration (Brunt et al., 2012).
D06	JUN	2.4	Jun is a target of Wnt canonical pathway. Jun is an early differentiation marker (Blatti & Scott, 1992; Murray et al., 2013) and an effector of TGF-beta – a key effector in skin homeostasis.
D07	KREMEN1	-2.1	Kremen1 (Krm1) is a negative regulator of the canonical Wnt signaling pathway.
E09	SFRP1	2.2	SFRP1 Induces differentiation, inhibits proliferation of epithelial cells and negatively regulates Wnt pathway.
F10	WNT10A	2.1	Induced by TGF-beta. Activator of WNT/β-catenin signaling. WNT10A, in addition to the formation of teeth and hair follicles, is of importance for the formation of nails, regeneration of the epidermis, papillae of the tongue and sweat gland function. Loss of function results in dry skin, abnormal hair patterns and nail malformations (Nawaz et al., 2009).
G10	WNT7B	2.0	Wnt7b plays an important role in stem cell homeostasis and in the tissue repair and regeneration (Lin et al., 2010; Kandyba et al., 2013).

8 out of 84 genes on the Wnt PCR array panel were differentially expressed by Emul-lipid BA. The directionality of the modulation indicates a controlled increase of expression of Wnt genes involved in proliferative/pro-regenerative progenitor cell homeostasis (FZD8, WNT7b, WNT10a), as well as cell differentiation (FZD2, JUN), consistent with the morphological changes observed microscopically (Fig. 2). This increase may be balanced by the negative regulator SFRP1, itself a powerful pro-differentiation effector. In conclusion, Emul-lipid BA is a bioactive material with progenitor (basal layer stem) cell -normalizing and skin -regenerative benefits, which could result in improved overall skin homeostasis.

Epidermal Human Keratinocytes Grown to a Differentiated State



Epidermal human keratinocytes grown in the presence of (A) Control and (B) Emul-lipid BA. Note the organized tight junctions between cells grown in the presence of Emul-lipid BA suggestive of a differentiated state, while cells in (A) are more scattered and isolated from each other, possibly geared towards further migration and/or proliferation (original mag. X100).

Modulating Hydration Related and Inflammatory Genes

TABLE II Gene expression in EMU-BA relative to EMU-CTR	AQP3	COX1	COX2 (PGS2)
Fold regulation	1.68	-1.07	-2.0

While the constitutively-expressed COX1 was not affected by Emul-lipid BA , the inducible proinflammatory COX2 was inhibited by Emul-lipid BA, while AQP3 was upregulated, as compared to the phosphatidylglycerol-free placebo Control.

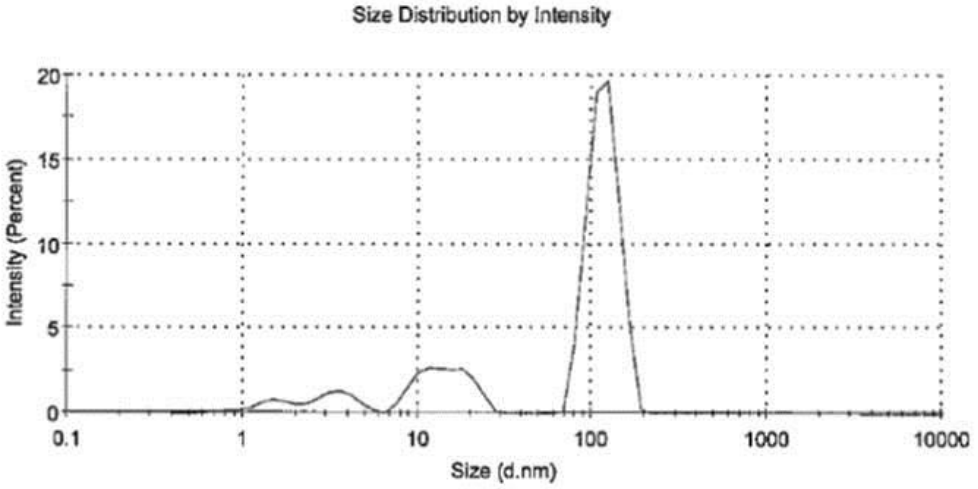
IN-VITRO STUDIES: Emul-lipid BA vs. Polysorbate 80

Collagen I Stimulation & Mitochondrial Metabolism in Human Dermal Fibroblasts

TABLE II Test Material	Type I Collagen (% Control)	p value	Mitochondrial Metabolism (% Control)	p value
H2O	100	1	100	1.000
Emu-BA 0.5% (5mg/ml)	60	0.000	84	0.028
Emu-BA 0.1% (1mg/ml)	51	0.000	81	0.007
Emu-BA 0.02% (200µg/ml)	102	0.712	107	0.202
PS80 0.5% (5mg/ml)	3	0.000	N/A	0.000
PS80 0.1% (1mg/ml)	3	0.000	12	0.000
PS80 0.02% (200µg/ml)	4	0.000	42	0.000
MAP	156	0.000	111	0.069

Emul-lipid BA is a non-disruptive emulsifier

IN-VITRO STUDIES: Evaluation of Droplet Size in Emulsion



Emul-lipid BA produces stable mini-emulsions

DC3897

SPF 30 Milk Formula RON22-94-1

PHASE	INGREDIENT	% BY WEIGHT	SUPPLIER
A	Water	Q.S.	
A	Natrosol™ PLUS 330 CS	0.15	Ashland
B	Glycerin	3.00	
B	Kelcogel® CG-HA	0.05	CP Kelco
B	Keltrol® CG-T	0.20	CP Kelco
C	Disodium EDTA	0.10	
C	Citric Acid (25% Solution)	0.04	
D	**Distinctive® Emul-Lipid BA**	**6.00**	**Resources Of Nature**
D	Finsolv TN	4.00	
D	Parsol® MCX (Ethylhexyl Methoxycinnamate)	7.50	DSM
D	Parsol® 1789 (Butyl Methoxydibenzoylmethane)	2.00	DSM
D	Parsol® HMS (Homosalate)	10.00	DSM
D	Parsol® EHS (Ethylhexyl Salicylate)	3.00	DSM
D	**Vegelight 1214LC**	**3.00**	**Resources Of Nature/Grant Industries**
D	Glyceryl Cocoate	0.70	
D	Behenyl Behenate	0.50	
D	Cetyl Alcohol	0.50	
E	Tocopheryl Acetate	0.50	
F	Euxyl PE9010	1.00	Schulke, Inc
		100.00	

- To the main vessel, add water and begin mixing with a propeller mixer. Heat to 75°C. Add Cetyl Hydroxyethylcellulose. Mix at 75°C until fully hydrated. Premix Phase B ingredients and then add to batch. Mix until uniform. Add Phase C ingredients separately to batch. Mix until uniform. In a side container, combine Phase D ingredients and heat to 75-80°C. Add Phase D ingredients, mix 5 - 10 minutes, until uniform. Homogenize batch for 5 minutes. Switch to propeller mixer and begin cooling batch. At 40°C, add Phase E. Mix until uniform. At 40°C, add Phase F. Mix until uniform. Cool to 30°C.
- Viscosity: 3900 cps
  pH: 6.62

Hydrating Milk Formula RON23-5-1

PHASE	INGREDIENT	% BY WEIGHT	SUPPLIER
A	Water	Q.S.	
A	Natrosol™ PLUS 330 CS	0.15	Ashland
B	Glycerin	1.00	
B	Keltrol® CG-T	0.10	CP Kelco
B	Kelcogel® CG-HA	0.05	CP Kelco
C	Butylene Glycol	5.00	
C	Lexgard Natural	1.20	Inolex
D	Sodium Benzoate	0.20	
D	Citric Acid 25% solution	0.15	
E	**Distinctive® Emul-Lipid BA**	**6.00**	**Resources Of Nature**
E	Lilac™	8.00	Sonneborn
E	Cetiol® OE	8.00	BASF
E	Neossance™ Squalane	5.00	Amyris
E	**Distinctive® Emul-Lipid ST**	**0.70**	**Resources Of Nature**
		100.00	

- To the main vessel, add water and begin mixing with a propeller mixer. Heat to 75°C. Add Cetyl Hydroxyethylcellulose. Mix until uniform. Premix Phase B ingredients and add to batch at 75°C. Mix until uniform. Premix Phase C ingredients, add to batch, and mix until uniform. Add Phase D ingredients separately and mix until uniform. Maintain temperature at 75°C. In a side container, combine Phase E ingredients and heat to 75°C. Add Phase E to main vessel and mix for 5 minutes. Homogenize batch for 5 minutes. Switch to propeller mixer and begin cooling batch. Cool to 30°C.
- Viscosity: 1680 cps
  pH: 5.82

Distinctive® Emul-Lipid BA

INCI: Polyglyceryl-10 Mono/Dioleate (and) Polyglyceryl-3 Oleate (and) Glycerin (and) Phosphatidylglycerol

DC3897

Anti-Aging Milk Formula RON23-24-1			
PHASE	INGREDIENT	% BY WEIGHT	SUPPLIER
A	Water	Q.S.	
A	Natrosol™ PLUS 330 CS	0.15	Ashland
B	**Gransil EP-9**	**2.00**	**Resources Of Nature/Grant Industries**
C	Glycerin	1.00	
C	Keltrol® CG-T	0.20	CP Kelco
C	Kelcogel® CG-HA	0.05	CP Kelco
D	Butylene Glycol	3.00	
D	Lexgard Natural	1.20	Inolex
E	Sodium Benzoate	0.20	
E	Citric Acid 25% solution	0.15	
F	**Distinctive® Blueberry 5P**	**1.00**	**Resources Of Nature**
F	**Distinctive® Emul-Lipid BA**	**6.00**	**Resources Of Nature**
F	Lilac™	8.00	Sonneborn
F	Cetiol® OE	8.00	BASF
F	Neossance™ Squalane	2.00	Amyris
F	**Distinctive® Emul-Lipid ST**	**0.70**	**Resources Of Nature**
F	Isododecane	4.00	
F	Xiameter® PMX-200 Silicone Fluid 5 cs	1.00	Dow Corning
F	Xiameter® PMX-0245 Cyclopentasiloxane	2.00	Dow Corning
G	Advanced® BTX	1.00	AE Chemie
		100.00	

- To the main vessel, add water and begin mixing with a propeller mixer. Heat to 75°C. Add Cetyl Hydroxyethylcellulose. Mix until uniform. Add Phase B ingredient. Mix until uniform. Premix Phase C ingredients. Add to batch and mix until uniform. Premix Phase D ingredients. Add to batch and mix until uniform. Add Phase E ingredients separately. Mix until uniform. Maintain temperature at 75°C. In a side container, combine Phase F ingredients and heat to 75°C. Add Phase F to main vessel and mix for 5 minutes, until uniform. Homogenize batch for 5 minutes. Switch to propeller mixer and begin cooling batch. Add Phase G ingredient at 35°C. Cool to 30°C.

Distinctive® Emul-Lipid BA

INCI: Polyglyceryl-10 Mono/Dioleate (and) Polyglyceryl-3 Oleate (and) Glycerin (and) Phosphatidylglycerol

DC3897

CC Milk Formula RON23-50-2

PHASE	PHASE	PHASE	PHASE
A	Water	Q.S.	
A	Propanediol	2.00	
A	Disodium EDTA	0.05	
A	Glycerin	2.00	
B	Natrosol™ PLUS 330 CS	0.15	Ashland
C	Glycerin	1.00	
C	Keltrol® CG-T	0.20	CP Kelco
D	Simulgel™ SMS 88	1.30	
E	**RON Ti-12**	**11.00**	**Resources Of Nature**
E	Yellow Iron Oxide	1.06	
E	Red Iron Oxide	0.34	
E	Black Iron Oxide	0.14	
F	Citric Acid (25% Solution)	0.15	
F	Sodium Benzoate	0.10	
G	**Distinctive® Emul-Lipid BA**	**3.50**	**Resources Of Nature**
G	**Distinctive® Emul-Lipid ST**	**1.00**	**Resources Of Nature**
G	Cetiol® OE	3.00	BASF
G	Neossance™ Squalane	4.00	Amyris
G	Essachem™ O	3.00	ESSA Technologies™
G	Cetyl Alcohol	0.50	
H	Diocide™	1.00	Centerchem
H	Mica 2800	2.00	Amerilure
I	**Hydro-Matrix Rice PGA**	**2.00**	**Resources Of Nature**
		100.00	

- To the main vessel, add water, heat to 75°C and begin mixing with a propeller mixer. Add remainder of Phase A ingredients separately and mix until uniform. Add Phase B ingredient at 75°C. Mix until uniform. Premix Phase C ingredients and add to batch. Mix until uniform. Add Phase D ingredient to batch at 75°C. Mix until uniform. Add Phase E ingredients and mix with high speed homogenizing until uniform. Switch to propeller mixing and heat to 75°C. Add Phase F ingredients separately to batch. Mix until uniform. Maintain temperature at 75°C. In a side container, combine Phase G ingredients and heat to 75°C. Add Phase G ingredients to main vessel and mix for 5 minutes, until uniform. Homogenize batch for 5 minutes. Switch to propeller mixer and begin cooling batch. Add Phase H ingredients at 60°C. Add Phase I ingredient at 45°C. Cool batch to 30°C.

  Shake Well Before Use

Distinctive® Emul-Lipid BA

INCI: Polyglyceryl-10 Mono/Dioleate (and) Polyglyceryl-3 Oleate (and) Glycerin (and) Phosphatidylglycerol

DC3897

SPF 15 BB Milk Formula RON23-50-4			
PHASE	INGREDIENT	% BY WEIGHT	SUPPLIER
A	Water	Q.S.	
A	Glycerin	1.50	
A	Lecinol S-10	0.10	Barnet
B	RON Ti-12	6.00	**Resources Of Nature**
B	Yellow Iron Oxide	0.80	
B	Red Iron Oxide	0.26	
B	Black Iron Oxide	0.11	
C	Natrosol™ PLUS 330 CS	0.20	Ashland
D	Glycerin	1.50	
D	Kelcogel® CG-HA	0.20	CP Kelco
D	Keltrol® CG-T	0.05	CP Kelco
E	Disodium EDTA	0.10	
E	Citric Acid (25% Solution)	0.04	
F	**Gransil EP-9**	**3.00**	**Resources Of Nature/Grant Industries**
G	Essachem™ O	2.00	ESSA Technologies™
G	Neossance™ Squalane	2.00	Amyris
G	**Distinctive® Emul-Lipid BA**	**6.00**	**Resources Of Nature**
G	Dermol 25B	3.00	ALZO International, Inc
G	Ethylhexyl Salicylate	5.00	
G	Octocrylene	3.00	
G	Avobenzone	2.00	
G	Homosalate	4.00	
G	Distinctive® Emul-Lipid ST	1.75	**Resources Of Nature, LLC**
G	Pelemol® BB	0.50	Phoenix Chemical, Inc
G	Cetyl Alcohol	0.50	
H	Phenoxyethanol	0.90	
H	Ethylhexylglycerin	0.10	
I	**Instalift™ Goji GF**	**2.00**	**Resources Of Nature, LLC**
		100.00	

- To the main vessel, add water, heat to 50°C and begin mixing with a propeller mixer. Add remainder of Phase A ingredients separately and mix until uniform. Add Phase B ingredients and mix with high speed homogenizing until uniform. Switch to propeller mixing and heat to 75°C. Add Phase C ingredient to batch at 75°C. Mix until uniform. Premix Phase D ingredients and add to batch. Mix until uniform. Add Phase E ingredients separately to batch at 75°C. Mix until uniform. Add Phase F ingredient to batch at 75°C. Mix until uniform. Maintain temperature at 75°C. In a side container, combine Phase G ingredients and heat to 75°C. Add Phase G ingredients to main vessel and mix for 5 minutes, until uniform. Homogenize batch for 5 minutes. Switch to propeller mixer and begin cooling batch.
  Add Phase H ingredient at 40°C. Add Phase I ingredient at 40°C. Cool batch to 30°C.

  Shake Well Before Use

DC3897

CC Bouncy Makeup Formula: RON24-75-4

PHASE	INGREDIENT	% BY WEIGHT	SUPPLIER
A	Water	Q.S.	
A	Lecinol S-10	0.10	Barnet
A	Glycerin	5.00	
A	**RON Ti-12**	**7.80**	**Resources Of Nature**
A	Yellow Iron Oxide	1.04	
A	Red Iron Oxide	0.34	
A	Black Iron Oxide	0.14	
B	Disodium EDTA	0.05	
B	Sodium Hydroxide 20% Solution	0.50	
B	Carbopol Aqua SF-1 OS Polymer	3.00	Lubrizol
B	**Granpowder USQ**	**3.00**	**Resources Of Nature/Grant Industries**
B	**Distinctive® Squalane Butter Mica P**	**4.00**	**Resources Of Nature**
C	**Distinctive® Emul-Lipid BA**	**3.50**	**Resources Of Nature**
C	**Distinctive® Emul-Lipid ST**	**1.00**	**Resources Of Nature**
C	Cetiol® OE	3.00	BASF
C	**Distinctive® Squalane Butter 45**	**4.00**	**Resources Of Nature**
C	Essachem™ O	3.00	
C	**Distinctive® Blueberry 5P**	**2.00**	**Resources Of Nature**
C	Cetyl Alcohol	2.00	
D	Lincoserve™ CG-5	1.00	Lincoln Fine Ingredients™
E	**Hydro-Matrix Rice PGA**	2.00	**Resources Of Nature**
E	Syntran® 5190CG	5.00	Interpolymer
		100.00	

- To the main vessel, add Water, Lecinol S-10, and Glycerin. Begin mixing with a propeller mixer and heat to 60°C. Mix until uniform. Add remainder of Phase A. Mix until uniform. Switch to the Silverson for high speed mixing. Use the square screen at 4500 rpm. Check dispersion on slides to confirm it is uniform. Switch back to propeller mixer. Heat to 73-75°C. Add Phase B Ingredients one at a time in the order listed. Mix until uniform. Maintain temperature at 73-75°C. In a side container, combine Phase C ingredients and heat to 75-77°C. Add Phase C ingredients to main vessel and mix for 5 minutes, until uniform. Switch to Silverson for high speed mixing for 5 minutes. Use square screen at 5000 rpm. Switch back to propeller mixer. Begin cooling batch. At 60°C, add Phase D. Mix until uniform. At 45°C, add Phase E ingredients separately. Mix until uniform. Cool batch to 30°C.

Anti-Aging Foundation & Concealer Formula: RON24-75-1

PHASE	INGREDIENT	% BY WEIGHT	SUPPLIER
A	Water	Q.S.	
A	Lecinol S-10	0.30	Barnet
A	Glycerin	5.00	
A	**RON Ti-12**	**10.10**	**Resources Of Nature**
A	Yellow Iron Oxide	1.35	
A	Red Iron Oxide	0.43	
A	Black Iron Oxide	0.18	
B	Disodium EDTA	0.05	
B	Sodium Hydroxide 20% Solution	0.45	
B	Carbopol Aqua SF-1 OS Polymer	3.00	Lubrizol
B	**Granpowder USQ**	**3.00**	**Resources Of Nature/Grant Industries**
B	**Distinctive® Squalane Butter Mica P**	**2.00**	**Resources Of Nature**
C	**Distinctive® Emul-Lipid BA**	**3.50**	**Resources Of Nature**
C	**Distinctive® Emul-Lipid ST**	**1.00**	**Resources Of Nature**
C	Dow Corning® 556 Cosmetic Grade Fluid	3.00	Dow Corning
C	**Distinctive® Squalane Butter 45**	**5.00**	**Resources Of Nature**
C	Essachem™ O	3.00	ESSA Technologies
C	**Distinctive® Blueberry 5P**	**2.00**	**Resources Of Nature**
C	Cetyl Alcohol	2.00	
D	Lincoserve™ CG-5	1.00	Lincoln Fine Ingredients™
E	Syntran® 5190CG	3.00	Interpolymer
		100.00	

Antiaging Foundation & Concealer Formula: RON24-75-1 (continued)

- To the main vessel, add Water, Lecinol S-10, and Glycerin. Begin mixing with a propeller mixer and heat to 60°C. Mix until uniform. Add remainder of Phase A. Mix until uniform. Switch to the Silverson for high speed mixing. Use the square screen at 4500 rpm. Check dispersion on slides to confirm it is uniform. Switch back to propeller mixer. Heat to 73-75°C. Add Phase B Ingredients one at a time in the order listed. Mix until uniform. Maintain temperature at 73-75°C. In a side container, combine Phase C ingredients and heat to 75°C. Add Phase C ingredients to main vessel and mix for 5 minutes, until uniform. Switch to Silverson for high speed mixing for 5 minutes. Use square screen at 5000 rpm. Switch back to propeller mixer. Begin cooling batch. At 60°C, add Phase D. Mix until uniform. At 45°C, add Phase E. Mix until uniform. Cool batch to 30°C.

Bouncy Blush Formula: RON24-71-2

PHASE	INGREDIENT	% BY WEIGHT	SUPPLIER
A	Water	Q.S.	
A	Lecinol S-10	0.10	Barnet
A	Glycerin	5.00	
A	**RON Ti-12**	**7.80**	**Resources Of Nature**
A	Yellow Iron Oxide	0.34	
A	Red Iron Oxide	1.04	
A	Black Iron Oxide	0.14	
B	Disodium EDTA	0.05	
B	Sodium Hydroxide 20% Solution	0.45	
B	Carbopol Aqua SF-1 OS Polymer	3.00	Lubrizol
B	**Granpowder USQ**	**3.00**	**Resources Of Nature/Grant Industries**
B	**Distinctive® Squalane Butter Mica P**	**2.00**	**Resources Of Nature**
C	**Distinctive® Emul-Lipid BA**	**3.50**	**Resources Of Nature**
C	**Distinctive® Emul-Lipid ST**	**1.00**	**Resources Of Nature**
C	Cetiol® OE	3.00	BASF
C	**Distinctive® Squalane Butter 45**	**4.00**	**Resources Of Nature**
C	Essachem™ O	3.00	ESSA Technologies
C	**Distinctive® Blueberry 5P**	**2.00**	**Resources Of Nature**
C	Cetyl Alcohol	2.00	
D	Dow Corning® 556 Cosmetic Grade Fluid	5.00	Dow Corning
D	**Gransil EPSQ**	**1.00**	**Resources Of Nature/Grant Industries**
E	Lincoserve™ CG-5	1.00	Lincoln Fine Ingredients™
F	Syntran® 5190CG	3.00	Interpolymer
		100.00	

- To the main vessel, add Water, Lecinol S-10, and Glycerin. Begin mixing with a propeller mixer and heat to 60°C. Mix until uniform. Add remainder of Phase A. Mix until uniform. Switch to the Silverson for high speed mixing. Use the square screen at 4500 rpm. Check dispersion on slides to confirm it is uniform. Switch back to propeller mixer. Heat to 73-75°C. Add Phase B Ingredients one at a time. Mix until uniform. Maintain temperature at 73-75°C. In a side container, combine Phase C ingredients and heat to 75°C. Add Phase C ingredients to main vessel and mix for 5 minutes, until uniform. Premix Phase D. Add Phase D on Silverson for high speed mixing. Mix on Silverson for 8-10 minutes. Use square screen at 6500 rpm. Switch back to propeller mixer. Begin cooling batch. At 60°C, add Phase E. Mix until uniform. At 45°C, add Phase F. Mix until uniform. Drop batch at 33-35°C.