

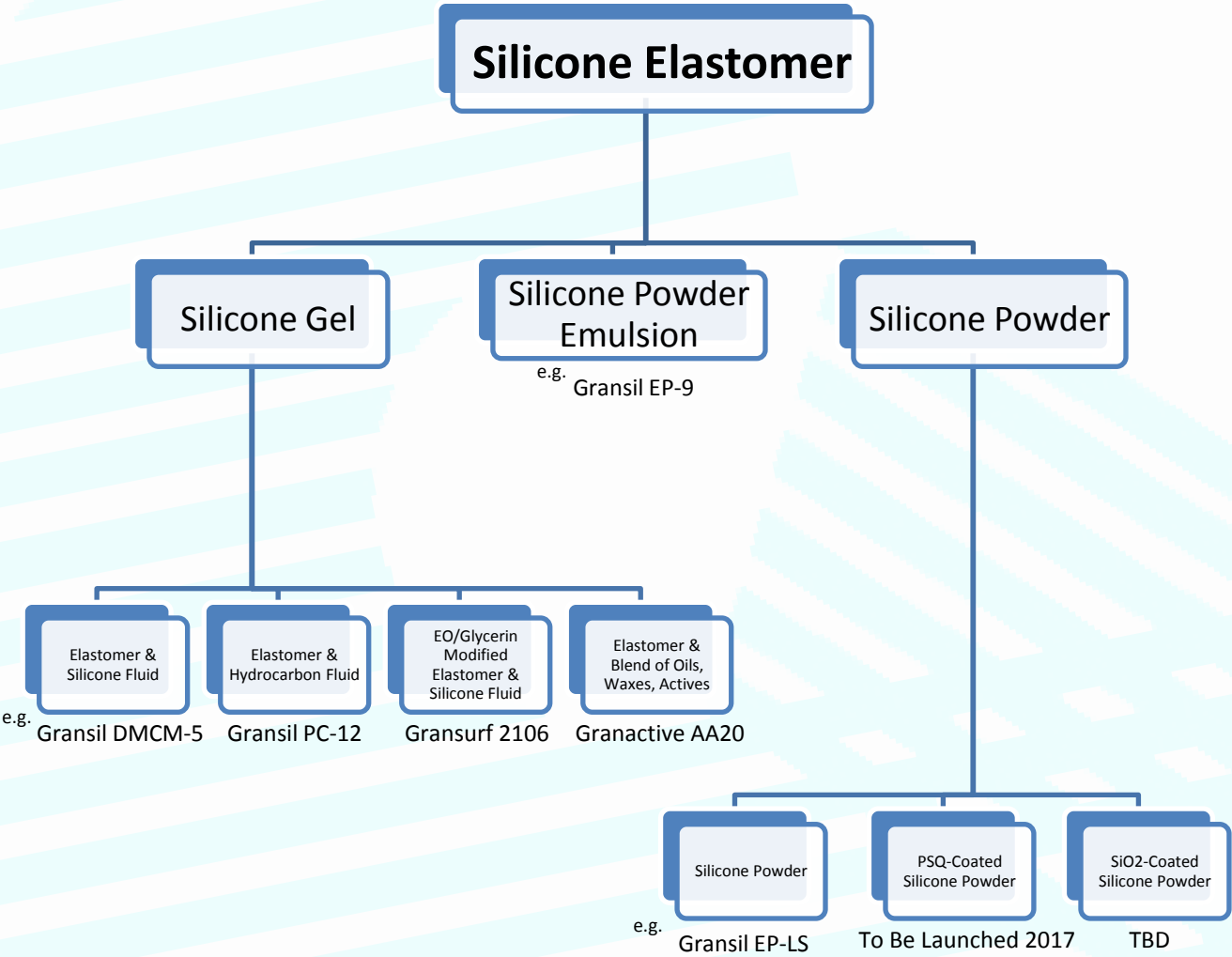


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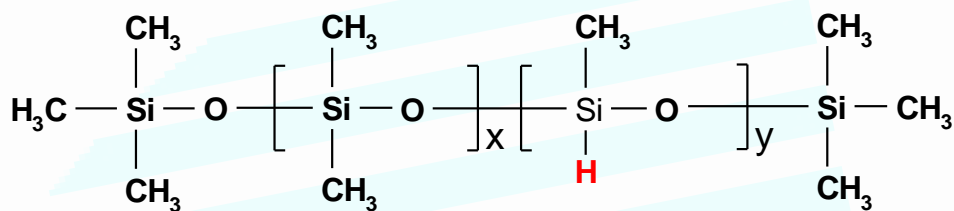
SILICONE ELASTOMER SERIES
Polysilicone-11

- ❖ Silicone elastomer was invented in late 1980's by crosslinking reaction of linear silicone molecules followed by milling with volatile silicone fluids
- ❖ Most significant advance in silicone chemistry for cosmetic industries
 - ❖ Provides innovative texture and desired feel
 - ❖ Delivers unique beneficial attributes of soft focus, wrinkle filing, mattifying effect, and even skin appearance
- ❖ Absorbs sebum oil and entraps actives for slow release
- ❖ Very low irritation and extremely safe for skin

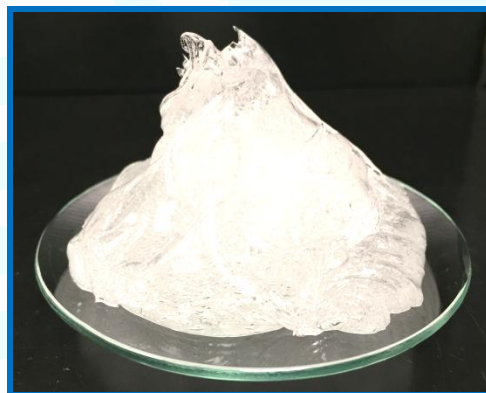
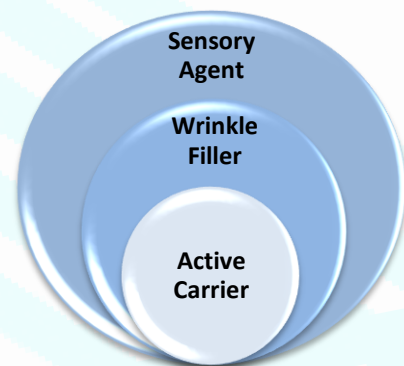
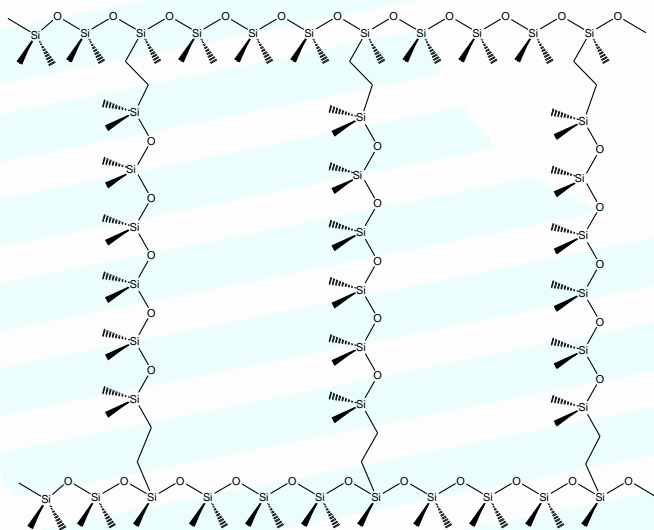
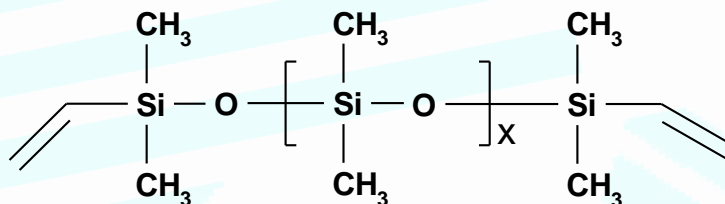
Categories of Silicone Elastomer



Synthesis of Polysilicone-11



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Silicone elastomer, INCI : **POLYSILICONE-11**, was first developed through crosslinking reaction of divinyl dimethicone and hydrogen dimethicone in late 1980's. Since then it has been widely used in cosmetic applications to enhance silky, luxurious feel, as a carrier to deliver active ingredients with less irritations, as invisible filler to provide instant wrinkle correction, as an absorber to offer oil control. The material is originated from sand through organic synthesis and extremely safe for skin and very friendly to environment as well.

Product line

Product	INCI	Physical Properties	Features/Benefits	Package
GI CD-10	Cyclopentasiloxane & Stearoxymethicone/Dimethicone Copolymer & Dimethicone	Translucent gel 500,000-800,000cPs	D5 gel most economical, robust, and reliable with high volatility for the delivery of excellent spreadability and unique experience of non-tacky, non-oily, silky powdery feel for cosmetic applications. Suggested use level: 5-20%	18kg 180kg
GI CD-965	Dimethicone & Stearoxymethicone/Dimethicone Copolymer & Dimethiconol	Translucent gel 400,000-800,000cPs	5cSt gel with high polymer content providing effectiveness at lower concentrations and enhance aesthetics, matte appearance with powdery after-feel.	18kg 180kg
GRANSIL RPS	Cyclopentasiloxane & Polysilicone-11	Translucent gel 700,000-1,000,000cPs	D5 gel delivers excellent spreadability and unique experience of non-tacky, non-oily, silky powdery feel for cosmetic applications. Suggested use level: 5-20%	18kg 190kg
GRANSIL DMCM-5	Dimethicone & Cyclopentasiloxane & Polysilicone-11	Translucent gel 500,000-900,000cPs	Blend of 5cSt and D5, optimum balanced volatile/non-volatile of exceptional high performance offering silky, cushioning, powdery after-feel and sebum absorption for use in applications of oil control, imperfection mask and instant wrinkle correction.	18kg 180kg
GRANSIL DMID	Dimethicone & Isododecane & Polysilicone-11	Translucent gel 420,000-700,000cPs	5cSt and C12 blend with unique non-oily, non-greasy, and fresh feel, improved compatibility with variety of fats, oils, and active ingredients. Delivers fast mattifying attribute, oil control, and water-resistance properties.	16kg 180kg
GRANSIL DMG-3	Dimethicone & Polysilicone-11	Translucent gel 400,000-750,000cPs	3cSt volatile gel with unique smooth touch feel, delivers excellent non-tacky, non-oily, smooth feel, offers sebum absorption and control.	16kg 180kg
GRANSIL DMDM-25	Dimethicone & Polysilicone-11	Translucent gel 400,000-800,000cPs	2cSt and 5cSt blend volatile gel with flash point of 87°C, delivers fast mattifying attribute, soft, fresh-feel.	18kg 180kg
GRANSIL RG-2X	Dimethicone & Polysilicone-11	Translucent gel 400,000-900,000cPs	2cSt gel delivers excellent spreadability and unique non-oily, non-tacky, silky fresh-feel.	18kg 180kg
GRANSIL RG-12	Isododecane & Polysilicone-11	Translucent gel 500,000-900,000cPs	C12 hydrocarbon gel super-fast volatilizing to soft elastomer powders, excellent solubility for organic UV agents and some actives, improved compatibility with vegetable and synthetic oils. Delivers fast mattifying attribute, oil control, and added drier after-feel.	15kg 150kg
GRANSIL GVL-HV	Coconut Alkanes & Polysilicone-11	Translucent gel 500,000-800,000cPs	Coconut alkane with high viscosity, ecocert approved, vegetable derived emollient with similar volatility profile as D5, delivers matte appearance with powdery after feel, low viscosity version also available.	15kg 150kg
GRANSILOHS-5	Cyclopentasiloxane & Polysilicone-11 & Ethylhexyl Hydroxystearate	Translucent gel 250,000-700,000cPs	Ethylhexyl Hydrostearate and gel blend delivers moisturizing ester oil that provides unique non-oily, silky, fresh feel. Reduces the oily appearance and tackiness, long wear silky after-feel. Diminishes wrinkles and protects skin moisture from evaporation with the lipid layer. Suggest level: 5-20%	16kg 180kg
GRANSILORB	Dimethicone & Cyclopentasiloxane & Polysilicone-11 & Isohexadecane & Ammonium Polyacryloyldimethyl Taurate & Polysorbate 20 & Polysorbate 80 & Tocopheryl Acetate	Off-white paste 500,000-900,000cPs	Self-emulsifying and thickening gel blend geared for high-performance O/W serum with ease of cold mixing 25-50% with the mixture of water and oils, delivering instant superb silky feel, oil control, wrinkle correction, fine pore reduction and lifted skin appearance. Other suggested use level: 5-10% for improved feel.	18kg 180kg

Cosmetic Applications



- ❖ Most application area is cream, lotion, and serum to create desired texture and outstanding silky feel at varying use level from 2-50%
- ❖ BB Cream and anhydrous primer are latest popular application area for the benefits of easy spread, even skin tone, and smooth feel at use level of 2-20%
- ❖ Mascara, face powder, lip color, and eyeliner are newly extended application area with unique characters



Formulation Tips

- ❖ Always disperse elastomer gel or powder in a good solvents such as cyclopentasiloxane, isododecane, squalane, dimethicone 2 cSt, dimethicone 5 cSt before combining with oil phase
- ❖ Avoid polar oils. If it is not avoidable, do not use more than 10% on the basis of elastomer gel
- ❖ Homogenize at moderate rate of less than 3500 rpm
- ❖ Add additional solvent when surface looks grainy or phase separation occurs
- ❖ Use compatible surfactant system listed below
- ❖ For W/Si system, add Bentone powder or wax to oil phase to improve stability
- ❖ For Si/W system, add cabomer or Seppic gel to water phase to improve stability
- ❖ Use self-emulsifiable elastomer such as Gransurf 2106 for better stability and performance

Compatible Surfactants

- ❖ Silicone surfactants for W/O: Gransurf 87, Gransurf 90, Gransurf 50C-HM
- ❖ Tween 20 and/or Tween 80
- ❖ Laureth-3/Laureth-4 with Laureth-12/Laureth-23
- ❖ Steareth-21 with Steareth-2
- ❖ Glyceryl Stearate & PEG-100 Stearate with Glyceryl Monostearate
- ❖ Cetareth-2 with Cetareth-20
- ❖ C12-13 Pareth-3 with C12-13 Pareth-23
- ❖ Sucrose esters of fatty acids
- ❖ Sucrose ethers of fatty alcohols

Disadvantage

- ❖ Poor compatibility with polar oils, vegetable oils, sunscreen chemicals
- ❖ Disperse and stabilization of elastomer into a formula is challenging

Benchmark Product System



Estee Lauder Idealist

Polysorbate-20, Seppic gel (Si/W)

La Prairie Caviar Cream

Arlacel 165, Steareth-2, Cetearyl alcohol (Si/W)



Dior Dreamskin



Silicone surfactant, Gransurf 50C-HM, Gransurf 90 (W/Si)

Clinique All about Eyes Cream

Silicone surfactant, Gransurf 87 (W/Si)



Estee Lauder Perfectionist

Polysorbate 20, Gransurf 87, Seppic gel (Si/W)



SKIN LUXE CREAM (D5 FREE)

Phase	Ingredient	INCI	%
A	DEIONIZED WATER	Water	20.000
	VANZAN NF	Xanthan Gum	0.150
B	DEIONIZED WATER	Water	26.950
	GLYCERINE	Glycerin	3.000
	PROPYLENE GLYCOL	Propylene Glycol	4.000
	GRANTHIXAPP	Isohexadecane & Ammonium Polyacryloyldimethyl Taurate & Polysorbata 80	1.500
	DISODIUM EDTA	Disodium EDTA	0.050
	SODIUM HYALURONATE 1% AQ SOLUTION	Water & Sodium Hyaluronate	0.500
	BT ALOE VERA	Water & Aloe Barbadensis	0.750
	BT SPINACH	Water & Spinacia Oleracea Leaf Extract	0.500
	BT GINSENG	Water & Panax Ginseng Root Extract	0.250
	UANTOX BHT	BHT	0.020
C	PROTACHEM GMS-165	Glyceryl Stearate & PEG 100 Stearate	2.500
	PROTACHEM OP	Octyl Palmitate	4.000
	GRANSIL DM-100	Trifluoromethyl C1-4 Alkyl Dimethicone	3.000
	JEECOL SA-2	Steareth-2	0.500
	VITAMIN E ACETATE	Tocopheryl Acetate	0.200
	DIMETHICONE, 5CST	Dimethicone	3.000
	PROTACHEM CS-50	Cetearyl Alcohol	2.500
	EUXYL PE 9010	Phenoxyethanol & Ethylhexylglycerin	1.000
	ALCOLEC BS	Lecithin	0.050
	D	GRANSIL DMDM-25	Dimethicone & Polysilicone-11
FLAMENCO SATIN RED		Mica & Titanium Dioxide (CI 77891)	0.500
TIMIRON GOLD PLUS MP-25		Mica & CI 77491 & CI 77891	0.080
	Total:		100.000

Procedure :

- Combine Phase A into main kettle and mix at 70°C until all solids are dissolved
- Combine Phase B in support kettle 1 and mix until uniform. Add to main kettle while mixing.
- Combine Phase C in a support kettle 2 and heat to 70°C until all solids are dissolved. Add to main kettle while mixing.
- Add Phase D sequentially to main kettle and homogenize at 1500-2000 rpm until uniform.

G103-263.01

DREAM FACIAL SERUM

Phase	Ingredient	INCI	%
A	GRANSIL RG-2X	Dimethicone & Polysilicone-11	25.000
	DIMETHICONE, 2CST	Dimethicone	5.000
	CYCLOPENTASILOXANE	Cyclopentasiloxane	7.000
	BENTONE 38V	Disteardimonium Hectorite	0.200
	GRANSIL PSQ	Polymethylsilsequioxane	3.000
	GRANSIL PSQ-DIAMOND 10	Polymethylsilsequioxane & Diamond Powder	0.100
	GRANSURF 90	Cetyl PEG/PPG-10/1 Dimethicone	2.000
	GRANSURF 50C-HM	Dimethicone & PEG/PPG-18/18 Dimethicone	2.000
B	VITAMIN E ACETATE	Tocopheryl Acetate	0.100
	PROTACHEM CTG	Caprylic/Capric Triglyceride	2.000
	TINOGARD TT	Pentaerythrityl Tetra-Di-T-Butyl Hydroxyhydrocinamate	0.100
C	DEIONIZED WATER	Water	35.300
	RICE BRAN BT*	Water & Oryza Sativa (Rice) Bran Extract & Phenoxyethanol & Sodium Benzoate	2.000
	MANUKA HONEY BT*	Water & Honey Extract & Phenoxyethanol & Sodium Benzoate	2.000
	ALCOHOL DENATURED	Alcohol Denat.	4.000
	GLYCERINE	Glycerin	3.000
	BUTYLENE GLYCOL	Butylene Glycol	2.000
	MAGNESIUM SULFATE	Magnesium Sulfate	1.000
	SODIUM CHLORIDE	Sodium Chloride	0.100
	DISODIUM EDTA	Disodium EDTA	0.100
D	PHENOXYETHANOL	Phenoxyethanol	1.000
	TIO2 40% IN CASTOR OIL	Ricinus Communis Seed Oil & Titanium Dioxide (CI 77891)	2.935
E	YELLOW IRON OXIDE, 25% PTIS SOL.	Pentaerythrityl Tetraisoostearate & Iron Oxide (CI 77492)	0.030
	RED IRON OXIDE, 25% PTIS SOL.	Pentaerythrityl Tetraisoostearate & Iron Oxide (CI 77491)	0.030
	BLACK IRON OXIDE, 25% PTIS SOL.	Pentaerythrityl Tetraisoostearate & Iron Oxide (CI 77499)	0.005
	Total:		100.000

Procedure :

- Combine Phase A in the main kettle and homogenize until uniform.
- Combine Phase B and heat to 45°C. Mix until uniform.
- Add Phase B into the main kettle while homogenizing.
- Combine Phase C in the support kettle and mix until uniform.
- Add Phase C into the main kettle while homogenizing. Continue to mix for 10-15 minutes.
- Add Phase D into the main kettle while homogenizing. Mix until uniform.
- Add Phase E into the main kettle while homogenizing. Mix until uniform.
* BC Research Company (www.BCResearchCO.com)

G103-397.02

"SELFIE-READY" PRIMER

Phase	Ingredient	INCI	%
A	GRANSIL PC-12	Isododecane & Polysilicone-11	40.000
	GI CD-965	Dimethicone & Stearoxymethicone/Dimethicone Copolymer & Dimethiconol	35.000
	CREASIL ID	Isododecane	12.800
	GRANRESIN MQI-2450	Isododecane & C24-28 Alkyldimethylsiloxy Trimethylsiloxy silicate	5.000
	GRANPOWDER USQ	Polymethylsilsequioxane & HDI/Trimethylol Hexylactone Crosspolymer	5.000
	CETIOL LC	Coco-Caprylate/Caprate	2.000
	AEROSIL 200	Silica	0.200
	Total:		100.000

Procedure :

- Weigh Phase A in the main kettle equipped with side sweep agitation. Mix well until all is uniform.

G1574-2240.01

SKIN REFINISHER

Phase	Ingredient	INCI	%
A	GRANSILORB	Dimethicone & Cyclopentasiloxane & Polysilicone-11 & Isohexadecane & Ammonium Polyacryloyldimethyl Taurate & Polysorbata 20 & Polysorbata 80 & Tocopheryl Acetate	27.750
	GRANSIL 530	Dimethicone	0.800
	VITAMIN E ACETATE	Tocopheryl Acetate	0.250
	JEECHEM ISP	Isopropyl Palmitate	1.500
	EUXYL PE 9010	Phenoxyethanol & Ethylhexylglycerin	1.000
B	DEIONIZED WATER	Water	64.000
	BUTYLENE GLYCOL	Butylene Glycol	1.000
	GLYCERINE	Glycerin	1.000
	GRANTHIXAPP	Isohexadecane & Ammonium Polyacryloyldimethyl Taurate & Polysorbata 80	0.600
	SODIUM HYALURONATE 1% AQ SOLUTION	Water & Sodium Hyaluronate	1.900
C	FLAMENCO SATIN RED	Mica & Titanium Dioxide (CI 77891)	0.200
	Total:		100.000

Procedure :

- Add Phase A into main kettle and mix until uniform.
- Pre-mix Phase B in separate kettle.
- Add Phase B into the main kettle while mixing.
- Add Phase C into the main kettle while mixing. Homogenize until uniform.

G103-128.01

PERFORMANCE FOUNDATION

Phase	Ingredient	INCI	%
A	DEIONIZED WATER	Water	12.100
	POMEGRANATE BT*	Water & Punica Granatum Extract & Phenoxyethanol & Sodium Benzoate	2.000
	WHITE TEA BT*	Water & Camellia Sinensis Extract & Phenoxyethanol & Sodium Benzoate	1.000
	BUTYLENE GLYCOL	Butylene Glycol	7.000
	JEECIDE CAP-5	Phenoxyethanol & Caprylyl Glycol & Potassium Sorbate & Water & Hexylene Glycol	0.500
B	VEEGUM HV	Magnesium Aluminum Silicate	0.500
	AMPHISOL K	Potassium Cetyl Phosphate	0.500
C	DEIONIZED WATER	Water	2.000
	SODIUM CHLORIDE	Sodium Chloride	0.400
D	CETIOL LC	Coco-Caprylate/Caprate	5.000
	ISODODECANE	Isododecane	17.000
	GRANSURF 50C-HM	Dimethicone & PEG/PPG-18/18 Dimethicone	3.000
	GRANSURF 90	Cetyl PEG/PPG-10/1 Dimethicone	3.000
	DISTINCTIVE LECIWAX H	Hydrogenated Lecithin & C12-16 Alcohols & Palmitic Acid	1.000
	DISTINCTIVE GEL ID	Isododecane & Quaternium-90 Bentonite & Propylene Carbonate	5.000
		Titanium Dioxide (CI 77891)	5.000
E	RON TI-12	Titanium Dioxide (CI 77891)	5.000
	BYO 11S2	Iron Oxide (CI 77492) & Triethoxycaprylylsilane	1.000
	BRO 11S2	Iron Oxide (CI 77491) & Triethoxycaprylylsilane	0.300
	BBO 11S2	Iron Oxide (CI 77499) & Triethoxycaprylylsilane	0.100
	SILVER 2800	Mica	3.600
GRANSIL PSQ	Polymethylsilsesquioxane	5.000	
F	GRANSIL GVL	Coconut Alkanes & Polysilicone-11	25.000
		Total:	100.000

Procedure :

1. Weigh Phase A in a side kettle and mix until homogenous.
2. Weigh Phase B and sprinkle into Phase A. Mix until dispersed and heat to 75-80°C.
3. Weigh Phase C in a side kettle and mix until homogenous. Add Phase C to Phase AB and mix until homogenous while maintaining temperature at 75-80°C.
4. In the main kettle equipped with a homogenizer and side sweep, weigh Phase D. Heat to 75-80°C and mix until homogenous.
5. Micro-pulverize Phase E and add to Phase D. Mix until homogenous.
6. Add Phase ABC to Phase DE under homogenization and maintain temperature at 80°C. Mix for 20 minutes.
7. Cool batch to 50°C and add phase G. Mix for 20 minutes.
8. Cool batch to room temperature using side sweep agitation.

* BC Research Company (www.BCResearchCo.com)

G101-929.08

LONG LASTING COMFORT EYELINER

Phase	Ingredient	INCI	%
A	CYCLOPENTASILOXANE	Cyclopentasiloxane	12.900
	CREASIL ID	Isododecane	12.000
	SUNCROMA BLACK IRON OXIDE	Iron Oxide	15.000
	UNIPURE BLACK LC902	Carbon Black	4.000
	GRANSURF 50C-HM	Dimethicone & PEG/PPG-18/18 Dimethicone	2.000
B	GRANSURF 87	PEG-10 Dimethicone	2.000
	GI CD-10	Cyclopentasiloxane & Stearoxymethicone Copolymer & Dimethicone	10.000
	BEESWAX	Beeswax	3.000
	JEECHEM 3H	Polyethylene	6.000
	GRANSIL PM-56	Phenyl Trimethicone	3.000
	GRANRESIN PMSQ-ID	Polymethylsilsesquioxane & Isododecane	20.000
	SERICITE DNN	Mica	6.000
	BENTONE 38V	Disteardimonium Hectorite	1.000
	BARIUM SULFATE	Barium Sulfate	2.000
	BHT	BHT	0.100
BRONIDOX 1160	Phenoxyethanol	1.000	
	Total:	100.000	

Procedure :

1. Combine Phase A and ball mill until uniform.
2. Combine Phase B in the main kettle and heat to 65-70°C. Mix until uniform.
3. Add Phase A into the main kettle and mix until uniform.
4. Heat pour to 50-55°C.

G101-929.08

BB CREAM

Phase	Ingredient	INCI	%
A	GI CD-10	Cyclopentasiloxane & Stearoxymethicone/Dimethicone Copolymer & Dimethicone	5.000
	CYCLOPENTASILOXANE	Cyclopentasiloxane	23.000
	GRANSURF 87	PEG-10 Dimethicone	4.000
	GRANSIL 314	Cyclopentasiloxane & Dimethicone	2.000
	DIMETHICONE, 5CST	Dimethicone	2.000
	EUXYL PE 9010	Phenoxyethanol & Ethylhexylglycerin	1.000
	B	SUNCROMA YELLOW IRON OXIDE	Iron Oxide
SUNCROMA RED IRON OXIDE		Iron Oxide	0.150
SUNCROMA BLACK IRON OXIDE		Iron Oxide	0.030
RBDT-MS3		Titanium Dioxide (CI 77891) & Methicone	2.420
SERICITE DNN		Mica	2.420
CYCLOPENTASILOXANE	Cyclopentasiloxane	3.360	
GRANSURF 87	PEG-10 Dimethicone	0.320	
C	DEIONIZED WATER	Water	44.820
	GLYCERINE	Glycerin	5.000
	BUTYLENE GLYCOL	Butylene Glycol	2.000
D	SODIUM CHLORIDE	Sodium Chloride	1.000
	BENTONE 38V	Disteardimonium Hectorite	1.000
	Total:	100.00	

Procedure :

1. Combine Phase A in the main kettle and homogenize at 1000-1500 rpm until uniform.
2. Combine Phase B and run ball mill until the drawdown passes 10 micron on Hegman Gauge.
3. Combine Phase C in the support kettle and mix until uniform.
4. Add Phase B into the main kettle while homogenizing and continue mixing for at least 20 minutes.
5. Add Phase C very slowly to the main kettle while homogenizing.
6. Sprinkle Phase D while homogenizing and continue to mix until uniform. At the end, increase the speed to 1500-2500 to finish the batch.

G103-111.04

ELASTOMER LIPSTICK

Phase	Ingredient	INCI	%
A	PROTACHEM CTG	Caprylic/Capric Triglyceride	6.300
	MYRITOL 331	Cocoglycerides	16.500
	MICROCRYSTALLINE WAX 190/195	Microcrystalline Wax	2.000
	OZOKERITE 170	Ozokerite	4.500
	PERFORMALENE 400	Polyethylene	6.500
	POLYETHYLENE	Polyethylene	6.500
	EUTANOL G	Octyldodecanol	10.000
	INDOPOL H-100	Polybutene	11.000
	DERMOL DISM	Diisostearyl Malate	7.800
	GRANSIL DMG-3	Dimethicone & Polysilicone-11	9.000
	GI CD-965	Dimethicone & Stearoxymethicone/Dimethicone Copolymer & Dimethicone	9.000
	GRANSIL PSQ	Polymethylsilsesquioxane	2.000
	RED NO. 7, 25% IN CASTOR OIL	Ricinus Communis Oil & Red 7	2.500
RED NO. 6, 25% IN CASTOR OIL	Ricinus Communis Oil & Red 6	1.000	
BLUE NO. 1, 25% IN CASTOR OIL	Ricinus Communis Oil & Blue 1	0.150	
CLOISSONNE VIVID RED 450	Mica & Iron Oxide & Titanium Dioxide & Silica	2.200	
DHCB	DHCB	0.050	
GEMTONE AMBER	Mica & Titanium Dioxide & CI 77491	1.500	
TINOGARD TL	Benzotriazolyl Dodecyl p-Cresol	0.050	
B	ULTRA FILLING SPHERES	Ethylhexyl Palmitate & Trihydroxystearin & Sodium Hyaluronate & Amorphophallus Konjac Root Extract	3.000
	ADVANCED MOISTURE COMPLEX	Glycerin & Water & Sodium PCA & Urea & Trehalose & Hexylene Glycol & Polyquaternium-51 & Triacetin & Capryl Glycol & Sodium Hyaluronate	5.000
	Total:	100.000	

Procedure :

1. Combine Phase A in the main kettle and heat to 90-95°C with mixing until homogeneous.
2. Add Phase B sequentially while mixing at 90-95°C.
3. Pour samples at 90°C.

G3430-438.11