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TECHNICAL DATA SHEET

Silsurf® I108

O/W Emulsifier and Dispersant

DESCRIPTION

Silsurf I108 is a dimethicone copolyol which acts as a strong O/W emulsifier and dispersant. **Silsurf I108** is described by INCI Name PEG-8 Dimethicone.

TYPICAL PROPERTIES

Appearance	Clear Liquid
Color, Gardner	1
Viscosity, cPs	600
1% Cloud Point, °C	93
Hydroxyl Value	115
Active Content, %	100
Water solubility, 1%/5%	Soluble/Soluble

USES AND APPLICATION

Silsurf I108 is especially formulated to stabilize oil in water emulsions when used as the sole emulsifier while providing excellent tactile properties to the emulsions. **Silsurf I108** is water soluble and easy to use, it can be cold processing to make O/W emulsion.

Silsurf I108 provides excellent dispersibility of powders and pigments.

PROTOTYPE FORMULATIONS

O/W Skin Care Lotion

Part A	Wt%	Properties	
D.I. Water	54.85	Viscosity (cps)*	600
Pemulen TR2	0.05	pH	6.95
TEA	0.10	Appearance	White Cream
Part B		Stability @RT/45°C	Good/Good
Silsurf I108	5.00	Feel (1-10 best)	9.3
Jjoba Oil	40	Compatibility	Good

Procedure: Disperse Pemulen TR2 in water until uniform and heat up to 75~80 °C. Combine Part B and mix well, heat up to 75~80 °C. Add Part B into Part A while agitating quickly to obtain a homogeneous mixture; continue to mix for 5 minutes. Cool batch down to room temperature. Mix at 2000 rpm for 5 minutes.

The unthickened emulsion has a nice feel and can be used as is for a sunscreen base or similar thin emulsion applications. It provides a nice, soft moist feel to the skin.

O/W Face Care Cream

Part A	Wt%	Properties	
D.I. Water	66.15	Viscosity (cps)	18,000
Pemulen TR2	0.30	pH	6.50
DL-Panthenol	0.10	Appearance	White Cream
Glycerin	5.00	Stability @RT/45°C	Good/Good
Tea	0.30	Feel (1-10 best)	9.3
Part B		Compatibility	Good
Silsurf I108	5.00		
Silwax D02	2.00		
Silmer Q25	2.00		
Cetyl Alcohol	1.50		

Behenyl Alcohol	1.00
Argan Oil	2.00
Moringa Oil	2.00
Coco Butter	2.00
Shea Butter	2.00
Mango Butter	1.55
Squalane	1.00
Phenonip	0.60
Part C	
Aloe Vera Extract	5.00
Wheat Protein	0.50
Preservative, Fragrance	q.s.

Procedure: Disperse Pemulen TR2 in water until uniform, add the remaining ingredients of Part A, then heat up to 80 °C. Combine Part B and mix well, heat up to 80 °C. Add Part B into Part A while agitating quickly to obtain a homogeneous mixture; continue to mix for 5 minutes. Cool batch down to room temperature. Shear batch with homogenizer at 20,000 rpm for 1 minute. Add Part C one by one.

The cream base has a nice feel and can be used in many skin care products. It provides a nice, soft moist feel to the skin.

O/W Sun Care Cream

Part A	Wt%	Properties	
D.I. Water	46.55	Viscosity (cps)	10,000
Pemulen TR-2	0.25	pH	7.10
Na ₂ EDTA	0.100	Appearance	White Cream
Part B		Stability @RT/45°C	Good/good
Silsurf I108	5.00	Feel (1-10 best)	9.3
Neo Heliopan OS	5.00	Compatibility	Good
Neo Heliopan 303	10.00		
Neo Heliopan HMS	15.00		
Neo Heliopan 357	3.00		
Neo Heliopan BB	6.00		
Neo Heliopan AV	7.50		
Part C			
Sodium Hydroxide 10% aq	0.60		
SymOcide	1.00		

Procedure: Disperse Pemulen TR-2 in water until uniform and add Na₂EDTA and heat up to 75~80 °C. Combine Part B and mix well, heat to 75~80 °C. Add Part B into Part A while agitating quickly to obtain a homogeneous mixture; continue to mix for 5 minutes. Cool batch down to room temperature. Add Part C one by one.

This is a high SPF sun care cream which has a very soft moist feel.

O/W BB Cream (Make-up/Sunscreen)

Part A	Wt%	Properties	
D.I. Water	55.10	Viscosity (cps)	12,000
Ultrez 30	0.20	pH	7.05
Propanediol	5.00	Appearance	Ivory Makeup
Unipure White LC981 SGP	8.04	Stability @RT/45°C	Good/good
Unipure Yellow LC182 SGP	1.71	Feel (1-10 best)	9.30
Unipure Red LC381 SGP	0.60	Compatibility	Good
Unipure Black LC989 SGP	0.15		
Silsurf I108	5.00		
Part B			
Pelemol 899	3.00		
Isohexadecane	2.00		
D ₅	5.00		
Isopropyl Myristate	2.30		
Escalol 557	7.50		
Cetyl Alcohol	1.80		
Part C			
TEA	0.10		
Nylone-12	2.50		

Procedure: For Part A, disperse Carbomer in water until fully hydrated, add propanediol and pigments, Blend well then add **Silsurf I108** emulsifier, mix well, then heat up to 75~80 °C. Combine Part B and mix well, heat up to 75~80 °C. Add Part B into Part A while agitating quickly to obtain a homogeneous mixture; continue to mix for 5 minutes. Cool batch down to room temperature. Add Part C ingredients one by one with mixing.

This BB Cream provides a very soft, moist feel.

Hair Conditioner

Part A	Wt%	Properties	
D.I. Water	76.90	Viscosity (cps)	8,500
Hydroxyl Ethyl Cellulose	0.80	pH	4.50
Mackernium 261	0.30	Appearance	White Cream
Glycerin	3.00	Stability @RT/45 °C	Good/good
Na ₂ EDTA	0.10	Feel (1-10 best)	9.30
Part B		Compatibility	Good

Silsurf I108	3.00
Silwax D02	0.50
Moringa Oil	3.00
Meadowfoam Seed Oil	2.00
Raspberry Seed Oil	1.80
Cetyl Alcohol	1.00
Stearyl Alcohol	1.20
EGDS	1.00
Part C	
Aloe Vera Extract	5.00
Wheat Protein	0.40
Citric Acid (aq)	q.s.
Preservative, Fragrance	q.s.

Procedure: For Part A, disperse HEC then add Mackernium 261 and the remaining Part A ingredients one by one with mixing. Mix well until fully hydrated and dispersed. Heat up to 80 °C. Combine the ingredients of Part B, and heat up to 75 ~ 80 °C with mixing. Add Part B into Part A slowly with stirring. Keep the temperature at ~ 80 °C for 5 minutes and cool down to room temperature. Add the ingredients of Part C one by one and mix until uniform. Add fragrance as desired and adjust pH to 4.5 ~ 5.5 by using q.s. citric acid.

This hair conditioner minimizes flyaway and provides wet and dry combing improvements.

Body Wash

Part A	Wt%	Properties	
D.I. Water	44.4	Viscosity (cps)	7,000
Guar Hydroxypropyltrimonium Chloride	0.50	pH	6.45
Na ₂ EDTA	0.10	Appearance	White Cream
Sodium Laureth-2 Sulfate	16.00	Stability @RT/45 °C	Good/good
Cocamidopropyl Betaine	16.00	Feel (1-10 best)	9.30
Genapol TSM	5.00	Compatibility	Good
Disodium Cocoamphodiacetate	1.00	Foam Evaluation	
Coco Glucoside	2.00	Two Minutes (Average, mL)	Five Minutes (Average, mL)
Silsurf I108	1.00	705	695
Jobba Oil	0.10		
Wheat Protein	0.50		
Nipaguard DMDMH	0.30		
Part B			
D.I. Water	11.00		
Carbopol Aqua SF-1 Polymer	1.00		
TEA	0.10		
Part C			
Citric Acid (40% aq)	q.s.		
Sodium Chloride	1.00		
Crothix Liquid	q.s.		
Fragrance	q.s.		

Procedure: Disperse guar in water until it is dispersed. Add the rest of Part A ingredients one by one under mixing. Mix SF-1 and water in Part B, then add TEA and mix until clear. Add Part B into Part A and mix slowly to minimize the air incorporation. Adjust pH with Citric acid to 4.5 to 5.5; then adjust viscosity to 6,000 to 9,000 cps using NaCl and Crothix. Add fragrance as desired.

The body wash provides a very soft, lubricious, moist skin feel.

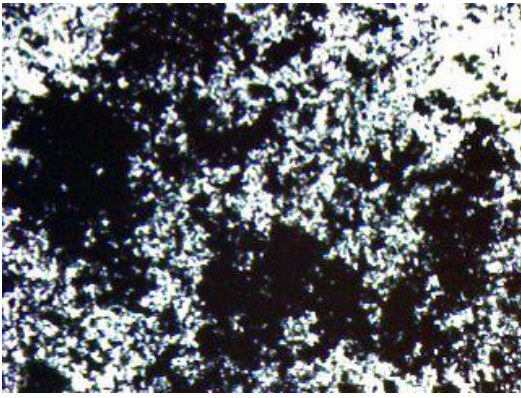
APPLICATION DATA: Pigment Dispersion

Dispersions of 8% TiO₂ and 8% FD&C Red 28 AL Lake were made directly into Silsurf I108. The dispersions were uniform and stable. This was tried with several other organosilicone products without success.

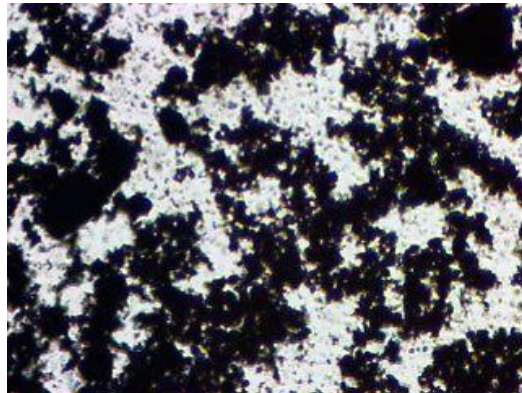
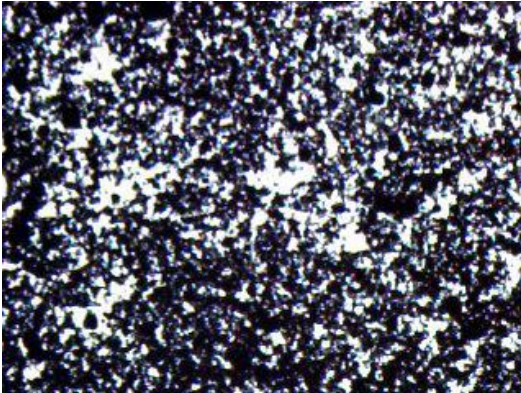
8% Carbon Black was dispersed in Silsurf I108 and the mixture was then dispersed in water in a ratio of 1:2 and examined under an optical microscope.

Carbon black alone shows clumps, while the dispersion in Silsurf I108 and the aqueous dispersion are much more evenly dispersed.

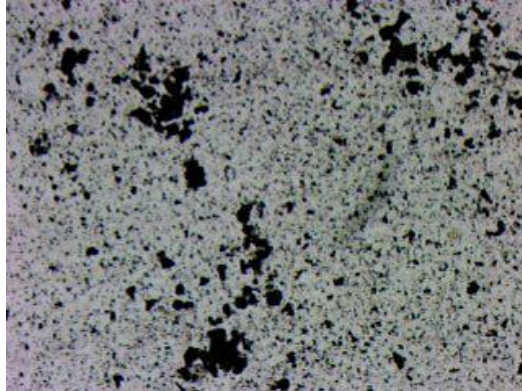
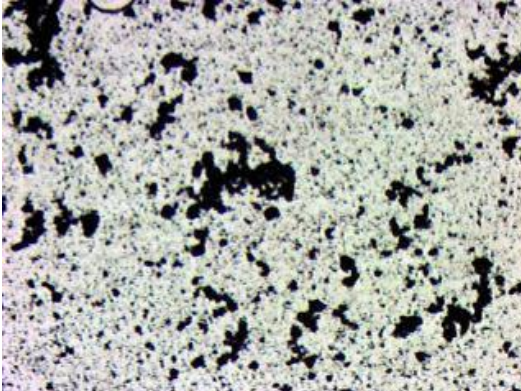




Pure Carbon black 4X magnification



Carbon black in Silsurf I108 4X 8% Carbon black in Silsurf I108 40X



8% Carbon Black and Silsurf I108 1:2 in Water 4X and 40x.

SAFETY

Before handling, read the Material Safety Data Sheet and container label for safe use, physical and health hazard information.

THIS MATERIAL IS NOT FOR MEDICAL OR DRUG USE.

STORAGE AND SHELF LIFE

When stored in the original, unopened containers between 10 and 40°C, **Silsurf I108** has a shelf life of 36 months from date of manufacture.

PACKAGING

Silsurf I108 is available in 20kg and 200kg containers.

LEGAL DISCLAIMER

Siltech Corporation believes that the information in this technical data sheet is an accurate description of the typical uses of the product. Siltech Corporation, however, disclaims any liability for incidental or consequential damages, which may result from the use of the product that are beyond its control. Therefore, it is the user's responsibility to thoroughly test the product in their particular application to determine its performance, efficacy and safety. Nothing contained herein is to be considered as permission or a recommendation to infringe any patent or any other intellectual property right.

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