



Personal Care Solutions

Formulating Guidelines for EcoSmooth™ Delight

Affordable Luxury: exceptional feel and indulgence for skin care



Formulating Guidelines for EcoSmooth™ Delight Sensorial Enhancer

Use Levels: The suggested usage range is 1% to 10% AS IS.

Applications: Skin moisturizers, Anti-aging, BB, CC & DD creams, Shaving creams, Moisturizing oils, Sunscreens, Color Cosmetics, Antiperspirants & Deodorants, etc.

Processing Recommendations: EcoSmooth™ Delight can be incorporated into a variety of formulations, including O/W, W/O and anhydrous systems. There are several methods to incorporate EcoSmooth™ Delight.

A. Hot Processing: EcoSmooth™ Delight can be added directly into the oil phase with other oil phase ingredients, heating up to 80–85°C with agitation to ensure EcoSmooth™ Delight is fully melted, then adding the oil phase to the water phase with sufficient mixing (homogenization recommended).

B. Lower Temperature Processing: EcoSmooth™ Delight can be added post emulsification by adding directly to the emulsion ~ 65°C; ensure there is sufficient agitation during addition of EcoSmooth™ Delight and through cooling until batch reaches room temperature.

Formulations Tips:

- EcoSmooth™ Delight can be used alone as a sensory modifier, or combined with other sensory modifiers such as commodity silicone oils, silicone elastomers, light emollients (Isododecane, Lexfeel D4/D5, etc.).
- 1:1 ratio of EcoSmooth™ Delight and another sensory modifier such as dimethicone or isododecane has been shown to provide premium sensory benefits.
- It is important to employ sufficient agitation from the point when EcoSmooth™ Delight is added to your formulation through cooling to room temperature.
- EcoSmooth™ Delight is based on hydrocarbon chemistry. Ester or hydrocarbon emollients can be added together with EcoSmooth™ Delight to dilute EcoSmooth™ Delight, reducing the viscosity and potentially lowering the EcoSmooth™ Delight melting point.
- EcoSmooth™ Delight is a non-ionic material, so it is not pH sensitive and can be used in a wide pH range of formulas.
- EcoSmooth™ Delight offers richness to the formula.
- If there is a small amount of oil separation in EcoSmooth™ Delight, gently mix EcoSmooth™ Delight prior to use to ensure uniformity.
- EcoSmooth™ Delight is an odorless material, so it won't impact the final formulation's odor.



Starting Point Formulations for EcoSmooth™ Delight

Skin Lotion: EcoSmooth™ Delight / Dimethicone 5 cSt

Ingredient	Ingredient	INCI/CTFA Name	% Weight	Supplier
A	Deionized water	Water	q.s to 100	–
A	Keltrol CG-SFT	Xanthan Gum	0.70	CP Kelco
A	Optim Glycerine	Glycerin	2.00	Dow Chemical
B	Procol CS-20D	Cetearyl Alcohol (and) Cetareth 20	3.00	Protameen
B	Rita GMS	Glyceryl Stearate	2.00	Rita Corporation
B	Super White Propopet Petrolatum	Petrolatum	5.00	Sonneborn
B	EcoSmooth™ Delight	C14-22 Alkane (and) Ethylene/Octene Copolymer	2.00	Dow Chemical
B	Dimethicone, 5 cSt	Dimethicone	2.00	–
C	Citric Acid	Citric Acid	q.s. to pH	–
D	Preservative	Preservative	q.s.	–

Processing Instructions:

1. Disperse Xanthan Gum into water while mixing until all dissolves; add glycerin to Phase A under stirring and heat to 85°C.
2. Combine and heat the ingredients of Phase B to 85°C with agitation and ensure all ingredients are completely melted.
3. Add Phase B to Phase A with high shear (homogenization recommended) and maintain speed and temperature for 5 minutes.
4. Cool 55–60°C, add Phase C to the batch, adjust pH to 6.0-7.0.
5. Cool to 40°C and add preservative (Phase D).
6. Continue stirring until formulation is at room temperature.

Delight U Skin Lotion: Featuring EcoSmooth™ Delight + Dimethicone 5 cSt

Phase	Ingredient	INCI/CTFA Name	% Wt.	Supplier
A	Deionized water	Water	q.s to 100	–
A	Carbopol Ultrez 10	Carbomer	0.05	Lubrizol
A	1,3-Butanediol	Butylene Glycol	2.00	Spectrum
A	UCON™ 75-H-450	PEG/PPG-17/6 Copolymer	0.50	Dow Chemical
B	Procol CS-20D	Cetearyl Alcohol (and) Cetareth 20	3.00	Protameen
B	Rita GMS	Glyceryl Stearate	1.50	Rita Corporation
B	Super White Propopet Petrolatum	Petrolatum	3.00	Sonneborn
B	Isopropyl Myristate	Isopropyl Myristate	2.00	–
B	Caprylic/Capric Triglyceride	Caprylic/Capric Triglyceride	2.00	–
B	Dimethicone, 5 cSt	Dimethicone	2.00	–
C	EcoSmooth™ Delight	C14-22 Alkane (and) Ethylene/Octene Copolymer	2.00	Dow Chemical
D	TRIS AMINO™ Ultra PC	Tromethamine	q.s. to pH	Dow Chemical
E	Optiphen	Phenoxyethanol (and) Caprylyl Glycol	1.00	Ashland

Processing Instructions:

1. Combine all ingredients of Phase A individually under stirring and heat to 70°C.
2. In a separate vessel combine the Phase B ingredients and begin agitation and heating to 65–70°C. Mix and heat until temperature reaches 65–70°C and all ingredients are fully melted.
3. Add Phase B to Phase A and mix for 5 minutes at temperature. Discontinue heating and continue sufficient mixing while batch is cooling.
4. (Phase C): Add EcoSmooth™ Delight directly to Phase A/B at 65°C batch temperature with sufficient mixing.
5. At 60–65°C, begin adding Phase D to reach a pH of 5.0–5.5.
6. Once batch temperature reaches 45°C or below, add Phase E and mix to ensure batch is uniform. Continue mixing until batch reaches room temperature.

Skin Lotion: Featuring EcoSmooth™ Delight + Dimethicone 300 cSt

Phase	Ingredient	INCI/CTFA Name	% Wt.	Supplier
A	Deionized water	Water	64.15	–
A	Aminocoat	Betaine	2.00	Asahi Kasei Chemicals
A	Glycerin	Glycerin	2.00	–
A	1,3-Butanediol	Butylene Glycol	5.00	–
A	Xanthan gum	Xanthan Gum	0.15	–
A	Arlacel 2121	Sorbitan Stearate (and) Sucrose Cocoate	3.00	Croda
A	NEOLONE™ PH100	Phenoxyethanol	0.30	Dow Chemical
B	Nikkol Purified Olive Squalane	Squalane	5.00	Nikko Chemical
B	EOD	Octyldodecyl Erucate	4.00	Shin-Ei Chemical
B	O.D.O.	Caprylic/Capric Triglyceride	6.00	Nisshin Oillio
B	Kalcol 6098	Cetyl Alcohol	3.00	Kao
B	EcoSmooth™ Delight	C14-22 Alkane (and) Ethylene/Octene Copolymer	2.00	Dow Chemical
B	Dimethicone 300 cSt	Dimethicone	3.00	–
C	BHT	Butylate hydroxytoluene	0.10	–
C	NEOLONE™ PH100	Phenoxyethanol	0.30	Dow Chemical

Processing Instructions:

1. Disperse Xanthan Gum in water while mixing until all dissolves. Then combine all ingredients in Phase A and heat to 80°C.
2. In a separate vessel, combine all ingredients in Phase B and heat to 80–85°C under sufficient mixing to ensure complete melting of EcoSmooth™ Delight.
3. Add Phase B into Phase A gradually at 80°C with homogenization (5,000 ~ 7,000 rpm) until it is uniform.
4. Change to sweep mixing and cool down to <45°C.
5. Add Phase C into batch, mix well.

Silicone-free Facial Moisturizer: Featuring EcoSmooth™ Delight + Isododecane

Phase	Ingredient	INCI/CTFA Name	% Wt.	Supplier
A	Deionized water	Water	69.30	–
A	VERSENE™ NA2 crystals	Disodium EDTA	0.05	Dow Chemical
A	ACULYN™ 28	Acrylates/Beheneth-25 Methacrylate Copolymer	1.30	Dow Chemical
B	Arlacel 165	Glyceryl Stearate (and) PEG-100 Stearate	4.50	Croda
B	Tego Alkanol 16	Cetyl Alcohol	1.50	Evonik
B	Crodamol AB	C12-15 Alkyl Benzoate	10.00	Croda
B	Florasun® 90	Helianthus Annuus (Sunflower) Seed Oil	6.00	Floratech
B	EcoSmooth™ Delight	C14-22 Alkane (and) Ethylene/Octene Copolymer	2.00	Dow Chemical
C	Permethyl 99A	Isododecane	2.00	Presperse
D	TRIS AMINO™ Ultra PC (Solution 20%)	Tromethamine	q.s. to pH	Dow Chemical
E	NEOLONE™ PH100	Phenoxyethanol	0.83	Dow Chemical
E	Hydrolite 8	Caprylyl Glycol	0.68	Symrise
E	Cosmetik Milk G_112 98 60	Parfum/Fragrance	0.20	Robertet
E	Deionized Water	Water/Aqua	q.s. 100%	–

Processing Instructions:

1. Combine all the ingredients of Phase A and heat to 70°C.
2. Combine all ingredients of Phase B and heat to 85°C under efficient mixing to ensure melting of EcoSmooth™ Delight.
3. Decrease temperature of Phase B to 70°C, continuing mixing.
4. At 70°C, add Phase C to Phase B while mixing.
5. Add Phase B/C to Phase A and stir for 2 minutes at high speed.
6. Homogenize for 3 minutes at 10,000 – 11,000 rpm until bright and shiny.
7. Stir with gentle mixing and cool down to below 35°C.
8. Adjust pH to 6.0 – 6.5 with Phase D.
9. Add ingredients of Phase E, mix well.



Formulating Guidelines for EcoSmooth™ Delight

Silicone-free Facial Moisturizer: Featuring EcoSmooth™ Delight + Isododecane

Phase	Ingredient	INCI/CTFA Name	% Wt.	Supplier
A	Deionized water	Water/Aqua	39.00	–
A	PGSS-22 Yellow N°602P	Iron Oxide (and) Methoxy PEG- 10 Propyltrimethoxysilane	0.58	Daito Kasei
A	PGSS-22 Red N°211P	Iron Oxide (and) Methoxy PEG- 10 Propyltrimethoxysilane	0.24	Daito Kasei
A	PGSS-22 TiO2 R250	Titanium Dioxide(and) Methoxy PEG- 10	4.80	Daito Kasei
A	Talc Superior M10	Talc	0.50	Imerys Talc
A	VERSENE™ Na2 Crystals	Disodium EDTA	0.05	Dow Chemical
A	OPTIM™ Glycerine	Glycerin	3.00	Dow Chemical
A	ACULYN™ 28	Acrylate/Beheneth-25 Methacrylate	1.00	Dow Chemical
A	SUNSPHERES™ PGL	Styrene/Acrylates copolymer	11.60	Dow Chemical
B	Crodamol AB	C12- 15 Alkyl Benzoate	8.00	Croda
B	Glucamate SSE-20	PEG-20 Methyl Glucose Sesquistearate	0.65	Lubrizol
B	Tego Care PS	Methyl Glucose Sesquistearate	1.38	Evonik
B	EcoSmooth™ Delight	C14-22 Alkane (and) Ethylene/Octene Copolymer	2.00	Dow Chemical
C	Permethyl 99A	Isododecane	2.00	Presperse
C	Neo Heliopan HMS	Homosalate	5.00	Symrise
C	Neo Heliopan 303	Octocrylene	5.00	Symrise
C	Parsol MCX	Ethylhexyl Methoxycinnamate	5.00	DSM
C	Neo Heliopan OS	Ethylhexyl Salicylate	4.00	Symrise
C	Neo Heliopan 357	Butyl methoxydibenzoylmethane	4.00	Symrise
D	TRIS AMINO™ UltraPC (Solution 20%)	Tromethamine	0.02	Dow Chemical
E	NEOLONE™ PH 100	Phenoxyethanol	0.66	Dow Chemical
E	Hydrolite 8	Caprylyl Glycol	0.54	Symrise
E	Parfum Suntan E_ 1023711	Parfum/Fragrance	0.20	Mane
E	Deionized Water	Water/Aqua	0.78	–

Processing Instructions:

1. Phase A: Add pigments and talc to water (premix pigments together first). Mix until dispersed.
2. Add the other ingredients of Phase A and heat to 70°C.
3. Add ingredients of Phase B and heat to 85°C under efficient mixing to ensure melting of EcoSmooth™ Delight.
4. Prepare Phase C, mixing ingredients and heating to 70°C.
5. Decrease temperature of Phase B to 70°C, continuing mixing.
6. At 70°C, add Phase C to Phase B while mixing.
7. Add Phase B/C to Phase A and stir for 2 minutes at high speed.
8. Homogenize for 3–5 minutes at ~13,000/14,000 rpm.
9. Stir with gentle mixing and cool down to temperature below 35°C.
10. Adjust pH to 6.0–6.5 with Phase D.
11. Add ingredients of Phase E, mix well.





Interested in Learning More?

For more information on EcoSense Surfactants and how they can be used in your formulation, please contact us at the numbers listed below, or visit us online at www.dowpersonalcare.com.

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