

XANTHAN GUM IN COSMETICS AND TOILETRIES

Xanthan gum is an anionic, high molecular weight polysaccharide, which is used as a stabilizer and viscosity modifier in aqueous based systems. Xanthan gum solutions are pseudoplastic, i.e. they show shear thinning flow behavior. This pseudoplasticity imparts a smooth texture to the final product and provides a pleasant application.

Xanthan gum is soluble in cold and hot water and shows a high degree of viscosity even in low concentrations. The high viscosity of xanthan gum at low shear rates effectively stabilizes creams and lotions which are primarily oil-in-water emulsions. Xanthan gum keeps emulsions stable over a broad temperature and pH-range. It also assures lotion flowability even upon ageing. Furthermore xanthan gum stabilizes the oil phase of creams and lotions and delivers the active ingredients to the skin in a uniform manner. With its high viscosity at rest xanthan gum effectively suspends insoluble ingredients in cosmetics. Due to the shear thinning flow behavior of xanthan gum highly pigmented products like liquid make-up can be spread easily and uniformly. Xanthan gum provides effective stabilization and suspension to hair care products and enhances the lathering quality of shampoos.

Xanthan gum is a natural product which is non-toxic and non-irritating. It can be used in combination with other thickeners and stabilizers to improve texture, flow behavior, stability and appearance.

All these properties make xanthan gum a very effective thickening and stabilizing agent for cosmetics and toiletries.

SKIN REGENERATION CREAM		
	Ingredients	% weight
A	Water (deionized)	68.5
	Xanthan gum	0.5
	Veegum [†]	1.0
	Propylene glycol	3.0
B	Brij 72 ¹⁵	3.0
	Brij 721 ¹⁶	2.0
	Cetiol V ¹⁷	8.0
	Olive oil	2.0
	Uninox A-287 ¹⁸	1.0
	Uniphen P-23 ¹⁹	2.0
	Cetyl alcohol	1.0
	Amerchol CAB ²⁰	3.0
	Amerchol L 101 ²¹	2.0
C	Unitrienol T-27 ²²	3.0
	Preservative and fragrance	q.s

Preparation:

1. Blend xanthan gum, Veegum and propylene glycol. Slowly add to water, while agitating at maximum available shear. Continue mixing until smooth. Heat to 70 °C.
2. Blend part B ingredients and heat to 70 °C. Mix until homogeneous.
3. Add B to A and mix until uniform.
4. Continue mixing until cooled to 27 °C.
5. Add part C ingredients to A/B mixture.

Consistency: Smooth cream

COLLAGEN LOTION		
	Ingredients	% weight
A	Water (deionized)	59.45
	Xanthan gum	0.50
	Veegum †	1.00
	Propylene glycol	3.80
B	Arlachel 989 ²³	3.30
	Artacel 481 ²⁴	2.70
	Myritol 318 ²⁵	7.00
	Mineral oil	17.00
C	Collagen	5.00
	Allantoin	0.25
	Preservative and fragrance	q.s

Preparation:

1. Blend Xanthan gum, Veegum and propylene glycol. Slowly add to water, while agitating at maximum available shear. Continue mixing until smooth. Heat to 75 – 80 °C.
2. Blend part B ingredients and heat to 75 – 80 °C. Mix until homogeneous.
3. Add B to A and mix until uniform.
4. Continue mixing until cooled to 27 °C.
5. Add part C ingredients to A/B mixture.

Consistency: Pourable lotion

FACIAL CREAM FOR OILY SKIN		
	Ingredients	% weight
A	Water (deionized)	85.2
	Xanthan gum	0.2
	Mineral oil	6.0
	Glucam E-20 ⁶	1.0
B	Cutina GMS ⁷	2.8
	Stearic acid	2.0
	Cetyl alcohol	1.8
C	Triethanolamine	1.0
	Preservative and fragrance	q.s

Preparation:

1. Blend Xanthan gum with mineral oil. Slowly add to water, while agitating at maximum available shear. Add other part A ingredients and heat to 75 – 80 °C.
2. Blend part B ingredients and heat to 75 – 80 °C. Mix until homogeneous.
3. Add B to A and mix until uniform.
4. Continue mixing until cooled to 50 °C, then add triethanolamine.
5. Continue mixing until cooled to 27 °C, then add fragrance and preservative.

Consistency: Smooth cream

MOISTURIZING CREAM		
	Ingredients	% weight
A	Water (deionized)	68.77
	Xanthan gum	0.10
	Propylene glycol	3.00
B	Mineral oil	5.00
	Safflower oil	3.00
	Stearic acid	3.50
	Cetyl alcohol	1.00
	Polawax ⁸	2.00
	Lanolin	0.50
	Dow Corning 200 fluid ⁹	0.50
	Wickenol 163 ¹⁰	1.00
	Arlacel 165 ¹¹	5.00
	Arlacel 60 ¹²	1.50
	Methocel E4MQ ¹³	0.10
Vitamin E oil	0.01	
C	Ajidew N-50 ¹⁴	5.00
	Collagen	0.01
	Elastin	0.01
	Preservative and fragrance	q.s

Preparation:

1. Blend Xanthan gum with propylene glycol. Slowly add to water, while agitating at maximum available shear. Heat to 75 – 80 °C.
2. Blend part B ingredients and heat to 75 – 80 °C. Mix until homogeneous.
3. Add B to A and mix until uniform.
4. Continue mixing until cooled to 40 – 45 °C.
5. Add part C ingredients to A/B mixture.

Consistency: Smooth cream

HAND AND BODY LOTION		
	Ingredients	% weight
A	Water (deionized)	74.67
	Xanthan gum	0.30
	Tween 20	2.00
	Glycerol	3.00
B	Mineral oil	1.00
	Saflor oil	4.00
	Sesame oil	4.00
	Arlacel 165 ¹¹	3.00
	Arlacel 60 ¹²	2.00
	Cetyl alcohol	1.00
	Amerchol L-101 ²¹	3.00
	Abil 350 ³²	0.50
	Vitamin-E oil	0.01
	Stearic acid	1.50
C	Collagen	0.01
	Elastin	0.01
	Preservative and fragrance	q.s

Preparation:

1. Blend Xanthan gum with Tween 20 and glycerol. Slowly add to water, while agitating at maximum available shear. Continue mixing until smooth. Heat to 75 – 80 °C.
2. Blend part B ingredients and heat to 75 – 80 °C. Mix until homogeneous.
3. Add B to A and mix until uniform.
4. Continue mixing until cooled to 27 °C.
5. Add part C ingredients to A/B mixture.

Consistency: Pourable lotion

BABY CREAM		
	Ingredients	% weight
A	Water (deionized)	80.6
	Glucam E-20 ⁶	5.0
	Glucamate SSE-20 ³⁸	1.0
	Xanthan gum	0.3
	Veegum [†]	0.3
B	Vaseline	7.0
	Cetyl alcohol	3.0
	Lanolin	2.0
	Glucate SS ³⁴	0.8
C	Preservative and fragrance	q.s

Preparation:

1. Blend xanthan gum and Veegum. Slowly add to water, while agitating at maximum available shear. Continue mixing until smooth.
2. Add all other part A ingredients and heat up to 75 – 80 °C.
3. Blend part B ingredients and heat to 75 – 80 °C. Mix until homogeneous.
4. Add B to A and mix until uniform.
5. Continue mixing until cooled to 27 °C.
6. Add part C ingredients to A/B mixture.

Consistency: Smooth cream

LOTION FOR DRY SKIN		
	Ingredients	% weight
A	Water (deionized)	73.0
	Glycerol	4.0
	Xanthan gum	0.5
	Veegum, high viscosity ¹	0.5
B	Acetulan ²	4.0
	Finsolv TN ³	4.0
	Fitoderm ⁴	3.0
	Cocoa butter	4.0
	Vaseline	2.0
	Arlacel 165 ¹¹	5.0
C	Preservative and fragrance	q.s

Preparation:

1. Blend xanthan gum and Veegum. Slowly add to water, while agitating at maximum available shear. Continue mixing until smooth.
2. Add all other part A ingredients and heat up to 65 – 70 °C.
3. Blend part B ingredients and heat to 65 – 70 °C. Mix until homogeneous.
4. Add B to A and mix until uniform.
5. Continue mixing until cooled to 30 °C.
6. Add part C ingredients to A/B mixture.

Consistency: Pourable lotion

PEELABLE LIQUID FACE MASK		
	Ingredients	% weight
A	Water (deionized)	59.5
	Xanthan gum	0.5
	Polyvinyl alcohol	10.0
	Propylene glycol	7.0
B	Alcohol, 96%	20.0
	Ameroxol DE-20 ³³	3.0
C	Color	q.s
	Preservative and fragrance	q.s

Preparation:

1. Slowly add xanthan gum to water, while agitating at maximum available shear. Continue mixing until smooth.
2. Add all other part A ingredients and heat up to 70 – 75 °C.
3. Continue mixing until cooled to 40 °C.
4. Blend part B ingredients.
5. Add B to A and mix until uniform.
6. Add part C ingredients to A/B mixture.

Consistency: Fluid lotion

LIQUID MAKE-UP		
	Ingredients	% weight
A	Water (deionized)	61.2
	Xanthan gum	0.3
	Propylene glycol	4.0
	Dye pigments ⁴³	6.0
B	Dragorin 100 s.e. ²⁸	4.0
	Cetyl alcohol	2.0
	Dragophos S ²⁹	2.5
	Dragorin GMS ³⁰	2.5
	Almond oil, sweet	7.0
	Apricot core oil	4.5
	Dragoxat EH ³¹	5.5
	Abil 350 ³²	0.5
C	Preservative and fragrance	q.s

Preparation:

1. Slowly add xanthan gum to water, while agitating at maximum available shear. Continue mixing until smooth.
2. Add all other part A ingredients and mix until homogeneous. Heat up to 80 °C.
3. Blend part B ingredients and heat to 80 °C.
4. Add B to A and mix until uniform.
5. Continue mixing until cooled to 50 °C.
6. Add part C ingredients to A/B mixture.

Consistency: Smooth cream

SUNSCREEN LOTION		
	Ingredients	% weight
A	Water (deionized)	70.7
	Xanthan gum	0.3
B	Parsol MCX ²⁷	5.0
	Glucamate SSE-20 ³⁸	2.5
	Lanolin	2.0
	Glucam P-10 ²⁶	2.0
C	Coconut oil	5.0
	Isopropyl Myristate ⁴²	4.0
	Glucate SS ³⁴	2.5
	Cutina GMS ⁷	2.0
	Cetyl alcohol	2.0
	Acetulan ²	2.0
D	Preservative and fragrance	q.s

Preparation:

1. Slowly add xanthan gum to water, while agitating at maximum available shear. Continue mixing until smooth.
2. Add the blend of part B ingredients and heat to 70 – 75°C.
3. Blend part C ingredients and heat to 70 – 75°C.
4. Add C to B and mix until uniform.
5. Continue mixing until cooled to 30°C.
6. Add part D ingredients to B/C mixture.

Consistency: Pourable lotion

LIQUID SOAP		
	Ingredients	% weight
A	Water (deionized)	65.9
	Xanthan gum	0.2
	Texapon Z ³⁵	5.0
	Texapon A ³⁶	2.0
B	Witconate AOS ⁴⁰	15.0
	Comperlan LD ³⁹	6.0
	Dehyton K ³⁷	3.0
	Propylene glycol	2.5
C	Salt	0.4
	Citric acid	q.s
D	Color	q.s
	Preservative and fragrance	q.s

Preparation:

1. Slowly add xanthan gum to water, while agitating at maximum available shear. Continue mixing until smooth.
2. Add remaining part A ingredients and mix until homogeneous. Heat up to 70 °C.
3. Blend part B ingredients and heat to 70 °C.
4. Add B to A and mix until uniform.
5. Add salt and adjust the pH value with Citric acid to pH 5.5.
6. Continue mixing until cooled to 40 °C.
7. Add part D ingredients to A/B/C mixture.

Consistency: Liquid lotion

MOUSSE SHAMPOO		
Ingredients		% weight
A	Water (deionized)	63.2
	Xanthan gum	0.2
B	Texapon A ³⁶	9.2
	Texapon Z ³⁵	9.2
	Comperlan LD ³⁹	4.6
	Comperlan COD ⁴¹	2.8
	Conditioner P7 ⁵	2.0
	Dehyton K ³⁷	1.4
	Cutina GMS ⁷	1.4
	Tween 20	0.5
	Stearic acid	0.5
C	Color	q.s
	Preservative and fragrance	q.s
D	Propellant	5.0

Preparation:

1. Slowly add xanthan gum to water, while agitating at maximum available shear. Continue mixing until smooth. Heat up to 80 °C.
2. Blend part B ingredients and heat to 80 °C.
3. Add B to A and mix until uniform.
4. Continue mixing until cooled to 40 °C.
5. Add part C ingredients to A/B mixture.
6. Add propellant.

Consistency: Foamy shampoo

SUPPLIERS OF RAW MATERIALS

1. Veegum (magnesium aluminum silicate) C.H. Erbslöh, Hamburg, Germany
2. Acetulan (cetylacetate (and) acetylated lanolin alcohol) Nordmann, Rassmann & Co., Hamburg, Germany
3. Finsolv TN (C₁₂-C₁₅ alcohol benzoate) Witco S.A, Paris, France
4. Fitoderm (HQ squalane) Nordmann, Rassmann & Co., Hamburg, Germany
5. Conditioner P7, Sigma Prodotti Chimici, Bergamo, Italy
6. Glucam E-20 (methyl gluceth-20) Nordmann, Rassmann & Co., Hamburg, Germany
7. Cutina GMS (glyceryl stearate) Henkel KGaA, Düsseldorf, Germany
8. Polawax (proprietary emulsifying wax) Croda GmbH, Nettetal, Germany
9. Dow Corning 200 fluid (dimethicone) Dow Corning Europe, Brussels, Belgium
10. Wickenol 163 (porosity ester) Rahn & Co, Zürich, Switzerland
11. Arlachel 165 (glycerylmonostearate (and) glyceryldistearate (and) polyoxyethylen stearate) ICI Speciality Chemicals, Essen, Germany
12. Arlachel 60 (sorbitan monostearate) ICI Speciality Chemicals, Essen, Germany
13. Methocel E4MQ (hydroxypropylmethylcellulose and hydroxybutylmethylcellulose) Dow Chemical Europe, CH
14. Ajidew N-50 (5-pyrrolidon) Ajinomoto GmbH, Hamburg, Germany
15. Brij 72 (polyoxyethylen-(2)-stearyl alcohol) ICI Speciality Chemicals, Essen, Germany
16. Brij 721 (polyoxyethylen-(21)-stearyl alcohol) ICI Speciality Chemicals, Essen, Germany
17. Cetiol V (decyl oleate) Henkel KGaA, Düsseldorf, Germany
18. Uninox A-287 (isopropyl myristate (and) wheat germ oil (and) BHT) Induchem AG, Dübendorf, Switzerland
19. Uniphen P-23 (phenoxyethanol (and) methylparaben (and) ethylparaben (and) propylparaben (and) butylparaben) Induchem AG, Dübendorf, Switzerland
20. Amerchol CAB (petrolatum (and) lanolin alcohol) Nordmann, Rassmann & Co., Hamburg, Germany
21. Amerchol L 101 (mineral oil (and) lanolin alcohol) Nordmann, Rassmann & Co., Hamburg, Germany
22. Unitrienol T-27 (farnesyl acetate (and) farnesol (and) panthenyl triacetate) Induchem AG, Dübendorf, Switzerland
23. Arlachel 989 (polyoxyethylen fatty acid ester) ICI Speciality Chemicals, Essen, Germany
24. Arlachel 481 (glycerol sorbitol oleo stearate) ICI Speciality Chemicals, Essen, Germany
25. Myritol 318 (caprylic (and) capric triglyceride) Henkel KGaA, Düsseldorf, Germany
26. Glucam P-10 (methyl glucose ether) Nordmann, Rassmann & Co., Hamburg, Germany
27. Parsol MCX (octyl methoxycinnamate) Givaudan, Vernier-Geniva, Switzerland
28. Dragorin 100 s.e. (glycerylmonostearate (and) polyoxyethylenstearate) Dragoco Gerberding & Co, Holzminden, Germany
29. Dragophos S (hydroxylalcyether (and) diethanolaminosalt of hydroxylalcyphosphorester) Dragoco Gerberding & Co, Holzminden, Germany
30. Dragorin GMS (glycerylmonostearate (and) glyceryldistearate) Dragoco Gerberding & Co, Holzminden, FRG
31. Dragoxat EH (2-ethylenhexyl-2-ethylenhexanate) Dragoco Gerberding & Co, Holzminden, Germany
32. Abil 350 (polydimethylsiloxane) Goldschmidt AG, Essen, Germany
33. Ameroxol OE-20 (oleth-20) Nordmann, Rassmann & Co., Hamburg, Germany
34. Glucate SS (methyl glucose sesquisteate) Nordmann, Rassmann & Co., Hamburg, Germany
35. Texapon Z (sodium lauryl sulfate) Henkel KGaA, Düsseldorf, Germany
36. Texapon A (ammonium lauryl sulfate) Henkel KGaA, Düsseldorf, Germany
37. Dehyton K (cocamidopropyl betaine) Henkel KGaA, Düsseldorf, Germany
38. Glucamate SSE-20 (PEG-20 methyl glucose sesquisteate) Nordmann, Rassmann & Co., Hamburg, FRG
39. Comperlan LD (lauramide DEA) Henkel KGaA, Düsseldorf, Germany
40. Witconate AOS (alpha olefin sulfonate) Witco S.A, Paris, France
41. Comperlan COD (cocamide DEA) Henkel KGaA, Düsseldorf, Germany
42. Isopropyl myristate; Henkel KGaA, Düsseldorf, Germany
43. Dye pigments; Dragoco Gerberding & Co, Holzminden, Germany

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