

Product Application Sheet for Personal Care products

CAGGEL™ PC

Gellan gum is a high molecular extracellular microbial polysaccharide produced by strict aseptic fermentation of a pure culture of *Sphingomonas elodea*. CAGGEL PC is a kind of low or high acyl gellan gum with medium gel strength and high transmittance. In personal care products, such as sunscreens, lotions, and mild hair conditioners, gellan gum has been used as a structuring rather than gelling agent, providing body, stability, and pleasing skin feel. In some cases, performance is further improved by the inclusion of xanthan gum or xanthan / locust bean gum.

CAGGEL PC typical recommended amount of PC in personal care products is 0.03-0.3%. PC have good compatibility with other colloids, mineral salt to obtain products with different texture and other functions.

In cosmetic applications gellan gum is frequently used as a structuring as well as a gelling agent, providing body, stability and pleasing skin feel.

Gellan gum can provide effective stability and suspension of shampoo and conditioner formulas. It is ideally suited to products requiring a pseudoplastic (shear thinning) rheology. In creams and lotions, the high yield value of gellan gum fluid gels effectively stabilize these emulsions and imparts a 'light and silky' feel when rubbed on the skin. Gellan gum also keeps emulsions stable during temperature fluctuations, for consistent quality in transit, as well as on the shelf.

In suntans and sunscreens, gellan gum stabilizes the oil phase and delivers the important ingredients to the skin in a uniform manner. Gellan gum offers excellent stability over the wide range of temperatures that these products experience.

In toothpaste formulations gellan gum is beneficial both for its binding properties and its reversible, non-stringy, true-gel structure. It provides excellent flavour release, so significant reductions of flavour and sweetener levels are possible. At typical use levels, gellan gum contributes very little viscosity during toothpaste preparation allowing the design of fluid formulations that subsequently form a gel after packaging. This low viscosity performance makes manufacturing and packaging easier and allows the incorporation of fragile ingredients such as encapsulated flavors that would not normally be possible with typical binder systems. Blends of low and high acyl gellan gum can produce toothpastes with a variety of binding, stand-up and preparation viscosity.



Disclaimer

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Application Guide: CAGGEL Personal Care in Skincare Formulations

Product: CAGGEL™ Personal Care (Ultra Transparent High-Acyl Gellan Gum)

Description: A microbial polysaccharide that produces clear, elegant gels with high clarity and stability. It is highly efficient at low usage levels and provides excellent suspension properties.

Key Properties for Formulation:

High Clarity: Forms brilliant, water-clear gels.

Thermoreversible: Gels melt on heating and reset upon cooling.

Ionic Activation: **DO NOT Requires cations** (e.g., Ca²⁺, Mg²⁺, Na⁺) for gel formation.

Low Use Level: Highly efficient, typically used at 0.05% - 0.3%.

pH Stability: Stable in a wide pH range (3.0 - 8.5).

Important Handling Notes:

Dispersion: Gellan gum must be fully dispersed in water before heating to prevent lump formation.

High-shear mixing is recommended for dispersion.

Hydration: Full hydration and solubility require heating the dispersion to at least 90°C

Gelation: Gel formation occurs upon cooling, without the presence of ions.

Formulation 1: Crystal-Clear Aloe Vera Gel Base

This formulation is an excellent starting point for a transparent moisturizing gel, soothing gel, or hair gel.

Phase	Ingredient	Function	% Weight
A	Deionized Water	Solvent	QS to 100
	CAGGEL PC	Gelling Agent (Rheology Modifier)	0.30%
	Glycerin	Humectant, Solvent	5.00%
	Tetrasodium EDTA	Chelator	0.10%
B	Propylene Glycol (and)	Solubilizer, Enhances clarity	2.00%
	Phenoxyethanol (and)	Preservative	1.00%
	Caprylyl Glycol		
C	Aloe Vera Juice (1:1)	Active Soothing Agent	10.00%
D	Fragrance	Perfume	0.20%
	Citric Acid (10% sol.)	pH Adjuster	To pH ~6.0

Manufacturing Instructions:

Dispersion: In the main vessel, add Phase A ingredients (Water, CAGGEL PC, Glycerin, EDTA) under high-shear agitation (e.g., 800-1000 rpm). Mix for at least 20-30 minutes to ensure complete dispersion of the gellan gum with no visible lumps.

Heating/Hydration: Heat the dispersion to 90°C while maintaining agitation. Hold for 5 minutes to

ensure complete hydration. The batch will become thin and watery.

Cooling: Begin cooling the batch. Agitation can be reduced to moderate speed (300-400 rpm) to prevent air entrapment.

Addition: At approximately 45°C (113°F), add pre-mixed Phase B (Solubilizer/Preservative) and Phase C (Aloe Vera). Mix until homogeneous.

Final Adjustment: At 35-40°C (95-104°F), add Phase D (Fragrance). Adjust the pH to the target (typically 5.5-6.5) using the Citric Acid solution.

Final Step: Cool the batch to room temperature. The gel will form upon cooling. Once formed, avoid high-shear mixing to prevent breaking the gel structure.

Formulation 2: Light O/W Lotion with Suspension

This formula demonstrates how CAGGEL PC can be used to create a stable, light lotion with a silky feel and suspended droplets.

Phase	Ingredient	Function	% Weight
A	Deionized Water	Solvent	QS to 100
	CAGGEL PC	Suspension, Rheology	0.03-0.04%
	Glycerin	Humectant	3.00%
B	Light Mineral Oil	Emollient	5.00%
	Cetearyl Alcohol (and) Ceteareth-20	Emulsifier, Thickener	2.50%
	Cetyl Alcohol	Co-emulsifier, Thickener	1.00%
	Glyceryl Stearate	Emulsifier	1.50%
	Propylene Glycol (and) Phenoxyethanol (and) Caprylyl Glycol	Preservative	1.00%
D	Fragrance	Perfume	0.15%

Manufacturing Instructions:

Aqueous Phase (A): Disperse CAGGEL PC in water with Glycerin and Sodium Citrate under high-shear agitation. Heat to 75-80°C (167-176°F).

Oil Phase (B): Combine all Phase B ingredients in a separate vessel and heat to 75-80°C (167-176°F) until melted and clear.

Emulsification: Slowly add the oil phase (B) to the aqueous phase (A) under high-shear homogenization. Homogenize for 3-5 minutes to form a fine emulsion.

Cooling: Begin cooling with slower agitation. The gellan gum network will begin to form as the batch

cools, providing long-term stability and suspension.

Addition: At 40-45°C (104-113°F), add Phase C (Preservative). Mix well.

Final Step: At 35°C (95°F), add Phase D (Fragrance). Continue cooling to room temperature. The final product will be a stable, luxurious lotion.

Disclaimer: These formulations are suggested starting points for laboratory development. We recommend conducting thorough stability, compatibility, and preservative efficacy testing on all finished products. Performance may vary based on specific ingredients, processing conditions, and water quality. The responsibility for final product safety and regulatory compliance lies with the manufacturer.

We offer different packing & size as required



500g /1kg



500g / 1kg



20kg / 25kg



20kg / 25kg



25kg