

G-GEL™

Bentonite Clay Gels, Remastered



Create Possibilities



G-GEL™ BENTONITE CLAY RHEOLOGY MODIFIERS



Bentonite clay gels, refreshed for the modern formulator

The G-GEL™ product series are dispersions of organically modified bentonite clay. They are used in cosmetic applications as a primary rheological additive to build thixotropic viscosity and suspension within the oil phase of formulations.

Traditionally used in color cosmetics, they can also be used to stabilize water-in-oil emulsions in both skincare and suncare applications.

🍏 Excellent Suspension

Very effective in formulations where suspending color pigments and UV actives are top priority.

🍏 Builds Shear-Thinning, Stable Viscosity

Enhances glide and imparts more silkiness during application while increasing viscosity.

🍏 Boosts Formulation Heat Stability

Creates a viscosity profile stable at temperatures up to 70 Celsius! Reduce the need for high melting point waxes and improve sensory at the same time.

🍏 Cold Processable

Only mechanical force is necessary to incorporate G-GEL into your formulation.



Features & Benefits

Out with the old, in with the new.



Bentonite clay gels have been around for so long that formulators have simply accepted the functionality issues of traditional gels - poor long term stability, industrial grade quality not meant for cosmetics, and inherent formulation restrictions on the types of oils that can be used.

The G-GEL™ product series eliminates these old issues and introduces new features tailored for the modern formulator:



Universal Versatility

- 🍏 High level suspension performance in every type of oil - naturals, hydrocarbons, and silicones.
- 🍏 Increased product flexibility with no restrictions on usage.
- 🍏 Reduce inventory costs by replacing many gels with one!



Reliable Stability

- 🍏 Never need to remix a gel before use.
- 🍏 Consistent clay levels from one batch to the next for dependable consistency.
- 🍏 Excellent performance even after long term storage



Improved Viscosity Curve

- 🍏 Higher zero-shear viscosity for improved suspension.
- 🍏 Steeper viscosity drop-off at high shear levels, translating to enhanced glide and lubricity during application.

New Tools for New Trends

Our latest G-GEL offerings are designed for formulators looking to meet the latest consumer and global supply trends. The G-GEL Eco-HMS is a perfect fit for clean beauty and natural formulations, while the G-GEL Silkane is designed as a silicone replacement for formulations requiring silicone-free claims or simply reducing overall dependence on expensive silicone oils in short supply.



A



B



Better Process, Better Product

Applechem's proprietary production method allows for increased exfoliation of organoclay platelet stacks, leading to much improved product performance and stability.

(A) Standard Organoclay Gels

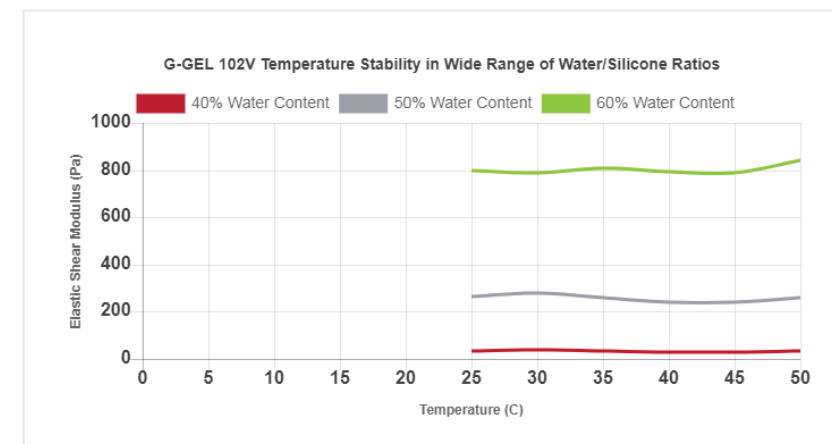
Traditional gels have poor exfoliation with many organoclay stacks still stuck together, leading to poor stability (oil bleeding over time), reduced efficacy, and inconsistent performance.

(B) G-GEL™

Organoclay gels are fully exfoliated which reduces oil syneresis, creating a much more stable gel with improved efficacy and sensorial properties.



Suspension and Stability at High Temperatures



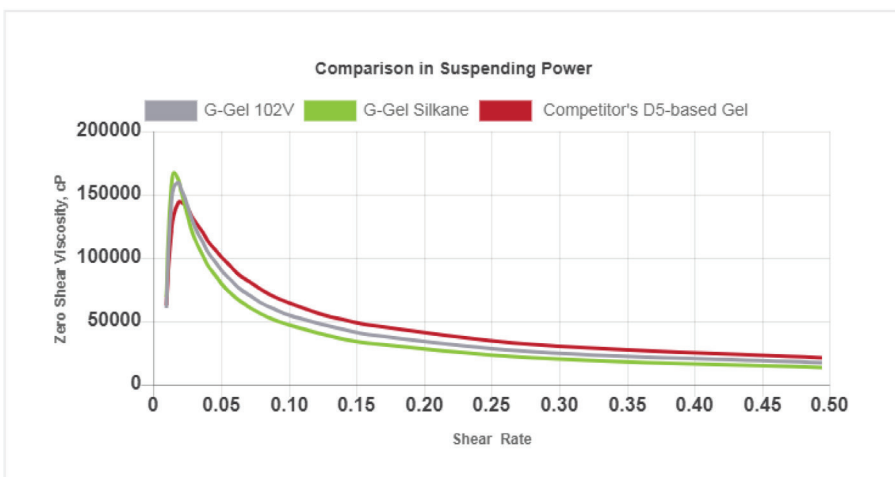
Thermal Stability and Versatility

Calculating a formula's Elastic Shear Modulus is an accurate way of demonstrating its suspension efficacy in specific environments. This graph demonstrates that G-GEL formulations retain their suspension stability with minimal variance even at temperatures as high as 50 Celsius.

This heat stability boost is maintained through a wide range of water-in-silicone ratios, which gives formulators a lot of flexibility - use G-GEL with confidence in anything from liquid eyeliner to creamy foundations.



Suspension Power Demonstration in Water-in-Silicone Foundation



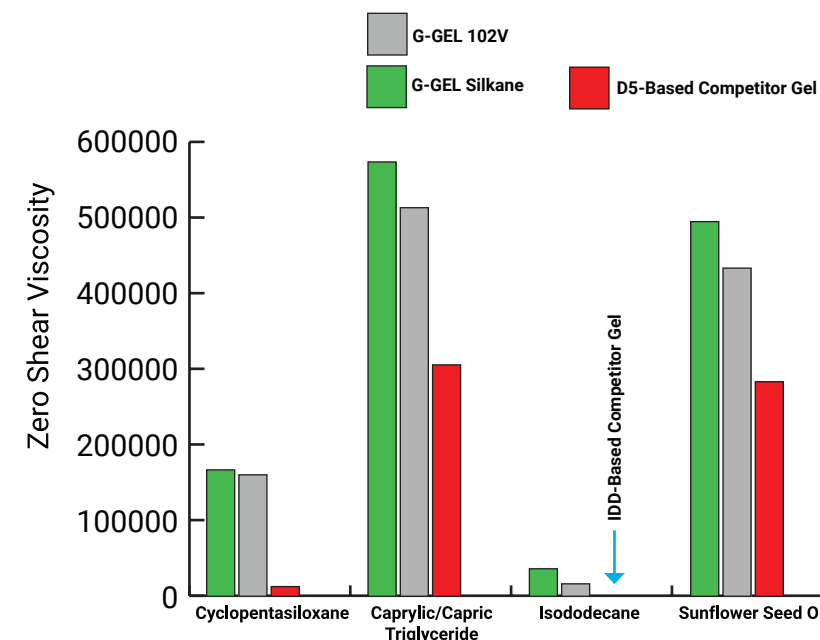
Higher Suspension, Smoother Shear

Both the traditional G-GEL 102V and our new G-GEL Silkane feature stronger zero shear viscosity as well as a more optimal shear curve when compared to the most popular D5-based gel on the market. This translates to higher suspension power as well as more improved sensory during application.

Of special note is the G-GEL Silkane, a gel designed for replacing silicones outperforming the competitor's silicone clay gel in the silicone emulsion. This highlights the power and versatility of our G-GEL technology.



Universal Compatibility in All Oil Classes



One Gel for Everything

From silicones to esters, natural oils to hydrocarbons, G-GEL will provide far better suspension and viscosity performance in all oil mediums versus the leading silicone-based organoclay gels.

This allows for increased formulation and cost flexibility since formulators are no longer restricted to pairing specific oils to the organoclay gel, and vice versa.

This graph compares the zero shear viscosity at 10% usage in a oil-in-water emulsion. Of particular note is the tremendous performance difference between G-GEL and an IDD-based competitor gel in an isododecane dominant O/W emulsion.

Product INCI and Applications

TRADE NAME	INCI	PRIMARY APPLICATION	FEATURES
Gg G-Gel Eco-HMS	C ₁₃₋₁₅ Alkane (Sugarcane) (and) Quaternium-90 Bentonite (and) Triethyl Citrate	<ul style="list-style-type: none"> Clean Beauty Color Cosmetics Clean Beauty Sunscreens Clean Emulsions 	The Eco-HMS gel is dispersed in sugarcane-derived hemisqualane. It features an ISO Natural Origin Index Score of 0.998 (99.8%), and was designed for Clean Beauty and natural cosmetic products.
Gg G-Gel Silkane	C ₁₅₋₁₉ Alkane (and) Quaternium-90 Bentonite (and) Triethyl Citrate	<ul style="list-style-type: none"> Silicone-free Color Cosmetics Nail Products 	The Silkane gel was designed for silicone-free and oil-free formulations requiring high-end sensory and stability with less dependence on silicone and silicone elastomers.
Gg G-Gel 100V	Dimethicone (and) Ethylhexyl Palmitate (and) Quaternium-90 Bentonite (and) Propylene Carbonate	<ul style="list-style-type: none"> Sensory-focused color cosmetics 	The 100V is a dimethicone-based gel that features powerful suspension and thickening efficacy with excellent sensory profile.
Gg G-Gel 102V	Cyclopentasiloxane (and) Ethylhexyl Palmitate (and) Quaternium-90 Bentonite (and) Propylene Carbonate	<ul style="list-style-type: none"> Silicone-based color cosmetics Water-in-silicone emulsions 	The 102V is the workhorse in the G-Gel portfolio, with excellent performance in all silicone focused color cosmetic and water-in-silicone emulsions.
Gg G-Gel CCT 200	Caprylic/Capric Triglyceride (and) Stearalkonium-90 Bentonite (and) Propylene Carbonate	<ul style="list-style-type: none"> Natural Cosmetics and Emulsions 	The CCT 200 gel is suitable for stabilizing and suspending formulations requiring more natural ingredients.



Need Samples?

We believe sample requests should be provided generously. We understand trying, testing, and evaluating our ingredients and intermediates are all critical to your research, development, and production processes. So go ahead, ask and you shall receive.

Visit [Applechem.com](https://www.applechem.com) or call **862.210.8344** to Order Samples

The Model Foundation

Description

This quick-drying foundation features an ultra-creamy sensory with excellent coverage and water resistance.

It is a stable water-in-silicone emulsion system that contains G-GEL for increased suspension, stability, and sensorial glide. The addition of Applecare PDS-300 also ensures a well-dispersed, finer pigment grind that boosts coverage and sensory while reducing the need for pre-treated pigments.

This formulation was used in all of the comparison testing featured in this brochure.

Specifications

- Zero Shear Viscosity: 186,900 cP
- Passed 4 Week Heat Stability Test (50 Celsius, Oven)
- Passed Freeze-Thaw Stability Test (3 cycles)

PHASE	INCI NAME (TRADE NAME)	WT%
A	Distilled Water	30.00
	Sodium Chloride	1.00
	Glycerin	4.00
	Phenoxyethanol (and) Ethylhexyl Glycerin (Euxyl PE 9010)	0.20
B	Hemisqualane	3.58
	Pigment Grade Titanium Dioxide	12.53
	Yellow Iron Oxide (Non-Surface Treated)	1.97
	Red Iron Oxide (Non-Surface Treated)	0.34
	Black Iron Oxide (Non-Surface Treated)	0.18
	Applecare PDS-300 - Natural Pigment Dispersant	1.20
C	G-GEL™ (All Variants)	15.00
	Polymethylsilsequioxane (SilForm Flexible Resin, Momentive)	0.65
	Polydimethylsiloxane (DC 200 Fluid, Dow Corning)	0.15
	Isododecane (Ritacane ID, Rita)	10.20
D	Isododecane (Ritacane ID, Rita)	4.00
	PEG-10 Dimethicone (KF-6017, Shin-Etsu)	1.00
	Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone (KF-6038, Shin-Etsu)	3.00
E	HDI/Trimethylol Hexyllactone Crosspolymer (and) Silica (BPD-500, Kobo)	6.50
	Nylon-12 (SP-500, Kobo)	4.50

Processing Method:

- Mix Phase A ingredients until uniform and set aside.
- In main vessel, mix Phase B by dispersion blade at 800 RPM while heating to 85°C for 30 minutes
- Pass Phase B through 3-roll mill twice (first at gap ratio 7:3, then 3:1)
- Add Phase C ingredients to Phase B and mix with dispersion blade for 15 minutes at 800 RPM
- In a separate beaker, mix Phase D until uniform
- Once uniform, add Phase D to main phase and continue mixing with dispersion blade for 5 minutes at 800 RPM
- Add Phase A slowly to main phase while mixing, increasing speed as necessary
- Homogenize with Silverson Homogenizer for 5 minutes at 4500 RPM
- Move main phase back to dispersion blade and add Phase E while mixing for 5 minutes at 1000 RPM
- Discharge

Gb

Pc

Gg

G-Gel

Sbx

Of

Sg

Create Possibilities

applechem
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Applechem was founded in 2003 by Dr. Samuel Lin in a tiny laboratory within a tech incubation center in northern New Jersey. Yet even after transitioning from a one-man startup to a stable, global supplier, we've never forgotten our roots as a small, spirited business with big ideas.

We recognize that every personal connection should be valued and validated with responsive customer service coupled with strong technical aptitude. Moreover, we promise to continue expanding the range of possibilities in the formulation space, creating functionality where none existed before and putting an improved spin on traditional ingredient technologies.

Get in touch with us.

ADDRESS	2 Cranberry Road, Unit A4 Parsippany, New Jersey 07054
OFFICE	862.210.8344
FAX	862.210.8336
EMAIL	info@applechem.com
ONLINE	applechem.com