Biostyle® CGP polymer

Sustainable solutions for styling

INCI: Maltodextrin/VP Copolymer

The best hair styling products require superior form and function. In the quest to create hairstyles that look good, last long and feel great, consumers are becoming increasingly demanding when it comes to the products they'll use. Creating hair styling products that meet performance and cost requirements is a challenge, and trying to make them more natural has seemed impossible. All of that can change with Biostyle CGP polymer, a new fixative polymer designed to create superior styling products with improved sustainability versus traditional gels and styling aids.

Biostyle CGP polymer is a naturally-derived hair fixative polymer designed especially for use in styling products including clear hair gels, spray gels, creams, lotions and mousses. Biostyle CGP polymer provides the features of exceptional clarity and consumer preferred rheology that are normally associated with synthetic fixative polymers, yet Biostyle CGP polymer contains more than 50% renewable content.

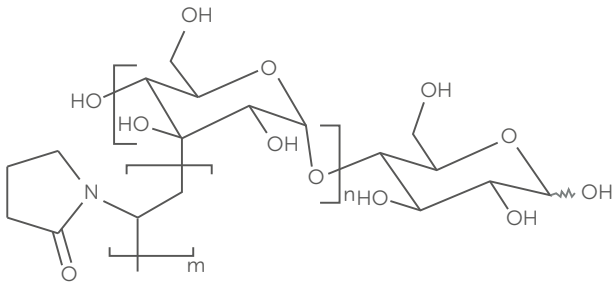
A proprietary, patented hybrid polymer formed by the reaction of NVP and maltodextrin, Biostyle CGP polymer represents a new way for formulators to create more natural and sustainable styling products while maintaining cost-in-use targets and without any sacrifice of performance properties.

Biostyle CGP styling polymer provides the benefits that meet today's formulating needs, offering the well known styling performance similar to PVP K-30 and PVP/VA at equivalent costing, and is the first naturally derived styling polymer that allows the formulator to make styling aids more sustainable and renewable without any compromise on cost, gel clarity, product aesthetics or on-hair performance.

Recommended applications

Biostyle CGP polymer is a nonionic hair fixative polymer having greater than 50% natural content. It is a unique, patented graft polymer produced via the reaction of maltodextrin and vinyl pyrrolidone. Biostyle CGP polymer delivers performance equivalent to PVP K-30 and PVP/VA in hair gel formulations.

Suggested structure of Biostyle XH polymer



Suggested use levels, as supplied

Application	% active
Hair spray formulations	4-24
Mousse	8-24
Creams and lotions	4-24

Product highlights

Features	Benefits
Excellent carbomer compatibility	Clear gels with consumer-preferred rheology
Low turbidity	Exceptional gel clarity
Performance at low use level	Cost effective
Low viscosity liquid	Easy to use
Equivalent performance to PVP K-30 or PVP/VA	Excellent formulating latitude, broad range of use, easy to incorporate into existing product formulations
Greater than 50% naturally derived	Improved sustainability and renewability versus synthetic fixative polymers
Compatible with commonly used formulation ingredients	Robust and reliable performance, ease of formulation
Alcohol tolerance up to 20%	Broad range of use
Nonionic	Excellent compatibility with commonly used gel ingredients
Requires no neutralization	Streamlines formulation, reduces cost

Formulation guidelines

Supplied as a ~25% active solution in water, Biostyle CGP polymer is very low in viscosity and simple to use. The polymer is Carbomer compatible, and should be added to the batch after the Carbomer has been neutralized.
Biostyle CGP polymer can be formulated from 1-6% active in hair styling gels and mousses. For optimal clarity in Carbomer gels, Biostyle CGP polymer should be formulated between a pH of 6.0-6.5.

Solubility

Biostyle CGP polymer is soluble in water as well as water and ethanol solutions. Biostyle CGP polymer will tolerate up to 20% ethanol using 3% active polymer.

Neutralization

Biostyle CGP polymer does not require neutralization. Other polymers in the final formulation (such as Carbomer) should be neutralized as recommended by the manufacturer.

Compatibility

Biostyle CGP polymer is compatible with Carbomer and most common gel additives, including, but not limited to panthenol, silicones, sorbitol, EDTA, GLDA, polyethylene glycols and polypropylene glycols. This polymer does have limited compatibility with Benzophenone-4. Biostyle CGP polymer is compatible with other rheology modifiers Ethylhydroxyethyl cellulose, Hydroxyethylcellulose, Structure® 2001 (Acrylates/ Steareth-20 Itaconate Copolymer) and Acrylates/C10-30 Alkyl Acrylate Crosspolymer.

Biostyle CGP polymer with various thickeners and their gel properties

Thickener	% solids	pH	Visc (cps)	Clarity (visual)	Turbi-dity (ntu)
Hydroxyethyl-cellulose	2.0	6.14	27,580	Trans-lucent, yellow with fibers	22.5
Acrylates/C10-30 Alkyl Acrylate Crosspolymer	0.5	6.19	34,730	Clear	14.6
Structure 2001 polymer	2.0	6.22	73,180	Clear	12.2
Ethylhydroxyethyl cellulose	1.5	6.39	26,620	Trans-lucent, yellow with fibers	35.6
Structure 2001 polymer	1.5	6.31	28,170	Clear	8.4

Performance properties

Hair gels formulated with Biostyle CGP polymer have similar gel properties when compared to gels formulated with PVP K-30 and PVP/VA at equivalent use levels. Carbomer gels that are neutralized with Aminomethyl Propanol (AMP) or Triethanolamine (TEA) show similar properties when formulated with Biostyle CGP polymer.

Typical gel properties of Biostyle CGP polymer vs other nonionic polymers

Description	Polymer solids, wt%	Carbomer* wt%	pH	Visc** (cps)	Turbidity (ntu)
PVP K-30 gel with AMP	3.0	0.5	6.29	42,736	9.02
PVP K-30 gel with TEA	3.0	0.5	6.29	42,273	8.57
PVP/VA gel with AMP	3.0	0.5	6.15	42,991	14.90
PVP/VA gel with TEA	3.0	0.5	6.43	45,745	11.80
Biostyle CGP polymer gel with AMP	3.0	0.5	6.34	45,527	11.50
Biostyle CGP polymer gel with TEA	3.0	0.5	6.42	47,245	10.80

Viscosity: T-C spindle S-93, 10 rpm at 25°C

On hair subjective performance

Subjective evaluations were conducted by trained panelists on hair tresses to determine the performance of Biostyle CGP polymer compared to PVP K-30 and PVP/VA.

In the below studies, hair tresses were treated with a gel comprised of 3% Biostyle CGP polymer and 0.5% Carbomer and compared to PVP K-30 and PVP/VA gels at the same polymer and Carbomer solids levels.

The panelists evaluate the dry swatches and are forced to pick one swatch over the other for each performance attribute. The data is reported at the 95% confidence level.

Subjective on-hair performance of Biostyle CGP polymer vs PVP K-30 and PVP/VA gels (neutralized with AMP)

Biostyle CGP polymer with AMP vs description	PVP K-30 gel with AMP	PVP/VA gel with AMP
Gloss	NSD	NSD
Stiffness	NSD	NSD
Dry comb	NSD	NSD
Flake	NSD	NSD
Anti-stat	NSD	NSD
Feel	+	NSD

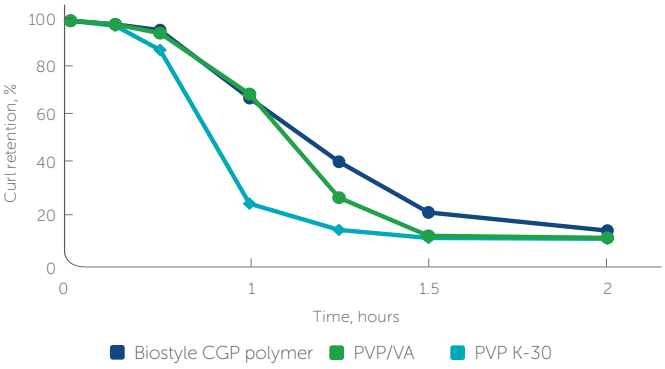
NSD = No statistical difference

No statistical difference was seen on any property with the exception of dry hair feel, where the gel formulated with Biostyle CGP polymer was found to be superior to the gel formulated with PVP/VA polymer.

Biostyle CGP polymer high humidity curl retention

Biostyle CGP polymer offers no significant difference in style retention compared to PVP K-30 and PVP/VA, as measured by high humidity curl retention after two hours at 21°C (70°F) and 90% relative humidity conditions.

High humidity curl retention of nonionic hair gels



Storage and handling

Biostyle CGP polymer should be stored under ambient conditions. The product is supplied in drums and should be kept tightly sealed and sampled minimally to prevent unintended micro contamination. This product is supplied as a ~25% solids polymer solution in water that is preserved.

Health and safety

Information on Biostyle CGP polymer relating to the EU cosmetic directive 76/768/EECC is available on request.

Contact us directly for detailed product information and sample request
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Nouryon

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