

Technologies,
Products, and Product
Development Leverage
for the Personal Care
Industry

KYTAMER PC

A substantive humectant for long-lasting softness and fullness

KYTAMER™ PC (INCI/CTFA Name: Chitosan PCA) is a very biocompatible, water-soluble fixative and humectant that helps your hair and skin care formulations deliver long-lasting softness and fullness. KYTAMER PC combines the substantive film-forming properties of chitosan with the natural humectancy of pyrrolidone carboxylic acid (PCA) in a single, versatile raw material.

Natural moisturization factor

High molecular weight KYTAMER PC forms smooth, uniform films on skin and hair. Its PCA component is a basic amino acid that is one of the skin's natural moisturizing factors. PCA attracts and binds significant amounts of moisture to negatively-charged protein substrates like skin or hair.

Long lasting humectancy for skin

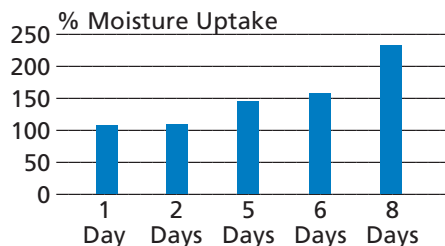
KYTAMER PC gives enduring humectancy to creams and lotions. On the skin, KYTAMER PC forms a smooth, uniform polymer film that enhances the skin's elasticity while holding moisture in place. Figure 1 illustrates its outstanding water absorption ability over time.

Because KYTAMER PC is so substantive, its protective film resists rinse-off. And, its semi-permeable films can allow the transmission of oxygen to the skin.

Hair care products get excellent setting and conditioning

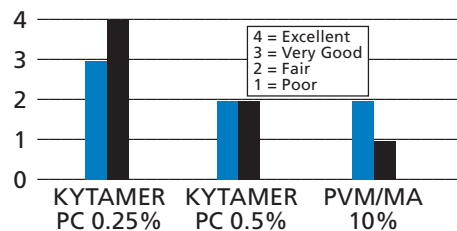
Water-soluble KYTAMER PC is used at very low concentrations — as little as 0.25 % — to provide excellent fixative and curl retention properties in pump hair spray systems. At the same time, KYTAMER PC delivers enhanced conditioning with wet and dry combing and anti-frizz properties that are far superior to copolymer systems. See Figure 2. KYTAMER PC is also an outstanding humectant that prevents hair from becoming dry or brittle while it adds luster and shine.

Figure 1—Water Absorption of KYTAMER PC



Method: Placed 0.1% KYTAMER PC aqueous solution in petri dish; dried to a "film," and recorded mass gain at 25°C and 95% RH.

Figure 2—Combability: KYTAMER PC vs. PVM/MA†



■ Wet Combability ■ Dry Combability

† Ethyl ester of PVM/MA copolymer



For more information, complete literature, and product samples, you can reach a Dow representative at the following numbers:

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Or you can contact us on the Internet at:

www.amerchol.com

Formulating Considerations for KYTAMER PC

General formulating guidelines

Preparation of solutions: Preparation of a 2% aqueous solution is a good starting point for working with KYTAMER PC.

Add KYTAMER PC to room temperature (20–25°C) water and propeller mix with heating to fully hydrate the product. To more easily “wet” KYTAMER PC, you can add it to a co-solvent such as Methyl Gluceth-20, glycerin, propylene glycol, or SD alcohol 40.

Addition to formulations: Add solutions of KYTAMER PC to the water phase of your formulation.

pH stability: KYTAMER PC is stable in a pH range of 4.0–10.0.

Thixotropic nature of solutions—

Solutions of KYTAMER PC are thixotropic. They thin with shear to squeeze through narrow dispenser openings and re-thicken upon release. See Figure 3.

Table 2—Viscosities¹ of Aqueous Solutions of KYTAMER PC

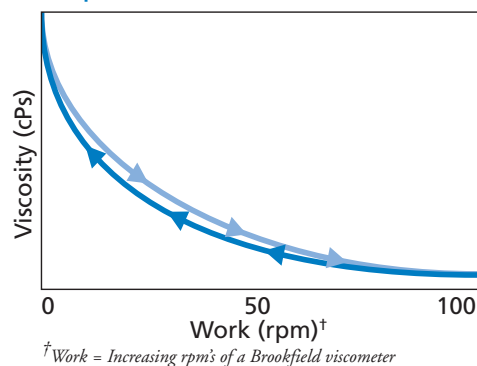
% KYTAMER PC	Viscosity, cPs	Spindle #	RPM
0.5	100	2	100
1.0	200	2	100
2.0	1200	3	50
3.0	4000	4	50
4.0	14,300	5	20
5.0	37,000	6	20

¹Brookfield RVT @ 23°C (73°F)

Table 1—Compatibility Information for KYTAMER PC in Aqueous Solutions

Nonionics	
Methyl Glucose Sesquistearate	Compatible
Methyl Glucose Dioleate	Compatible
PEG-20 Methyl Glucose Sesquistearate	Compatible
Methyl Gluceth-20 Distearate	Compatible
Cationics	
UCARE™ Polymers (Polyquaternium-10)	Compatible
Anionics	
ALS/SLS/TEALS/AOS	Incompatible
Carbomer	Incompatible
TEA-Stearate	Incompatible
Amphoterics	
Cocoamidopropyl betaine	Compatible
Cocoamphocarboxypropionate	Incompatible
Hydroalcoholic Solutions	
SD Alcohol 40 solutions, >60% water	Compatible
SD Alcohol 40 solutions, 50/50 water/alcohol	Hazy
SD Alcohol 40 solutions, <40% water	Incompatible

Figure 3—Effect of Shear on Viscosity of Aqueous Solutions of KYTAMER PC



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