BYK

COLOR COSMETICS

HAIR CARE AND STYLING

PRODUCT GUIDE

ADDITIVES FOR PERSONAL CARE

ANTIPERSPIRANTS/ DEODORANTS

SKIN CARE AND SUNSCREEN

SKIN CLEANSING

A member of ALTANA

Organically modified phyllosilicates and castor oil derivatives

Product	Product properties				Effect							Composition	Formulation systems						Dosage	Application area						
	Vegan	COSMOS APPROVED	NATRUE Approved	Delivery form	Viscosity modification	Particle stabilization	Product stabilization	Sensory effect	Absorption	Matting	Binding properties	INCI	W/O*2, W/Si*3	O/W*4	Water-based	Surfactant-based	Water-free	Powder-based	As delivered (%)	Skin care	Sunscreen	Antiperspirants/deos	Skin cleansing	Color cosmetics	Hair care	Hair styling
Organically modified phyllosilicates																										
CLAYTONE-APA V	●			Powder	●	●	●	●	●		●	Stearalkonium Bentonite	●			●	●	●	1–10	●	●	●	●	●	●	●
CLAYTONE-APA V XR*1	●			Powder	●	●	●	●	●		●	Stearalkonium Bentonite	●			●	●	●	1–10	●	●	●	●	●	●	●
CLAYTONE-MPZ V	●			Powder	●	●	●	●	●		●	Stearalkonium Bentonite	●			●	●	●	1–8	●	●	●	●	●	●	●
CLAYTONE-MPZ V XR*1	●			Powder	●	●	●	●	●		●	Stearalkonium Bentonite	●			●	●	●	1–8	●	●	●	●	●	●	●
CLAYTONE-VP V XR*1	●			Powder	●	●	●	●	●		●	Quaternium-90 Bentonite	●			●	●	●	1–10	●	●	●	●	●	●	●
CLAYTONE-VZ V	●			Powder	●	●	●	●	●		●	Stearalkonium Bentonite	●			●	●	●	1–10	●	●	●	●	●	●	●
CLAYTONE-VZ V XR*1	●			Powder	●	●	●	●	●		●	Stearalkonium Bentonite	●			●	●	●	1–10	●	●	●	●	●	●	●
GARAMITE-7308 XR*1	●			Powder	●	●	●	●				Quaternium-90 Sepiolite, Quaternium-90 Montmorillonite					●		0.3–8	●		●		●	●	●
TIXOGEL-CCT	●			Gel	●	●	●	●			●	Caprylic/Capric Triglyceride, Stearalkonium Bentonite, Propylene Carbonate	●			●	●	●	3–20	●	●	●	●	●		●
TIXOGEL-DMC	●			Gel	●	●	●	●				Dimethicone, Quaternium-90 Bentonite, Triethyl Citrate	●				●		3–20	●	●	●		●		●
TIXOGEL-FTN	●			Gel	●	●	●	●				C12-15 Alkyl Benzoate, Stearalkonium Bentonite, Propylene Carbonate	●			●	●		3–20	●	●	●	●	●		●
TIXOGEL-IDD	●			Gel	●	●	●	●				Isododecane, Quaternium-90 Bentonite, Propylene Carbonate	●				●		3–20	●	●	●		●		●
TIXOGEL-IDP	●			Gel	●		●					Isododecane, Polyethylene	●				●		3–15	●	●	●		●		
TIXOGEL-IIN	●			Gel	●	●	●	●				Isononyl Isononanoate, Quaternium-90 Bentonite, Propylene Carbonate	●			●	●		3–20	●	●	●	●	●		●
TIXOGEL-VSP	●			Gel	●	●	●	●			●	Cyclopentasiloxane, Cyclohexasiloxane, Quaternium-90 Bentonite, Propylene Carbonate	●				●	●	3–20	●	●	●		●		●
Castor oil derivatives																										
RHEOBYK-7590 PC	●	●	●	Powder	●	●	●					Trihydroxystearin	●				●		1–7	●	●	●		●		●
TIXOGEL-RCM	●			Gel	●	●	●				●	Cyclopentasiloxane, Cyclohexasiloxane, Trihydroxystearin	●				●	●	3–20	●	●	●		●		

*1 XR products are sterilized by gamma irradiation *2 Water-in-oil emulsion *3 Water-in-silicone emulsion *4 Oil-in-water emulsion

Incorporation of organically modified phyllosilicates and castor oil derivatives

Organically modified phyllosilicates

CLAYTONE grades are added to the organic phase before all other ingredients are added. For wetting, the additives are dispersed at a medium shear rate using dispersion equipment and then homogenized at high shear forces (10,000–15,000 rpm).

CLAYTONE-VZ V, CLAYTONE-VP V and **CLAYTONE-MPZ V** are stirred for 10 minutes after activation of the product. Activators are, for example, polycarbonate or ethanol, each in a ratio of 95:5 in water. They can be used in the following additional quantities:

- Polycarbonate/water (95/5): 15–60 % based on the amount of CLAYTONE product used
- Ethanol/water (95/5): 15–40 % based on the amount of CLAYTONE product used

For **CLAYTONE-APA V** activation is not necessarily required.

GARAMITE-7308 XR is added to the oil phase while stirring (800–1,500 rpm, 10 minutes). Very high shear forces should be avoided.

TIXOGEL grades can be added at any stage of the manufacturing process. It is recommended that these products are incorporated into the oil phase while stirring at 800–3,000 rpm.

All incorporation information also refers to the "gamma-irradiation-sterilized" versions of the products.

Castor oil derivatives

RHEOBYK-7590 PC is added to the oil/solvent phase under high shear forces to avoid the agglomeration of particles. The mixture is then heated to 35–65 °C and mixed for 20 minutes at high shear forces.

A temperature of 35–65 °C is required to activate the product. In addition, continuous stirring is necessary to avoid recrystallization.

If the temperature is too low or exceeds the maximum activation temperature of 65 °C, soft gel-like particles may form. In this case, it is recommended that the formulation is reworked by heating to 55–65 °C and stirring with high shear forces.

The required activation temperature depends on the polarity of the oil/solvent phase: the higher the polarity, the lower the required temperature.

TIXOGEL grades can be added at any stage of the manufacturing process. It is recommended that these products are incorporated into the oil phase while stirring at 800–3,000 rpm.

Natural and synthetic phyllosilicates

Product	Product properties				Effect							Composition	Formulation systems					Dosage	Application area						
	Vegan	COSMOS APPROVED	NATRUE Approved	Delivery form	Viscosity modification	Particle stabilization	Product stabilization	Sensory effect	Absorption	Matting	Binding properties	INCI	W/O*2, W/Si*3	O/W*4	Water-based	Surfactant-based	Water-free	Powder-based	As delivered (%)	Skin care	Sunscreen	Antiperspirants/deos	Skin cleansing	Color cosmetics	Hair care	Hair styling
Natural phyllosilicates																									
GELWHITE-H	●	●	●	Powder	●	●	●	●	●		●	Bentonite		●	●	●		●	1–10	●	●	●	●	●	●	●
GELWHITE-H XR*5	●		●	Powder	●	●	●	●	●		●	Bentonite		●	●	●		●	1–10	●	●	●	●	●	●	●
OPTIGEL-CL	●	●	●	Powder	●	●	●	●	●		●	Bentonite		●	●	●		●	1–12	●	●	●	●	●	●	
OPTIGEL-CL XR*5	●		●	Powder	●	●	●	●	●		●	Bentonite		●	●	●		●	1–12	●	●	●	●	●	●	
PURABYK-P 5541 SATIN	●	●	●	Powder				●	●	●		Bentonite	●	●		●	●	●	1–20	●	●	●	●	●		●
PURABYK-P 5541 SATIN XR*5	●		●	Powder				●	●	●		Bentonite	●	●		●	●	●	1–20	●	●	●	●	●		●
PURABYK-R 5510	●	●	●	Powder	●	●	●				●	Bentonite, Xanthan Gum		●	●	●		●	0.5–3	●			●	●		
PURABYK-R 5511	●	●	●	Powder	●	●	●	●	●		●	Bentonite		●	●			●	1–10				●	●		
PURABYK-R 5511 XR*5	●		●	Powder	●	●	●	●	●		●	Bentonite		●	●			●	1–10				●	●		
Synthetic phyllosilicates																									
LAPONITE-XL 21	●			Powder	●	●	●	●				Sodium Magnesium Fluorosilicate (nano)		●	●			●	0.1–5	●	●	●	●	●	●	●
LAPONITE-XL 21 XR*5	●			Powder	●	●	●	●				Sodium Magnesium Fluorosilicate (nano)		●	●			●	0.1–5	●	●	●	●	●	●	●
LAPONITE-XLG	●			Powder	●	●	●	●				Lithium Magnesium Sodium Silicate (nano)		●	●			●	0.1–5	●	●		●	●	●	●
LAPONITE-XLG XR*5	●			Powder	●	●	●	●				Lithium Magnesium Sodium Silicate (nano)		●	●			●	0.1–5	●	●		●	●	●	●
LAPONITE-XLS	●			Powder	●	●	●	●				Lithium Magnesium Sodium Silicate (nano), Tetrasodium Pyrophosphate		●	●			●	0.1–5	●	●		●	●	●	
LAPONITE-XLS XR*5	●			Powder	●	●	●	●				Lithium Magnesium Sodium Silicate (nano), Tetrasodium Pyrophosphate		●	●			●	0.1–5	●	●		●	●	●	

*5 XR products are sterilized by gamma irradiation *6 Water-in-oil emulsion *7 Water-in-silicone emulsion *8 Oil-in-water emulsion

Incorporation of natural and synthetic phyllosilicates

Natural and synthetic phyllosilicates are added to the water phase before all other ingredients are added. All incorporation information also refers to the "gamma-irradiation-sterilized" versions of the products.

Natural phyllosilicates

GELWHITE-H and **OPTIGEL-CL** are added to water while stirring. The additive is then dispersed at a medium shear rate (800–3,000 rpm) for 15 minutes.

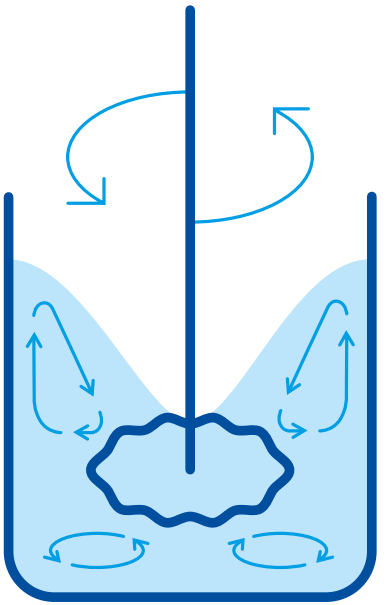
PURABYK-R 5511 and **PURABYK-R 5510** are added to water while stirring and then incorporated for 15 minutes at a high shear rate (6,500 rpm).

A subsequent hydration time of 10 minutes is recommended for the natural phyllosilicates before other ingredients are added.

Synthetic phyllosilicates

LAPONITE grades should be stirred into water at a temperature of 15–25 °C with high shear forces within 10–30 seconds. The solution should be stirred at a sufficient speed to produce the so-called vortex/donut effect. This ensures that the additive is well dispersed and prevents the formation of clumps. After addition, the additive is dispersed for 20 minutes until a clear, colorless, and low-viscosity pre-mix is formed. As soon as this pre-mix is combined with other components of the formulation, the targeted viscosity develops. This can be affected by adjusting the pH value, the temperature, and the addition of electrolytes.

Vortex effect
(donut effect)



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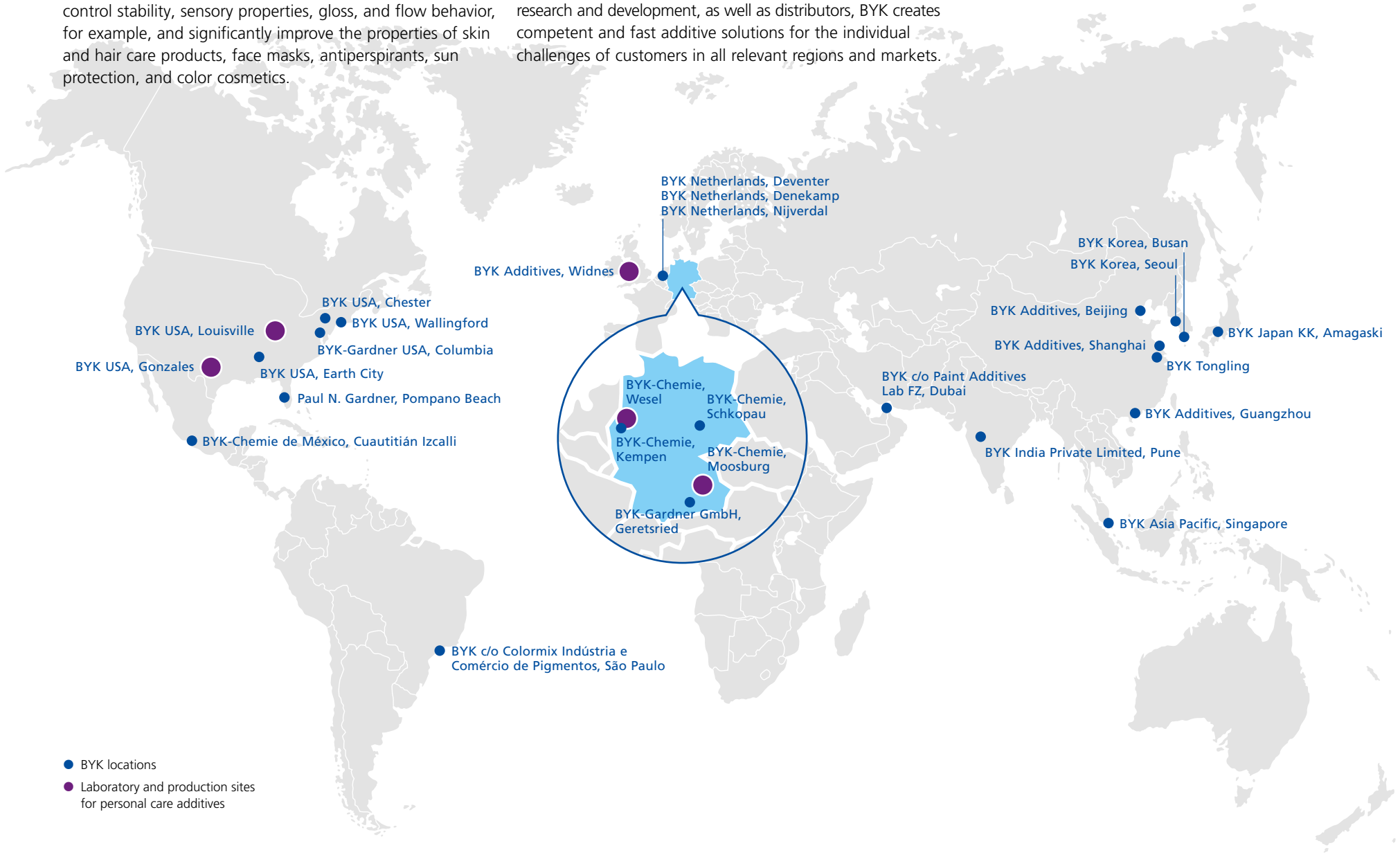
BYK worldwide

BYK is a leading global supplier of specialty chemicals. For the personal care sector, BYK offers innovative solutions that control stability, sensory properties, gloss, and flow behavior, for example, and significantly improve the properties of skin and hair care products, face masks, antiperspirants, sun protection, and color cosmetics.

Customer orientation is an important BYK characteristic. With globally networked locations for production, sales, and research and development, as well as distributors, BYK creates competent and fast additive solutions for the individual challenges of customers in all relevant regions and markets.



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