



TECHNICAL INFORMATION  
**PERSONAL CARE**



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# Introduction

Cosmetic products have a significant influence on our well-being, they cleanse and protect, change our appearance, care and perfume. BYK offers innovative solutions for personal care applications. BYK additives are very versatile and improve a wide variety of formulation systems. They stabilize particles and active ingredients, e.g. in skin care, sun protection, antiperspirants, and color cosmetics. They also control the flow behavior, influence product stability, exhibit absorption, matting, and binding properties, and lead to a wonderful skin feel. The portfolio also includes a selection of additives for natural cosmetics that meet the requirements of COSMOS and/or NATRUE.

This brochure provides an overview of and recommendations for interesting effects in personal care applications.



For various applications you will find **starting point formulations with BYK additives** here.

## Note

To ensure the best appearance and full functionality, please open in Adobe Acrobat.

## Rheology of cosmetic formulations

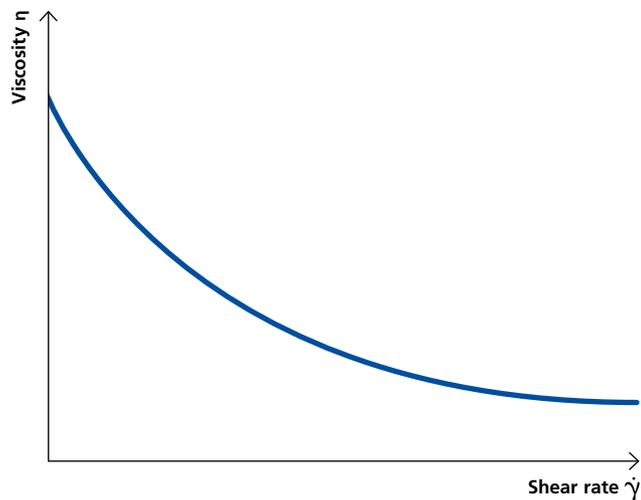
Rheology refers to the flow behavior of substances. In cosmetic products, the rheological behavior determines the handling and application properties and has an influence on the storage stability. The properties of cosmetic formulations with pseudoplastic (G.01) and thixotropic (G.02) flow behavior depend on the shear stress applied on the material. As the shear stress increases, the viscosity decreases (shear thinning) and builds up again as the shear

stress is reduced. Thixotropic flow behavior is also time-dependent, i.e. once the shear stress has been removed, the viscosity only builds up again with time delay (e.g. creams, lotions), whereas with pseudoplastic flow behavior it immediately returns to its initial level (e.g. sprays). With Newtonian flow behavior (G.03), the viscosity is independent of the shear stress (e.g. simple shower gels, oils, or tonics).



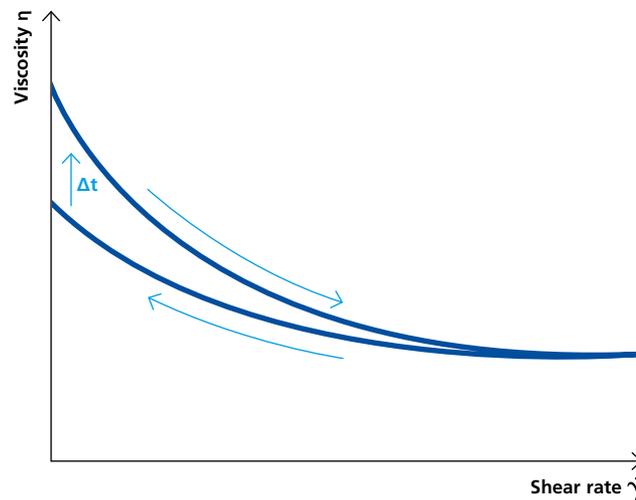
Properties and areas of application for the products can be found in the brochure [PC-G 1](#)

### Pseudoplastic flow behavior



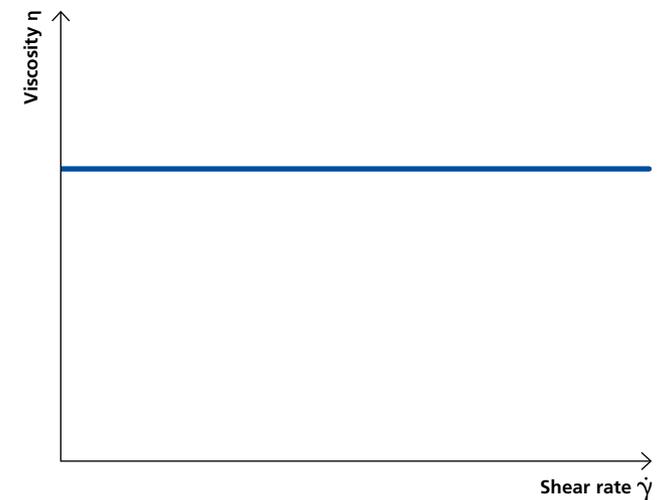
G.01

### Thixotropic flow behavior



G.02

### Newtonian flow behavior



G.03

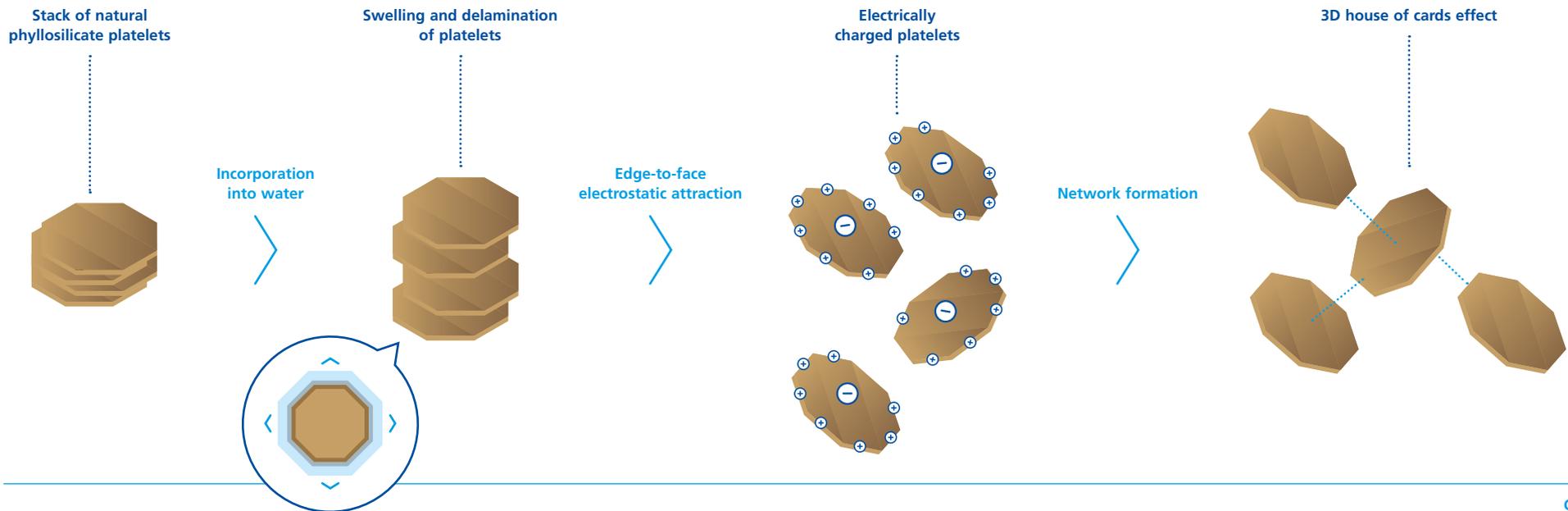
## Mode of action of BYK additives

### Natural and synthetic phyllosilicates

Natural mineral phyllosilicates (e.g. bentonites) belong to the group of inorganic rheology additives. They are obtained from natural deposits of volcanic origin and processed into powdered rheology additives after various treatment processes. Due to their pronounced effectiveness in the low shear rate range, phyllosilicates are particularly suitable for improving storage stability. The powder consists of agglomerated stacks of phyllosilicate platelets. Due to its hydrophilic character, it can be easily incorporated into

water through stirring. The water penetrates through the capillarity between the individual platelets and swelling occurs with a large increase in volume. At the same time, the platelets are separated from each other by shear forces. The delaminated phyllosilicate platelets exhibit charge differences between the edges and the surface of the platelets. Due to these charge differences, the individual particles in aqueous formulations arrange themselves via electrostatic attractions between the edges and surfaces of the platelets in a three-dimensional structure, the so-called house of cards structure.

Synthetic phyllosilicates differ primarily in their origin from natural phyllosilicates. They are produced from defined inorganic minerals in a complex manufacturing process and are characterized in particular by their high purity, consistent composition, and physical properties. They are also significantly smaller than natural phyllosilicates (natural phyllosilicates: 500 nm, synthetic phyllosilicates: 25 nm).

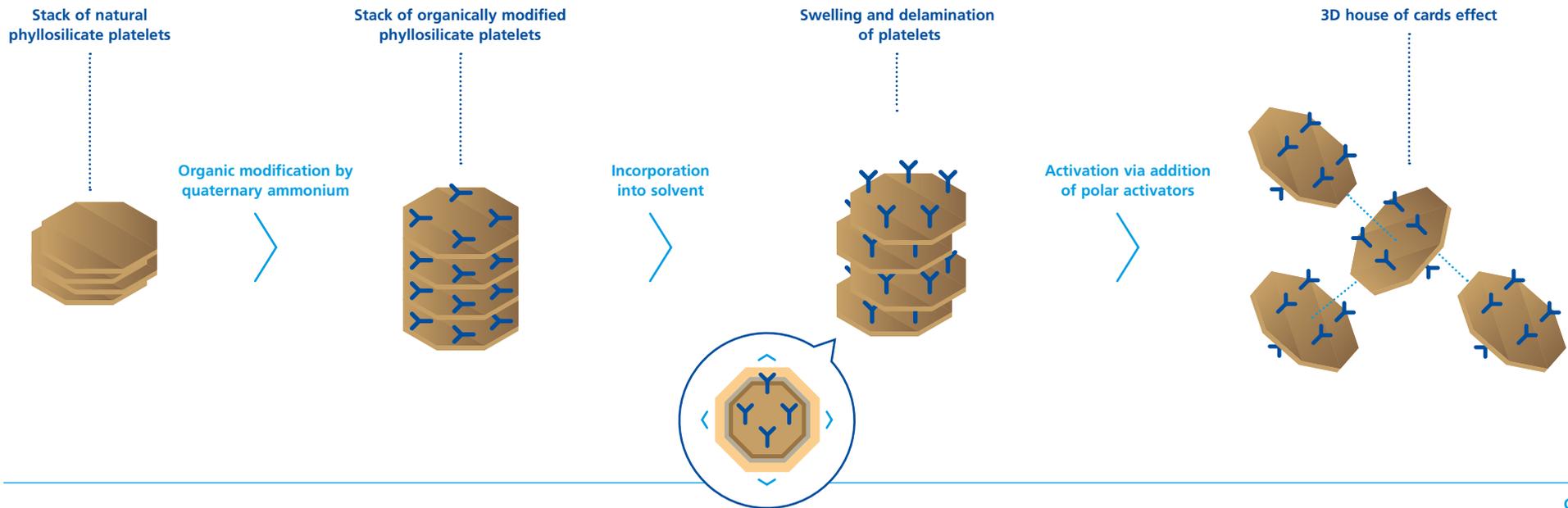


## Organically modified phyllosilicates

Modification with quaternary ammonium compounds with different polarities makes it possible to use phyllosilicates in non-aqueous systems. A distinction is made between conventional and self-activating qualities, depending on the

level of the organic content. The organically modified phyllosilicates also form a house of cards structure, often through hydrogen bonds between the individual phyllosilicate platelets. This leads to a rheological effect. It may be necessary to use polar activators such as alcohol-water or propylene carbonate-water mixtures. This is not the case

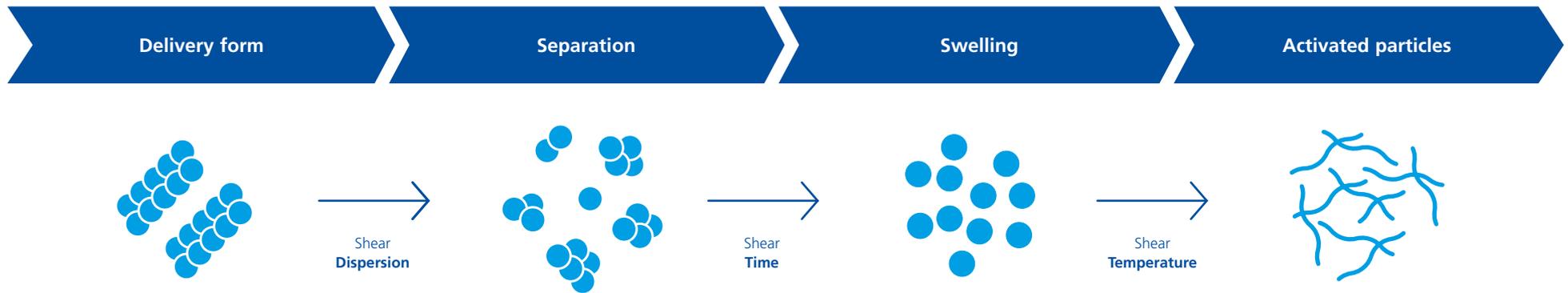
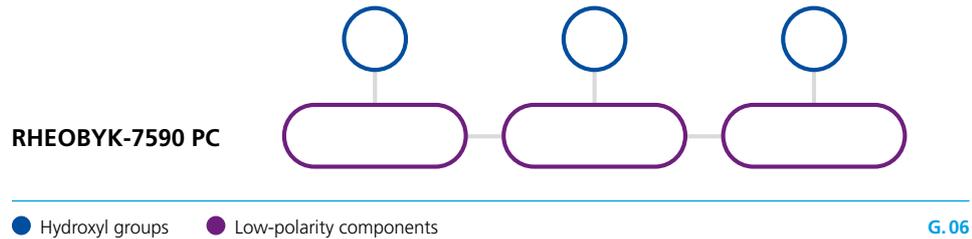
with self-activating products (G.05). Organically modified phyllosilicates are available as powders and gels. In the gels, the organically modified phyllosilicates have already been in an oil phase.



## Castor oil derivatives

Castor oil derivatives are organic rheology additives in powder form that are used to achieve high viscosities. Activation is necessary for a rheological effect. For this purpose, it is necessary to ensure that the powder particles swell up as much as possible. Factors influencing swelling include the polarity of the formulation, the temperature, the shear forces applied, and the dispersion time.

## Structure of RHEOBYK-7590 PC



## Skin care and sun protection

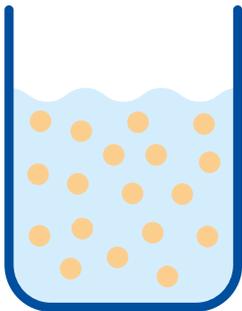
Skin and sun care products regulate the skin's natural functions, protect the skin from environmental influences and light-induced skin ageing, and compensate for the loss of lipids and moisture. Suitable systems for skin care and protection are emulsions (e.g. O/W, W/O), gels, and oils.

### Oil-in-water emulsions

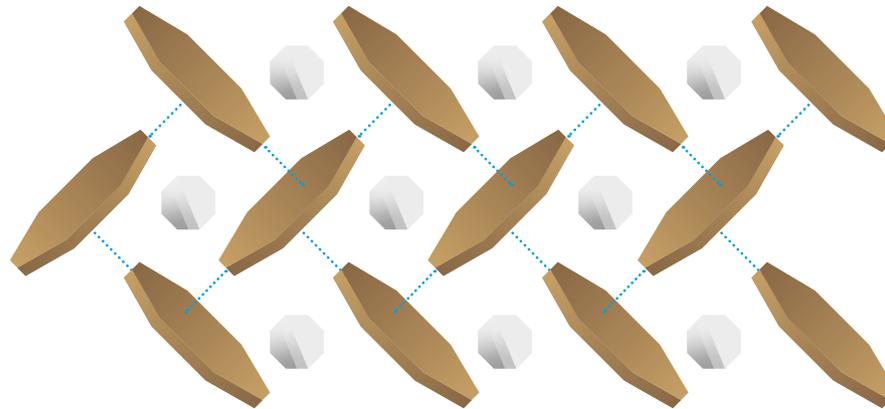
O/W emulsions (G.08) are easy to spread and absorb well into the skin. Oil and water droplets are finely dispersed and the outer phase consists of water. This type of emulsion is widespread and is often used in the development of day creams and lotions. O/W emulsions are preferably stabilized with a hydrophilic rheological additive that is incorporated into the water phase.



### Oil-in-water emulsion



### Stabilization of particles/active ingredients in the house of cards structure



The natural phyllosilicates **GELWHITE-H** and **OPTIGEL-CL**, and the synthetic phyllosilicates **LAPONITE-XL 21**, **LAPONITE-XLG**, and **LAPONITE-XLS** form a stabilizing network in the emulsion (house of cards structure) and have a major influence on the texture and flow behavior, especially on the low shear viscosity. They also have a high degree of whiteness and are very suitable for use in creams

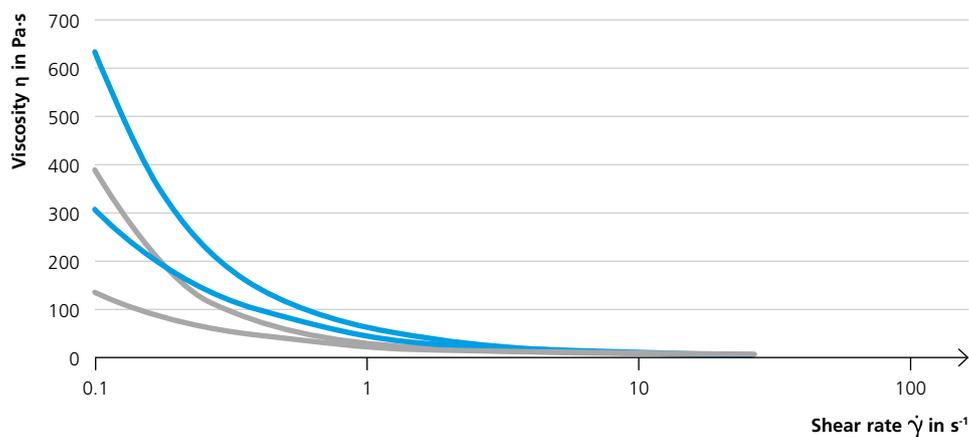
and lotions. In sun protection products or skin care creams, the structure of the three-dimensional network effectively stabilizes the UV filters and active ingredients.

Oil-in-water emulsions with hydrophilic phyllosilicates lead to a beautiful texture, have a pleasant, non-sticky skin feel, they spread well, are quickly absorbed by the skin, and thus

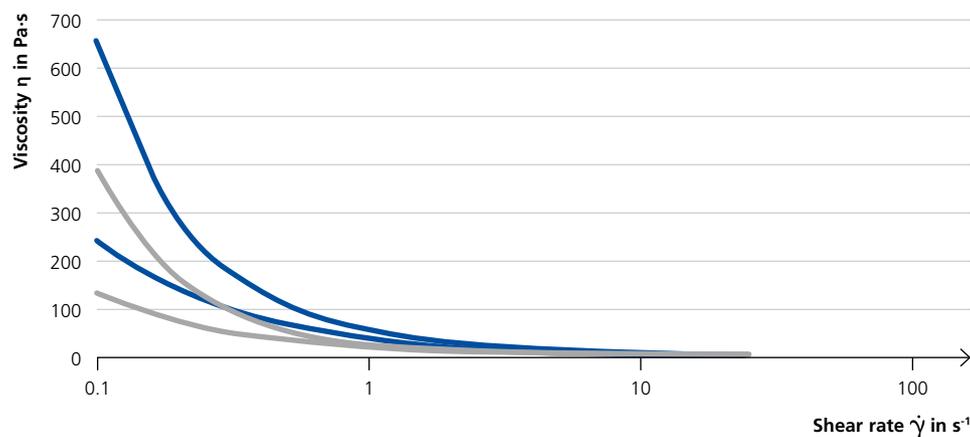
significantly improve the sensory properties of O/W emulsions. The phyllosilicates can be incorporated using both hot and cold processes. **PURABYK-P 5541 SATIN** is recommended for a matting and/or moisture-absorbing effect, e.g. in applications for blemished skin or foot creams.

## Flow curves of an emulsion with natural and synthetic phyllosilicates: Increase in viscosity in the low shear range

### Natural phyllosilicate

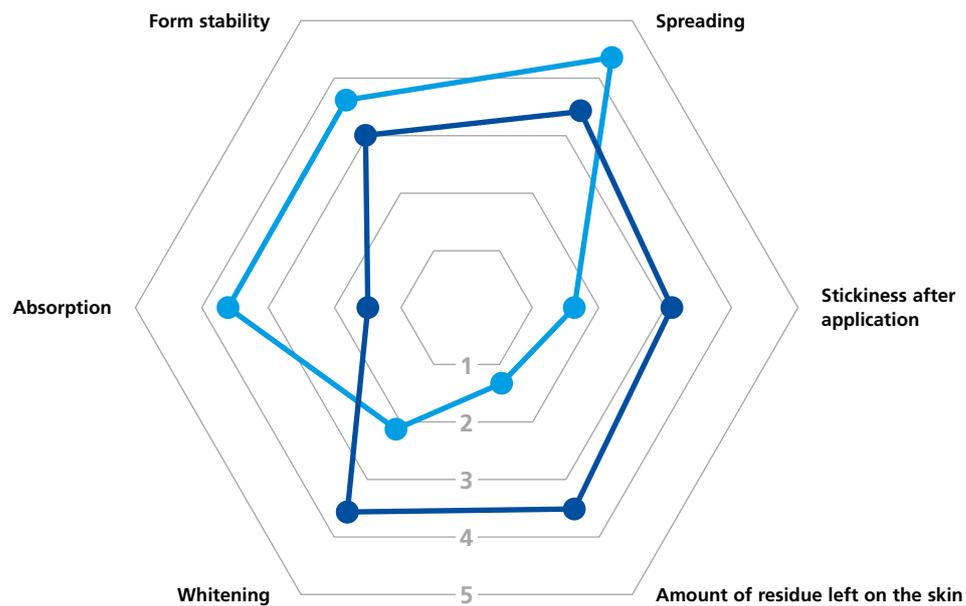


### Synthetic phyllosilicate



● Without additive ● 3 % GELWHITE-H ● 1 % LAPONITE-XL 21

## Sensory diagram



In comparison, an oil-in-water emulsion with **GELWHITE-H** is absorbed into the skin more quickly, is less sticky, and is easier to spread.

● Oil-in-water emulsion with xanthan gum ● Oil-in-water emulsion with GELWHITE-H

G.11

## Recommendations for oil-in-water emulsions

Additive group	Product	INCI
Natural phyllosilicates	GELWHITE-H	Bentonite
	OPTIGEL-CL	Bentonite
	PURABYK-P 5541 SATIN	Bentonite
Synthetic phyllosilicates	LAPONITE-XL 21	Sodium Magnesium Fluorosilicate (nano)
	LAPONITE-XLG	Lithium Magnesium Sodium Silicate (nano)
	LAPONITE-XLS	Lithium Magnesium Sodium Silicate (nano), Tetrasodium Pyrophosphate

T.01

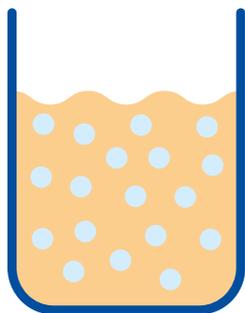
## Water-in-oil emulsions

W/O emulsions are richer than O/W emulsions. They are also made up of finely dispersed water and oil droplets, but the outer phase consists of oil. This type of emulsion has caring properties and is often used as a base for night creams or in applications for dry skin. By adding a rheological additive to the oil phase, W/O emulsions are stabilized and phase separation is prevented.

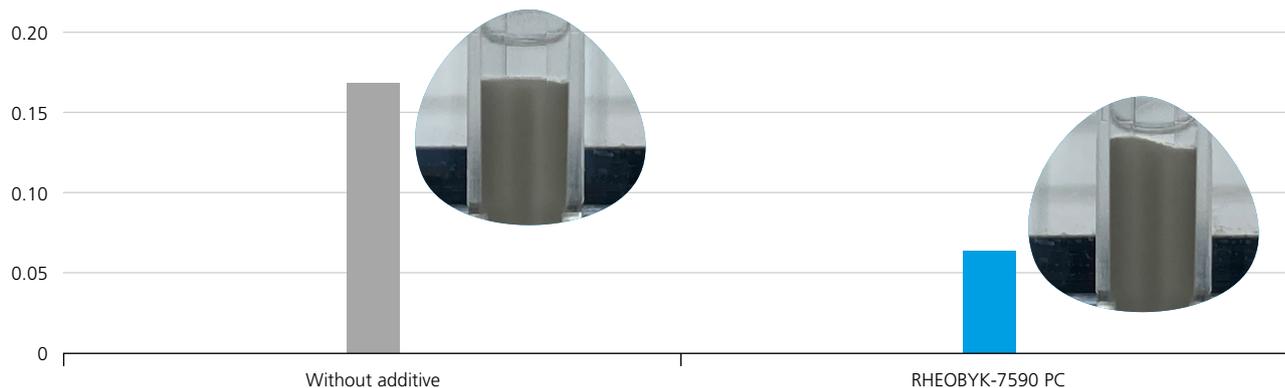
**RHEOBYK-7590 PC** as well as the **CLAYTONE** and **TIXOGEL** products are highly recommended for this type of emulsion. They not only stabilize, but also suspend active ingredients in this system.

In a measurement with the LUMISizer, which analyzes the particle and droplet speed for creaming and sedimentation phenomena, W/O sun protection creams with and without **RHEOBYK-7590 PC** were compared with each other. The W/O sun protection cream with **RHEOBYK-7590 PC** has a significantly lower instability index than the same emulsion without this additive and thus leads to a homogeneous distribution of the inorganic zinc oxide light protection filter used.

## Water-in-oil emulsion



## Instability index



## Recommendations for water-in-oil emulsions

Additive group	Product	INCI
Organically modified phyllosilicates	CLAYTONE-APA V	Stearalkonium Bentonite
	CLAYTONE-MPZ V	Stearalkonium Bentonite
	CLAYTONE-VP V XR	Quaternium-90 Bentonite
	CLAYTONE-VZ V	Stearalkonium Bentonite
	TIXOGEL-CCT	Caprylic/Capric Triglyceride, Stearalkonium Bentonite, Propylene Carbonate
	TIXOGEL-FTN	C12-15 Alkyl Benzoate, Stearalkonium Bentonite, Propylene Carbonate
	TIXOGEL-IIN	Isononyl Isononanoate, Quaternium-90 Bentonite, Propylene Carbonate
	TIXOGEL-DMC	Dimethicone, Quaternium-90 Bentonite, Propylene Carbonate
	Castor oil derivatives	RHEOBYK-7590 PC

## Hydrogels

Hydrogels are water-based systems in which a gelling agent/polymer forms a three-dimensional network and increases the viscosity. **GELWHITE-H**, **LAPONITE-XLG**, and **LAPONITE-XL 21** are very good at forming hydrogels as they are hydrophilic inorganic phyllosilicates. These gels are characterized by a thixotropic shear-thinning flow behavior, a nice texture, and pleasant sensory properties.

### Recommendations for hydrogels

Additive group	Product	INCI
Natural phyllosilicates	GELWHITE-H	Bentonite
Synthetic phyllosilicates	LAPONITE-XL 21	Sodium Magnesium Fluorosilicate (nano)
	LAPONITE-XLG	Lithium Magnesium Sodium Silicate (nano)

T.03

## Oleogels

Oleogels are water-free and are used for lip care, as massage gels, and generally for the care of dry skin. The BYK additives **RHEOBYK-7590 PC**, **GARAMITE-7308 XR**, and the **CLAYTONE** and **TIXOGEL** products are very well suited as rheology additives, control the flow behavior, and improve the skin feel of these oil-based systems.

### Recommendations for oleogels

Additive group	Product	INCI
Organically modified phyllosilicates	CLAYTONE-APA V	Stearalkonium Bentonite
	CLAYTONE-MPZ V	Stearalkonium Bentonite
	CLAYTONE-VP V XR	Quaternium-90 Bentonite
	CLAYTONE-VZ V	Stearalkonium Bentonite
	GARAMITE-7308 XR	Quaternium-90 Sepiolite, Quaternium-90 Montmorillonite
	TIXOGEL-CCT	Caprylic/Capric Triglyceride, Stearalkonium Bentonite, Propylene Carbonate
	TIXOGEL-FTN	C12-15 Alkyl Benzoate, Stearalkonium Bentonite, Propylene Carbonate
	TIXOGEL-IIN	Isononyl Isononanoate, Quaternium-90 Bentonite, Propylene Carbonate
	TIXOGEL-DMC	Dimethicone, Quaternium-90 Bentonite, Propylene Carbonate
	Castor oil derivatives	RHEOBYK-7590 PC

T.04

## Antiperspirants/deodorants

Antiperspirants and deodorants are available in different application forms, as aerosols, roll-ons, sticks, creams, and pump sprays, allowing consumers to choose their preferred application.

### Aerosols

With aerosols, an active ingredient solution with a propellant is filled into spray cans under pressure. During spraying, the propellant gas evaporates and the active ingredient solution is distributed into very fine droplets.

Antiperspirants in aerosol form are oil-based systems in which the active ingredients are based on aluminum salts to inhibit perspiration. Organically modified phyllosilicates stabilize the salts, lead to an even distribution in the product, and thus prevent the nozzle from clogging (G. 14).

Bentonite-based phyllosilicates are an excellent alternative to phyllosilicates based on hectorite (G. 15). Thanks to the wide range of BYK additives based on different technologies, BYK can make recommendations for every system.



### Active solution after 2 h



Without additive



With additive

### Separation behavior of an active solution



Without additive



Market standard  
based on hectorite



TIXOGEL-FTN  
based on bentonite



GARAMITE-7308 XR

### Recommendations for aerosols

Additive group	Product	INCI
Organically modified phyllosilicates	CLAYTONE-APA V	Stearalkonium Bentonite
	CLAYTONE-MPZ V	Stearalkonium Bentonite
	CLAYTONE-VP V XR	Quaternium-90 Bentonite
	CLAYTONE-VZ V	Stearalkonium Bentonite
	GARAMITE-7308 XR	Quaternium-90 Sepiolite, Quaternium-90 Montmorillonite
	TIXOGEL-CCT	Caprylic/Capric Triglyceride, Stearalkonium Bentonite, Propylene Carbonate
	TIXOGEL-FTN	C12-15 Alkyl Benzoate, Stearalkonium Bentonite, Propylene Carbonate
	TIXOGEL-IIN	Isononyl Isononanoate, Quaternium-90 Bentonite, Propylene Carbonate
	TIXOGEL-DMC	Dimethicone, Quaternium-90 Bentonite, Propylene Carbonate

T.05

### Sticks and creams

Deodorant sticks or water-free deodorant creams require a certain hardness, but at the same time good abrasion on the skin is also necessary. The optimum consistency can be achieved using the castor oil derivative **RHEOBYK-7590 PC** or organically modified phyllosilicates. In addition, particles and active ingredients are homogeneously distributed and stabilized in the system. The hydrophilic phyllosilicate **PURABYK-P 5541 SATIN** also binds moisture and leaves the skin feeling pleasantly dry.

### Recommendations for sticks and creams

Additive group	Product	INCI
Castor oil derivatives	RHEOBYK-7590 PC	Trihydroxystearin
Organically modified phyllosilicates	GARAMITE-7308 XR	Quaternium-90 Sepiolite, Quaternium-90 Montmorillonite
Natural phyllosilicates	PURABYK-P 5541 SATIN	Bentonite

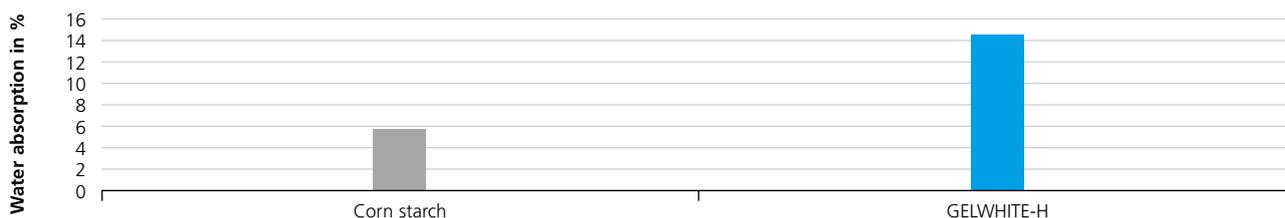
T.06

## Roll-ons

Application as a roll-on is very widespread. A rotating ball distributes the product evenly and delivers it to the desired area. There are different systems for roll-ons, with gel-based and emulsion-based formulations being the most commonly used.

Hydrophilic phyllosilicates are very easy to incorporate. They have excellent moisture-absorbing properties and show more than twice the water absorption capacity of corn starch (G. 16). A formulation with **GELWHITE-H** is absorbed faster into the skin, meaning that the product dries off better (G. 17). In addition, phyllosilicates are known for their odor-binding properties.

## Water absorption capacity



After a storage period of one month at 30 °C and 80 % humidity

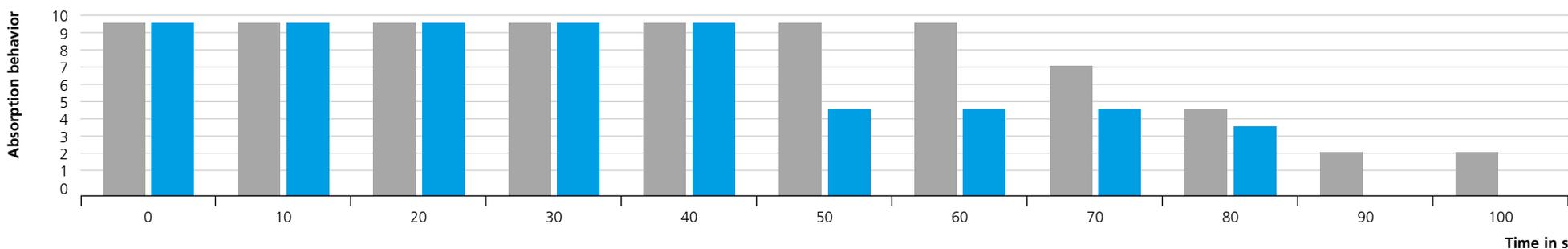
G. 16

## Recommendations for roll-ons

Additive group	Product	INCI
Natural phyllosilicates	GELWHITE-H	Bentonite
	OPTIGEL-CL	Bentonite
	PURABYK-P 5541 SATIN	Bentonite

T. 07

## Absorption behavior



● Without additive ● 1.8% GELWHITE-H 10 (not absorbed) / 5 (slightly absorbed) / 0 (absorbed)

G. 17

## Skin cleansing

There is a large selection of skin cleansing products on the market, including shower gels, bath additives, liquid and bar soaps, as well as facial cleansing products and scrubs. These applications remove dirt and dead cells from the skin and prepare it for further treatment.

In aqueous surfactant systems for skin cleansing, powders, effect pigments, or beads (G. 18) are evenly distributed and kept in suspension (G. 19) with hydrophilic phyllosilicates (such as **GELWHITE-H**, **PURABYK-R 5510**, or **PURABYK-R 5511**). In mostly water- or emulsion-based

peeling products and face masks, particles and active ingredients are used that can be stabilized very well with hydrophilic phyllosilicates. In oil-based professional hand cleansing products with a high particle content, organically modified phyllosilicates (such as **CLAYTONE** and **TIXOGEL** products) lead to very good long-term stability and prevent phase separation. **PURABYK-P 5541 SATIN** with a small particle size and a high specific surface area supports gentle skin cleansing and is highly recommended for use in facial cleansing products.

### Shower gels with particles



G. 18

### Stabilization of particles



G. 19



## Recommendations for skin cleansing products

Additive group	Product	INCI
Organically modified phyllosilicates	CLAYTONE-APA V	Stearalkonium Bentonite
	CLAYTONE-MPZ V	Stearalkonium Bentonite
	CLAYTONE-VP V XR	Quaternium-90 Bentonite
	CLAYTONE-VZ V	Stearalkonium Bentonite
	TIXOGEL-CCT	Caprylic/Capric Triglyceride, Stearalkonium Bentonite, Propylene Carbonate
	TIXOGEL-FTN	C12-15 Alkyl Benzoate, Stearalkonium Bentonite, Propylene Carbonate
	TIXOGEL-IIN	Isononyl Isononanoate, Quaternium-90 Bentonite, Propylene Carbonate
Natural phyllosilicates	GELWHITE-H	Bentonite
	PURABYK-P 5541 SATIN	Bentonite
	PURABYK-R 5510	Bentonite, Xanthan Gum
	PURABYK-R 5511	Bentonite

T.08

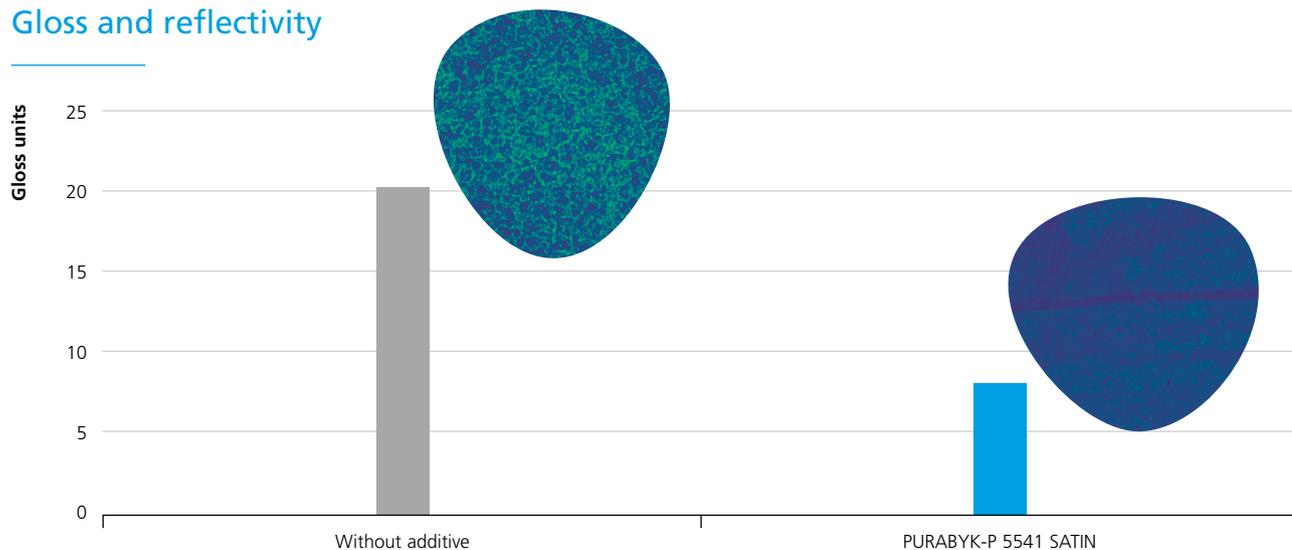
## Color cosmetics

The primary function of decorative cosmetics is to change the appearance. These applications contain a higher proportion of colorants, often combined with active ingredients for skin care. They can be divided into face, eye, lip, and nail care products depending on the area of application. The selection of formulations is diverse and the range of colors is large. There are water-free pencils, high- to low-viscosity oleogels, different types of emulsions, pressed and loose powders, as well as solvent-based systems such as nail polish.

### Emulsions

Make-up creams (foundations) and tinted day creams are emulsions with a high particle content. Phyllosilicates not only offer advantages as sensory and stabilizing additives in these semi-solid pigment-containing applications, they also have very good oil and water absorption properties. An emulsion with **PURABYK-P 5541 SATIN** shows a lower gloss value when applied to vitro-skin® than an emulsion without an additive and also has a significantly lower average reflectivity, leaving the skin mattified. This is shown in the 2D reflectivity measurement with the spectro2profiler from BYK Gardner.

### Gloss and reflectivity



## Recommendations for emulsions

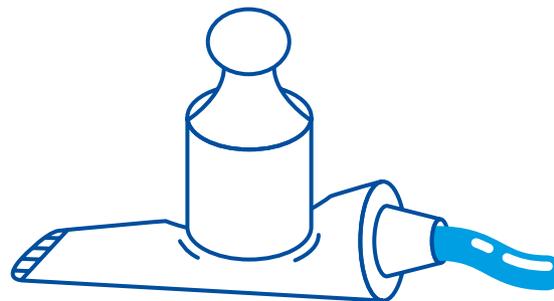
Additive group	Product	INCI
Organically modified phyllosilicates	CLAYTONE-APA V	Stearalkonium Bentonite
	CLAYTONE-MPZ V	Stearalkonium Bentonite
	CLAYTONE-VP V XR	Quaternium-90 Bentonite
	CLAYTONE-VZ V	Stearalkonium Bentonite
	TIXOGEL-CCT	Caprylic/Capric Triglyceride, Stearalkonium Bentonite, Propylene Carbonate
	TIXOGEL-FTN	C12-15 Alkyl Benzoate, Stearalkonium Bentonite, Propylene Carbonate
	TIXOGEL-IIN	Isononyl Isononanoate, Quaternium-90 Bentonite, Propylene Carbonate
	TIXOGEL-DMC	Dimethicone, Quaternium-90 Bentonite, Propylene Carbonate
	TIXOGEL-IDD	Isododecane, Quaternium-90 Bentonite, Propylene Carbonate
Synthetic phyllosilicates	LAPONITE-XL 21	Sodium Magnesium Fluorosilicate (nano)
	LAPONITE-XLG	Lithium Magnesium Sodium Silicate (nano)
	LAPONITE-XLS	Lithium Magnesium Sodium Silicate (nano), Tetrasodium Pyrophosphate
Natural phyllosilicates	GELWHITE-H	Bentonite
	OPTIGEL-CL	Bentonite
	PURABYK-P 5541 SATIN	Bentonite
Castor oil derivatives	RHEOBYK-7590 PC	Trihydroxystearin

T.09

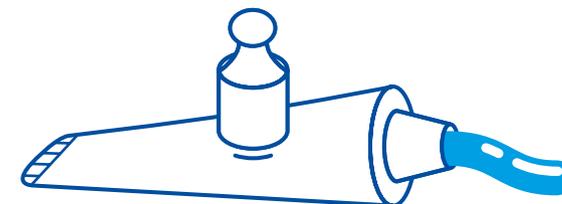
## Oleogels

Pigment-containing products with a very thick to very thin consistency, such as lip gloss and lip balm, are oil-based systems with a rheology that can be optimally adjusted using organically modified phyllosilicates or castor oil derivatives. The additives prevent the pigments from settling, but also improve the product properties and handling. A semi-solid lip balm in a tube can be made more compact and less oily through the addition of an organically modified phyllosilicate. A lip balm with phyllosilicate has a higher structural energy and a lower yield point compared to a lip balm without an additive. Less force is therefore required to squeeze the product out of the tube.

### Yield point of lip balm



Lipbalm without additive



Lip balm with organically modified phyllosilicate

G.21

## Recommendations for oleogels

Additive group	Product	INCI
Organically modified phyllosilicates	CLAYTONE-APA V	Stearalkonium Bentonite
	CLAYTONE-MPZ V	Stearalkonium Bentonite
	CLAYTONE-VP V XR	Quaternium-90 Bentonite
	CLAYTONE-VZ V	Stearalkonium Bentonite
	GARAMITE-7308 XR	Quaternium-90 Sepiolite, Quaternium-90 Montmorillonite
	TIXOGEL-CCT	Caprylic/Capric Triglyceride, Stearalkonium Bentonite, Propylene Carbonate
	TIXOGEL-FTN	C12-15 Alkyl Benzoate, Stearalkonium Bentonite, Propylene Carbonate
	TIXOGEL-IIN	Isononyl Isononanoate, Quaternium-90 Bentonite, Propylene Carbonate
Castor oil derivatives	RHEOBYK-7590 PC	Trihydroxystearin

T.10

## Pencils

Water-free pencil applications are widely used in decorative cosmetics. Oil/wax-based lip, eyeliner, eyebrow, and concealer pencils are popular applications. Organically modified phyllosilicates suspend the high proportion of pigments evenly in the product, generate very good heat and long-term stability, and prevent undesirable effects such as the formation of crystals (blooming) or the appearance of oil droplets (sweating, oil bleeding) on the surface.

### Recommendations for pencils

Additive group	Product	INCI
Organically modified phyllosilicates	GARAMITE-7308 XR	Quaternium-90 Sepiolite, Quaternium-90 Montmorillonite
	TIXOGEL-CCT	Caprylic/Capric Triglyceride, Stearalkonium Bentonite, Propylene Carbonate
	TIXOGEL-IDD	Isododecane, Quaternium-90 Bentonite, Propylene Carbonate
	TIXOGEL-IIN	Isononyl Isononanoate, Quaternium-90 Bentonite, Propylene Carbonate
	TIXOGEL-DMC	Dimethicone, Quaternium-90 Bentonite, Propylene Carbonate
Natural phyllosilicates	PURABYK-P 5541 SATIN	Bentonite
Castor oil derivatives	RHEOBYK-7590 PC	Trihydroxystearin

T.11

## Powder

Pressed powders with a high colorant content are widely available on the cosmetics market, particularly as makeup, eye shadow, and blush. Phyllosilicates have very good binding properties and prevent compact powders from becoming brittle. They can also mattify the skin and effectively absorb sebum and perspiration.

### Recommendations for powders

Additive group	Product	INCI
Organically modified phyllosilicates	CLAYTONE-APA V	Stearalkonium Bentonite
	CLAYTONE-MPZ V	Stearalkonium Bentonite
	CLAYTONE-VP V XR	Quaternium-90 Bentonite
	CLAYTONE-VZ V	Stearalkonium Bentonite
	TIXOGEL-CCT	Caprylic/Capric Triglyceride, Stearalkonium Bentonite, Propylene Carbonate
	TIXOGEL-DMC	Dimethicone, Quaternium-90 Bentonite, Propylene Carbonate
	Natural phyllosilicates	GELWHITE-H
PURABYK-P 5541 SATIN		Bentonite
PURABYK-R 5511		Bentonite

T.12

### Nail polishes (solvent-based systems)

Organically modified phyllosilicates play an important role in nail polish. They suspend and stabilize the pigments used and form a thixotropic gel structure with optimum rheological properties.

### Recommendations for nail polishes (solvent-based systems)

Additive group	Product	INCI
Organically modified phyllosilicates	CLAYTONE-APA V	Stearalkonium Bentonite
	CLAYTONE-MPZ V	Stearalkonium Bentonite
	CLAYTONE-VP V XR	Quaternium-90 Bentonite
	CLAYTONE-VZ V	Stearalkonium Bentonite
	GARAMITE-7308 XR	Quaternium-90 Sepiolite, Quaternium-90 Montmorillonite

## Hair care and styling

Hair cosmetics include shampoos for cleansing the hair, conditioners, and treatments that improve combability and provide special care for the hair, as well as products that shape the hairstyle or change the hair, such as hair gels, waxes, tints, and colors. The variety of hair care and styling products has grown in recent years, innovative product applications that follow current trends are emerging, and the market is growing worldwide.

### Dry shampoo aerosols

Dry shampoos are mainly offered as aerosols. Starch is finely suspended as a solid in a liquid phase. Organically modified phyllosilicates, such as the **GARAMITE** or **CLAYTONE** types, keep the starch particles in suspension and ensure good sprayability. These additives also prevent agglomeration and rapid settling of the particles during the filling process in the production stage.



### Recommendations for dry shampoo aerosols

Additive group	Product	INCI
Organically modified phyllosilicates	CLAYTONE-APA V	Stearalkonium Bentonite
	CLAYTONE-VZ V	Stearalkonium Bentonite
	GARAMITE-7308 XR	Quaternium-90 Sepiolite, Quaternium-90 Montmorillonite

## Shampoo

Hydrophilic phyllosilicates stabilize active ingredients in liquid shampoos, keep them evenly distributed in the formulation, and result in an opaque appearance. They improve the texture and show very good compatibility with anionic, amphoteric, and non-ionic surfactants. **RHEOBYK-7590 PC** is suitable for use in solid shampoos as it provides consistency and stabilizes particles.

### Recommendations for shampoos

Additive group	Product	INCI
Natural phyllosilicates	GELWHITE-H	Bentonite
Synthetic phyllosilicates	LAPONITE-XL 21	Sodium Magnesium Fluorosilicate (nano)
	LAPONITE-XLG	Lithium Magnesium Sodium Silicate (nano)

T.15

## Water-based styling products

Natural and synthetic phyllosilicates show very good synergies in combination with other thickeners. Textures with particle-stabilizing properties can be developed for innovative hair styling (hair gels, styling creams, and pastes).

### Recommendations for water-based styling products

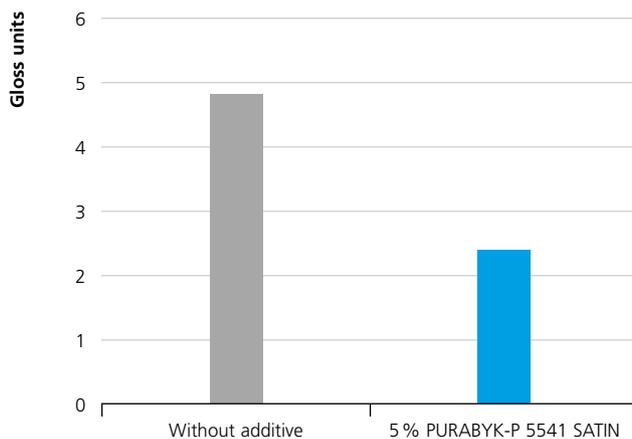
Additive group	Product	INCI
Natural phyllosilicates	GELWHITE-H	Bentonite
Synthetic phyllosilicates	LAPONITE-XL 21	Sodium Magnesium Fluorosilicate (nano)
	LAPONITE-XLG	Lithium Magnesium Sodium Silicate (nano)

T.16

## Water-free styling products

The castor oil derivative **RHEOBYK-7590 PC**, as well as organically modified phyllosilicates such as the **CLAYTONE** and **TIXOGEL** types, stabilize oil/wax-based hair styling products, suspend particles, and give hair waxes and pomades consistency. Styling products for shiny hair have dominated in the past, but today products for a matte look are also in high demand. Compared to a hair wax without an additive, a hair wax with **PURABYK-P 5541 SATIN** creates a matte effect on the hair and thus supports the natural look (G.22).

## Gloss measurement



G.22



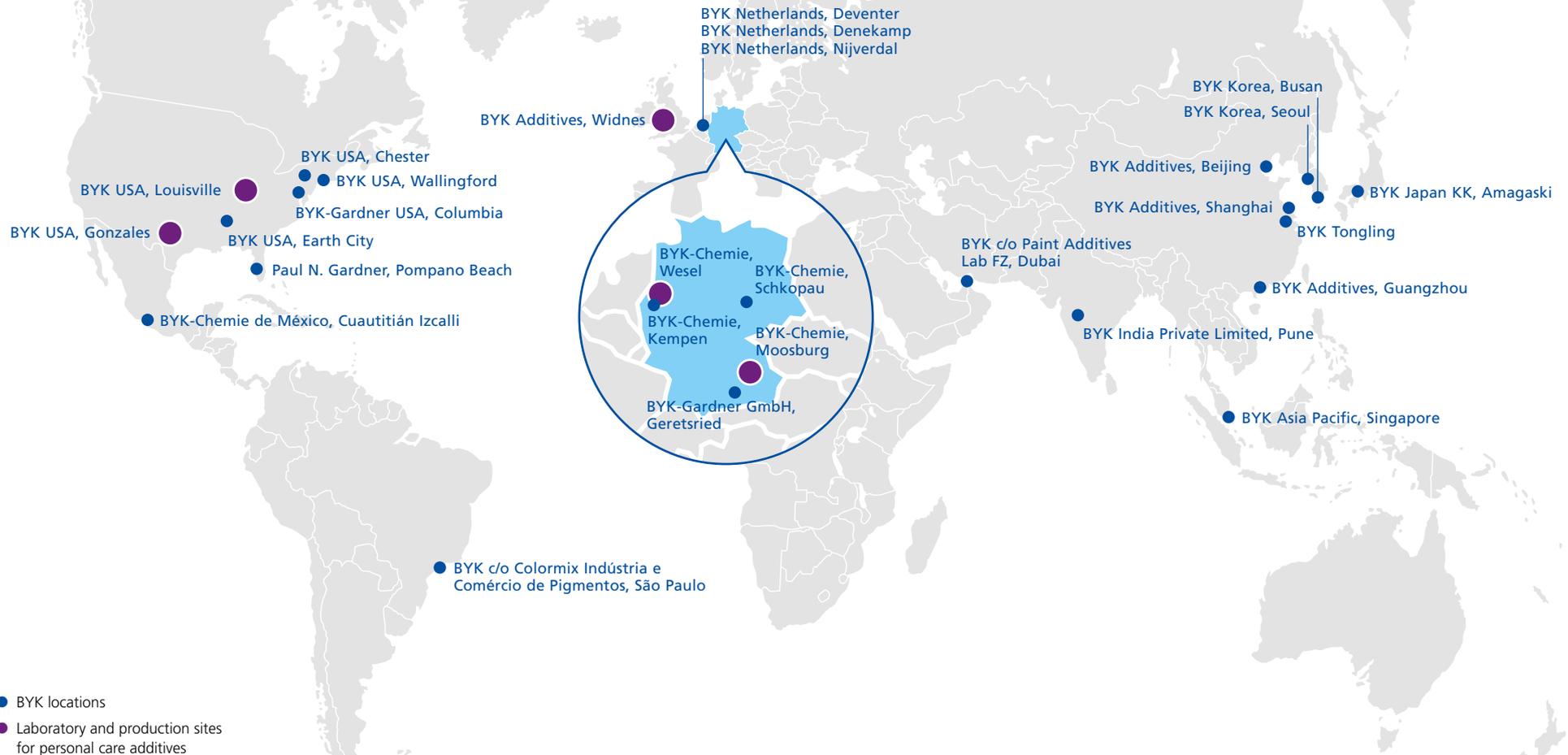
## Recommendations for water-free styling products

Additive group	Product	INCI
Organically modified phyllosilicates	CLAYTONE-APA V	Stearalkonium Bentonite
	CLAYTONE-VP V XR	Quaternium-90 Bentonite
	CLAYTONE-VZ V	Stearalkonium Bentonite
	TIXOGEL-CCT	Caprylic/Capric Triglyceride, Stearalkonium Bentonite, Propylene Carbonate
	TIXOGEL-FTN	C12-15 Alkyl Benzoate, Stearalkonium Bentonite, Propylene Carbonate
	TIXOGEL-IIN	Isononyl Isononanoate, Quaternium-90 Bentonite, Propylene Carbonate
	TIXOGEL-DMC	Dimethicone, Quaternium-90 Bentonite, Propylene Carbonate
Natural phyllosilicates	PURABYK-P 5541 SATIN	Bentonite
Castor oil derivatives	RHEOBYK-7590 PC	Trihydroxystearin

# 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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