



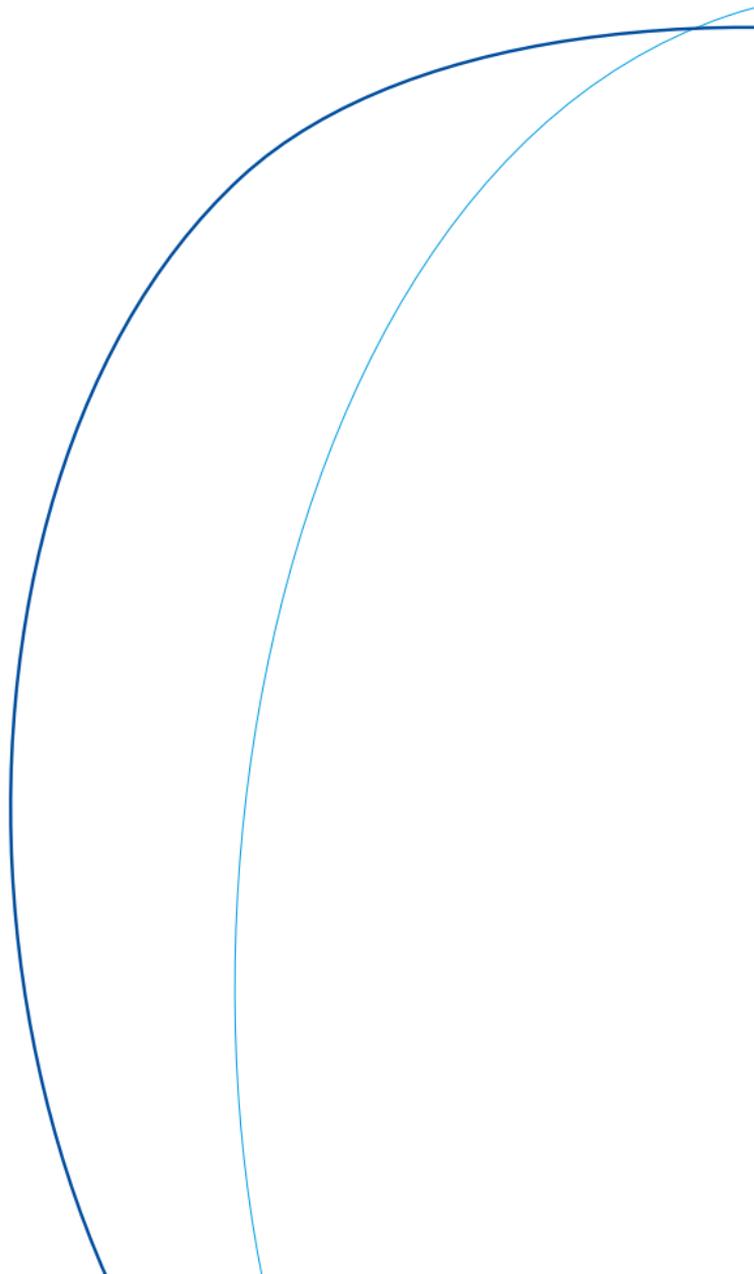
# SHOW NEWS

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# Pioneering Solutions

As the technological leader in water-based additives, BYK offers a diverse range of cross-sector possibilities for almost all coating applications. You will have seen the results of our specialty chemicals both in premium technology products such as tablet displays or high-tech cars, and in everyday items such as parquet flooring, washing machines or wall paints – they are everywhere.

As one of the leading additive suppliers for water-based applications, we can even provide high-performance aqueous additive solutions for challenging protective and marine coatings.



# BYK Additives

## World-class in water-based formulations

The world is changing rapidly. This is particularly evident on the coatings market, with the switch from solvent-borne to water-based coatings as a result of the long-term trend towards more environmentally friendly products.

As one of the leading additive suppliers with the **widest range of water-based additives throughout the industry**, we have been conducting the appropriate research and development for decades. To date, more than **40% of our additives** are already being recommended for water-based coatings and printing inks.

And we're continuously expanding the range with new additives, as BYK is a **leader in innovation**. Excellent, differentiated additive solutions are developed based on new raw materials, using state-of-the-art technologies and while observing both global and local regulations. In this process, **more than 50% of our research and development activities** are aimed at additives which help to formulate **environmentally friendly products**.

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# BYK markets

## Decorative coatings

### Architectural coatings

The range of decorative coatings covers interior wall paints, decorative wood and metal coatings as well as external coatings for facades and road marking paints. In addition, pigment concentrates for tinting systems (both point-of-sales and in-plant tinting) are an essential part of the range of applications and related binder systems. From clear coats to highly filled paints, BYK offers special additives that comply with legal requirements for both aqueous and solvent-borne systems. There is an extensive additive portfolio for decorative and architectural coatings. Wetting and dispersing agents are just as important as defoamers, rheological and surface additives.



### Floor coatings

Once reserved for warehouses, multi-storey car parks and production sites, the use of liquid polymer coatings is gaining popularity in many commercial spaces, shopping centers and hospitals. Regulatory oversight has increased significantly at the same time. For this reason, the use of water-based and solvent-free systems is even more important. BYK additives for floor coatings simplify system handling and make it possible to obtain more reproducible results.



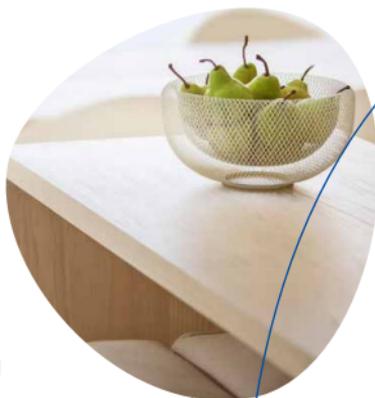
## Construction chemicals

BYK offers environmentally friendly solutions for construction applications incl. cement-based systems, concrete formulations and admixtures. The innovative product portfolio contains different types of high-performance additives, particularly for cement-based applications such as dry mix mortars, concrete formulations and admixtures. Our rheology modifiers improve application and workability properties while our defoamers enhance de-aeration and prevent foam formation. The range of wetting and dispersing and surface additives finally provide pigment stabilization and leveling properties.



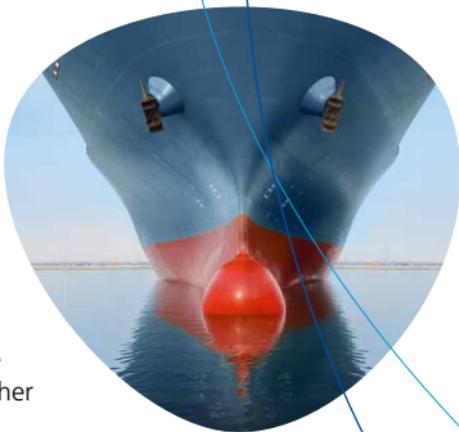
## Wood and furniture coatings

BYK formulates premium additives distinctively for wood coating systems, offering high quality performance characteristics like: easy-to-clean, scratch-resistance, UV resistance, excellent surface leveling and, provide exceptional pigment stabilization within pigmented systems.



## Marine and protective coatings

Whether it be the primer, filler, or top coat, BYK offers a wide range of special selected additives to assist formulators in developing high performance marine/protective and intumescent coating systems. Especially to provide extraordinary film thicknesses against aggressive environments to avoid negative effects on the long term performance, or to improve the fire resistance, is the focus in this end use, besides many other demands.



## Automotive coatings

### Automotive OEM coatings

BYK offers additive solutions for aqueous and solvent-borne automotive OEM coatings, such as cathodic electro deposition, primers, monolayer topcoats, basecoats and clearcoat systems. Our various additive families improve surface properties such as gloss and leveling, support brilliance and color intensity, and help orientation of effect pigments to optimize the flop effect. Furthermore, BYK additives also prevent foam and the associated defects.



### Automotive refinish coatings

Our additive solutions show positive effects in both aqueous and solvent-borne automotive refinish coatings, such as putty primers, monolayer topcoats, basecoats and clearcoat systems. Our various additive families offer solutions for improving surface properties such as gloss and leveling, support brilliance and color intensity, and help orientation of effect pigments to optimize the flop effect. BYK also offers suitable solutions to prevent foam and the associated defects. Sandability and polishability are also challenges which can be positively influenced by our additives.



## Special coatings

### Can coatings

High surface smoothness, very good scratch and abrasion resistance, absence of bubbles, good substrate adhesion and very good leveling are decisive characteristics for can coatings. BYK offers additives which are suitable for food contact applications according to certain regulations and can be used in solvent-borne, aqueous and radiation-cured can coating systems.

### Coil coatings

The high speeds of industrial band coating lines and the subsequent extreme deformation of the coated sheets demand coatings with very good color stability. They must also be free of foam, provide excellent leveling, adhere well and have surface characteristics such as smoothness, scratch and abrasion resistance, and also enhanced easy to clean properties. With BYK additives, these properties can be achieved in all coil coating application areas.



### General industrial coatings

Industrial coatings are used on plastic, metal, and mineral substrates. The application areas are versatile and so are the required additives. BYK additives provide solutions for pigment stabilization, defoaming, improved surface properties and rheology control in aqueous, solvent-borne and solvent-free formulations.



### Powder coatings

Powder coatings are one of the most environmentally friendly coating systems. They are 100 % solid and they contain no harmful VOC's. BYK offers a wide range of additives for powder coatings that improve leveling, prevent craters and enhance degassing and pigment wetting. A special range of additives is used to improve processing conditions and other types provide structured or textured surfaces. BYK also provides the right additives for clear powder coatings as well as UV powders.



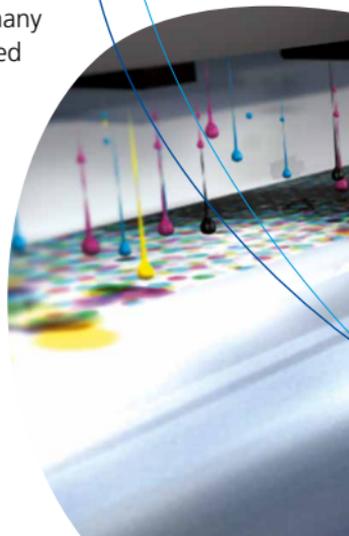
## Industrial applications

### Printing inks

Printing speeds in conventional printing are becoming ever faster, with a corresponding increase in the demands on the printing inks used. BYK additives help meet these increased requirements and develop the optimum printing inks. Whether to improve the color strength and transparency of a printing ink, to improve the abrasion resistance of printing inks and overprint varnishes, for efficient defoaming or to improve the wetting behavior – BYK offers the fitting additives for aqueous, solvent-borne and radiation-curing systems. Of course, they are also suitable for food contact applications according to certain regulations.

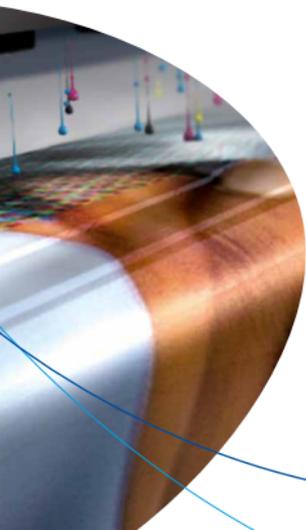
### Inkjet inks

Inkjet printing is becoming increasingly important in many areas in which substrates have traditionally been printed using exclusively conventional means, e.g. in packaging printing on paper, cardboard and foil, on ceramic substrates or on textiles. For all applications, BYK offers the fitting additives to support the formulation of inkjet inks, even in areas in which indirect contact with food is required. BYK additives ensure low-viscosity and long-term stable inkjet inks with optimum color strength, improve the jetting properties and abrasion resistance of aqueous, radiation-curing, solvent-borne and ceramic inkjet inks.



### Adhesives and sealants

BYK is your expert technology partner when it comes to purposefully improving the properties of your adhesives and sealants. BYK offers additives for all kinds of adhesive systems, from aqueous dispersion adhesives to solvent-borne systems or solvent-free reactive systems such as polyurethanes, epoxides, acrylates and silane-terminated polymers. In addition, BYK is continuously expanding its range in the field of hot-melt adhesives.



Wetting and dispersing additives

## DISPERBYK-2014

100 % wetting and dispersing additive for solvent-borne, solvent-free, and aqueous coatings and uv systems as well as aqueous printing inks and inkjet inks

### Benefits

- Significant viscosity reduction, even with high pigment loading
- Excellent color development, gloss and transparency
- For resin-containing and resin-free grinds, equally suitable in aqueous systems
- VOC-free (< 1500 ppm)
- Ideal product viscosity at 100 % active substance content  
→ easy to handle
- Label-free
- Compliant with Swiss Ordinance

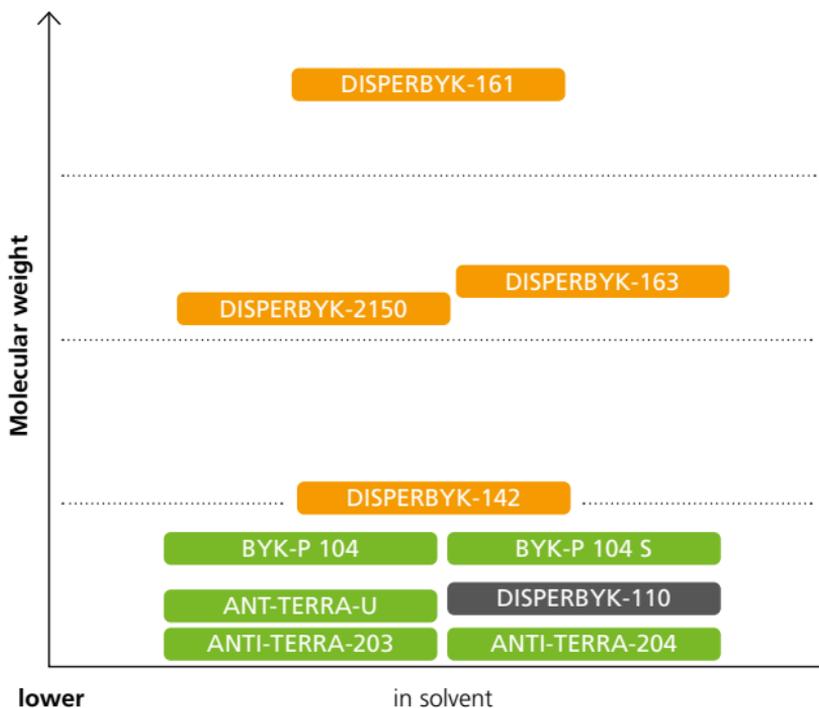
BYK's current portfolio already offers outstanding solutions for the majority of organic pigments and carbon blacks – but some pigments present particular challenges if a maximum product performance needs to be achieved or the introduction of undesirable solvents into the formulation needs to be prevented. Furthermore, some high-solid additives are difficult to handle owing to their high viscosity, while others are subject to labeling requirements or are not entirely suitable for use in printing and inkjet inks.

This makes the new DISPERBYK-2014 the perfect addition to BYK's range of 100 % additives – with the focus on a maximum transparency and perfect color development of organic pigments and carbon blacks. This product profile is further rounded off by broad compatibility with a huge variety of solvents and resins.

## DISPERBYK-2014 – The addition to byk's range of wetting and dispersing additives

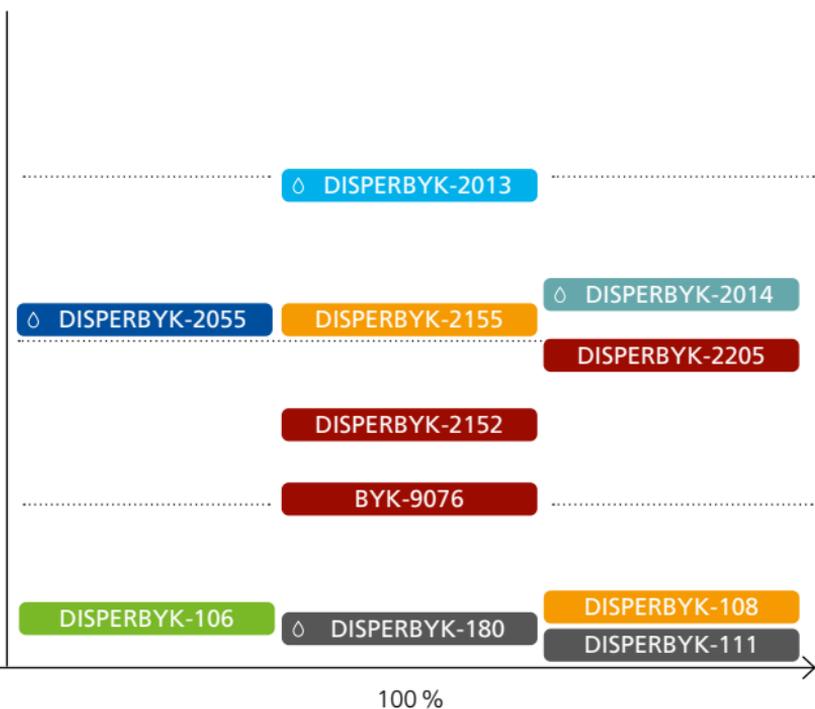
### Solvent-borne wetting and dispersing additives

higher



- Acrylate copolymer
- CPT-based acrylate copolymer
- Fatty acid derivative
- Phosphoric acid derivative

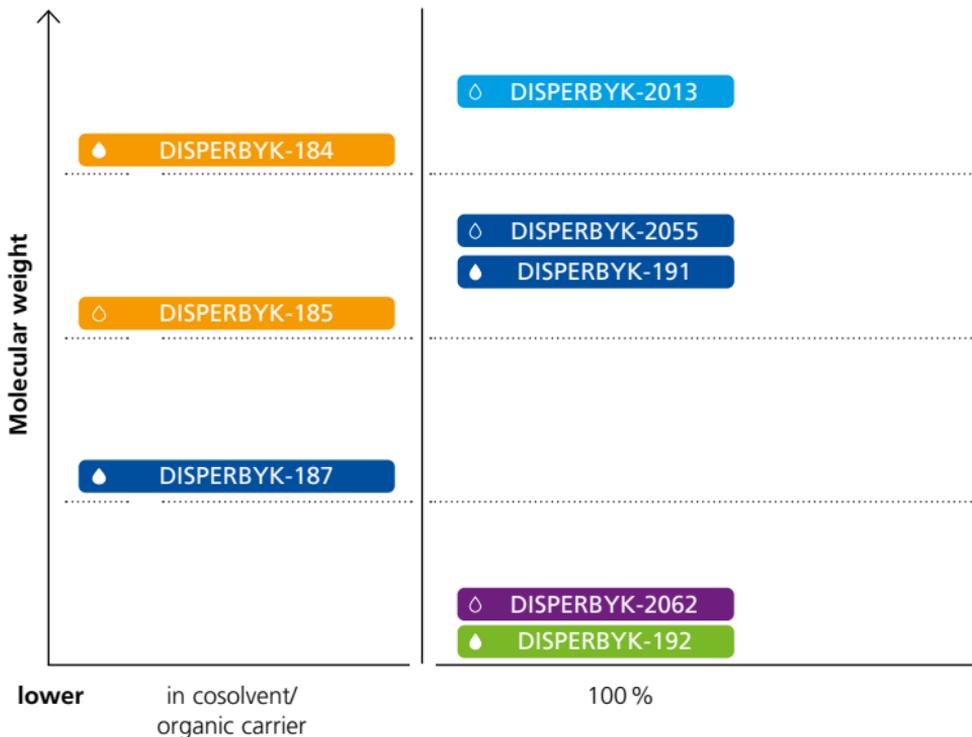
- Polyurethane
- Polyalkoxyate
- Epoxy-amine
- Hyperbranched polymer



- /// Controlled flocculating
- Aqueous systems
- Solvent-borne and aqueous systems

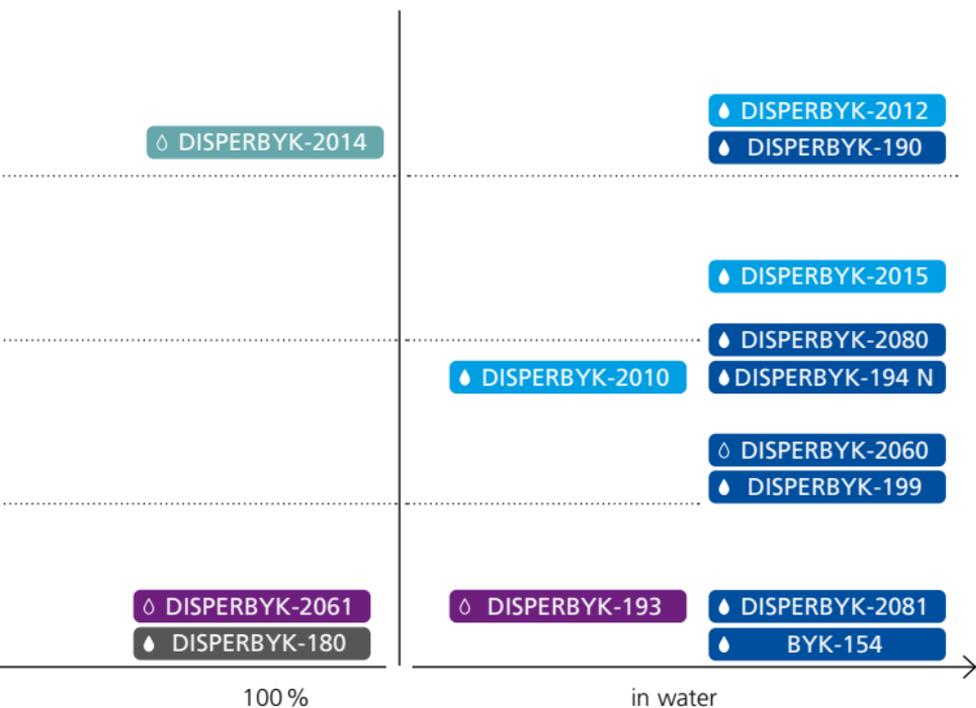
## Aqueous wetting and dispersing additives

higher



- Acrylate copolymer
- CPT-based acrylate copolymer
- Fatty acid derivative
- Phosphoric acid derivative

- Polyurethane
- Polyalkoxylate
- Epoxy-amine
- Hyperbranched polymer



- /// Controlled flocculating
- Aqueous systems
- Solvent-borne and aqueous systems

Wetting and dispersing additives

# DISPERBYK-2018

# DISPERBYK-2019

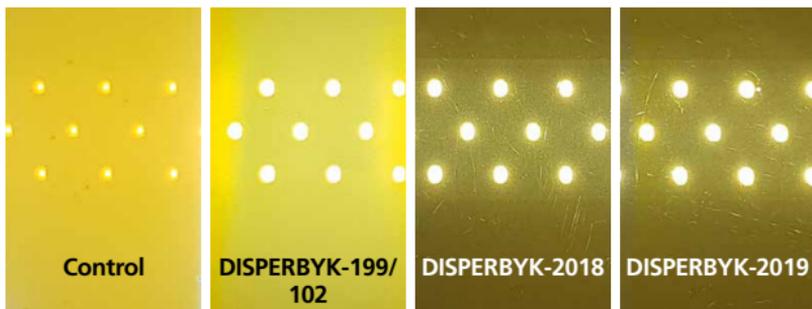
VOC- and solvent-free wetting and dispersing additives for aqueous paint systems, floor coatings, adhesives, and pigment concentrates

DISPERBYK-2018 and DISPERBYK-2019 are two new wetting and dispersing additives with maximum performance in terms of high viscosity reduction combined with Newtonian flow behavior, outstanding pigment stability, and perfect optical properties.

Although both additives can be used in an array of markets, they still differ with regard to their recommendations. While DISPERBYK-2018 achieves outstanding results in aqueous architectural coatings across the entire spectrum of inorganic and organic pigments as well as transparent iron oxide pigments, both additives are suitable for automotive coatings, for example only for inorganic pigments. In inkjet inks, the best result varies depending on the pigment type.

Versatility? Yes, but still specific in application. The DISPERBYK-2018 and DISPERBYK-2019 have one thing in common: Both additives are VOC- and biocide-free and are therefore suitable for all modern aqueous systems.

## DISPERBYK-2018 and DISPERBYK-2019 – Excellent transparency of iron oxide yellow pigments in aqueous wood and furniture coatings



Pigment: Sicotrans Yellow L1916; dosage: 20 % additive (solid based on pigment), slurry; test system: 1K-PU-clearcoat, layer thickness (wet): 50  $\mu\text{m}$

## Benefits

- Strong reduction in viscosity
- No thixotropic flow behavior
- Outstanding storage stability
- Excellent optical properties:
  - High color strength and transparency
  - High gloss and no haze
- Suitable for high pH values
- Very broad compatibility in aqueous systems and, depending on application area, very broad pigment spectrum

**Biocide-free**  
**VOC-free**

Wetting and dispersing additives

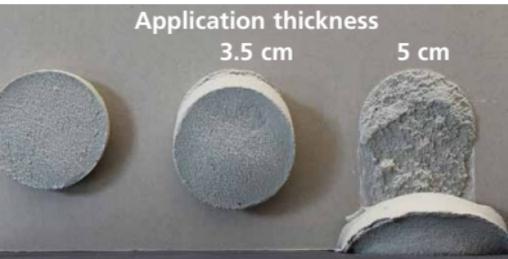
## DISPERBYK-2290

VOC- and APEO-free powder wetting and dispersing agent for use with highly alkaline aqueous building materials

DISPERBYK-2290 is a highly efficient powder VOC- and silicone-free wetting and dispersing agent for use in predominantly sag-controlled, mineral based building material formulations. The additive is highly compatible with various different mineral binder systems. Due to its powder form, the additive is easy distributed in the building material formulation.

DISPERBYK-2290 accelerates and improves wetting of the powder components. Not only the consistency but also the rheological properties are retained throughout the processing time. The processing properties are improved by the homogeneous and robust texture.

## DISPERBYK-2290 – Improved anti-sagging properties after application



0.05 % competitor



0.05 % DISPERBYK-2290

## Benefits

- Environmentally friendly
  - VOC-free, < 1500 ppm
  - APEO-free
- Accelerated and easier mixing
- A robust and homogeneous structure is achieved
- Workability properties are improved
- Consistency is maintained over a longer period of time
- No negative influence on setting behavior
- Stabilization of pigments and fillers

Wetting and dispersing additives

## DISPERBYK-2291

VOC- and APEO-free powder wetting and dispersing agent for highly alkaline aqueous building material formulations

DISPERBYK-2291 is a highly efficient powder VOC- and silicone-free wetting and dispersing agent for use in predominantly flowable, mineral bound building material formulations. The additive is highly compatible with various different mineral binder systems. Due to its powder form, the additive is easily distributed in the building material formulation.

The additive accelerates and improves wetting of the fine-grain powder components in flowable systems without increasing the consistency during mixing. Furthermore, high density and an almost unchanging consistency are achieved throughout the processing time.

## DISPERBYK-2291 – Excellent workability properties and surface characteristics in a ternary self-leveling compound



**Competitor/30 min.**



**0.1 % DISPERRBYK-2291/30 min.**

## Benefits

- Environmentally friendly
  - VOC-free, < 1500 ppm
  - APEO-free
- Accelerated and easier mixing
- A robust and homogeneous structure is achieved
- Leveling properties are optimized
- Consistency is maintained over a longer period of time
- No negative influence on setting behavior
- Stabilization of pigments and fillers

Defoamers

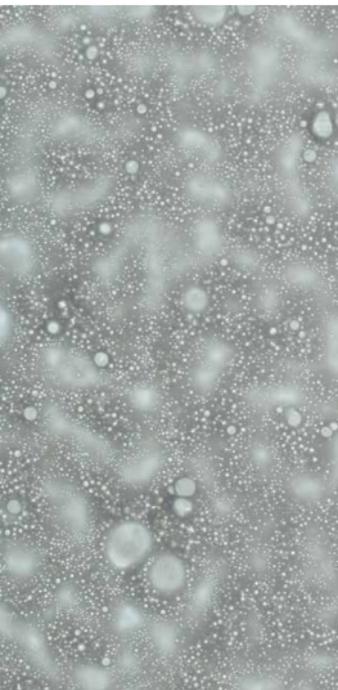
## BYK-092

VOC-free silicone defoamer for aqueous systems with broad compatibility and long-term stability for brush and spray application



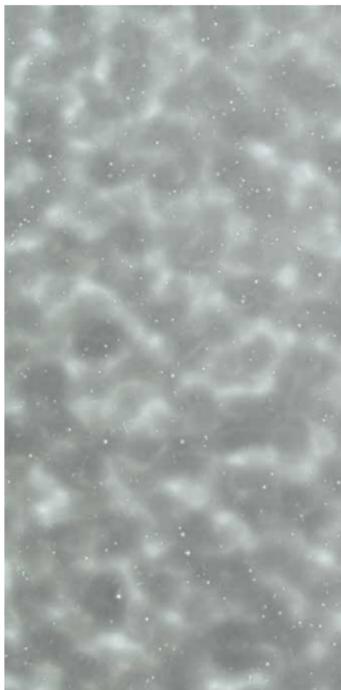
## BYK-092 – Very good defoaming of an emulsion paint before and after storage

Before storage



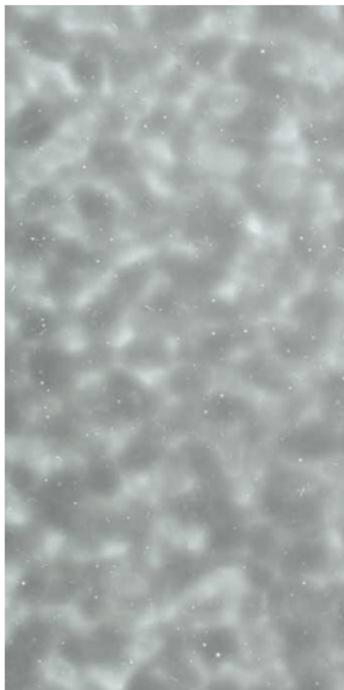
**Control without defoamer**

Before storage



**0.3 % BYK-092**

After 2 weeks at 40 °C



**0.3 % BYK-092**

System: Emulsion paint based on Mowilith LDM 1871, PVC 84 %; Dosage: 0.3 % (as supplied) based on the total formulation, post-addition 3 min. at 2 m/s; Application: 30 g of the sample is rolled onto a 500-cm<sup>2</sup> contrast card with an open-pored moltoprene roller

With the BYK-092 defoamer, BYK can now offer a perfectly tailored and highly effective solution that forms a solid foundation for future developments in the industry. A new generation of polysiloxanes combined with selected hydrophobic particles creates an excellent balanced product profile. BYK-092 displays high efficiency in clear coats as well as pigmented and matted systems, with the positive properties such as high transparency and gloss particularly evident in clear coats. The easy incorporation at moderate shear forces and the long-term stability of the defoamer in the system are just excellent. The VOC-free BYK-092 defoamer has a wide range of applications and eliminates both macrofoam and microfoam in systems such as pure acrylates, 2-component PUR resins or hybrid systems. It is also very suitable for difficult application methods such as HVLP or roller coating.

## Benefits

- Very good defoaming in various systems (clear, matt, pigmented)
- High transparency in clear coats
- Little or no influence on the surface (haze and cratering)
- Excellent effectiveness even at low dosages
- Very good long-term stability
- VOC-free

## Applications

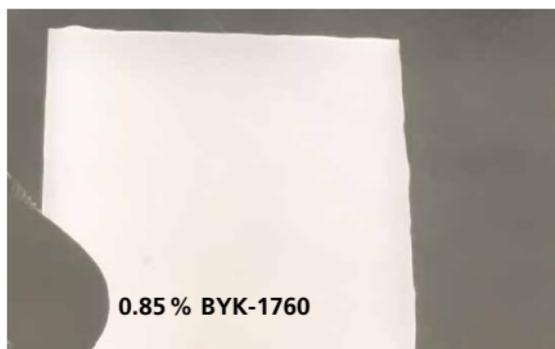
- Wood and furniture coatings
- Architectural coatings
- Floor coatings
- Printing inks
- Adhesives and sealants

Defoamers

## BYK-1760

Emission-free silicone and polymer-containing defoamer and air release agent for solvent-borne and solvent-free coatings, adhesives, sealants and casting resins

**BYK-1760 – Very good defoaming and leveling properties of a 2-pack epoxy system**



Test system: 2-pack epoxy resin system, filled; Dosage: 0.85 % (as supplied) based on component A; Incorporation: During the grinding process  
Application: Self-leveling coating, Application quantity per  $m^2 = 1.9 \text{ kg}$

BYK-1760 is a newly developed air release agent that guarantees fast and efficient elimination of trapped air without altering optical and mechanical properties. The high effectiveness of the additive makes it the first choice for solvent-free systems. The epoxy-functional groups contained in the additive enable embedding into the polymer matrix, protecting negative side effects, such as an increase in slip. In addition, BYK-1760 is also recommended for plastic applications (e.g. casting resins) and adhesives and sealants. The product also demonstrates its breadth of performance in these applications.

## Benefits

- Very good defoaming properties in combination with a broad compatibility with clear/matt/pigmented systems
- Particularly suitable for epoxy formulations
- Suitable for PUR/Polyaspartic formulations
- Easy to incorporate
- No or low influence on transparency and cratering
- Solvent-free
- AgBB-compliant
- Can be embedded into the polymer matrix

## Applications

- Floor coatings
- Protective coatings
- Casting resins
- Adhesives and sealants

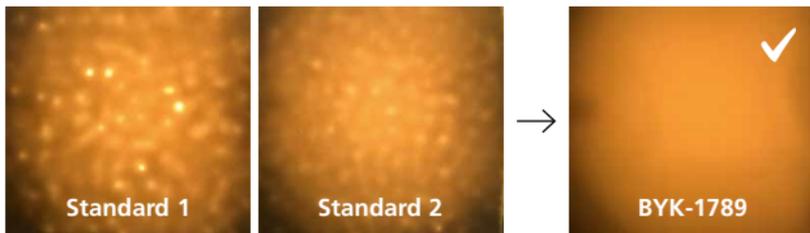
Defoamers

## BYK-1789

Solvent-free silicone defoamer for improving air release and preventing microfoam in aqueous high-build and fast-drying coatings and adhesives

BYK-1789 is a new 100 % defoamer that has been specially developed for aqueous epoxy-based corrosion protection coatings. It is highly compatible despite its strong effect, supports substrate wetting, and is extremely effective in reducing microfoam and macrofoam.

**BYK-1789 – The first choice for perfectly defoamed and crater-free demanding coatings**



Test system: 2-pack epoxy system; dosage: 0.8 % (as supplied) based on component A; Test method: Coating draw down 300  $\mu\text{m}$  wet film with doctor blade; Drying conditions: 5 min. flash-off, 30 min. in oven at 50 °C

A particular advantage is the exceptionally good internal air release of the coating, even in fast-drying systems. This particularly good air release can ultimately be seen in the improved corrosion protection characteristics.

## Benefits

- 100 % active substance, solvent-free
- Optimally suited to demanding systems such as
  - Airless application (HVLP and airmix)
  - High-build systems
  - Fast-drying systems
  - Direct-to-metal (DTM) coatings
- Effective defoaming and internal air release
- Very good compatibility in numerous coating systems
- Optimized substrate wetting
- Improved corrosion protection

## Applications

- Marine and corrosion protection coatings
- General industrial coatings
- Wood and furniture coatings
- Architectural coatings
- Floor coatings
- Adhesives and sealants

Surface additives

## BYK-329

Silicone-containing surface additive for improving the leveling properties and defoaming of solvent-free and solvent-borne systems

**BYK-329 – Very good leveling and good defoaming in a 2-pack epoxy system**



Test system: Self-leveling 2-pack epoxy coating; Dosage: 0.2 % additive (as supplied) based on component A; Layer thickness: 1 mm

High build systems, and solvent-free systems in particular, require efficient additives. These additives not only level the surface smoothly to give it an attractive appearance, but they also guarantee good defoaming during application and in the final product. BYK-329 is a newly developed surface additive that combines good defoaming properties with excellent leveling. Examples include self-leveling floor coatings, particularly those based on epoxy resin, as well as rolled polyaspartic topcoats and general industrial coatings.

The additive contains a 100 % active substance and is highly effective even at a low dosage. This makes it easy to incorporate into the relevant system.

## Benefits

- Very good leveling properties, especially in epoxy systems
- Outstanding defoaming, even in high build systems
- Highly effective at a low dosage
- 100 % active substance; particularly suitable for solvent-free systems

## Applications

- Floor coatings
- General industrial coatings
- Automotive coatings

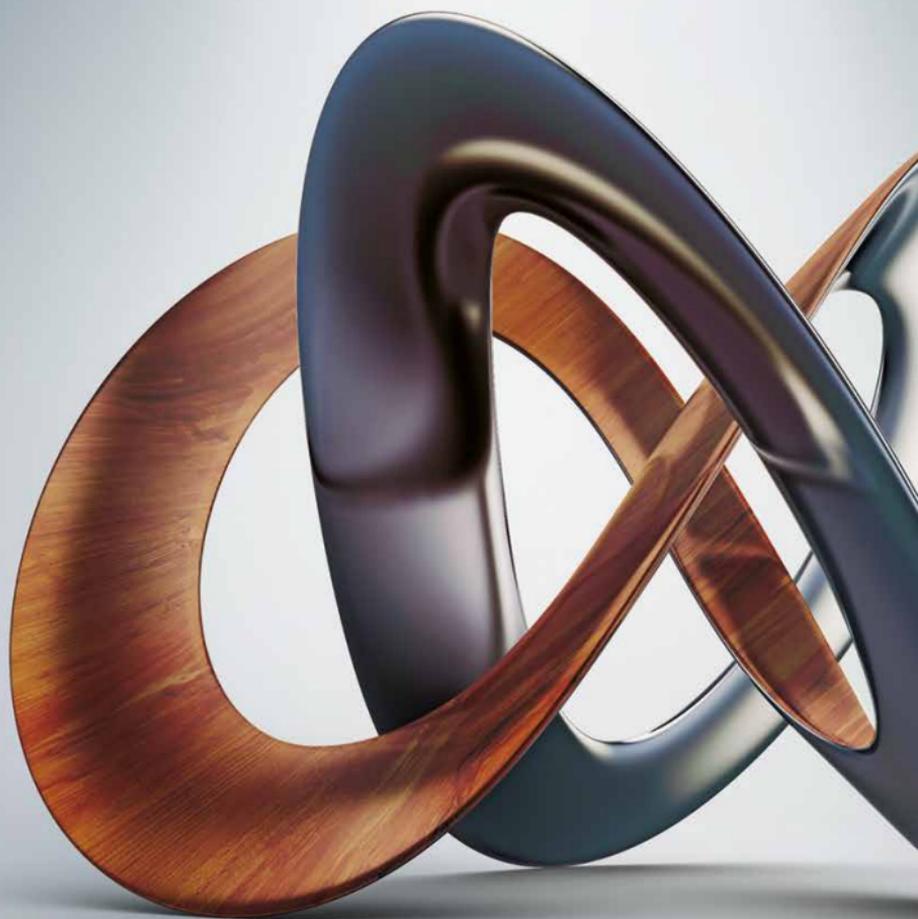
Surface additives

**BYK-3480** 

**BYK-3481** 

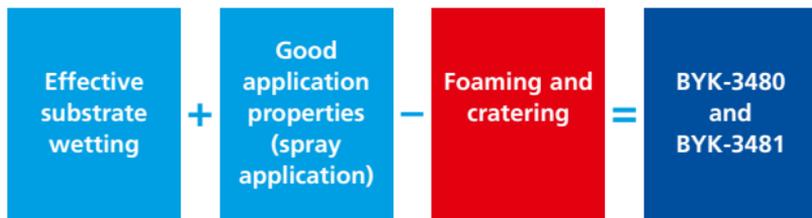
Combined surface additives for excellent substrate wetting, leveling and defoaming properties in aqueous systems

Aqueous coatings present a particular challenge with regard to formulation since this requires the use of additives that exhibit strong properties, yet also do not have any negative effects on the foam stabilization. In applications such as the coating of non-polar plastic substrates or contaminated metal surfaces, excellent substrate wetting and perfect leveling are not easy to achieve. A significant reduction in surface tension is necessary to obtain the required level of substrate wetting. The desired property profile is often only achieved through the use of multiple additives, which can include silicone surfactants, acrylic leveling additives and one or more defoamers.



To be able to offer products that are as simple as possible and perfectly suited to users' requirements in such cases as well, BYK has now developed two special additives that combine the necessary properties in an ideal manner:

### The Success Formula of BYK-3480 and BYK-3481



### What is the Difference between BYK-3480 and BYK-3481?

#### BYK-3480

- More polar than BYK-3481
- Better suited to pigmented systems due to the stronger defoaming effect

#### BYK-3481

- Less polar than BYK-3480
- Better suited to clearcoats
- Greater compatibility

## Benefits

- Combination of
  - significant reduction in static surface tension
    - excellent substrate wetting even at a low dosage
    - superb leveling properties
    - significant anti-cratering effect
  - good defoaming effect
    - in coatings manufacturing
    - in application (particularly spray application)
- 100 % active substance
- SVHC labeling-free
- Also recommended for particularly critical substrates (plastics, contaminated metal surfaces)
- Can be post-added as "troubleshooting" additive

## Applications

- General industrial coatings
- Marine and protective coatings
- Wood and furniture coatings
- Architectural coatings
- Automotive coatings
- Floor coatings

**NEW**

Surface additives

## **BYK-3568**

Macromer-technology based surface additive for increasing the surface energy of solvent-borne, 100 %, and UV coatings to ensure effective substrate wetting and good leveling

For decades, formulators of clearcoats and topcoats have been successfully using silicone-based additives when there is a need to reduce the surface tension to enable better wetting of the substrate, avoid cratering, and ensure good surface slip. Furthermore, once the coating has cured, it should have good wettability and recoatability, and the subsequent layers (e.g. including labels) should adhere to it.

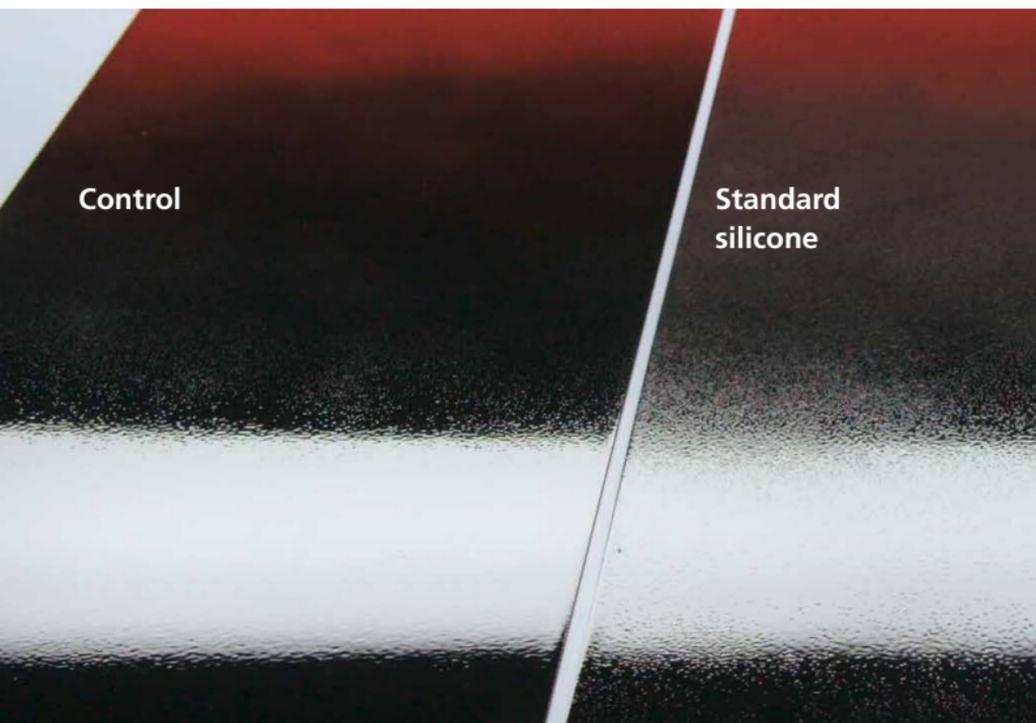
## Benefits

- Significantly reduced surface tension in the liquid coating – effectiveness comparable to that of a moderately active silicone
- Increased surface energy in the cured coating for better recoatability and less of a negative effect on the adhesion of labels, printing inks, or adhesives
- Improved wetting through subsequent layers, particularly if the next is an aqueous system → ideal for two-color coatings
- Good leveling, higher surface slip (lower COF)
- Suitable for solvent-borne, solvent-free, and UV systems; also suitable for aqueous systems if compatibility is good

The new silicone- and polyether-modified acrylate BYK-3568, however, is able to improve the substrate wetting like a moderately active silicone while increasing the surface energy and surface slip at the same time.

BYK-3568 is therefore the perfect addition to BYK's product range of macromer-modified acrylates. Its benefits are particularly evident in clearcoats and topcoats, for which good recoatability or adhesion of subsequent layers is required, such as in two-color coatings.

### **BYK-3568 – Ideal for two-color coatings**



Test system/method:

20  $\mu\text{m}$

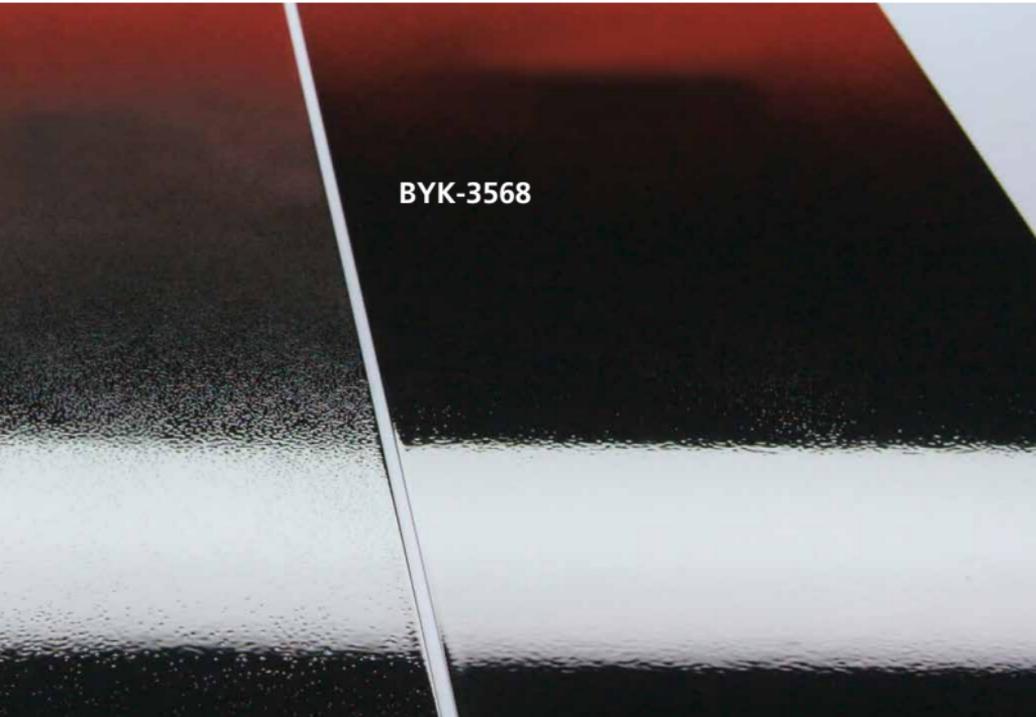
**Topcoat**

0  $\mu\text{m}$

**Clearcoat + additive**

**Red basecoat**

Electrostatic spray application of a solvent-borne 1-pack OEM clearcoat on a red aqueous basecoat. After curing for 20 min. at 140 °C, a black aqueous topcoat was applied over the clearcoat to simulate a two-color coating. Wedge application per electrostatic application.



**BYK-3568**

Wax additives

**CERAFLOUR 1001** 

**CERAFLOUR 1002** 

Sustainable, wax-like biopolymers for matting and improving the surface protection of coatings and printing inks while maintaining high transparency



These days, the issue of sustainability is an important criterion in the development of new products. In addition to the product's direct properties and effects, questions regarding environmental impact, chemical basis and energy consumption often play a significant role, too.

BYK noticed this trend many years ago, and began developing particularly sustainable additives. CERAFLOUR 1000 is a bio-based polymer that was launched on the market in 2011. It has all the properties of traditional additives manufactured using either natural or synthetic waxes, but is based on >97 % renewable resources and is fully biodegradable. BYK is now supplementing this successful approach with two more biopolymers that utilize the same resource.

## Applications

- Wood and furniture coatings
- General industrial coatings
- Architectural coatings
- Floor coatings
- Can coatings (CERAFLOUR 1001)
- Printing inks

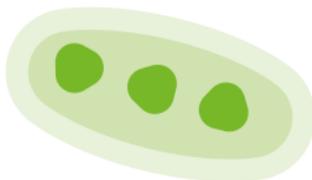
For aqueous, solvent-borne, solvent-free, and UV systems

The CERAFLOUR 1000 series is based on renewable carbon



**Raw Material:**  
Biorenewable  
carbon source

Fermentation



**Microorganism**

Separation  
Purification  
Micronization

> 97 % Biorenewable  
100 % Biodegradable

**Biopolymer**

## Comparison of the properties of the biopolymers:

### CERAFLOUR 1000

Since  
2011

- **>97% renewable resources**
- **100% biodegradable**
- Soft feel effect
- Increase of scratch resistance
- For aqueous, solvent-borne, solvent-free and UV systems

### CERAFLOUR 1001

NEW!

- **>97% renewable resources**
- **100% biodegradable**
- Soft feel effect
- Increase of scratch resistance
- For aqueous, solvent-borne, solvent-free and UV systems

### CERAFLOUR 1002

NEW!

- **100% biodegradable**
- Soft feel effect
- Increase of scratch resistance
- For aqueous, solvent-borne, solvent-free and UV systems

# Have you heard of RHEOBYK?

Under the brand name RHEOBYK, BYK has brought together organic products from the versatile rheology portfolio, underlining its extensive expertise as a leading supplier of rheology additives. At BYK you receive a wide range of tailor-made solutions which you can use to optimize your production and to precisely adjust the flow, processing and storage properties of your products.



Rheology additives

## RHEOBYK-440

### Liquid, polyamide-based rheology additive for modern aqueous systems

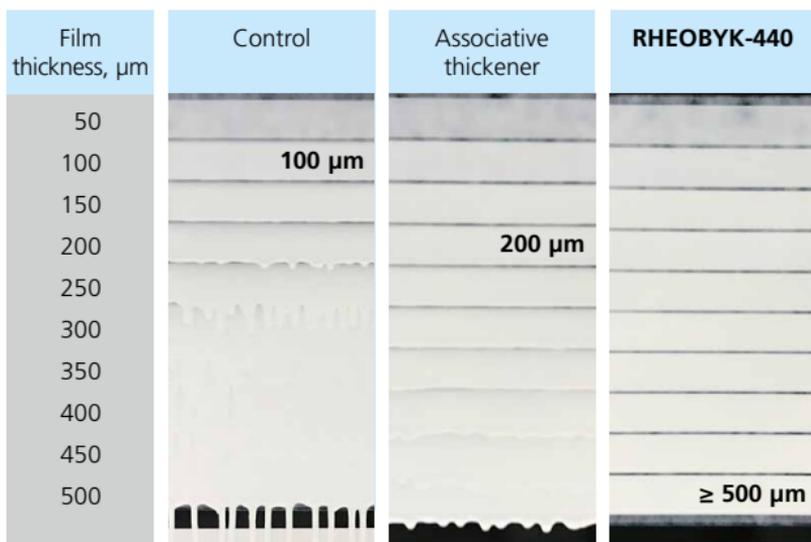
Over the past years, the Chinese coatings market – particularly in the area of sea freight containers – has moved the focus of developments in protective coatings to increasingly concentrate on aqueous systems based on epoxy dispersions.

The coatings used in this area are highly pigmented and applied in thick layers, requiring the rheological properties to be controlled using a suitable additive. However, the established products are only slightly or even not at all effective, and some are completely incompatible in epoxy dispersions.

RHEOBYK-440 is a liquid polyamide-based rheology additive which has been developed as a tailor-made solution for these modern, water-based systems, and simultaneously complements BYK's product family of liquid polyamides.

Alongside the outstanding anti-sagging and anti-settling properties in water-based protective coatings, RHEOBYK-440 can also be used in many other applications, e.g. to achieve a good effect pigment orientation.

## RHEOBYK-440 – High sag resistance in an aqueous epoxy primer



Test system: Aqueous, 2-pack epoxy system based on:

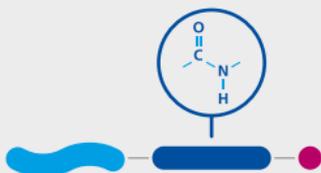
EPI-REZ\* 7520-WD-52/EPIKURE\* 6870-W-53;

Additive dosage: 0.5 % active substance based on component A

Test of active substance: Draw down on contrast card with automatic applicator directly after mixing of components A and B.

\*EPI-REZ and EPIKURE are registered trademarks of Hexion

## Completing the family of liquid polyamides – RHEOBYK-430/RHEOBYK-431/RHEOBYK-440



### RHEOBYK-440

High polarity



### RHEOBYK-430

Urea-modified, medium-polarity



### RHEOBYK-431

Urea-modified, non-polar



**Polyamide backbone**

Hydrogen bonds for rheological effect



**Compatibility providing unit**

(EO, PO, Alkyl-chains)



**Rheology enhancing group**



**Urea unit**

## Benefits

- Ideal viscoelastic behavior
- Excellent anti-sagging properties
- Stable viscosity after hardener addition in epoxy resins
- Broad compatibility in many different resin systems
- Easy to use and to incorporate

Rheology additives

## RHEOBYK-7600

VOC-, APEO- and tin-free associative thickener (HEUR) for aqueous systems, to generate a highly pseudoplastic flow behavior

The addition of pigment concentrates in a basic paint to achieve the desired color can cause problems with regard to rheological behavior. Any co-solvents, imported water or wetting and dispersing additives contained in the pigment

### **RHEOBYK-7600 – Improvement in the color paste acceptance after storage**



Test system: Pure acrylic, PVC 19 %

Dosage: 0.1 % active substance based on the total formulation

Tinting: aqueous, blue pigment concentrate 97:3

Storage: 14 days at 50 °C

concentrates can bring about a significant reduction in the viscosity of the finished paint. To avoid this effect, with RHEOBYK-7600, BYK is offering a unique associative thickener based on a new technology.

RHEOBYK-7600 leads to a considerable increase in the viscosity in the low shear range, stabilizes the viscosity when the colorant is added, and improves the color paste acceptance.

The rheological properties are comparable with those of RHEOBYK-TV5 HEAT technology. The new additive also offers significantly better leveling properties. As well as being VOC-, APEO-, and tin-free, RHEOBYK-7600 is also liquid, which facilitates incorporation and handling. Due to its composition, it is highly compatible in many aqueous systems. The sagging tendency and the storage stability are improved. It is not necessary to adjust the pH value or control the temperature during incorporation. Combining with rheology additives, which are effective in the high shear range, optimizes processability.

## Benefits

- Very good viscosity stability after tinting
- Balanced ratio of anti-sagging and leveling – improved leveling properties
- Improved colorant acceptance
- Improved anti-settling and anti-sagging properties
- Good compatibility with different systems
- Easy handling and incorporation due to the viscosity of the additive
- VOC-, APEO- and tin-free

Rheology additives

## RHEOBYK-7610

VOC-, APEO- and tin-free associative thickener for aqueous systems, to generate a highly pseudoplastic flow behavior

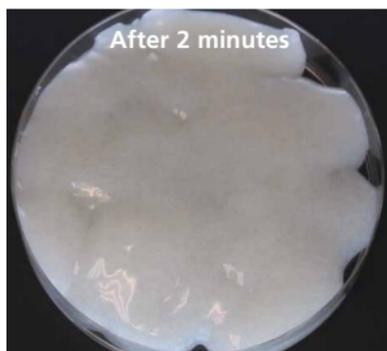
There are a variety of rheological additives on the market which exhibit a range of properties. Due to the effects in different shear ranges, it is possible to positively influence, for example, the settling, flow and processing of a system. However, with RHEOBYK-7610, BYK has succeeded in developing a rheology additive which, in addition to the familiar properties, generates a specific viscosity profile.

## Benefits

- Very effective in the low shear range
- Offers self-leveling properties with good anti-sagging
- For non-dip paints
- Thick layers possible by spray application (airless/airmix/HVLP)
- High transparency in clear coats
- Improvement of the settling properties
- Easy to incorporate
- VOC-, APEO- and tin-free

RHEOBYK-7610 is an associative thickener for aqueous systems. It generates a highly pseudoplastic flow behavior and considerably increases the viscosity in the low shear range. The most impressive feature, however, is the outstanding self-leveling properties of the finished system. For this reason, alongside good anti-sagging, e.g. at airless/airmix/HVLP application, RHEOBYK-7610 simultaneously offers a perfect surface due to its self-leveling effect. The storage stability and the colorant acceptance have also been improved. Moreover, the foaming behavior of RHEOBYK-7610 is a noteworthy aspect. The additive is liquid and easy to handle. It is not necessary to adjust the pH value or control the temperature during incorporation.

### **RHEOBYK-7610 – Special rheology profile: self-leveling system**



Test system: Pure acrylic

Dosage: 0.2 % active substance based on the total formulation

# Additive portfolio for powder coatings in the market

## Anti-crater and leveling

- Suitable in all resin systems
- Perfect flow and anti-crater properties
- Broad range of compatibility

## Micronized waxes

- Texture and structure effects
- Degassing and outgassing
- Gloss reduction
- Scratch and abrasion resistance

## Processing and dispersing

- Higher extrusion efficiency and throughput
- Better pigment dispersing
- Improved surface appearance (DOI)



## Special applications

- Problem solvers
- Compatibility
- Increased surface energy
- Clear coats
- Adhesion

## Rheology modifiers

- Increased melt-viscosity
- Edge coverage
- Texture and structure effects

## Additives for masterbatch

- Liquid additives for resin manufacturers
- Improved flow properties
- Better compatibility

## Anti-crater and leveling

|                   |  |
|-------------------|--|
| <b>BYK-3900 P</b> | Best anti-crater and leveling properties               |
| <b>BYK-368 P</b>  | Broad compatibility and general purpose in all systems |
| <b>BYK-3902 P</b> | Specialized for low thickness applications             |

## Micronized waxes

|                      |  |
|----------------------|--|
| <b>CERAFLOUR 960</b> | Best degassing properties in HAA systems to avoid pinholes |
| <b>CERAFLOUR 961</b> | Prevention of substrate outgassing in all systems          |
| <b>CERAFLOUR 964</b> | Non-blooming degassing properties in low-bake HAA systems  |
| <b>CERAFLOUR 966</b> | Fine-textured, scratch-resistant, and matte surfaces       |

## Processing and dispersing

|                   |  |
|-------------------|--|
| <b>BYK-3950 P</b> | Improved processing, higher throughput in all systems  |
| <b>BYK-3951 P</b> | Improved processing and dispersing of titanium dioxide |
| <b>BYK-3955 P</b> | Improved processing and dispersing of carbon black     |

## Special applications

- |                   |  |
|-------------------|--|
| <b>BYK-3931 P</b> | Most suitable problem solver to eliminate craters                                      |
| <b>BYK-3933 P</b> | Increased surface energy to improve recoatability                                      |
| <b>BYK-3938 P</b> | Post-add matting additive for all powder coating systems                               |
| <b>BYK-3941 P</b> | Adhesion promoter, suitable for various substrates and pre-treatments                  |
| <b>BYK-3942 P</b> | Adhesion promoter, suitable for various substrates and insufficient cleaned substrates |

## Rheology modifiers

- |                      |  |
|----------------------|--|
| <b>CLAYTONE-40</b>   | High efficient rheology modifier to increase viscosity |
| <b>CLAYTONE-HY</b>   | High efficient rheology modifier to increase viscosity |
| <b>GARAMITE-1958</b> | Rheology modifier for epoxy systems                    |

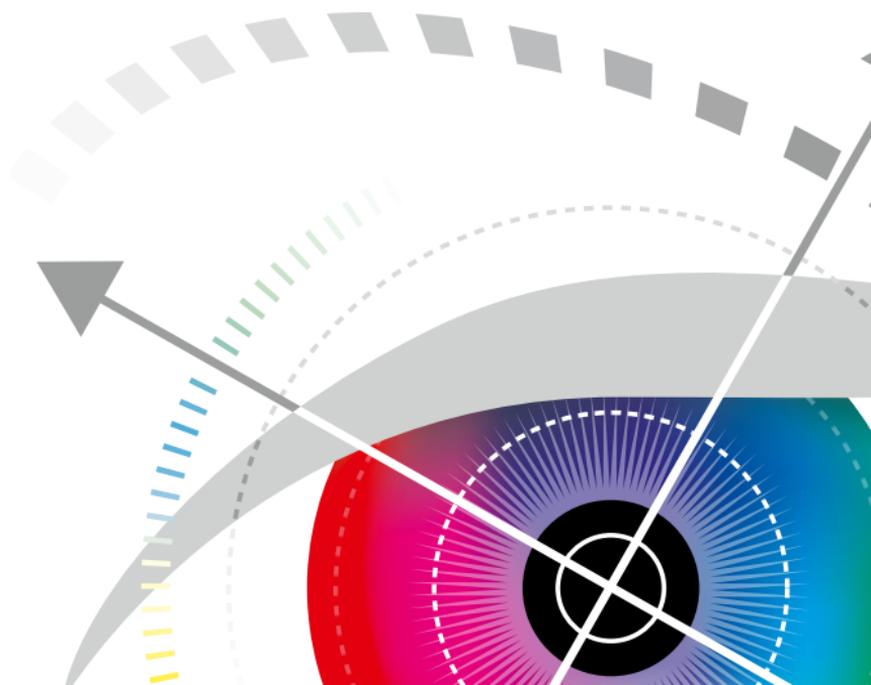
## Additives for masterbatch

- |                  |  |
|------------------|--|
| <b>BYK-356</b>   | Anti-crater and leveling properties in all resin systems |
| <b>BYK-361 N</b> | Anti-crater and leveling properties in all resin systems |

# BYK Instruments

## The objective eye for paint QC solutions

The world is in a continuous change. The trends of 'globalization and standardization' within a more and more 'digital world' not only change consumer behavior but also your requirements for testing solutions:



### **Global communication**

- Global specifications are prerequisite for seamless communication and ask for digital standard distribution.
- Excellent technical performance in compliance with international standards is a must.

### **Standardized QC management system**

- Standardized QC procedures and QC reports need to be easy to set up globally.
- Routine QC checks and documentation are the key to product and process optimization.

### **Increase efficiency**

- Innovative technologies are needed to guarantee objective and reliable measurement data.

### **Figures and facts instead of feelings!**



# THE OBJECTIVE EYE



## Benefits

- As the new objective eye, the color2view combines several measurement methods in one benchtop spectrophotometer – 45°c:0° color, 20°/60° gloss and fluorescence detection. Thus, the visual impression of color and gloss is completely analyzed today and in the future
- Ease of use, intuitive navigation and new features create an unprecedented user experience
- Breakthrough technical performance ensures seamless global color management across the entire supply chain



## color2view

The revolution in color management

# spectro2guide

Raise your expectations –  
touch the color

## Benefits

- Color, gloss and fluorescence measurement in one instrument
- Balanced and upfront design with large 3.5" color touchscreen
- Smart docking station with intelligent auto diagnosis function
- Live preview of measurement spot with zoom function
- Exchange of digital standards between two instrument families due to excellent extra-instrument agreement
- Data analysis out-of-the-box with WiFi or USB connection



## color2view

Color and gloss measurement of small parts



## micro-gloss XS

The perfect fit for  
small parts





## Benefits

- Ultra small measurement port  
→ Color and gloss of small and large parts will finally fit together
- Unsurpassed performance  
→ Best in temperature control – reliable and stable results from 10–40 °C

# byko-spectra *pro*

See things the right way

## Benefits

- Light booth with highest Mlvis class A for daylight simulation of CIE D65 and D75: Combination of filtered halogen lamps with LEDs
- Eight certified light sources: D65, D75, A, HZ, CWF, TL84, U30 and UV
- Simultaneous visualization of color temperature and light intensity in lux ensures 100 % controlled illumination
- Auto Sequence Mode for standardized and efficient color evaluation
- Available as luminaire. Mount on the ceiling or a wall and conveniently appraise large products



## spectro2profiler

Supports you through ups  
and downs to achieve color  
and grain harmony

### Benefits

- 45°c:0° color measurement to measure color as you see it
- 3D topography measurement to determine grain size, grain depth and texture uniformity
- 2D gloss measurement to determine reflectivity contrast, which correlates with the visual perception of structure depth
- Traditional 60° gloss measurement according to international standards
- Smart high-tech LEDs with peak performance for digital standards
- Efficient data analysis and documentation with smart-chart software





## BYK Passes on its Knowledge

### 22.2.

11:00–11:30 h

Guo Ting,  
IA lab head

**New environment friendly  
dispersing additives for  
UV system**

### 22.2.

13:30–14:00 h

Xiong Mengke,  
Can and coil coatings  
specialist

**BYK-3480, BYK-3481 and  
AQUATIX-8421 –  
Multifunctional surface  
additives for aqueous  
coatings**

## 22.2.

**15:00–15:30 h**

Yan Guikai,

Floor coatings specialist

**BYK-329, BYK-1760 –**

**New surface and defoamer additives for environmentally friendly floor coatings**

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## 23.2.

**10:30–11:00 h**

Wang Haiyan,

Wood coatings senior specialist

**CERAFLOUR 1001, CERAFLOUR 1002 – Biodegradable and micronized polymer with wax-like properties based on renewable raw materials**

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## 23.2.

**13:30–14:00 h**

Wang Huili,

Transportation coatings lab head

**DISPERBYK-2014, BYK-3568 – New high jetness dispersant and macromer-modified acylate surface additives**

## 23.2.

**15:00–15:30 h**

Jiao Yuchao,

Marine and protective coatings lab head

**BYK-1789, RHEOBYK-440 – New defoamer and rheology additives for aqueous coatings**

# BYK by numbers

About

# 1,000

samples a day

More than

# 35

laboratories  
across the globe

# 40

markets



More than  
**2,500**  
**employees** around the world

Investment in R&D



**3** times higher  
than the industry  
average

Almost  
**150**  
years of **expertise**



## What do we mean by... innovation?

Continually offering the most modern and advanced additives. To do this, we invest about 8 percent of our annual turnover in research and development – 3 times more than most in the sector. Research and development and application technology staff make up 22 % of our workforce.



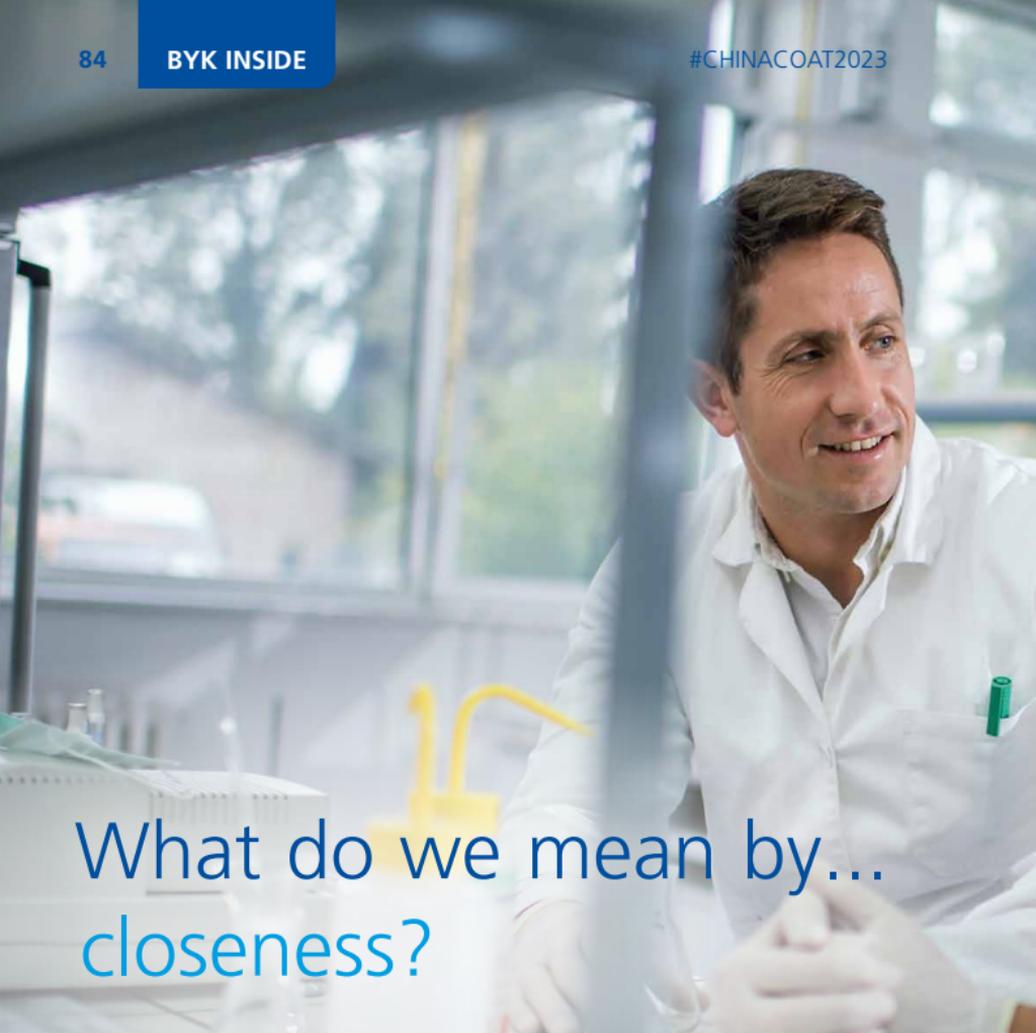
A close-up photograph of a hand holding a blue pen over a white notepad. The background is a blurred, light-colored wall. The text is overlaid on the notepad.

## What do we mean by... expertise?

We host more than 40 customer seminars annually, sharing valuable know-how and insights into product solutions and application techniques.

[www.byk.com](http://www.byk.com)



A male scientist with short brown hair, wearing a white lab coat over a light-colored shirt, is smiling and looking towards the right. He is in a laboratory setting with large windows in the background. In the foreground, there is a piece of laboratory equipment, possibly a pipette or a small robot, with a yellow tube. The overall atmosphere is professional and positive.

## What do we mean by... closeness?

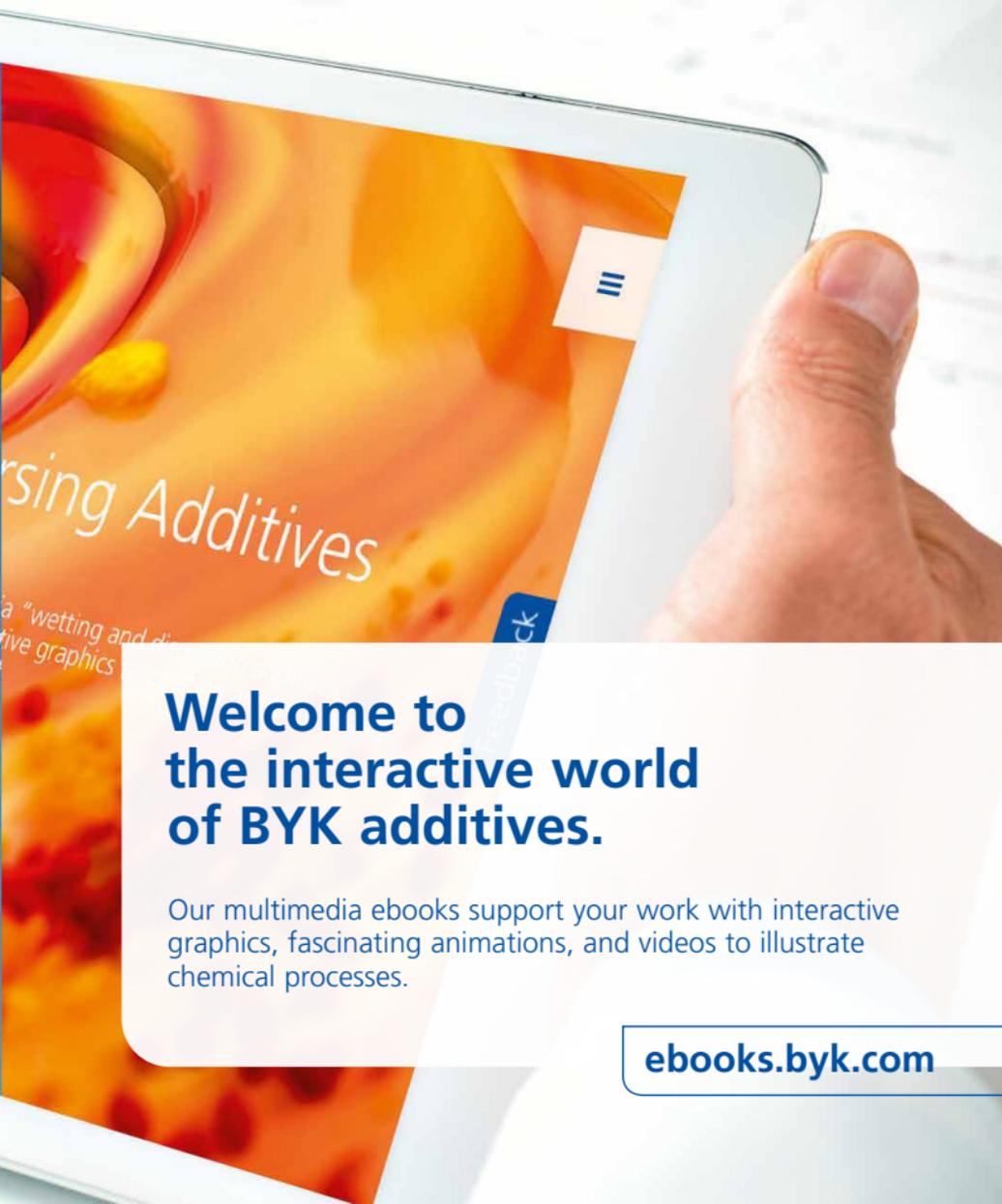
Our global footprint and end-use structure enable us to deliver regional, tailor-made solutions to our customers with specialized industry and application focus.



The BYK logo is displayed in white on a blue rectangular background. It consists of a stylized 'O' symbol followed by the letters 'BYK' in a bold, sans-serif font.

# Defoamers and Air

Welcome to the interactive world of BYK additives. This multimedia has been designed to support your work, offering interactive graphics of the chemical processes.



ising Additives

a "wetting and d...  
ive graphics

Feedback

## Welcome to the interactive world of BYK additives.

Our multimedia ebooks support your work with interactive graphics, fascinating animations, and videos to illustrate chemical processes.

[ebooks.byk.com](https://ebooks.byk.com)

# BYK highlights



Automotive coatings



Marine and protective coatings



Powder coatings



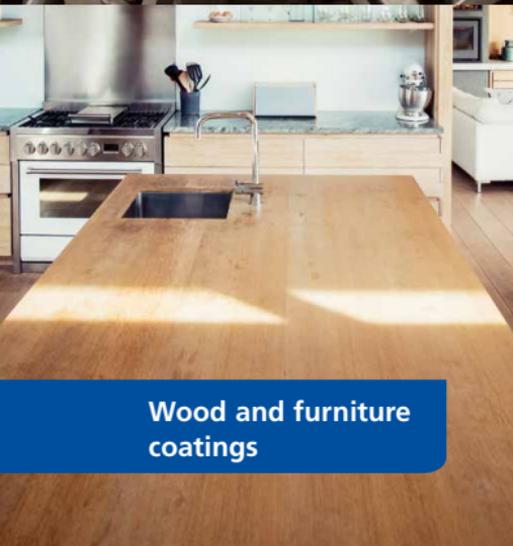
Can coatings



Industrial coatings



Architectural coatings



Wood and furniture coatings



Instruments



# BYK: world's largest and most versatile flexshuttle facility

- Significant time-to-market advantage for customers
- BYK doubles capacity in application technology

## Would you like to learn more?

Feel free to talk to our HTS experts here on site at the Chinacoat.

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This issue replaces all previous versions.



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