BYK

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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.**

Content

Additives for aqueous systems
Additives for aqueous and non-aqueous systems

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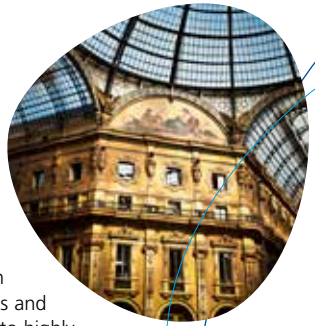
BYK markets

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

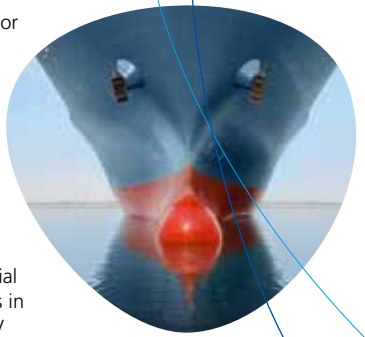
BYK offers environmentally friendly solutions for construction applications incl. cement-based systems, concrete formulations and admixtures. The innovative product portfolio contains different types of high-performance additives, particularly for cement-based applications such as dry mix mortars, concrete 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

BYK offers special rheology additives for marine, protective and intumescent coatings. 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. 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.



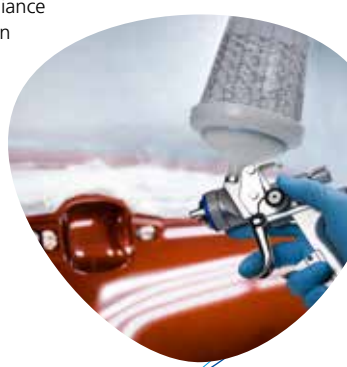
Automotive coatings

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.



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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.

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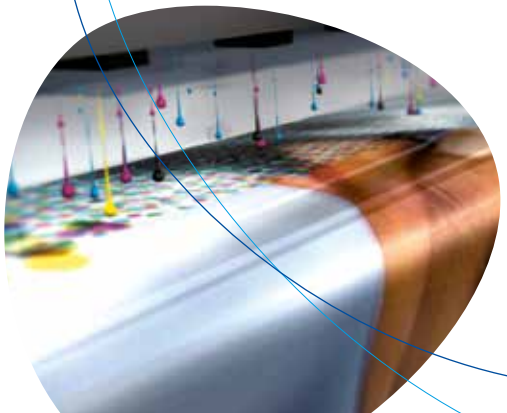
Printing inks

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

BYKJET-9175
BYKJET-9177

Next-generation wetting and dispersing additives for perfect stabilization of organic pigments and disperse dyes in aqueous inkjet inks

Modern inkjet inks are continuing to develop unabatedly – be that through new binder systems and the subsequently adapted formulations, or through the general evolution of technology from solvent-borne systems towards aqueous systems. Increasing customer demand for quality and environmental properties, paired with new regulatory requirements, are the driving forces behind the new innovations and advances.

BYKJET-9175 is a modern additive based on a new generation of the controlled polymerization technology for aqueous systems and features broad compatibility with many pigments. BYKJET-9177 is a relatively low-molecular-weight polymer (> 1000 g/mol) with a special pigment-affinic group that ensures the stabilization of difficult pigments. They therefore represent the latest generation of wetting and dispersing additives for inkjet inks. In addition to efficient dispersion and outstanding viscosity, the additives exhibit excellent resolubility of the inkjet inks. BYKJET-9175 and BYKJET-9177 are VOC-free and meets the current standards for indirect contact with food.*1

Benefits

BYKJET-9175
- Disperses and stabilizes a broad range of disperse dyes and organic pigments, and ensures long-term stability of inks and millbases
- An extremely versatile product: During a large series of tests, BYKJET-9175 performed more effectively on 19 out of 24 pigments than all internal standard products
- Shortened dispersion times lead to energy savings

BYKJET-9177
- Dispersing additive for organic pigments, carbon blacks, and disperse dyes in aqueous systems (both inkjet and traditional printing inks)
- Particularly effective with carbon blacks and some pigments that are difficult to stabilize
- Very good results for PY 185 and PO 64

BYKJET-9175/BYKJET-9177
- Highly efficient grinding process and smaller particles
- Ensures perfect resolubility of the ink
- Outstanding viscosity reduction with Newtonian flow behavior even with higher pigment load
- Strong color strength and transparency of the finished inkjet inks
- Especially recommended for resin-free pigment grinds
- Compatibility with let-down resins should be tested
- Supplied as an aqueous solution, making it free from VOC and other emissions
- Complies with the Swiss Ordinance (A list) and Nestlé Guidance Note on Packaging inks*1

*1 This information is correct as of December 2022. The current status can be found at https://www.byk.com/en/service/regulatory-affairs/food-contact

Wetting and dispersing additives

DISPERBYK-2013

100 % solvent-free wetting and dispersing additive for solvent-borne, solvent-free and aqueous coatings, printing inks and UV systems

Benefits

- Its **excellent deflocculation and stabilization** of especially
  - Organic pigments (phthalo blue, organic red and yellow pigments)
  - Carbon blacks
  - Inorganic pigments, transparent iron oxide red and transparent iron oxide yellow pigments
- BYK-DISPERSANT-2013* leads to properties such as:
  - **Effective viscosity reduction with minimized thixotropic flow behavior**
    → Allows a higher pigment load in the mill base
  - **Excellent storage stability** of the formulated coating systems
  - **Significantly improved optical properties** such as
    → Higher color strength and transparency
    → Increased gloss and minimized haze

Applications

- Industrial coatings
- Coil coatings
- Wood and furniture coatings
- Marine and protective coatings
- Automotive coatings
- Floor coatings
- Can coatings
- Printing inks

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.

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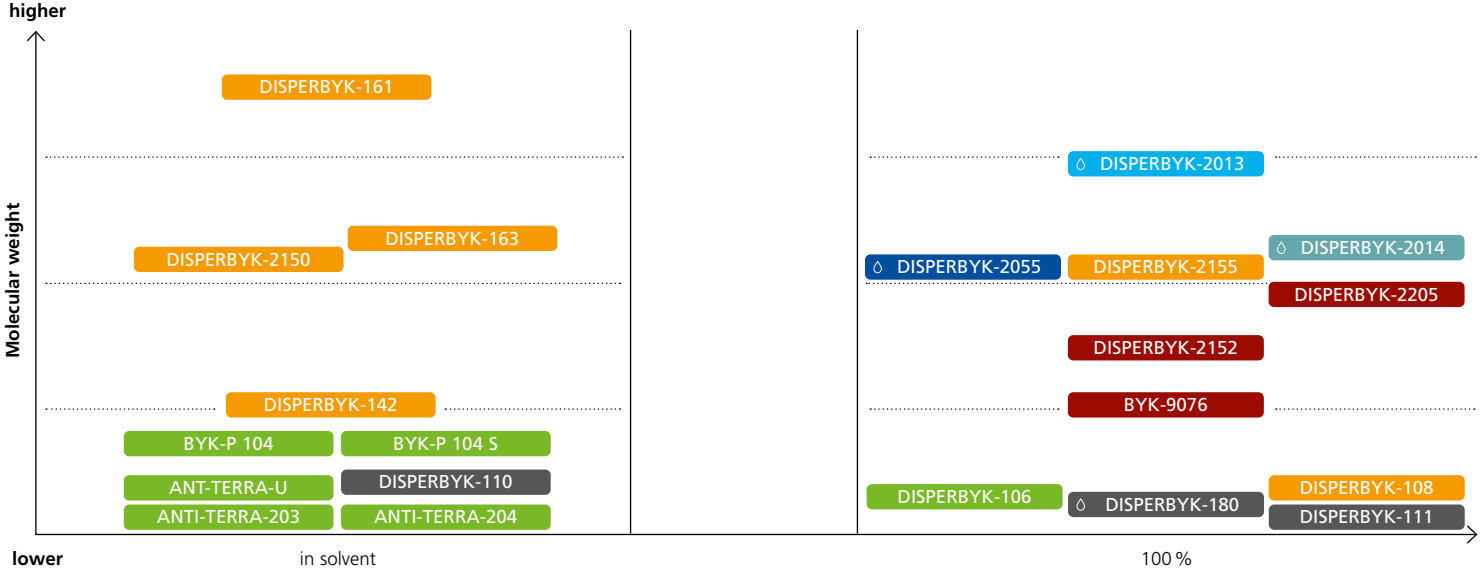
DISPERBYK-2014 – The addition to byk's range of wetting and dispersing additives

Solvent-borne wetting and dispersing additives



- 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

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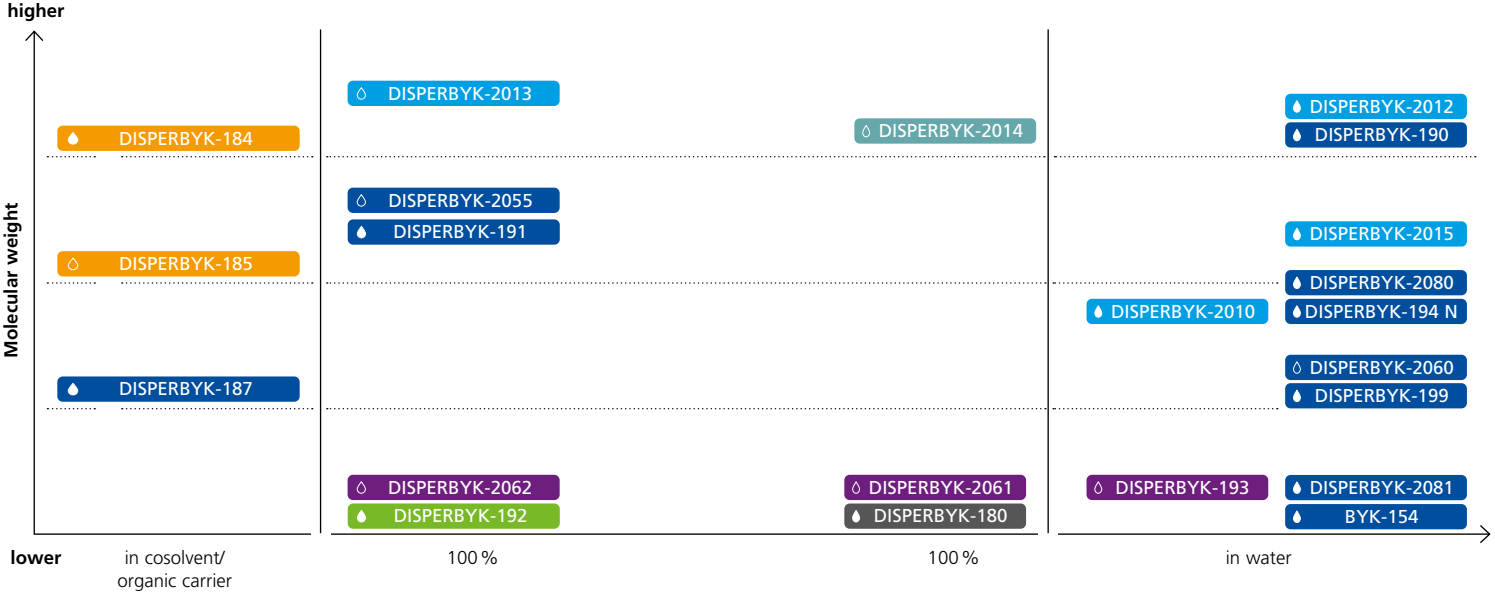
Aqueous wetting and dispersing additives



- 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-2015

Now also for marine and protective

Wetting and dispersing additive for water-based, colored protective systems.

Water-based direct-to-metal coatings are becoming increasingly important in today's market. Among other things, this trend calls for the use of organic pigments to achieve brilliant color shades. In addition to the high-quality visual requirements, the functionality of the coating, e.g. corrosion resistance, must be maintained at the same time.

DISPERBYK-2015 offers exactly this maximum performance and fulfills the balance between visual and functional properties. In addition, it shows particularly strong viscosity reduction, excellent storage stability and wide applicability.

DISPERBYK-2015 in water-based protective systems
Well balanced: Appearance and functionality

General properties

- Excellent color development
- High gloss level
- Excellent stabilization of organic and inorganic pigments
- Superb reduction of the viscosity - high pigment loading possible
- VOC-free (< 1500 ppm)

Functional performance

- Low water sensitivity
- Minor influence on corrosion resistance
- Broad system compatibility in water-based DTM coatings and primers

Wetting and dispersing additives

DISPERBYK-2018
DISPERBYK-2019

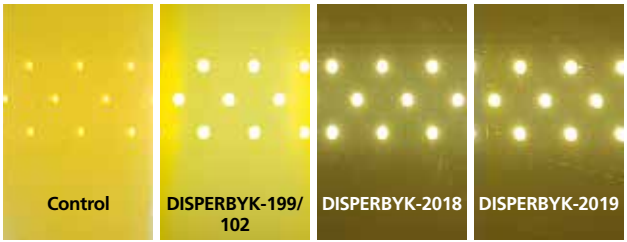
VOC- and solvent-free wetting and dispersing additives for aqueous paint systems, floor coatings, adhesives, and pigment concentrates.

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 µm

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-2080
DISPERBYK-2081

Wetting and dispersing additives for aqueous systems without negative impact on water sensitivity, stain and corrosion resistance

Benefits

- DISPERBYK-2080 and DISPERBYK-2081 preserve the
  - Water resistance
  - Corrosion resistance
  - Stain resistance
  - Early water resistance

  of aqueous systems
- and show positive effects on
  - Gloss retention
  - Improved adhesion
- Good wetting and dispersing properties with excellent viscosity reduction for TiO_2, inorganic, partly organic and anticorrosive pigments as well as fillers

To overcome the difference in surface tension between pigments and water, dispersing additives for water-borne systems need a certain hydrophilicity which can be achieved for example through ionic or hydrophilic structures. As these components remain in the cured coating, they bear the risk of increasing the coating´s hydrophilicity and, thus, negatively influencing characteristics such as water, stain, and corrosion resistance.

The water and corrosion resistance is of special importance to anticorrosive primers and DTM (direct to metal) coatings whereas wood coatings need excellent water and stain resistance. These systems are mainly pigmented with titanium dioxides and other inorganic pigments, fillers and anticorrosive pigments.

DISPERBYK-2080 and DISPERBYK-2081are new tailor-made wetting and dispersing additives based on novel chemical structures, which combine good viscosity reduction and deflocculation of inorganic pigments on one hand with the least negative influence on water, stain, and corrosion resistance on the other hand as possible.

Wetting and dispersing additives

DISPERBYK-2190

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

DISPERBYK-2190 is a highly efficient liquid VOC- and silicone-free wetting and dispersing agent for use in minerally bound building material formulations. The additive is highly compatible with various different mineral binder systems and very effective, even in highly alkaline systems.

The additive makes mixing quicker and easier in flowable applications. The system exhibits less shear-thickening and dilatant rheological behavior than conventional wetting and dispersing agents.

DISPERBYK-2190 – Softer consistency during mixing

Conventional wetting and dispersing agent

DISPERBYK-2190

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
- High compatibility with conventional superplasticizers

Wetting and dispersing additives

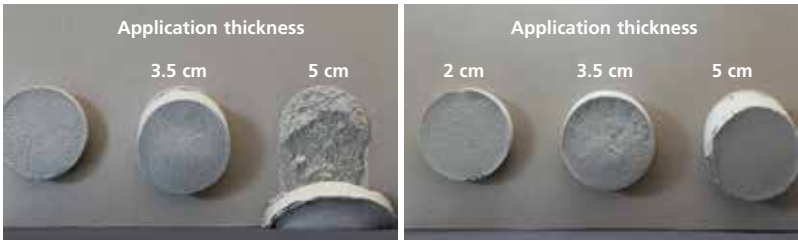
DISPERBYK-2290

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-controled, minerally 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

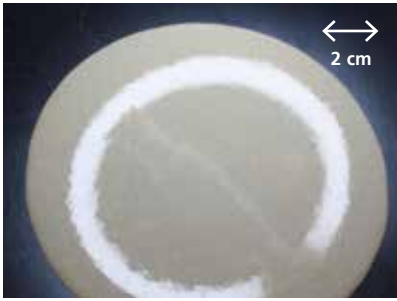
VOC- and APEO-free powder wetting and dispersing agent for highly alkaline aqueous building material formulations

DISPERBYK-2291 is a highly efficient powder VOC- and silicone-free wetting and dispersing agent for use in predominantly flowable, minerally bound 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.

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

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
- General industrial coatings
- Floor coatings
- Printing inks
- Adhesives and sealants

Defoamers

BYK-1745

VOC- and silicone-free defoamer based on polymers and renewable and sustainable raw materials for aqueous systems

As a rule, modern systems must conform not only to application requirements but also to environmental, sustainability, and consumer protection demands. These systems are often aqueous, but they need to meet additional criteria in the formulation, such as food contact compliance or the use of raw materials from sustainable and renewable sources.

The new silicone-free defoamer BYK-1745 fulfills all of these criteria in one product. It can even play a central role when it comes to adhesives for the consumer-oriented packaging sector, since the raw materials used in emulsion adhesives must comply with the regulations for applications involving contact with food. BYK-1745 meets most of the food contact regulations that are relevant to adhesive applications and is also based on 65 % renewable vegetable raw materials, which are replacing finite raw materials such as mineral oil. At the same time, it delivers application results that are on the same level as conventional additives. BYK-1745 is a very effective and compatible defoamer, preventing foam development during manufacturing and application processes.

Benefits

- Wide approval for applications involving contact with food
- 65 % biobased and therefore sustainable
- Meets global ecolabel standards (particularly significant for architectural coatings)
- Efficient defoaming
- Outstanding compatibility
- High storage stability

Applications

- Adhesives: PVAc and VAE emulsions and dispersion adhesives
- Architectural coatings: PVC range of 40 to 85 and emulsion plasters

Technical properties

- Composition: Blend of hydrophobic solids and foam-destroying polymers, silicone-free
- Density (20 °C): 0.97 g/ml
- Non-volatile matter (10 min, 150 °C): 99.7 %
- VOC-free (< 1500 ppm)

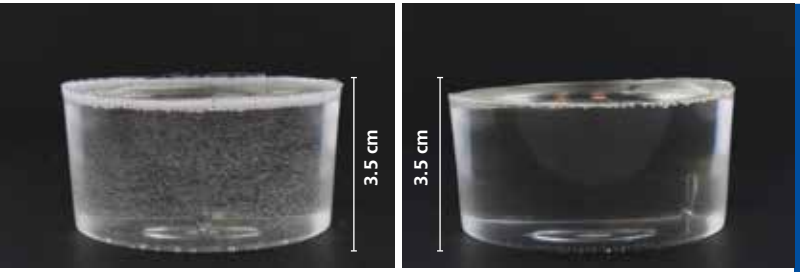
NEW

Defoamers

BYK-1748

Silicone- and VOC-free, 100 % polymeric defoamer for epoxy resin-based, clear thick layer systems.

BYK-1748 – The ideal solution, even for very high layer thicknesses



Without additive **With BYK-1748**

Test system: Solvent-free, clear 2-pack epoxy resin coating
Additive dosage: 0.1 % additive (as supplied) based on the total formulation

Thick layer systems, in particular solvent-free systems, require the use of highly effective additives. Ensuring good defoaming even at high film thicknesses requires powerful products that can cause turbidity in clear systems.

BYK-1748 is a new, silicone-free polymeric defoamer that has been specially developed for clear, high-build, and solvent-free 2-pack epoxy resin systems. Despite its particular efficiency, it does not cause turbidity or cratering. With the use of BYK-1748, excellent transparency can be achieved, even at very high film thicknesses.

BYK-1748 is a 100 % additive that largely consists of bio-based raw materials and is VOC- and APEO-free.

Benefits

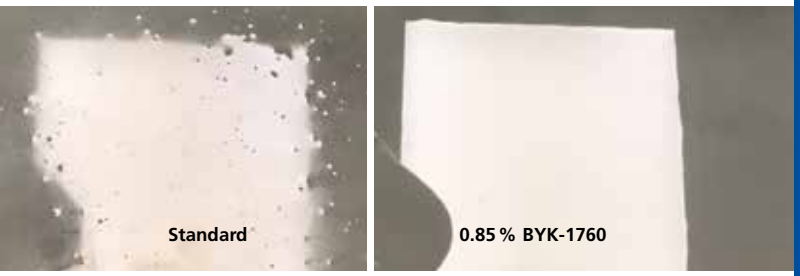
- Excellent defoaming of epoxy resin-based thick layer systems
- High transparency in clear applications
- Does not affect the surface properties
- High level of effectiveness, even at low dosage
- Very good storage stability
- Silicone-free
- 100 % active substance
- High proportion of bio-based raw materials
- VOC- (< 1500 ppm) and APEO-free
- Label-free

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 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

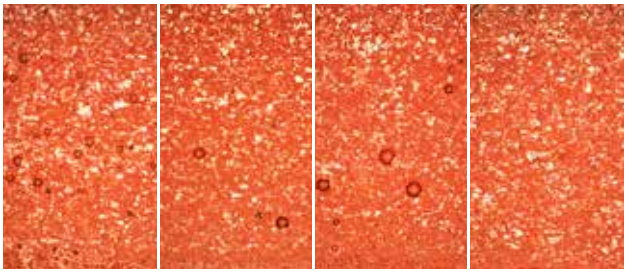
Defoamers

BYK-1765

Solvent- and silicone-free defoamer for high-solid and solvent-free epoxy systems

The combination of high viscosity, low solvent content and high film thickness that can be seen in epoxy systems in protective and floor coatings, poses a particular challenge for the defoaming of such systems.

Microscope image of the coating cross section: Defoaming of the entire film



Control | Silicone defoamer | Polymer defoamer | **BYK-1765**

Test system: 2-pack high-solid epoxy primer
Additive dosage: 1 % additive as supplied on component A

Insufficient defoaming affects not only the optical properties, but also the functionality of coatings, e.g. corrosion resistance.

The polymer defoamer BYK-1765 was therefore especially developed for the special requirements in high-solid and solvent-free epoxy systems.

Benefits

- Excellent defoaming in high film thicknesses
- Improved surface appearance
- Silicone-, fluor- and solvent-free

Application

Especially recommended:
- Marine and protective coatings
- Floor coatings

Recommended:
- General industrial coatings
- Adhesives and sealants

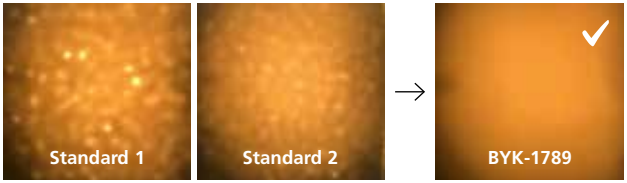
Defoamers

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 µm 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

Defoamers

BYK-1796

Highly effective air release agent for solvent-free and solvent-borne systems

In many areas, high-solid or 100 % systems make a valuable contribution to reducing or avoiding solvent emissions. BYK therefore focuses its activities on this forward-looking, environmentally friendly technology, thereby offering competent solutions for complex system requirements.

BYK-1796 – Excellent defoaming in solvent-free epoxy floor coatings

Test system: 2K epoxy resin (highly filled with quartz sand), based on EPON 828/D.E.R 354 and Aradur 43-1 BD

One challenge comes in releasing all of the air from a system. Trapped air not only alters a system's optical properties, but also adversely affects its mechanical values. Among other things, this results from a high filling level and the absence of solvents. This often results in a higher processing viscosity, but prevents rapid air release from the system. The air introduced through raw materials and the processing methods used also play a major role. One such example comes in the form of PU or EP floor coatings.

BYK-1796 is a newly developed air release agent that guarantees fast and efficient elimination of trapped air without altering optical and mechanical properties. The high efficiency of the additive and a good price-performance-ratio make it the number one choice for solvent-free systems. BYK-1796 is also recommended for solvent-based systems, e.g. protective coatings, where it also offers a full range of services.

Benefits

- Excellent defoamer and air release agent
- Effective during both manufacturing and application of the coating
- Particularly suitable for solvent-borne and solvent-free applications, such as epoxy and polyurethane systems
- Very effective in various applications, particularly suitable for high-viscosity systems and for high layer thicknesses

Defoamers

BYK-1799

VOC-free silicone-containing defoamer for solvent-borne, high-solid and solvent-free systems. Particularly suitable for 100 % UV systems

The main fields of application are UV wood and furniture coatings, and UV printing inks. However, it also perfectly defoams solvent-borne and high solid systems.

Benefits

- Excellent, spontaneous defoaming, even under critical application conditions such as roller application
- Ideal for 100 % UV systems, solvent-borne, high-solid and solvent-free systems based on epoxy and polyurethane resins
- Prevents macro- and microfoam
- Particularly suitable for highly matted and pigmented systems and also for clear coats
- Effective at a very low dosage
- VOC-free, solvent-free

NEW

Defoamers

BYK-1810/BYK-1811/ BYK-1815/BYK-1816/ BYK-1818

PFAS-free, silicone-containing defoamers for solvent-borne and solvent-free systems

Per- and polyfluoroalkyl substances (PFAS) are widely used in everyday life as components of, for example, non-stick coatings, fire-fighting foams, or paints. However, since PFAS are now suspected of having the potential to be harmful to health, their use is being viewed increasingly critically worldwide.

Defoamers also often contain fluorine-modified silicones for a spontaneous and fast defoaming effect. BYK has expanded their portfolio and now offers PFAS-free sustainable alternatives to fluorine-modified silicone defoamers: BYK-1810, BYK-1811, BYK-1815, BYK-1816, and BYK-1818.

These five new additives provide high efficiency and excellent spontaneous defoaming on a par with PFAS-containing products, yet are completely fluorine-free. They can be used in a wide range of solvent-borne and solvent-free systems and cover a broad spectrum of applications overall.

Applications of PFAS-free defoamers

Applications	BYK-1810	BYK-1811	BYK-1815	BYK-1816	BYK-1818
Architectural coatings	●	○	○	○	○
Floor coatings	●	○	○	○	○
General industrial coatings	●	○	●	●	○
Marine coatings	●	●	●	●	●
Protective coatings	●	●	●	●	●
Wood and furniture coatings				●	○
Automotive refinish coatings	○				
Adhesives and sealants	●	○	●		
Thermosets	○		○		

● Highly recommended ○ Recommended

Benefits

PFAS-free!

- Excellent defoaming properties in solvent-borne and solvent-free systems (wide range of applications)
- Spontaneous defoaming even at low dosage levels
- Prevention of pinholes
- Reduction of surface tension
- Positive influence on leveling and surface appearance
- Good storage stability

Defoamers

BYK-1880

Airless by airless

New defoamer technology for solvent-borne and solvent-free systems applied by airless or air-assisted airless spray

Solvent-borne or solvent-free coatings, e.g. typical 2-pack PUR systems for ACE* applications, are often applied using airless or air-assisted airless spray. In this application method, air is dragged along with the paint due to the very high pressure at the spray nozzle. The coating then hits the substrate at high speed (~ 150 m/s), the dragged along air is entrapped and later becomes visible as microfoam in the coating. This is difficult to defoam and leads not only to a poor visual appearance, but also to loss of gloss, an increase in viscosity and poor durability of the coating.

To defoam these demanding systems, the new BYK-1880 has been developed. The silicone-containing defoamer is based on a novel, patented ABC structure and is specifically recommended for 2-pack high-solid PUR systems. In addition, the product can also be used in conventional spray-applied systems and is widely applicable in many solvent-borne and solvent-free coatings.

* Agricultural, Construction and Earthmoving

Novel and patented ABC structure

Benefits

- Particularly effective against microfoam caused by airless or air-assisted airless application
- Highly effective and at the same time very compatible
- Excellent defoaming in low as well as in higher film thicknesses
- Suitable for any gloss level
- No negative influence on paint properties, such as gloss, adhesion and leveling
- Especially recommended for 2-pack PUR systems (high-solid and conventional)
- Suitable for many solvent-borne and solvent-free coatings such as alkyds or 2-pack epoxy systems

Applications

- General industrial coatings
- Marine and protective coatings
- Floor coatings
- Automotive refinish coatings

Surface additives

BYK-314/BYK-3765 BYK-3772/BYK-UV 3511

Cyclic siloxanes in silicone-based surface additives – Purified alternatives to additives with a higher cyclic siloxanes content.

As of June 2018, silicone-based products containing 0.1 % or more D4, D5, or D6 cyclic siloxanes must be labeled as SVHC (Substance of Very High Concern) on the EU Safety Data Sheet.

BYK offers purified alternatives with a residual D4, D5, and D6 content of less than 0.1 % each to ensure safe use in any formulation.

What does "purified" mean?
By adding an additional production step after manufacturing, the D4, D5, and D6 cyclic siloxanes content is reduced to less than 0.1 % each.

BYK silicone additives with a cyclic siloxanes content of 0.1 % or higher and their low cyclic alternatives:

Standard additives with a cyclic siloxanes content of ≥ 0.1 %	Alternatives with a cyclic siloxanes content of < 0.1 %
BYK-300*[1]	BYK-3750*[1]/BYK-3755*[1]
BYK-301	BYK-3751
BYK-302	BYK-3752
BYK-306*[1]	BYK-3761*[1]/BYK-3765
BYK-307	BYK-3762
BYK-323	BYK-3780
BYK-330	BYK-3763
BYK-331	BYK-3753
BYK-342	BYK-3754/BYK-3756
BYK-370*[1, 2]	BYK-3772
BYK-375*[2]	-
BYK-377	BYK-3771
BYK-378	BYK-3764
BYK-SILCLEAN 3701	-
BYK-SILCLEAN 3710	-
BYK-UV 3500	Technical alternative: BYK-UV 3505*[2]
BYK-UV 3510	BYK-UV 3511
BYK-UV 3575*[2]	-

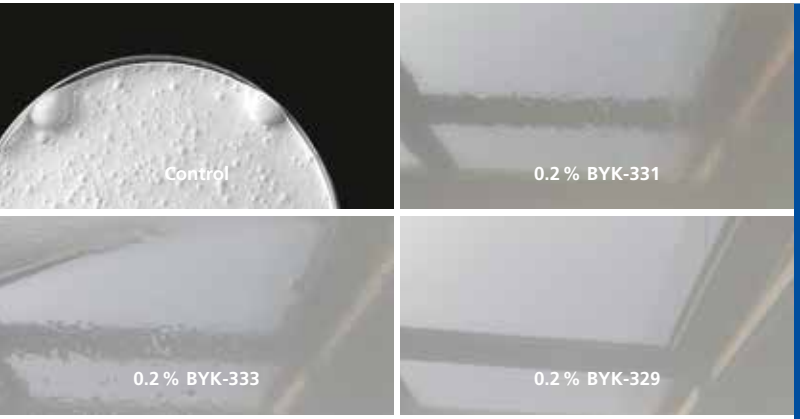
*[1] Aromatic solvent (BTX)
*[2] Contains organotin

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-379

Highly active silicone-containing surface additive with strong dynamic properties and minimal foam stabilization

In order to achieve excellent surface properties, such as good substrate wetting, surface slip, anti-crater properties, or scratch resistance in coatings and printing inks, BYK offers a number of highly active polyether-modified polydimethylsiloxanes that provide a strong reduction in static surface tension. In fast printing processes, spray applications, and in inkjet applications, the reduction of dynamic surface tension is also important.

The new silicone additive BYK-379 has therefore been especially developed for printing inks and inkjet inks to ensure these dynamic properties as well as to achieve the same surface effects as conventional highly active silicone additives. Due to the comb-like structure of the product, a reduction of static and dynamic surface tension is achieved at the same time.

The additive is universally usable in aqueous, solvent-borne, and radiation-curing coatings, printing inks, and inkjet inks and is broadly compatible. In addition, it hardly stabilizes foams and is very effective even at low dosages.

Benefits

- Very strong reduction of dynamic surface tension
  → Good wetting in fast printing processes
  → Improved jetting in UV inkjet inks
  → Excellent drop spread on the substrate in UV inkjet inks
- Very strong reduction of static surface tension
  → Good substrate wetting
  → Optimized anti-crater properties
  → Increase of surface slip
  → Improvement of scratch resistance
- No or only minimal foam stabilization
- 100 % active substance
- Universally usable – broadly compatible in aqueous, solvent-borne, and radiation-curing coatings, printing inks, and inkjet inks
- Cyclic siloxanes D4/D5/D6 content: each < 0.1 %
- Complies to the food contact regulations according to Swiss Ordinance and Nestlé Guidance Note*

* This information is correct as of November 2022.
The current status for all of the above can be found at https://www.byk.com/en/service/regulatory-affairs/food-contact

Defoamers

BYK-397

Polyacrylate-based surface additive for solvent-borne systems with a perfect balance between good leveling and defoaming

Polyacrylate-based surface additives use controlled incompatibility in coatings to orientate to the coating/air interface and develop their effect there. This means that they only have a minor effect on surface tension and maintain a high level of surface energy, which creates excellent leveling and does not affect the recoatability and intercoat adhesion. If the polyacrylate-based additives have a lower polarity, they can also produce a considerable defoaming effect.

BYK-397 – The 2-in-1 solution with perfect orientation toward the coating/air interface

The new BYK-397 has exactly this property profile and is therefore an ideal 2-in-1 solution. It can be used in systems with a wide range of different film thicknesses and is suitable for both pigmented coating systems and clearcoats. BYK-397 also meets the requirements for additives used in food contact applications.

Benefits

2 in 1

- Perfect balance between excellent leveling and good defoaming in solvent-borne systems
- High thermostability (> 250 °C/482 °F) → no yellowing even at high baking temperatures
- Can be used for all gloss levels – including high gloss
- Suitable for all film thicknesses, from low to high
- Can be used in pigmented coating systems and clearcoats
- Silicone-free
- Good recoatability and intercoat adhesion
- Easy to incorporate
- Approved for food contact applications (EU/PIM, FDA 21 CFR 175.300)

Applications

- General industrial coatings
- Coil coatings
- Can coatings

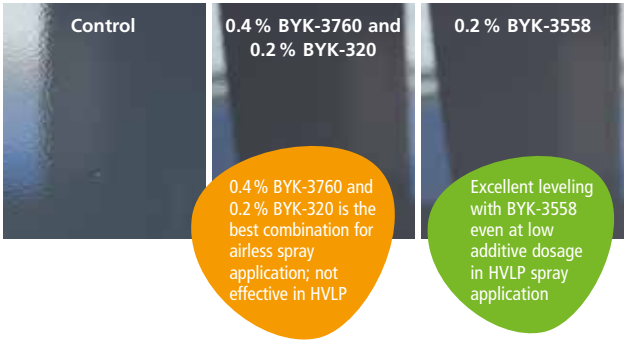
Defoamers

BYK-3558

Surface additive to improve leveling and prevent cratering in high- and medium-solid coating systems

Coating systems with a higher solid proportion, e.g. high- or medium-solid coatings, typically contain a significantly reduced quantity of solvents. This is particularly advantageous, for example, in cases where coating is carried out manually, such as in automotive refinish applications. The disadvantage is that

BYK-3558 replaces combinations of various additives



Test system: High-solid 2-pack PU system. Additive dosage: Active substance on component A; **Test method:** Spray application using HVLP (high volume, low pressure); nozzle: 1.4 mm, pressure: 2.0 bar

these modern high-solid systems are more challenging to apply, especially with regard to good leveling and a crater-free surface.

To date, the use of standard additives alone has only been able to achieve partially satisfactory results. For this reason, combinations of additives are often used, for example, a medium-active silicone for a sufficient reduction of surface tension and good slip together with a leveling-promoting acrylate.

BYK-3558 is based on a new technology and combines the beneficial properties of silicones and polyacrylates in a well-balanced manner in one product. It moderately reduces the surface tension, thereby wetting the substrate and ensuring good leveling. It prevents cratering and increases surface slip. BYK-3558 is therefore an excellent and easy-to-use alternative for perfect surfaces in solvent-reduced high- and medium-solid coating systems.

Benefits

New technology combines the benefits of silicones (reduction of surface tension, increase in surface slip) and polyacrylates (improvement of leveling properties) in one additive.

- Excellent leveling in high- and medium-solid clearcoats and pigmented coatings for automotive refinish and industrial coating applications
- Reduction of surface tension and increase in surface slip at the same level as medium-active silicones
- Effective prevention of cratering

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.

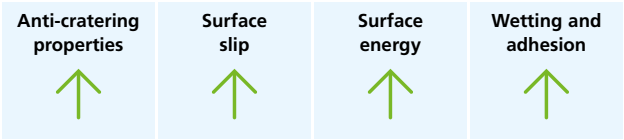
For decades, formulators of clearcoats and topcoats have been successfully using silicone-based additives when there is a need to reduce the surface tension to enable better wetting of the substrate, avoid cratering, and ensure good surface slip. Furthermore, once the coating has cured, it should have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

The 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.

Classic silicone additives offer:

Silicone- and polyether-macromer-modified polyacrylates can do more:



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

Surface additives

BYK-DYNWET 810

Silicone-free substrate wetting agent for aqueous wood and furniture coatings, printing inks, overprint varnishes, and inkjet inks. Low foam stabilization. Reduces the dynamic surface tension and is especially suitable for fast running machines.

Benefits

Coatings industry
The additive reduces the dynamic surface tension in aqueous wood and furniture coatings, and therefore improves the substrate wetting. It is particularly recommended for high-speed applications.

Printing inks and inkjet inks
The additive reduces the dynamic surface tension in aqueous systems and therefore enhances the substrate wetting. It is particularly recommended for high-speed applications.

BYK-DYNWET 810 improves droplet formation (jettability) in aqueous inkjet inks when printing.

When added to the millbase, it reduces the viscosity when grinding the pigment, increases gloss, color strength, and transparency, and reduces flooding/floating in pigment blends.

Surface additives

BYKETOL-WB

Silicone-free surface additive for aqueous coatings to prevent surface defects such as boiling marks, pinholes, bubbles, orange peel, and craters, and to improve leveling.

Benefits

BYKETOL-WB is a leveling additive with defoaming properties. It prevents the formation of bubbles and boiling marks in aqueous coatings, particularly in temperature-drying systems. Surface defects, such as cratering and pinholes, are avoided. The effectiveness of BYKETOL-WB can be additionally improved by combining it with polymeric defoamers.

Applications

Especially recommended
- Automotive OEM coatings
- Automotive refinish coatings
- Industrial coatings

Recommended
- Wood and furniture coatings

BYKETOL-WB is the butylglycol-free variant of BYKETOL-WA

Surface additives

BYK-UV 3590
BYK-UV 3595

BYK's new radiation-curing silicone-based surface additives

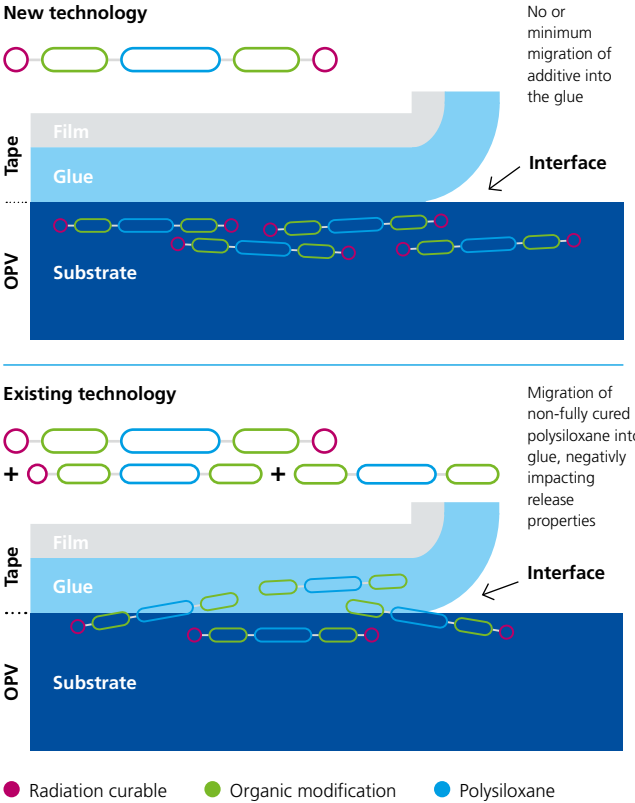
Two new radiation-curing additives, BYK-UV 3590 and BYK-UV 3595, have been developed that are particularly characterized by extremely strong tape release properties.

BYK-UV 3590 and BYK-UV 3595 are particularly suitable for UV-curing printing inks and overprint varnishes. The additive accumulates on the surface due to its very high interfacial activity. Due to its acrylic functionality, it can be incorporated into the polymer composite and thus permanently anchored to the surface. There it causes a reduction in adhesive tape adhesion (improvement of tape release properties) and leads to a significant increase in surface slip. In addition, BYK-UV 3590 exhibits very good defoaming properties and has only a slight influence on the turbidity of the system. BYK-UV 3595 improves flow and exhibits defoaming properties without affecting turbidity. By using BYK-UV 3590 and BYK-UV 3595, it is also possible to create structural effects in overprint varnishes and printing inks.

BYK-UV 3590 and BYK-UV 3595 are particularly recommended for all non-aqueous, radiation-curing flexographic, offset and screen printing inks as well as for radiation-curing overprint varnishes.

The additives are colorless, odorless, essentially clear and characterized by a very low content of the cyclic siloxanes D4, D5 and D6 (each < 0.1 %).

Strictly difunctional polysiloxane for improved release properties



Benefits

- Provides extremely high slip and maximum tape release properties to UV systems, including UV printing inks, UV screen inks and UV OPV
- Reduces friction in UV based printing inks → provides strong surface slip
- Improves levelling
- Excellent defoaming properties
- Contains defined number of radiation curing crosslinkable groups
- Low content of cyclic siloxanes (D4/D5/D6, each < 0.1 %)
- Colorless and odorless
- Essentially clear or slightly hazy product appearance
- Compliant to Swiss Ordinance and Nestlé Guidance Note*

* This information is correct as of February 2023. The current status can be found at https://www.byk.com/en/service/regulatory-affairs/food-contact

Wax additives

CERAFLOUR 1003
CERAFLOUR 1004

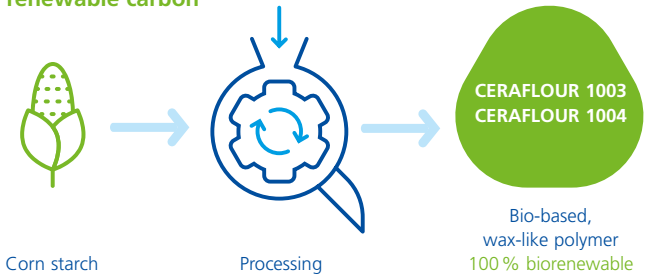
New sustainable, biorenewable, starch-based wax-like polymers for matting with optimum transparency.

For BYK, sustainability is an important criterion in the development of new additives. In addition to the product's direct properties and effects, questions regarding environmental impact, chemical basis and energy consumption always play a significant role, too.

Comparison of properties

CERAFLOUR 1003 and CERAFLOUR 1004 are starch-based polymers for providing good matting efficiency while keeping optimum transparency. CERAFLOUR 1003 gives a slight surface strucure and provides a similar matting effect at different observation angle. CERAFLOUR 1004 has finer particles for a slight matting effect combined with high transparency and a smooth, soft and silk feel.

The CERAFLOUR 1000 series is based on renewable carbon



CERAFLOUR 1003 Corn starch

- Slight surface structure
- Excellent transparency
- Providing a similar matting effect at different observation angles

- **100 % renewable rescources**
- Particle size distribution D50: 13 µm, D90: 19 µm

CERAFLOUR 1004 Finer corn starch

- Moderate matting effect
- High transparency
- Smooth, soft and silky feel surface especially for lower film weight applications

- **100 % renewable rescources**
- Particle size distribution D50: 10 µm, D90: 15 µm

Wax additives

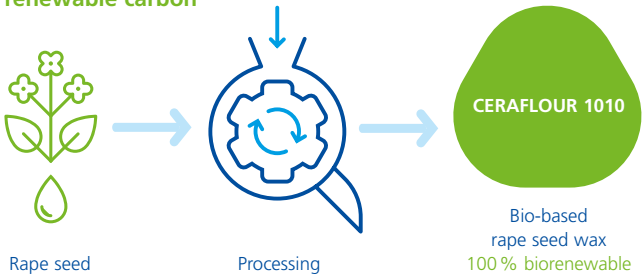
CERAFLOUR 1010

New sustainable, biorenewable, rape seed based wax additive for high matting and mechanical resistance.

For BYK, sustainability is an important criterion in the development of new additives. In addition to the product's direct properties and effects, questions regarding environmental impact, chemical basis and energy consumption always play a significant role, too.

CERAFLOUR 1010 gives an excellent matting effect and provides high mechanical resistance. This makes it ideally suited for modern wood coatings system, like natural look formulations.

The CERAFLOUR 1000 series is based on renewable carbon



Properties of the wax

CERAFLOUR 1010 Rape seed wax

- Particularly suitable for radiation curable systems
- Excellent matting efficiency
- Very good scratch and abrasion resistance

- **100 % renewable rescources**
- Particle size distribution D50: 6 µm, D90: 16 µm
- Melting point: 70 °C

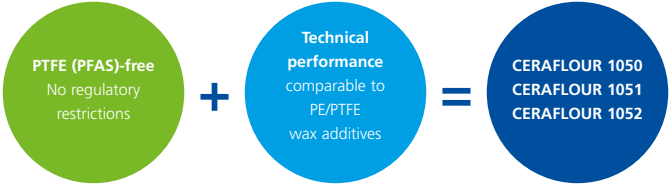
Wax additives

CERAFLOUR 1050
CERAFLOUR 1051
CERAFLOUR 1052

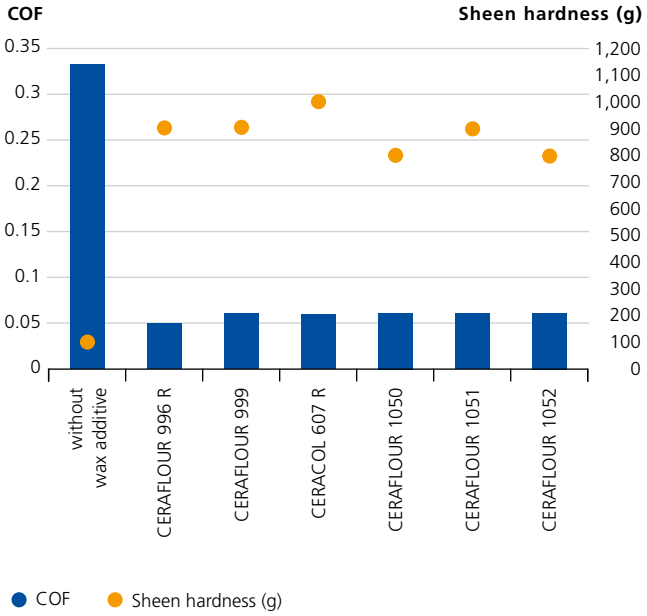
PTFE-free micronized wax additives for excellent abrasion and scratch resistance in aqueous, solvent-free, solvent-borne, and UV coating systems.

Polytetrafluoroethylene (PTFE) is a typical representative of perfluoroalkyl and polyfluoroalkyl (PFAS) substances. Its usage has been increasingly critically assessed at a global level for some time now, because products from this group of chemicals are suspected of being harmful to health. Nevertheless, PTFE possesses some desirable properties that harmless materials often do not have. In the field of wax additives, for example, conventional PTFE-based variants demonstrate outstanding abrasion and scratch resistance.

For this reason, BYK has developed sustainable alternatives to PE/PTFE wax additives that are both safe to use and ensure excellent application results: CERAFLOUR 1050, CERAFLOUR 1051, and CERAFLOUR 1052. Their special composition gives these additives a comparable level of mechanical resistance, including abrasion and scratch resistance. Their fine particle size distribution also makes them ideal for use in clearcoats and systems with low film thicknesses. CERAFLOUR 1050, CERAFLOUR 1051, and CERAFLOUR 1052 can be used to achieve matting in aqueous cosolvent-containing systems. All three additives are food contact compliant.



Very good scratch resistance and surface slip in a BPA-free can coatings clearcoat



Test system: BPA-free polyester/melamine system
Additive dosage: 1 % wax additive solid based on the total formulation
COF: Coefficient of friction

PTFE-free!

Benefits

of CERAFLOUR 1050, 1051, and 1052:

- Significant improvement in abrasion and scratch resistance
- Medium to strong reduction in surface slip
- Very fine particle size distribution → also suitable for clearcoats and systems with low film thicknesses
- Food contact compliant

Additional benefits

- of CERAFLOUR 1050:
  Especially recommended for clearcoats and haze-sensitive systems
- of CERAFLOUR 1051: Good performance in a wide range of application areas
- of CERAFLOUR 1052:
  Ideal for systems that require less surface slip

Applications

- General industrial coatings
- Can coatings
- Coil coatings
- Wood and furniture coatings
- Architectural coatings

Rheology additives

BYK-AQUAGEL-7100

New, highly effective, inorganic rheology additive for aqueous systems with excellent incorporation properties.

Natural layered silicates, often referred to as "clay," are well-known and widely used rheology additives in aqueous systems, such as emulsion paints and construction chemicals. This raw material contains accessory minerals that must be removed via a purification process before it can be used as an additive. If a conventional drying process is applied, this leads to an agglomeration of the clay platelets.

For this reason, BYK-AQUAGEL 7100 is purified in a very elaborate procedure and subsequently "shock dried."This special process forms a surface structure that is significantly more open and delaminated compared to standard products. The structure is permanent and already slightly preactivated.

The benefit is that, after incorporating while stirring, the layered silicate is easier to dissolve. Longer dispersion times with high shear forces are therefore not required and the final viscosity is achieved sooner. The result is a significant thixotropic flow behavior for a wide range of applications in paints, coatings, and aqueous construction formulations. One particular benefit is that BYK-AQUAGEL 7100 enables the manufacturing of flowable intermediates.

Benefits

- Shock drying produces a permanently open, delaminated, and slightly preactivated structure
- Easy incorporation and immediate activation
- Improved rheological effectiveness → lower additive dosage for achieving the desired final viscosity
- Thixotropic flow behavior
- Longer-term flowable intermediates
- Excellent anti-settling and anti-sagging properties in the final product
- No significant post-thickening

Applications

- Architectural coatings
- Wood and furniture coatings
- Construction chemicals
- Marine and protective coatings
- Adhesives and sealants

Rheology additives

RHEOBYK-7650
RHEOBYK-7670
RHEOBYK-7690

New family of solid, non-dusting, and biocide-free rheology additives based on HEUR technology for aqueous systems.

Polyurethane associative thickeners represent a significant proportion of rheology additives for aqueous systems. The majority of these proven products are supplied as water-based solutions and require the addition of a number of substances, including biocides that prevent microbial infestations. These products behave differently to solid associative thickeners, which are generally available in powder form. However, this powder form has the drawback of releasing dust during processing, meaning increased occupational safety measures, such as the use of dust masks, may be required.

The new RHEOBYK-7650, RHEOBYK-7670, and RHEOBYK-7690 associative thickeners are solid additives with a unique delivery form: They are supplied as flakes, which prevent dust formation and can still be perfectly incorporated directly or via a pregel. RHEOBYK-7650, RHEOBYK-7670, and RHEOBYK-7690 form a product family that covers the entire shear range, from low to high shear levels, and has outstanding storage stability.

Benefits

Special benefits

- Solid flakes → no dust formation, no additional protective measures, easy handling
- Biocide-, VOC-, APEO-, and tin-free
- Greater flexibility for formulation and production processes
- Environmentally friendly – solid form means lower transport volume
- Not sensitive to frost
- Increased shelf-life, outstanding storage stability

General benefits

- pH-independent → no subsequent adjustments necessary
- Pseudoplastic, balanced, or Newtonian flow behavior → the whole range of applications is covered
- Good leveling properties
- Excellent sag resistance
- No or minor negative influence on gloss
- Easy to incorporate

Additives from bio-based materials

Sustainability, climate neutrality, and similar topics are increasingly coming into focus worldwide. Collective awareness and new regulations, such as the European Green Deal, are demanding change not only in society but also in the chemical industry. The chemical industry is a major contributor to greenhouse gas emissions, but it also offers an important lever to contribute to a more sustainable world. One way to make the chemical industry more sustainable and climate friendly, and less based on finite resources, is the use of bio-based materials. Thanks to its intensive product and application research, BYK offers its customers a comprehensive portfolio of (partly) bio-based additives.

What are bio-based products?

According to the European Commission, bio-based products are "wholly or partly derived from materials of biological origin, excluding materials embedded in geological formations and/or fossilised. [...] As they are derived from renewable raw materials such as plants, bio-based products can help reduce CO_2 [...]."*

BYK's understanding

BYK's understanding is closely related to this definition. BYK takes the definition of "bio-based" given in ASTM D6866 into account as well, so that the bio-based content only refers to the organic carbon.

This means that the measurement does not include "neutral" substances that do not contain any carbon, such as water, minerals, and silicon dioxide. Furthermore, substances containing inorganic carbon are likewise excluded. The measured value should therefore be understood as the amount of bio-based organic carbon in relation to the total organic carbon (TOC).

* Reference: Bio-based products | Internal Market, Industry, Entrepreneurship and SMEs (europa.eu)

Additives from bio-based raw material

Product	Bio-based organic carbon content (%)
Wetting and dispersing additives	
BYK-MAX D 4220	62
DISPERBYK-106	37
DISPERBYK-108	89
DISPERBYK-192	41
DISPERBYK-2062	51
DISPERBYK-2157	91
Surface additives	
BYK-S 760	91
Defoamers/air release additives	
BYK-014	57
BYK-1740	100
BYK-1745	79
BYK-A 505	100
Wax additives	
AQUACER 561	88
AQUACER 565	94
AQUACER 570	91
AQUACER 571	92
AQUACER 581	87
AQUACER 1540	92
CERAFLOUR 960	96
CERAFLOUR 964	100

Product	Bio-based organic carbon content (%)
CERAFLOUR 993	96
CERAFLOUR 994	96
CERAFLOUR 1000	> 97
CERAFLOUR 1001	> 97
CERAFLOUR 1002	> 97
CERAFLOUR 1003	100
CERAFLOUR 1004	100
CERAFLOUR 1010	100
Processing additives	
BYK-3950 P	100
BYK-MAX P 4102	100
BYK-P 9050	95
BYK-P 9051	51
BYK-P 9080	86
BYK-P 9085	79
SCONA TPPL 1214 PA	97
SCONA TPPL 1310 PA	94
Viscosity depressants	
VISCOBYK-5120	89
Rheology additives	
OPTIGEL-WX	96
RHEOBYK-7590	100
RHEOBYK-7591	100
RHEOBYK-R 606	81

BYK by numbers

About **1,000**
samples a day

More than **40** markets

More than **35**
laboratories
across the globe

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

Investment in R&D

3 times higher
than the industry
average

150
years of **expertise**

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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.

...expertise?

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

www.byk.com

...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.

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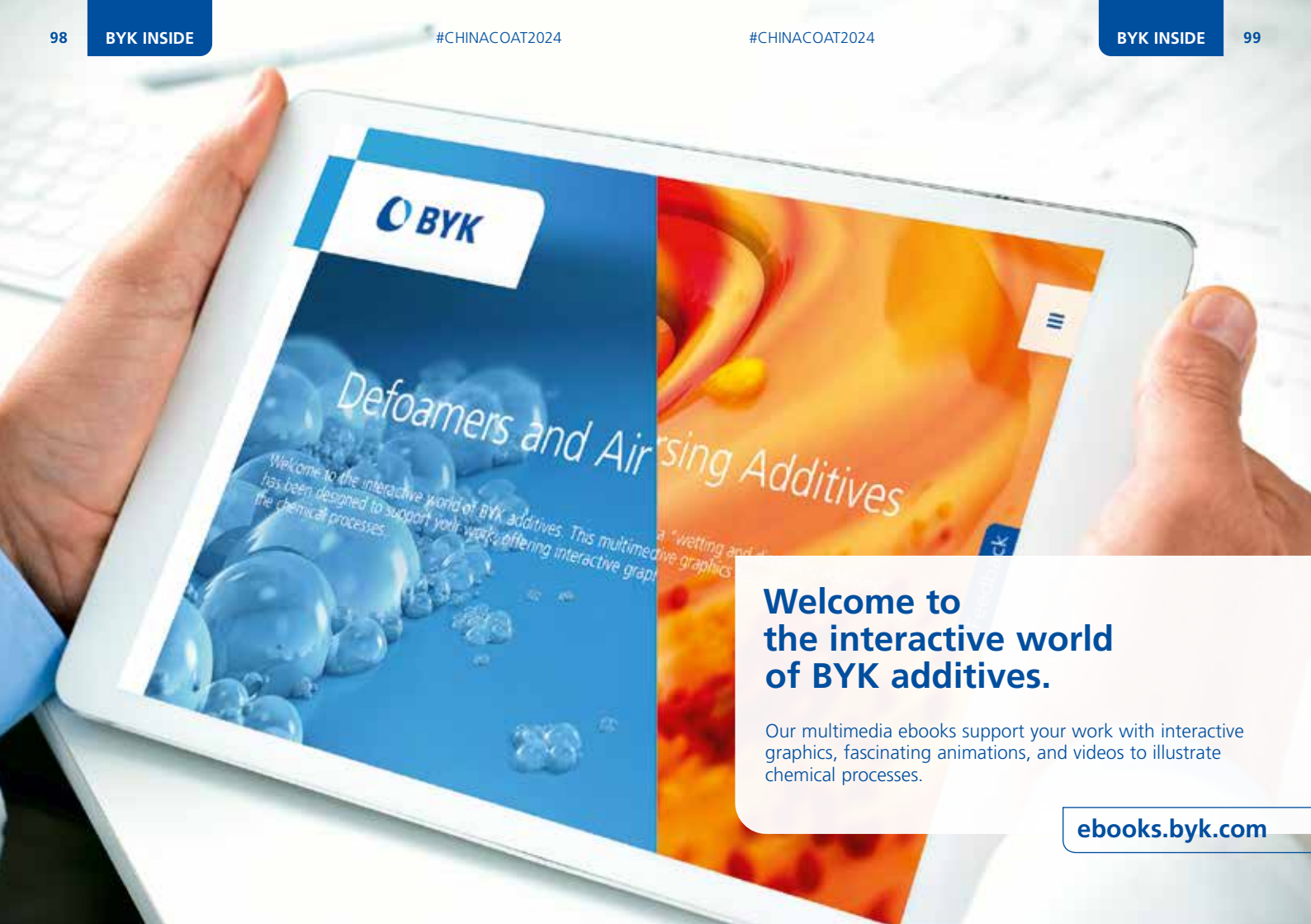

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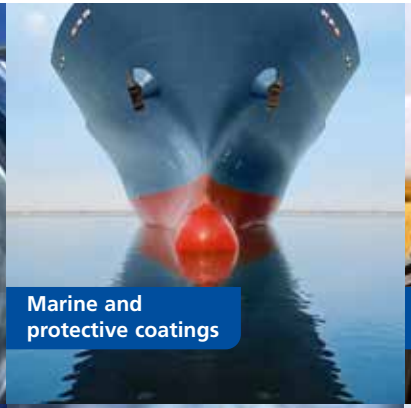
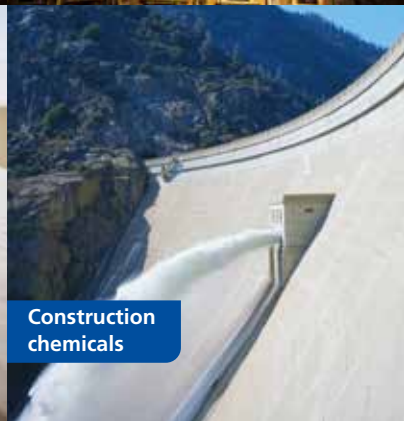
BYK highlights





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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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10/2024

Sustainability

Do you know BYK's solutions and products for sustainability?

What does sustainability mean at BYK?

Sustainability is of high value at BYK and has many facets. We want to be climate neutral as early as 2025. This is an ambitious goal, but by no means everything: the search for alternative raw materials, the reorientation of research and development towards more sustainable products, sustainability in the applications of our customers, and the safest possible recycling in the sense of the circular economy are also among our most important topics.

We integrate the three dimensions of ecology, economy and social commitment into all decision-making processes at BYK.

Unfortunately, we cannot be THE solution to climate change – but we can be part of the solution. With our sustainable solutions, we want to create value – not only for our customers, but also for our environment, our employees and future generations.

Discover
www.byk.com/sustainability