#CHINACOAT 2019

SHOW NEWS

ADDITIVES & INSTRUMENTS  BYK INSIDE  TIPS

Hall W1, Booth #B.05  english
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 & marine coatings.
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.
## ADDITIVES

### BYK Technologies

#### Defoamers

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### Additives for aqueous systems

- BYK Technologies

### Additives for aqueous and non-aqueous systems

- Defoamers
- Surface Additives
- Wax Additives
BYK Technologies

Decorative Coatings

Architectural Coatings
Architectural coatings range from interior wall paints to external coatings for facades, as well as decorative coatings for wood and metal, for example, with/on window frames, doors, fences, and road marking paints grids. BYK offers special additives according to the regulatory requirements for aqueous as well as for solvent-borne systems. In these applications different binders are used, such as acrylates, styrene-acrylates, alkyds, TPA, and PU.

Flooring Coatings
Once reserved for warehouses, production sites, shopping centers and hospitals, the use of liquid polymer coatings is gaining popularity in many commercial spaces. Increasing in parallel is regulatory oversight. For this reason, the growth 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. 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 & dispersing and surface additives finally provide pigment stabilization and leveling properties.
Wood & 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.

Automotive Coatings

BYK offers high solid systems and environmentally friendly solutions for water-borne, solvent-borne and UV coatings for OEM and refinish automotive applications such as: CED, primers, mono-coats, base coats and clear coat systems. Our wetting and dispersing additives maximize pigment efficiency for high transparency and our rheology modifiers and specialty waxes orient effect pigments for ideal metallic effect and flop. Optimize appearance with our flow and leveling additives and eliminate foam with defoaming technology.

Marine & Protective Coatings

Paints in Marine & Protective Coatings are applied at high film thickness to provide enhanced durability and resistance to aggressive environments to protect metal and concrete substrates. Whether it be the primer, filler, or top coat, BYK offers a wide range of additives to assist formulators in developing high performance protective and marine coatings systems.
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 food contact-approved additives which can be used in solvent-based, 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.

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 VOCs. 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-based and radiation-curing systems. Of course, they are also suitable for use in indirect food contact.

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-based and ceramic inkjet inks.

Adhesives & 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.
Defoamers

BYK-061

Silicone Defoamer for Solvent-borne and Solvent-free Systems with Outstanding Stability even at low Temperatures

Solvent-free systems based on epoxy or PUR resins, which are used in floor coatings as a binder, for example, require a fast and efficient air release during the application, since these formulations generally have a greater viscosity. However, the same applies to solvent-borne coatings, e.g. alkyd systems, to obtain a defect-free surface after the application. If the additive is stored or processed at low temperatures, the requirements for the performance of the defoamer are even higher.

The new BYK-061 meets all of these expectations in full. The additive offers fast and spontaneous defoaming. BYK-061 shows high stability and performance even at low temperatures. A further advantage is the achievement of very good results even at a very low dosage.

BYK-061 – Defoaming of a Self-leveling, Solvent-free Floor Coating based on an Epoxy Resin

Dosage: 0.5 % additive (as supplied) based on the total formulation
Test method: Hardener added, stirring for 1 min. at 4 m/s, system poured into a lid

Benefits

- Very good and spontaneous defoaming at low dosage
- Excellent stability at low temperatures
- Compared to the known BYK-066 N, it offers greater efficiency and a faster effect

Applications

- Architectural coatings
- Floor coatings
- General industrial coatings
- Protective coatings
Defoamers

BYK-1630

VOC- and APEO-free Mineral Oil
Defoamer for Aqueous Architectural Coatings, General Industrial Coatings, Floor Coatings and Adhesives

Mineral oil defoamers are widely used in the coating and paint industry. They offer a good price-performance ratio, especially in aqueous emulsion paints and plasters with a high to medium PVC, and also in adhesive dispersions.

BYK-1630 is a new mineral oil defoamer from BYK, which contains some silicone to improve its effectiveness. This gives the additive an excellent defoaming effect in a wide range of systems. In addition, BYK-1630 is very stable when stored compared to standard products on the market and shows no separation. The defoamer is VOC- and APEO-free.

BYK-1630 – Excellent Storage Stability Compared to Other Mineral Oil Defoamers

Benefits

- Particularly suitable for emulsion paints with a PVC of 30–85
- Can also be used in plasters
- Contains a small proportion of a coating-compatible silicone
- VOC- and APEO-free
- Excellent storage stability, no separation

Applications

- Architectural coatings
- Floor coatings
- General industrial coatings
- Adhesives & sealants
Defoamers

BYK-1680

Construction Material Applications, in Particular in Combination with Concrete Additives Based on Polycarboxylate Ethers

BYK-1680 – Very Good Defoaming and Leveling Properties in a Self-compacting Concrete Application

High-performance superplasticizers enable outstanding flow and workability properties in concrete applications. In the end system, however, the maximum possible strength properties cannot be achieved due to the foam-stabilizing effect of the superplasticizer, particularly in the case of PCE-based flow agents.

The use of defoamers is therefore mandatory in such formulations. Numerous suitable defoamers are incompatible and therefore, sooner or later, cause phase separation in the concrete additive. Over a longer period of time, many defoamers also tend to become ineffective in the end system.

In contrast to this, BYK-1680 is characterized by its excellent and sustained defoaming effect as well as its very good compatibility in aqueous polymer solutions and construction material formulations.

Benefits

- Very good miscibility with water and PCE-based polymer solutions
- No turbidity or phase separation in concrete additives
- Long-term stability in concrete additives, even at elevated storage temperatures
- Very good spontaneous and controlled long-lasting defoaming effect
- Improvement to the flow behavior
- Post-addition to the end system possible without restrictions
Defoamers

**BYK-1759**

Silicone-free, Polymer-based Defoamer for Solvent-borne Systems

BYK-1759 is an aromatic-, mineral oil- and silicone-free defoamer based on polymers for flexographic and gravure printing inks. It is equally suitable for laminating adhesives. The additive is highly effective even at low dosage and has no impact on intercoat adhesion. Furthermore, flow properties of the system can be positively influenced.

**Benefits**

- Highly effective even at low dosage
- No impact on intercoat adhesion
- Positive influence on flow properties

**Applications**

- Printing inks
- Laminating adhesives
A well-balanced defoamer that perfectly combines compatibility and efficiency, guarantees an easy application and a high-quality final coating. In 2017, BYK introduced the BYK-1781 additive in order to reduce the occurrence of microfoam in the coating resulting from difficult application methods such as spray painting (HVLP), airless and airmix applications. The new BYK-1786 is the emulsion of BYK-1781. In this form, the additive is easier to incorporate and dose. Due to its good compatibility and well-balanced silicone/polyether ratio, BYK-1786 is by no means inferior to BYK-1781 in terms of its performance. BYK-1786 is particularly recommended for pigmented and unpigmented aqueous coating systems, e.g. 1-component acrylate, 1-component PUD, 2-component PU and UV without negatively affecting transparency, haze, and cratering. The additive is VOC- and APEO-free and is particularly recommended for architectural, general industrial, protective, wood and furniture coatings, as well as floor coatings, adhesives, sealants, care products and polishes.

**Benefits**

- Perfect defoaming with no or minor effect on optical properties
- Broad compatibility with various systems (clear, matted, pigmented)
- Easy to incorporate
- Particularly suitable for use in airless/airmix applications
- VOC- and APEO-free
- Ecolabel-compliant

**Defoamers**

**BYK-1786**

VOC-free Silicone Defoamer for Aqueous Systems to Remove the Application-related Microfoam

**BYK-1786 – Excellent Clarity in Aqueous Systems**

Test system: Alberdingk AC 2739
Dosage: 0.3 % (as supplied) based on the total formulation (post addition)
Incorporation: 3 minutes at 2 m/s
Application: Graco Airless Spray Equipment
Defoamers

BYK-1795

Silicone-free Polymer Defoamer for Solvent-borne, Solvent-free and Radiation-curable Systems

BYK-1795 is a silicone-free polymer defoamer for solvent-borne, solvent-free and UV-curable systems. Its spontaneous defoaming action and excellent compatibility mean that BYK-1795 can be used in a variety of applications. BYK-1795 has particularly outstanding defoaming properties in polyurethane- and epoxy-based floor coatings, in various solvent-borne coil coatings (e.g., PVDF or polyester/melamine), as well as solvent-borne general industrial coatings and UV-curable systems.

Benefits

- Spontaneously defoaming action combined with excellent compatibility
- Effective in a variety of systems:
  - Self-leveling floor coating
  - Coil coatings
  - Spray application (e.g. general industrial coatings)
- Very effective in
  - Polyurethane and epoxy floor coatings
  - Solvent-borne coil coatings (e.g. PVDF, polyester/melamine)
  - Solvent-borne, general industrial coatings
  - Radiation-curable systems
- Silicone-free
- Ideal for high baking temperatures
- Emission-free (AgBB-compliant)
- Has food contact legal status
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**

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

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

**BYK-1797**

Silicone-Containing Defoamer for 100 % UV Printing Inks and OPV. Especially Recommended for Screen Printing Inks.

Due to their rheological profile, and since they are particularly prone to foaming during application, screen printing inks are especially challenging for defoamers. Often, it is also difficult to achieve good leveling, because, on the one hand, there is insufficient time with radiation-curable formulations and, on the other, the systems are configured for strong thixotropic to pseudoplastic behavior. That is where BYK-1797 comes into play, with two advantages. It has strong defoaming properties even at extremely low dosages, but with a little more, leveling can also be greatly improved. Newtonian radiation-curable systems such as UV flexographic inks or substrate printing inks often require additives both to eliminate foam, which may be carried through a enclosed doctor blade and to provide substrate wetting. This is another area in which BYK-1797 offers outstanding defoaming in many systems, even at the lowest of dosages.

**BYK-1797 – Excellent Defoaming and Leveling Properties in a Screen Printing Ink**

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**Benefits**

- Spontaneous defoaming in UV systems, particularly in screen printing inks and PU-based thermosets
- Highly effective at a very low dosage
- Improves substrate wetting at a higher dosage

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Printed on black LENETA substrate, 100-40 mesh
Surface Additives

**BYK-327**


BYK-327 is a polyether modified-polysiloxane which can be used in aqueous systems, polar solvent-borne systems and in solvent-free systems. It has excellent leveling properties and causes a moderate reduction in the surface tension. BYK-327 has very little effect on foam or even has a defoaming effect, depending on the system. This is due to its balanced polarity. BYK-327 is soluble in most common solvents, as well as in water without causing turbidity. This makes BYK-327 particularly suitable for clear coat systems.

**Benefits**

- 100% active substance
- Excellent leveling properties
- No turbidity in clearcoats the coating film
- Compatible with most types of solvents and water

**Very Good Defoaming of a Floor Coating**

Test system: 2-pack polyaspartic floor coating, solvent-free
Surface Additives

**BYK-3450**

**BYK-3451**

Silicone Surfactants for Aqueous Systems with a Significant Reduction in Surface Tension and Improved Wetting on Highly Non-Polar Substrates, without Increasing Surface Slip

**Benefits**

- Excellent spreading and wetting properties
- Strong reduction in surface tension
- Lower foam stabilization compared with standard silicones

**Applications**

- Printing inks
- Inkjet inks
- Architectural coatings
- Adhesives and sealants
- Care products and polishes

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**BYK-3450 and BYK-3451 – Very Good Wetting of an Aqueous Ink on Untreated Polyethylene**

Non-polar substrates such as PP, PE or PET as well as surfaces soiled with oily substances are difficult to wet with aqueous systems. These surfaces are usually non-polar and have a low surface energy. In terms of application, in particular aqueous printing inks and inkjet inks for printing films, pressure sensitive adhesives on silicon paper, but also soiled substrates during coating application should be mentioned here. In these cases, special silicone surfactants are required, which, on the one hand, cause a very powerful reduction of the static surface tension of the system to be applied, but, on the other hand, ensure in particular very good wetting through improved spreading capabilities. With BYK-3450 and BYK-3451, BYK has developed two new additives based on trisiloxanes, which achieve very good wetting of even the most difficult substrates as well as great spreading capabilities. When compared to conventional silicone surfactants, both additives show less foam stabilization, resulting in an improved processing and application.
Surface Additives

**BYK-3456**

Fluorine-free, Silicone-containing Additive to Improve Substrate Wetting and Leveling in Aqueous Systems and Solvent-free UV Coatings

Efficient substrate wetting and outstanding leveling are not guaranteed in every system nor are they easy to achieve. A particular challenge is posed by aqueous systems owing to the high surface tension of the medium, and UV systems, which are critical based on their rapid curing and high application speeds. It is for these specific systems that BYK has developed a new additive. BYK-3456 is a fluorine-free silicone additive that greatly reduces the dynamic and static surface tension. Even rough and porous substrates (e.g. wood) are wetted perfectly. As BYK-3456 is active both at the interface to the substrate and at the surface, the additive simultaneously improves substrate wetting and leveling. In contrast with many other additives, however, BYK-3456 does not stabilize foam. And there is no negative impact on the recoatability of the system. The additive is compatible with a multitude of resins and stable to hydrolysis across a broad pH range.

### Benefits

- Excellent substrate wetting even on porous substrates, e.g. wood
- Improved substrate wetting combined with good leveling properties
- Reduction in the dynamic surface tension
- Hydrolytic stability at low and high pH values
- Eliminates craters, fish eyes and picture framing
- High compatibility with many resins

### BYK-3456 – Mode of Action Compared with Standard Additives

<table>
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<tr>
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<td></td>
<td></td>
<td>Leveling</td>
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Surface Additives

BYK-3566

Macromer-modified Acrylate with Longer Silicone Chain for a Stronger Increase in the Surface Energy Level

BYK-3566 – Longer Silicone Chain for a Strong Surface Orientation

BYK-3566 is the latest addition to BYK’s range of macromer-technology based surface acrylates that provide an increase in the surface energy of dried coatings. The relatively long silicone-macromer chain which is the key characteristic of BYK-3566 causes a powerful orientation to the interface paint/air and thus increases its efficiency to a superior level. In this respect, BYK-3566 shows the strongest effect of all additives of this product family. Additionally, the longer chain provides certain anti-crater properties.

BYK-3566 is recommended for use in aqueous, solvent-borne, UV and 100 % systems.

Benefits

- Increases the surface energy of the cured paint by orientation to the interface paint/air
- Orientates stronger to the interface in solvent-borne and forced drying or room temperature drying systems due to longer silicone macromer chains
- Better wetting and adhesion of the next layer
- Improves the leveling
- Provides some anti-crater properties
- Recommended for aqueous, solvent-borne, UV, and 100 % systems
Surface Additives

BYKETOL-WA

APEO-free Version of BYKETOL-WS

BYKETOL-WS has for decades been the well known standard additive for an anti-popping and anti-pinhole effect in waterborne forced drying systems. The European Commission put now one of the additive ingredients (APEO) on the list of substances subject to authorization. The sunset date for this raw material is the 4th of January 2021. Afterwards, the manufacture, import and use of the substance is no longer allowed in the European market. Therefore we developed BYKETOL-WA which is based on unrestricted components and provides an almost identical performance compared to BYKETOL-WS.

It’s time to switch to BYKETOL-WA!

Benefits

• Excellent anti-popping and anti-pinhole effect
• Almost identical alternative to BYKETOL-WS
• Enhanced performance in combination with matching defoamer
Wax Additives

AQUACER 1540

Wax Additive to Improve the Surface Properties of Aqueous Coating Formulations, Especially Can Coatings

Can coatings form a protective film on metallic substrates for food packaging. On the one hand, they prevent the corrosion of the metal, and on the other hand, they protect the food contained inside the can. Many foodstuffs sold in metallic packaging contain, for example, acids, fats or salts. These food components can corrode the metal, thereby causing metal compounds to be released into the foodstuff.

The processing of the metal is particularly challenging, as it will be formed after it has been coated. Therefore, an optimum balance between the flexibility and the hardness of the coating is essential. AQUACER 1540 is a wax emulsion based on carnauba wax, and has been specially developed for can coatings with low film thickness. The additive provides low COF values, an excellent scratch resistance, and has no negative effect on the gloss, even in the case of thin layers. AQUACER 1540 fulfills food contact legal status requirements, and can be used both for internal and external coatings.

Benefits

- Low COF values
- Improves the scratch resistance of the coating
- No influence on turbidity, haze or gloss
- Particularly suitable for low film thicknesses
- For internal and external coatings
- Food contact legal status

Applications

For aqueous can coatings and aqueous systems with a low proportion of co-solvent.
Can coatings form a protective film on metallic substrates for food packaging. On the one hand, they prevent the corrosion of the metal, and on the other hand, they protect the food contained inside the can. Many foodstuffs sold in metallic packaging contain, for example, acids, fats or salts. These food components can corrode the metal, thereby causing metal compounds to be released into the foodstuff.

The processing of the metal is particularly challenging, as it will be formed after it has been coated. Therefore, an optimum balance between the flexibility and the hardness of the coating is essential. CERACOL 605 is a very fine wax dispersion based on carnauba wax, and has been specially developed for can coatings with low film thickness. CERACOL 605 contains butylglycol, and is ideal for solvent-borne and aqueous systems with a high proportion of co-solvent. The additive provides low COF values, an excellent scratch resistance and good optical properties, even in the case of thin layers. CERACOL 605 fulfills food contact legal status requirements, and can be used both for internal and external coatings.

Benefits

- Very fine wax dispersion for low film thicknesses
- Low COF values
- Improves the scratch resistance of the coating
- Minor influence on turbidity, haze or gloss
- For internal and external coatings
- Food contact legal status

Applications

For solvent-borne and aqueous systems with a high proportion of co-solvent, especially can coating systems
Wax Additives

**CERACOL 610**

**CERACOL 615**

Wax Additives to Improve the Surface Properties of Coating Formulations, Especially Can Coatings Systems

CERACOL 610 and CERACOL 615 are microcrystalline wax dispersions. Both additives are particularly effective in BPA-free can coatings systems. They achieve low COF values, high scratch resistance and good optical properties, before and after the sterilization process. At higher dosages, CERACOL 610 and CERACOL 615 also provide meat-release properties.

CERACOL 610 is recommended for solvent-borne medium-polarity systems. CERACOL 615 is particularly effective in polar solvent-borne and aqueous systems with a high proportion of co-solvents.

**Benefits**

- Low COF values in combination with improved scratch resistance of the coating
- In higher dosages, the additives provide meat-release properties
- Good optical properties, such as high transparency in the coating film
- Especially suitable for BPA-free systems, such as polyester or acrylate-based coating systems
- CERACOL 610 is especially recommended for solvent-borne medium-polarity coating systems.
- CERACOL 615 is especially recommended for polar solvent-borne and aqueous systems with high proportion of co-solvents
- Food contact legal status

**Technical Properties**

**CERACOL 610**

- Non-volatile matter (60 min., 125 °C): 15 %
- Solvent: Naphthalene-depleted aromatic hydrocarbons
- Melting point (wax content): 95 °C
- Particle size: D50: 5 μm D90: 9 μm
- Viscosity (23 °C, D=800/s): < 100 mPa·s

**CERACOL 615**

- Non-volatile matter (60 min., 125 °C): 20 %
- Solvents: Dipropylene glycol monomethyl ether (DPM)
- Melting point (wax content): 95 °C
- Particle size: D50: 6 μm D90: 10 μm
- Viscosity (23°C, D=800/s): < 200 mPa·s
Wax Additives

AQUAMAT 272 N  
CERAFLOUR 925 N  
CERAFLOUR 927 N  
CERAFLOUR 929 N

The discontinuation of one raw material of some of our wax additives made it necessary to redesign the respective products. The new types will be sold under the same tradename as before supplemented by an “N” for easy reference. They provide an almost identical performance in application testing and can replace the original additives.

AQUAMAT 272 N

Matting Aqueous Wax Dispersion for Improving Surface Properties of Water-Borne Systems

AQUAMAT 272 N is a wax dispersion on the basis of modified polyethylene for aqueous systems. It improves the scratch-resistance and abrasion-resistance, and has a matting effect. AQUAMAT 272 N is also suitable for leather coatings to adjust matting. It has a high solids content.

Benefits

- Improves surface protection
  - Scratch resistance
  - Abrasion resistance
- Matting effect
- Homogeneous distribution and easy incorporation even at low shear forces
- No foam stabilization
Wax Additives

CERAFLOUR 925 N

Fine Micronized Wax Additive for Water-borne and Solvent-borne Systems

CERAFLOUR 925 N is based on wax alloy technology. This technology provides a synergistic effect and unites the properties of single wax additives into one particle.

CERAFLOUR 925 N displays high scratch resistance and very good surface slip properties at the same time. This wax additive is suitable for solvent-borne and water-borne systems containing higher amounts of organic co-solvents.

Benefits

• High scratch resistance and very good surface slip properties at the same time
• Improved abrasion resistance
• Suitable for low film thickness applications
• Incorporation with lower shear force possible – not necessary to add the wax to the grinding stage
• Suitable for solvent-borne and water-borne systems with slightly higher organic co-solvent content
• No negative impact on substrate wetting, intercoat adhesion or compound adhesion in can coatings formulations
• Compliant with FDA 175.300, PIM 10/2011, Chinese Standard GB 9685-2008

Applications

Especially recommended for
• Can coatings
• Coil coatings
• General industrial coatings
• Leather finishes

Recommended for
• Wood and furniture coatings
Wax Additives

CERAFLOUR 927 N

Micronized Wax Additive for Improved Mechanical Properties in Aqueous Systems

Wax additives are added to coatings to provide them with a matt appearance and to improve their mechanical properties (primarily scratch and abrasion resistance) and their resistance to water or chemicals.

As a result of their chemical composition, the majority of powdered wax additives require an increased dispersion effort to achieve optimum effectiveness when incorporated into aqueous systems, particularly if no organic co-solvents are added.

CERAFLOUR 927 N has been developed specifically for use in aqueous systems and is characterized by being easy to incorporate. The wax distributes well in the coating system even without the addition of co-solvents and remains well distributed which results in excellent storage stability.

Benefits

- Perfectly adapted to water-borne systems
  - Easily dispersible, even if the system is co-solvent-free
- Only low shear forces for incorporation needed
- Improvement of scratch and abrasion resistance
- Enhanced water resistance
- Good matting effect through excellent orientation of the wax particles
- Long-term storage stability without syneresis or sedimentation in the final system
- No or low foam stabilization
- No negative influence on the recoatability
- Post addition possible
- Formaldehyde-free

Applications

- Architectural coatings
- Industrial coatings
- Wood and furniture coatings
- Printing inks
- Leather coatings
- Floor coatings
Wax Additives

CERAFLOUR 929 N

CERAFLOUR 929 N is a micronized wax on the basis of a modified PE for aqueous and solvent-borne architectural, wood and furniture, industrial and leather coatings to improve scratch resistance, abrasion-resistance, and matting. CERAFLOUR 929 N can be used for food contact applications according to EU/FDA regulations.

Benefits

- Improves surface protection
  - Scratch resistance
  - Abrasion resistance
- Matting effect
- Homogeneous distribution and easy incorporation even at low shear forces
- No foam stabilization
The new BYKJET-9171 expands BYK’s range of aqueous inkjet inks. It is particularly suitable for stabilizing organic pigments and disperse dyes, although it can also be used for inorganic pigments and carbon blacks.

Produced on the basis of controlled polymerization technology, BYKJET-9171 is characterized by a very narrow molecular weight distribution that makes it possible to manufacture perfectly dispersed and long-term stable pigment dispersions.

The highly deflocculating effect of BYKJET-9171 causes a significant increase in gloss, optical density, transparency or hiding power, and a strong reduction in mill base viscosity, which enables a higher pigment content in pigment concentrates.

BYKJET-9171 is especially recommended for resin-free grinds.
Modern solvent-borne printing inks are becoming increasingly polar. That is why it is particularly challenging to find suitable, compatible dispersing additives for NC-based printing inks. At the same time, PU and vinyl systems result in increased polarity as well as a faster printing process. The quicker processing speeds therefore require faster-drying printing inks. This can be achieved by using a solvent that evaporates more quickly, or by applying less printing ink. However, if less printing ink is applied, then higher pigmentation will be needed to achieve the same coloristic properties. BYK has responded to market demand and developed DISPERBYK-2023. This additive offers optimal dispersion and stabilization of organic pigments, as well as outstanding compatibility across a wide polarity range. DISPERBYK-2023 provides the formulation with virtually Newtonian flow behavior and itself contains a highly volatile solvent. The outstanding properties of DISPERBYK-2023 result in high application speeds with high levels of printing quality, combined with outstanding process reliability.
Benefits

- Excellent deflocculation and stabilization of organic pigments and carbon blacks
- Strong viscosity reduction with Newtonian flow behavior of the dispersions
- Allows a higher pigment load in the mill base
- Excellent storage stability of millbase and final ink
- Good water and alcohol resistance of the final film
- Significantly improved optical properties
- Suitable for indirect food contact applications

Applications

- Inkjet inks
- Printing inks

DISPERBYK-2030 is a high molecular weight wetting and dispersing additive based on controlled polymerization technology (CPT) for solvent-free UV-curable inkjet inks and printing inks. The additive improves pigment wetting and, thanks to its outstanding steric stabilization of the pigments, it also improves the optical properties of the systems (optical density, color strength, gloss, haze, transparency). The viscosity of the pigment concentrates and the finished inkjet and printing inks is reduced and thixotropy is prevented. Additionally, the water and alcohol resistance of the cured film is improved, thanks to the hydrophobic structure of the product DISPERBYK-2030 is compatible with all commonly used reactive diluents and shows no crystallization tendency. Furthermore the additive can be used for indirect food contact applications.
Wetting & Dispersing Additives

DISPERBYK-2157

Solvent-free Wetting and Dispersing Additive for Low Polar Systems

Today, it is still a challenge for wetting and dispersing additives to provide good pigment stabilization and a good storage stability in systems of low polarity. These systems contain e.g. solvents, like paraffins, isoparaffins, vegetable oils, mineral oils or plasticizers. As a response to the market demand, BYK has developed the broad compatible DISPERBYK-2157 which is especially suitable for low polar systems. The additive is recommended for all kinds of pigments and greatly improves optical properties such as color strength, transparency and gloss. Additionally, DISPERBYK-2157 provides a strong viscosity reduction and a good stability of the millbase.

Benefits

- Excellent dispersing and stabilizing performance
- Improves color strength
- Strong viscosity reduction of millbase
- Good storage stability of millbase
- Excellent heat stability
- Solvent-free and liquid additive with 100 % active substance
- Easy handling
- No labelling of the additive

Applications

- Inkjet inks
- Printing inks
- PVC-Plastisols
- Architectural coatings
- Protective coatings
Have you heard of RHEOBYK?

Under the new 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.

Please contact us:

www.byk.com/rheobyk
Over the past two 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

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-7405**

Aromatic- and Tin-free Thixbooster for Solvent-free and Solvent-borne Systems

Organophilic phyllosilicates and fumed silica are used in coatings in order to control rheological properties such as settling, syneresis and sag resistance. An added thixbooster can have two functions: On the one hand, it can increase the efficiency of the rheology additive that is being used, and therefore significantly protect the coating system from settling, syneresis and sagging. On the other hand, there is the possibility to reduce the level of fumed silica or organophilic phyllosilicates without impairing performance. This can reduce negative influences, e.g. on the gloss, while at the same time achieve more cost-effective formulations, as the intensive interaction of thixbooster and rheology additive via hydrogen bonds leads to a stronger network and greater efficiency.

The new RHEOBYK-7405 is an aromatic- and tin-free thixbooster that precisely demonstrates the described effect, and, thanks to the liquid supply form, is also easy to incorporate. Deaerating and leveling are not negatively influenced by RHEOBYK-7405.

**→ RHEOBYK-7405:** The aromatic-free variant of RHEOBYK-405

**RHEOBYK-7405 – Very Good Anti-sagging Behavior**

<table>
<thead>
<tr>
<th>Control</th>
<th>1% GARAMITE-7303</th>
<th>1% GARAMITE-7303</th>
<th>0.5% RHEOBYK-7405</th>
</tr>
</thead>
</table>

Test system: Long oil alkyd  
Dosage: % additive (as supplied) based on the total formulation

**Benefits**

- Aromatic- and tin-free
- Outstanding thixbooster – high viscosity increase
- Excellent anti-settling and anti-sagging behavior
- Prevention of syneresis – very good storage stability
- Easy to incorporate
- Intensive interaction with organophilic phyllosilicates or fumed silica for a strong network formation and increased efficiency
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 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-TVS 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.

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

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.

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.

**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 – Special Rheology Profile: Self-leveling System**

Immediate After 2 minutes

Test system: pure acrylic
Dosage: 0.2 % active substance based on the total formulation
Additive Portfolio
for Powder Coatings in the Market

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

**Micronized Waxes**
- Texture and structure effects
- Degassing & outgassing
- Gloss reduction
- Scratch and abrasion resistance

**Processing & 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 & Leveling**

BYK-3900 P  
Best anti-crater and leveling properties

BYK-368 P  
Broad compatibility and general purpose in all systems

BYK-3902 P  
Specialized for low thickness applications

**Micronized Waxes**

CERAFLOUR 961  
Prevention of substrate outgassing in all systems

CERAFLOUR 955  
Fine and matt texture finishes in all systems

CERAFLOUR 960  
Best degassing properties in HAA systems to avoid pinholes

**Processing & Dispersing**

BYK-3950 P  
Improved processing, higher throughput in all systems

BYK-3955 P  
Improved processing and dispersing of carbon black

DISPERBYK-2205  
Improved processing and dispersing of organic pigments

**Special Applications**

BYK-3931 P  
Most suitable problem solver to eliminate craters

BYK-3932 P  
Improved slip properties and surface protection

BYK-3933 P  
Increased surface energy to improve recoatability

**Rheology Modifiers**

CLAYTONE-40  
High efficient rheology modifier to increase viscosity

CLAYTONE-HY  
High efficient rheology modifier to increase viscosity

GARAMITE-1958  
Rheology modifier for epoxy systems

**Additives for Masterbatch**

BYK-361 N  
Anti-crater and leveling properties in all resin systems

BYK-356  
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 our consumer behavior, but also your requirements of 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 requirement.

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!
spectro2guide

Raise Your Expectations
Touch the Color

Benefits

- Color, gloss and new fluorescence measurement in one instrument
- Balanced and upfront design with large 3.5” color touchscreen
- Docking station with built-in standard for automatic calibration and charging
- Live preview of measurement spot with zoom function
- Smart high tech LEDs with peak performance for digital standards
- Data analysis out-of-the-box with WiFi or USB connection

#touchthecolor
www.touchthecolor.com

#CHINACOAT2019
BYK-mac i
The NEW Standard for Multi-angle Color and Effect Measurement

Benefits
• Excellent correlation to visual perception: 6-angle color measurement and sparkle/graininess analysis
• Quantification of fluorescence with new parameter IntEmission
• Innovative LED technology guarantees excellent inter-instrument agreement allowing digital standard distribution
• 10-year warranty on LED light sources
• Color display for ease of use at production line
smart-chart Software

The Solution to Set-up a Global QC Management System

Benefits

- Works with all BYK-Gardner color and appearance instruments
- Powerful standard management with digital standard distribution
- Data analysis right to the point with drill-in functions – just click on one data point to get trend information
- Dynamic print layout to create your own templates
- Efficient data sharing with SQL Server connection and automated data extracting
byko-spectra pro
See Things the Right Way

Benefits

• Excellent class a 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 appraise conveniently large products
byko-test

Film Thickness and Dew Point in One

The byko-test offers a unique solution to monitor environmental conditions while measuring dry film thickness – the ideal tool for coaters of exterior structures, like marine and protective coaters.

Benefits

• Four measurements in one instrument:
  - Film thickness Fe/NFe with automatic substrate recognition
  - Dew Point, Air Temperature, Relative Humidity
• SSPC specific mode for standardized measurement protocols and calibration routines
• Compact design for one hand operation
• Color display with 90° and 180° flip screen
• Zero, single and two point calibrations
• Hi/Low tolerance settings for pass/fail warning
• Statistic mode with 1000 measurement memory
Testing Physical Properties
from Wet to Dry

Cross-Cut Adhesion

Applicators

Drawdown Test Charts

Pendulum Hardness

Film Thickness

Flow and Dip Cups
BYK by Numbers

About 1,000 Samples a Day

More than 35 Laboratories Across the Globe

More than 16 Specialized End-Uses

More than 9 Percent Average Increase in Sales per Year

More than 145 Years of Expertise

More than 2,300 Employees Around the World
What do we mean by…
Innovation?

Continually offering the most modern and advanced additives. To do this we invest about eight percent of our annual turnover in research and development – three times more than most in the sector. Research & development and application technology staff make up 22% of our workforce.
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
What do we mean by... Closeness?

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

Automotive Coatings
Construction Industry
Industrial Coatings
Architectural Coatings
Powder Coatings
Can Coatings
Wood & Furniture Coatings
Instruments
Highlights in Shanghai

Time to Explore the City
1930s Street
The underground street designed to reflect the Shanghai of the 1930s takes you on a fascinating trip to the past. The little shops along the street offer historical character and there’s even more to discover: from traditional Chinese food to the most varied clothes shops, you can find virtually everything here.

Yu Garden/Old Town
Take some time to relax during your visit in the popular Yu Garden (Yu Yuan in Chinese) and enjoy one of the most famous examples of Chinese horticulture. No need to worry if you get a little peckish, there are plenty of places to grab a snack around the garden.

Waitan
Do you like to walk? Take a leisurely stroll along the promenade on Huangpu River and admire the view of palatial banks, offices and hotels, and the skyline of the high-tech center Pudong on the other side of the river.

Jinmao-Tower
In the evening, the 88th floor of Jinmao Tower offers an unforgettable view over the entire city of Shanghai. A floor below you can round off your evening in the Cloud9 bar.
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marketing.byk@altana.com
www.byk.com

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