



# Additives & Instruments: **improve & prove**

English B-7

# Additives & Instruments: Success through innovation, service, and customer orientation

BYK stands for the globally successful Division Additives & Instruments of the ALTANA Group. Around the world, the additives of BYK ensure that coatings, printing inks, and plastics obtain precisely the desired properties and the correct quality. Used in small quantities they improve the product properties, production, and processability. Yet in paper surface finishing, the production of adhesives and sealants, or construction chemistry, BYK additives are also improving the product properties and production processes.

An attractive look and long-lasting protection are the key quality criteria of a class-A surface. The BYK-Gardner unique color, appearance, and physical testing solutions not only control but also provide support for optimizing surface quality. The innovative instruments measure the surface as the human eye sees it – thus they become “objective eyes”.

In 2012 the Division Additives & Instruments employed around 1,500 people and achieved sales of 618 million euros.

## The name of a shared goal: improve & prove

Improving the quality of paints, printing inks, plastics, and paper coatings, and making them measurable: BYK Additives & Instruments lives out this objective, furnishing proof of the quality of our products on a daily basis.

Both sectors of BYK Additives & Instruments have been outstandingly successful – each assuming lead positions internationally. The company's group structure promotes additional synergies that make us a valuable partner for our customers. The additives and instruments sectors complement each other, serving all parts of our customers' process chains: from searching for solutions in order to obtain the properties desired and thus improve the quality of paints, printing inks, plastics, and paper surfaces – to using our highly specialized testing and measuring instruments to clearly describe the effects of the BYK additives on the visual appearance and functionality of these surfaces. So that it can quickly accommodate the customer's needs in this way, BYK places great importance on being close to its customers and remaining in constant communication with them.

The company is represented in more than 100 countries and regions around the globe. In fourteen technical service laboratories, BYK offers customers and users support with additive questions. At its locations in Germany and the Netherlands, as well as in Asia, the USA, and Brazil, BYK develops solutions for various application sectors. In BYK seminars more than 1,000 participants from around the world are informed and trained each year.

At the same time, every year BYK invests approx. 8% of its sales in research and development – a figure that is three times higher than the industry standard.



**improve & prove**

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**Wetting and dispersing additives** for stabilizing pigments and extenders in liquid media. The wetting of the solid particles is promoted and uncontrolled flocculation is suppressed. The good deflocculation of the solid particles improves gloss and leveling and prevents flooding in pigment mixtures. The viscosity is reduced and larger quantities of pigments and extenders can be worked in. Controlled flocculating additives are also available for application in primers and extenders, to prevent sagging and settling.

**Surface additives** to prevent surface defects and improve surface properties such as slip, leveling, or substrate wetting. Products based on modified polysiloxanes primarily reduce the surface tension and are therefore used as substrate wetters and anti-crater additives. Modified polyacrylates are used to improve leveling. Some of these additives also exhibit defoaming properties as well. For special applications, reactive additives are also available. Scratch resistance can be improved with  $\text{Al}_2\text{O}_3$  and  $\text{SiO}_2$ -based nanoparticles, which are present as dispersions in a liquid carrier medium.

**Defoamers and air release agents** suppress foam formation which is almost always attributable to the incorporation of air with stirring and mixing processes or with the application of the material. Any foam bubbles that develop are transported to the surface and destabilized, and as a result they quickly burst and do not cause any defects.

**Rheological additives** increase the viscosity of liquid media and control the flow (pseudoplastic, thixotropic). Sedimentation of solid particles is greatly reduced, and sagging on inclined surfaces is minimized. Furthermore, it is possible to optimize the orientation of effect pigments and, with it, the effect formation.

**Adhesion promoters** are used to increase the adhesion between individual coating layers or the adhesion of a single coating on a (metallic) substrate.

**Wax additives** are available as micronized waxes in powder form or as emulsions and dispersions of wax particles in liquid carrier media. Depending on the types of wax used (what is important are melting point and polarity), the additives will increase or decrease surface slip, improve scratch and abrasion resistance, and increase hydrophobicity. Depending on the size of the wax particles, the additives will reduce gloss and can be used for matting to create structure/texture, and to adjust the haptic properties of surfaces. Special types can also be used to adjust the rheology.

**UV absorbers** based on nanoscale inorganic particles ( $\text{ZnO}$  and  $\text{CeO}_2$ ) preserve coatings from degradation due to high-energy UV radiation and also protect sensitive substrates, such as wood.

**Viscosity depressants** are used to lower viscosity in filled PVC plastisols. They permit the use of higher filler volumes with the same viscosity and reduction in the plasticizer content.

**Processing additives** serve to optimize the processing properties of synthetic materials, especially with compounding and extruding. With powder coatings, the pigment and filler uptake is improved and, consequently, extrusion is also made easier.

### **SCONA® plastic modifiers**

SCONA® is the brand name of a family of chemically modified polymers produced using a patented process which grafts reactive monomers to free-flowing substrate polymers. The radical grafting in the solid phase following the substrate-phase polymerization process makes it possible to carry out targeted modifications on saturated polymers. Graft density, graft chain length, graft chain structure and the degree of cross-linkage can be adjusted with excellent reproducibility by selecting monomer and activation ratios over a wide range. Specifically matched modifiers are available for the different applications and materials.



# Application Areas

## **Coatings Industry**

- Architectural Coatings
- Automotive Coatings
- Can Coatings
- Coil Coatings
- Industrial Coatings
- Leather Finishes
- Powder Coatings
- Protective & Marine Coatings
- Wood & Furniture Coatings

## **Plastics Industry**

- Ambient Curing Systems
- PVC Plastisols
- SMC/BMC
- Thermoplastics

## **Printing Ink Industry**

- Flexo Inks
- Gravure Inks
- Inkjet Inks
- Offset Inks
- Overprint Varnishes
- Silk Screen Inks

## **Paper Coatings**

- Coatings
- Impregnation

## **Adhesives & Sealants**

## **Construction Chemicals**

## **Pigment Concentrates**

## **Raw Materials for Manufacturing Release Agents**





Uniform color and uniform gloss are important quality criteria, which play a major role in the purchasing decision behind many products. BYK-Gardner's innovative instruments objectively measure the visual impression.

### **Appearance**

Where appearance measuring instruments are concerned, BYK-Gardner is the global leader: instruments to measure gloss, haze, orange peel, distinctness of image (DOI/structure spectrum), cloudiness of effect coatings, and transparency.

### **Color**

A complete product range for reliable color control: portable spectrophotometers; multi-angle color measurement instruments for color measurement of effect coatings including color travel, sparkle and graininess; in-store color matching systems; color measuring instruments for automotive refinish paint shops; light booths for simulating different lighting conditions.

### **Physical Testing Instruments**

Grind gages for evaluating pigment dispersion; instruments for measuring density and electrical conductivity; film applicators; drawdown test charts for coating materials; determination of wet and dry film thickness and drying time; oven temperature recorders for the analysis of the cure process; measurement of hardness, flexibility, adhesion, and resistance to abrasion of coatings; flow cups in accordance with various standards; bubble viscometers, rotational viscometers.

### **Software**

For the documentation of measurement results, data analysis, and quality control.

### **Calibration and certification service**





# Application Areas

## **Automotive Industry**

- Automotive manufacturers including motorcycle production
- Automotive suppliers
- Car refinish paints

## **Coatings and Printing Ink Industry**

- Manufacturers of paints, coatings, printing inks
- Suppliers for these industries
- Users of paints, coatings, printing inks
- Automotive coatings
- Auto refinish coatings
- Coil coatings
- Industrial coatings
- Architectural coatings
- Powder coatings

## **Effect Pigments**

## **Aircraft Manufacturers**

## **Wood and Furniture Industry**

## **Plastics Processing Industry**

- Household appliances
- Consumer electronics
- Computers
- Mobile telephones

## **Cosmetics Industry**

## **Shipbuilding Industry**



### BYK Additives

#### Germany

##### **BYK-Chemie GmbH**

Abelstrasse 45  
46483 Wesel  
Germany

Tel. +49 281 670-0  
Fax +49 281 65735

info@byk.com  
www.byk.com

##### **BYK Kometra GmbH**

Value Park Y42  
06258 Schkopau  
Germany

Tel. +49 3461 4960-60  
Fax +49 3461 4960-70

info@kometra.de  
www.byk.com

#### Japan

##### **BYK Japan KK**

3-29, Ichigaya-Honmuracho  
Shinjyuku-ku, Tokyo  
Japan 162-0845

Tel. +81 3 6457-5501  
Fax +81 3 6457-5502

info@byk.co.jp  
www.byk.co.jp

#### Singapore

##### **BYK Asia Pacific Pte. Ltd.**

89 Science Park Drive, Lobby A  
#03-04, The Rutherford  
Science Park I  
Singapore 118261

Tel. +65 68747673  
Fax +65 68732330

info@byk.com  
www.byk.com

#### USA

##### **BYK USA Inc.**

524 South Cherry Street  
Wallingford, CT 06492-4453  
USA

Tel. +1 203 265-2086  
Fax +1 203 284-9158

info@byk.com  
www.byk.com

##### **BYK USA Inc.**

48 Leone Lane  
Chester, NY 10918  
USA

Tel. +1 845 469-5800  
Fax +1 845 469-5855

cs.usa@byk.com  
www.byk.com

#### Korea

##### **BYK Korea**

#159-2, Moonhyung-Ri  
Opo-Eup, Kwangju-City  
Kyungki-Do, Korea

Tel. +82 31 767-1441  
Fax +82 31 767-2438

info@byk.com  
www.byk.com

#### China

##### **BYK Solutions (Shanghai) Co., Ltd.**

Building 22  
No.140 Tianlin Road, Xuhui District  
Shanghai 200233  
P.R. China

Tel. +86 21 3367-6300  
Fax +86 21 3367-6301

info@byk.com  
www.byk.com

### BYK Instruments

#### Germany

##### **BYK-Gardner GmbH**

Lausitzer Strasse 8  
82538 Geretsried  
Germany

Tel. +49 8171 3493-0  
Fax +49 8171 3493-140

info.byk.gardner@altana.com  
www.byk.com

#### USA

##### **BYK-Gardner USA**

9104 Guilford Road  
Columbia, MD 21046  
USA

Tel. +1 301 483-6500  
Fax +1 301 483-6555

info.byk.gardnerusa@altana.com  
www.byk.com

#### China

##### **BYK-Gardner Shanghai Office**

3/F Building 22, No. 140  
Tianlin Road, Xuhui District  
Shanghai, 200233  
P.R. China

Tel. +86 21 3367-6331  
Fax +86 21 3367-6332

info.byk.gardner@altana.com  
www.byk.com