

# BYK-415

Liquid rheology additive for solvent-borne baking coatings and forced drying systems to improve anti-sagging properties.

## Product Data

### Composition

Solution of a urea derivative with a high molecular weight

### Typical Properties

The values indicated in this data sheet describe typical properties and do not constitute specification limits.

Active substance: 30 %  
Density (68 °F): 9.29 lbs/US gal  
Refractive index (68 °F): 1.492  
Solvents: Dimethyl sulfoxide

### Food Contact Legal Status

For the current food contact legal status, please contact our product safety department or visit [www.byk.com](http://www.byk.com) for further information.

### Storage and Transportation

As a result of decreasing solubility of the active substance, turbidity occurs below 15 °C (59 °F) and the product thickens. At temperatures above 15 °C (59 °F), the product becomes clear and liquid again. As turbidity and gel particles can impair the effectiveness and compatibility, we recommend storing the product at temperatures > 15 °C (59 °F) and warming if necessary.

As a result of the hygroscopic behavior of the solvent, BYK-415 is sensitive to moisture. The container should be well sealed after use so as not to restrict storage stability and to prevent any possible corrosion in the metal container.

### Special Note

As the additive contains a very low concentration of chloride ions, its influence on the corrosion properties in the event of contact with metal needs to be checked, especially if the formulation contains water (e.g. as a result of contamination). If necessary, containers with interior coating should be used. After drying of the coating film, there are no known influences on the corrosion protection.

## Applications

### Coatings Industry

#### Special Features and Benefits

BYK-415 works together with the binder and builds a three-dimensional network via hydrogen bonds and van der Waals forces. In addition to the dosage level and the polarity of the system, the degree of disentanglement of the higher molecular weight additive is key to the effectiveness. The higher molecular weight and the more pronounced pseudoplastic flow behavior are the reasons for the more temperature-stable viscosity behavior of BYK-415, even at higher drying temperatures.

- Improved anti-sagging properties in baking coatings and forced drying systems
- Temperature-stable viscosity behavior
- Quick structural development and shear-stable viscosity profile
- Excellent compatibility, easy to use
- No turbidity in the liquid clear coating
- No haze and no significant UV yellowing

#### Recommended Use

BYK-415 was developed specifically to improve the anti-sagging properties of coatings that are baked at higher temperatures or force dried. Applications are typical solvent-borne industrial and automotive coating systems that are applied at low layer thicknesses of 30 µm-70 µm dry film.

#### Recommended Levels

0.5-2 % additive (as supplied) based upon total formulation to improve the anti-settling properties and 1.5-4 % to increase the anti-sagging properties.

The above recommended levels can be used for orientation. Optimal levels are determined through a series of laboratory tests.

#### Incorporation and Processing Instructions

As a result of its liquid form (as supplied) BYK-415 is easy to use. It is incorporated and activated simply by stirring without a dispersion process or temperature control, and can be added at any time during production. Post-addition for correction purposes is also possible shortly before application.

The polarity of the formulation is vital for optimum effectiveness and this has a considerable influence on the compatibility. It is possible to check the compatibility by means of simple mixing experiments.

**Special Note**

Immediately after shearing during the application process, especially at higher temperatures above 50 °C, BYK-415 displays a quicker structural development than at room temperature. For this reason, it is possible that the improvement in the anti-sagging properties during the flash-off phase at room temperature is not sufficient.

In this case, we recommend combining with BYK-430. When combining, it has proven useful to separately incorporate BYK-415 first, followed by BYK-430. For the optimal dosage of both products, we recommend a ratio of 7:3 (BYK-415 : BYK-430) for initial orientation purposes.

This combination is also advantageous to selectively control the leveling and sagging behavior during the baking phase or the forced drying: BYK-430 has a positive effect on leveling and BYK-415 does not deteriorate the anti-sagging properties despite the temperature increase.

Positive experiences in improving the anti-sagging properties using BYK-415 have been reported predominantly when using 2-pack polyurethane systems. We recommend combining BYK-415 with BYK-430 particularly for baking systems that are crosslinked by melamine resin.

## BYK-415

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