

DISPERBYK-2158 DISPERBYK-2159

Wetting and Dispersing Additives for Excellent Dispersion and Stabilization of Silica-based Matting Agents to Produce Deep-matt UV-curing and Conventional Solvent-borne Coatings

Radiation curing is a technology enjoying a particularly large global growth momentum with high annual growth rates. For some time, there has been a trend towards deep-matt solvent-free UV-curing coatings in the wood and furniture coatings industry, and these represent a particular challenge – from careful raw material selection to perfectly tailored application and curing equipment. In addition to specialist matting binders or matting agents, it is common to use treated or untreated silica-based matting agents when gloss needs to be reduced. However, due to the absence of volatile solvents, minimum film shrinkage and the fast curing speed of solvent-free UV-curing coatings, high quantities of silica are required, which causes a significant increase in viscosity – an undesirable effect.

To both satisfy the technical requirements and achieve an optimum application viscosity, BYK has developed the new additives DISPERBYK-2158 and DISPERBYK-2159. Their special structural design enables perfect interaction both with treated and untreated silica-based matting agents to achieve consistently deep-matt coatings with optimum viscosity profiles.

Benefits

- Excellent dispersion and stabilization of treated or untreated silica-based matting agents
- Excellent viscosity reduction with minimal thixotropic flow properties (Newtonian flow behavior)
- Possible to add large quantities of matting agents → perfectly suited to producing deep-matt coatings with a good processing viscosity
- Significantly improved matting of solvent-free and solvent-borne UV-curing coatings and conventional solvent-borne systems
- Extremely good compatibility with all common oligomers and monomers

Applications

- Solvent-free and solvent-borne UV-curing wood and furniture coatings
- Conventional solvent-borne wood and furniture coatings

Technical Properties

DISPERBYK-2158

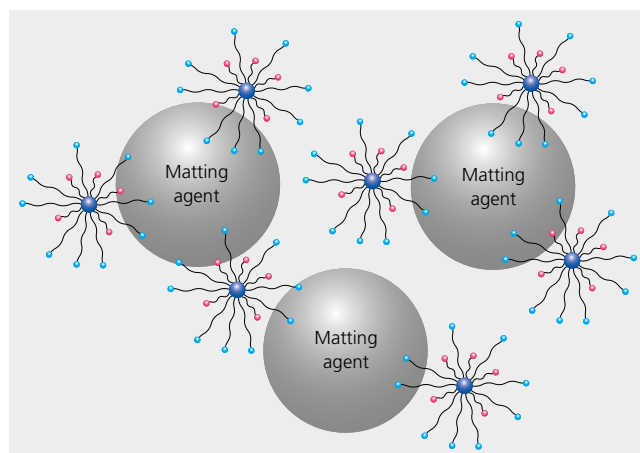
- Solution of a copolymer with pigment-affinic groups
- Amine value: 13 mg KOH/g
- Active substance: 60 %
- Density (20 °C): 1.08 g/ml
- Solvent: Dipropylene glycol diacrylate (DPGDA)
- Flash point: 143 °C

DISPERBYK-2159

- Solution of a copolymer with pigment-affinic groups
- Amine value: 13 mg KOH/g
- Density (20 °C): 1.05 g/ml
- Non-volatile matter (20 min, 150 °C): 60 %
- Solvent: Methoxypropyl acetate
- Flash point: 45 °C

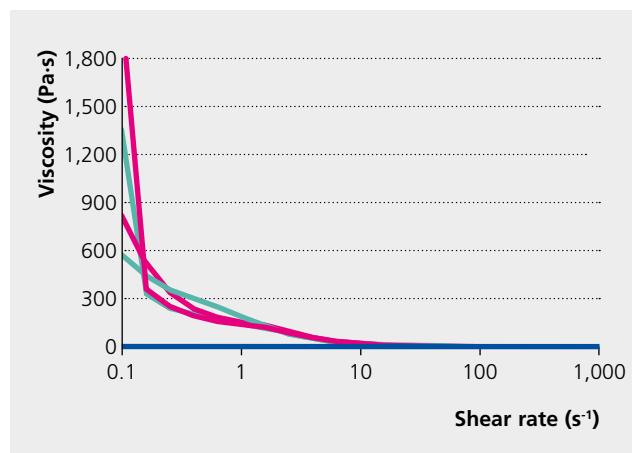
Structural Design and Working Mechanism of DISPERBYK-2158 and DISPERBYK-2159

DISPERBYK-2158 and DISPERBYK-2159 are Based on a Highly Branched Core-shell Structure



- Highly branched additive core ensures excellent interaction with the matting agent surface
- Additional functional groups at the additive core improve the affinity to the silica particles
- Functional groups at the outer shell improve the anti-settling properties

Excellent Viscosity Reduction in a Solvent-free UV-curing Coating



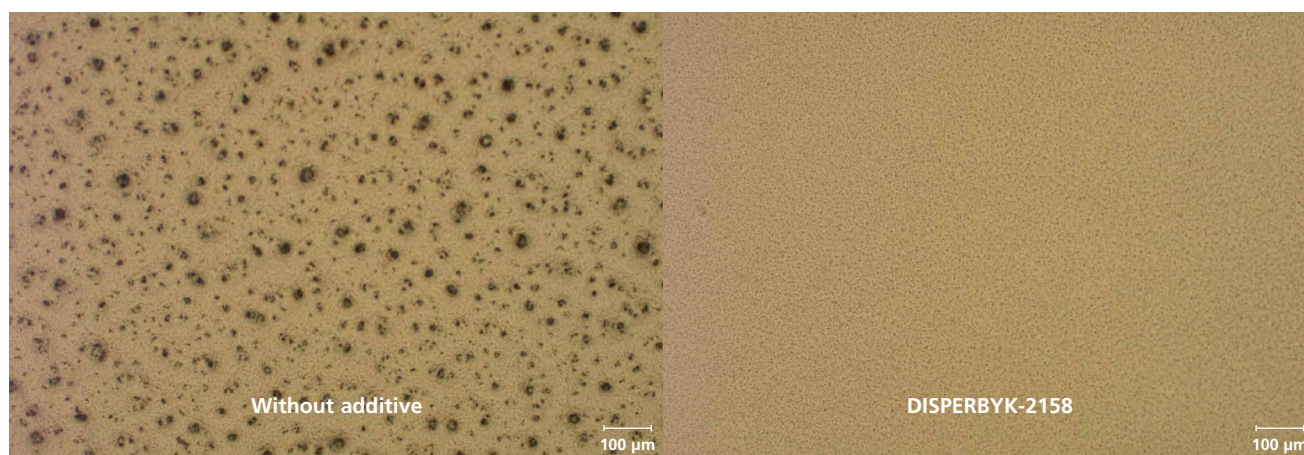
■ Standard 1 ■ Standard 2 ■ DISPERBYK-2158

Test system: Solvent-free UV-curing system based on EBECRYL® 4381

Dosage: 10 % additive based on matting agent (12 % ACEMATT® TS 100 in the formulation)

Viscosity measurement: RHEOPLUS/32 V3.62; CP25-1; 0.1–1.000 s⁻¹

DISPERBYK-2158 – Excellent Dispersion and Orientation of a Silica-based Matting Agent in a Solvent-free UV-curing System



Test system: Solvent-free UV-curing system based on LAROMER® PE 56 F

Dosage: 10 % additive based on matting agent (10 % ACEMATT® TS 100 in the formulation)

Microscopic images: optical microscope, 100x magnification

BYK
Additives & Instruments

BYK-Chemie GmbH
P.O. Box 10 02 45
46462 Wesel
Germany
Tel +49 281 670-0
Fax +49 281 65735

info@byk.com
www.byk.com

ACTAL®, ADD-MAX®, ADD-VANCE®, ADJUST®, ADVITROL®, ANTI-TERRA®, AQUACER®, AQUAMAT®, AQUATIX®, BENTOLITE®, BYK®, BYK®-DYNWET®, BYK®-SILCLEAN®, BYKANOL®, BYKETOL®, BYKJET®, BYKO2BLOCK®, BYKOPLAST®, BYKUMEN®, CARBOBYK®, CERACOL®, CERAFAC®, CERAFLOUR®, CERAMAT®, CERATIX®, CLAYTONE®, CLOISITE®, DISPERBYK®, DISPERPLAST®, FULACOLOR®, FULCAT®, GARAMITE®, GELWHITE®, HORDAMER®, LACTIMON®, LAPONITE®, MINERAL COLLOID®, MINERPOL®, NANOBYPK®, OPTIBENT®, OPTIFLO®, OPTIGEL®, PAPERBYK®, PERMONT®, PRIEX®, PURE THIX®, RHEOCIN®, RHEOTIX®, SCONA®, SILBYK®, TIXOGEL®, VISCOBYK® and Y 25® are registered trademarks of the BYK group.

The information herein is based on our present knowledge and experience. The information merely describes the properties of our products but no guarantee of properties in the legal sense shall be implied. We recommend testing our products as to their suitability for your envisaged purpose prior to use. No warranties of any kind, either express or implied, including warranties of merchantability or fitness for a particular purpose, are made regarding any products mentioned herein and data or information set forth, or that such products, data or information may be used without infringing intellectual property rights of third parties. We reserve the right to make any changes according to technological progress or further developments.

This issue replaces all previous versions – Printed in Germany

