BYK
Additives & Instruments

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

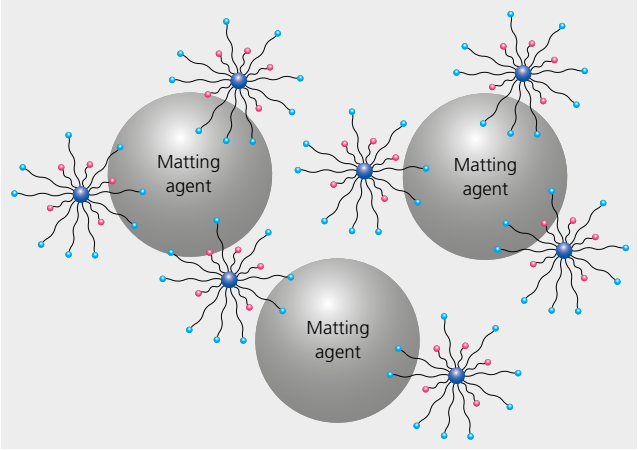
Technical Properties

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

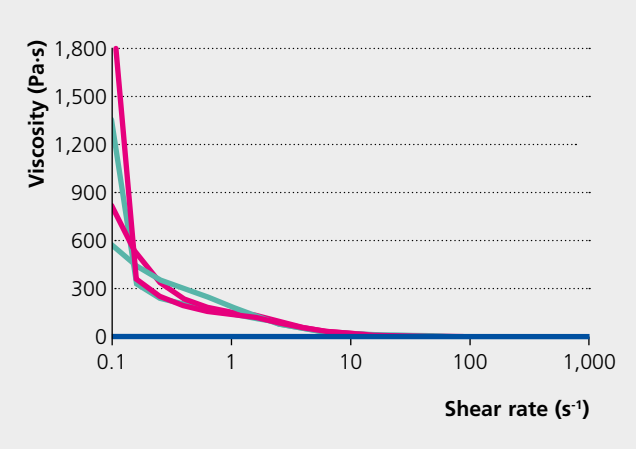
Structural Design and Working Mechanism of DISPERBYK-2158 and DISPERBYK-2159

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



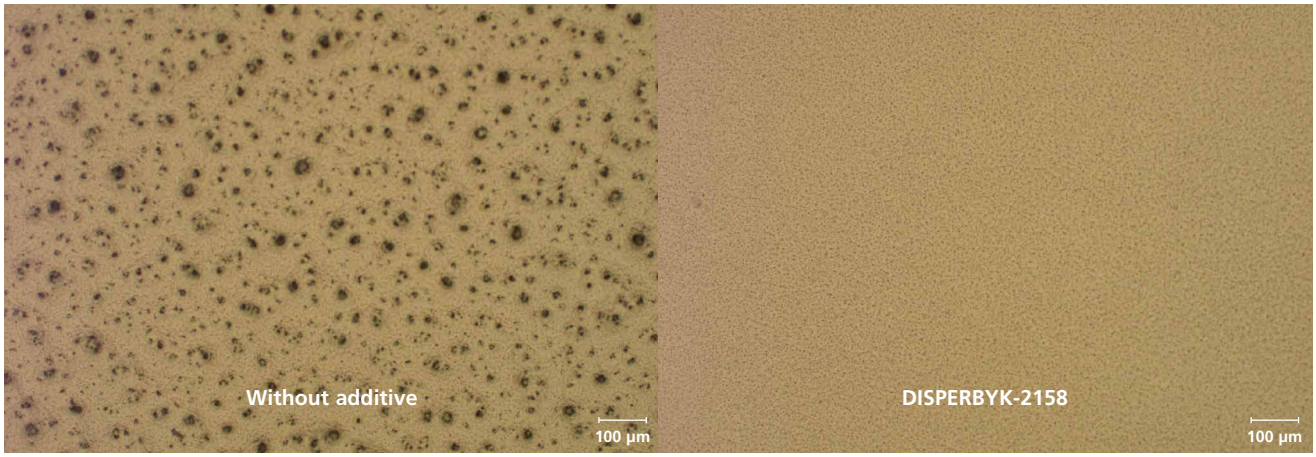
Standard 1 Standard 2 DISPERBYK-2158

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 Additive Guide

Available on the App Store

Google play

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

This issue replaces all previous versions – Printed in Germany

01/2017