

BYK-UV 3518

Nano-particle dispersion based on surface-treated silica for improving the scratch and abrasion resistance of solvent-free and solvent-borne radiation curable clearcoats.

Product Data

Composition

Dispersion of surface-treated silica nano-particles

Typical Properties

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

Nano-particle content:	45 %
Solvents:	1-methoxy-2-propanol
Non-volatile matter (20 min., 150 °C):	51 %
Particle size D_{50} :	20 nm
Viscosity (20 °C):	28 mPa·s
Flash point:	32 °C
Density (20 °C):	1.31 g/ml

Storage and Transportation

To be stored and transported between 5 °C and 40 °C.

Special Note

The product must be stirred thoroughly before processing. Dried additive residues must be removed from the container since they can lead to seeds if introduced into the final product. Containers that are not completely emptied must be closed immediately after use as this may otherwise also lead to seeding.

Applications

Coatings Industry

Special Features and Benefits

This additive offers the highest level of scratch and abrasion resistance without negatively impacting properties such as gloss and transparency. It improves impact resistance and increases the flexibility of radiation curable clearcoats. The UV-reactive modification crosslinks the nano-particles with the binder. This further increases the hardness of the coatings. The combination of improved hardness and flexibility, particularly with UV hardcoats, enhances the selection of potential of binders and monomers, even when they show stronger shrinkage. The particular benefit of BYK-UV 3518 is the option to use the additive in a very high dosage as a "nano-filler" for significantly improved pencil hardness and scratch resistance.

Recommended Use

The additive is recommended for solvent-borne and solvent-free radiation curable clearcoats which are used in general industrial coatings as well as in wood and furniture coatings.

Recommended Levels

1-22 % additive (as supplied) based on the total formulation.

In most cases, 1-5 % additive (as supplied) based on the total formulation is sufficient. To significantly improve pencil hardness and scratch resistance, BYK-UV 3518 can be used as "nano-filler" in a dosage of 10-80 % particles based on solid resin.

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

Incorporation and Processing Instructions

The product reaches its full effectiveness when added at low shear. This ensures that even distribution in the binder system is achieved. It is recommended that all surface-active substances, such as silicones, are removed before laboratory testing. If required, leveling, substrate wetting, and surface slip can be optimized in a second step by using additives based on polyacrylate or silicone.



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This issue replaces all previous versions.