EFKA® 6950

Anti-settling control additive for high solid solvent-based systems and pigment concentrates

TECHNICAL BULLETIN

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Introduction:

After the process of wetting, grinding and stabilisation of the pigments, the storage stability of the final paint or pigment concentrate plays an important role in several applications and properties.

To prevent sedimentation of the pigments during storage, a wide selection of rheology additives can be used such as bentonites, silicates, Hydrogenated Caster Oils and more. Unfortunately these rheology additives have an influence on gloss, transparency, levelling and viscosity of the coating systems.

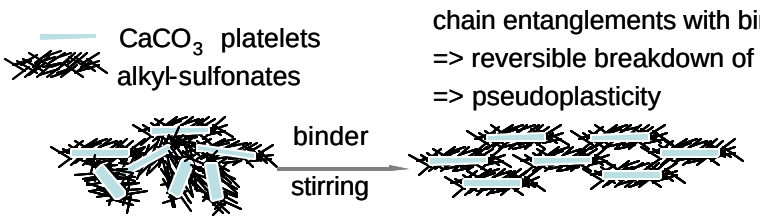
To overcome these defects EFKA introduces **EFKA® 6950,** an anti-settling agent based on an over-based Calcium Sulphonate Complex.

Mechanism:

The product is composed of $CaCO_3$ microcrystals "coated" with an alkylsulfonate wetting agent, which is irreversable bound to the Ca^{2+} ions of the crystals by its $-SO_3$ group.

The role of the $CaCO_3$ platelets is to build up a 3-D structure in the resin system. The alkyl chain of the sulfonate wetting agent has a good compatibility with the resin molecules and helps to provide the structure by London Dispersion and van der Waals forces, which can be easily broken by applying shear.

The result is a pseudoplastic (shear thinning) viscosity. The highest efficiency is achieved in highly filled systems.



Application field:

EFKA® 6950 is the ideal anti-settling additive for all solvent-based applications where high density pigments or highly loaded millbases are being used.
It is specifically suited for:

- High solid industrial coatings
- Heavy duty protective coatings
- Automotive OEM and Refinish coatings
- Wood coatings
- Marine coatings
- Pigment concentrates

Content of this issue:

Editorial:

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EFKA® 6950

Properties

EFKA® 6950 controls settling of the pigments in solvent-based coatings and pigment concentrates by creating a more shear-thinning (pseudoplastic) rheology behavior instead of building up a strong thixotropy.

EFKA® 6950 will prevent the formation of hard pigment sedimentation on the bottom of the can and has no effect on the final gloss of the paint film.

EFKA® 6950:

- prevents settling of the pigments
- gives shear-thinning rheology behaviour
- has no effect on gloss
- is easy to incorporate

Data

Active ingredients	58 - 62%	
Solvent	low boiling mineral spirit	
Density at 25 °C	0.94 - 0.96 g/cm^3	DIN 51757
Viscosity	40 - 65 Pa.s	DIN 53015
Flash point	41° C	ISO 3679
Appearance	Brown viscous liquid paste	

Addition levels

1.0 – 3.0% on total formulation

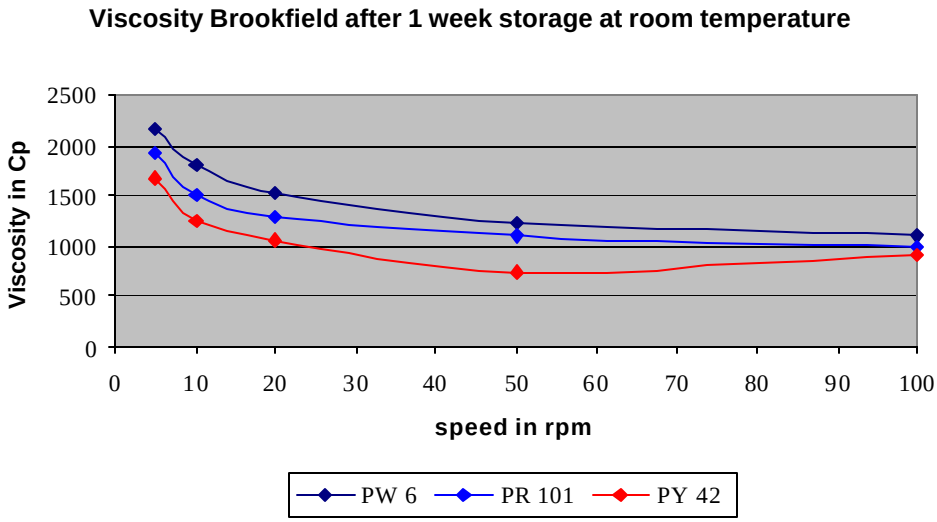
Application tests of EFKA® 6950

EFKA® 6950 has been tested in its application in a Resin Minimal Pigment Concentrate according to the following formulation:

EFKA® 1125 grinding resin	24.0	25.0	20.0
EFKA® 4403 HMWD agent	3.0	3.0	2.0
EFKA® 6950 anti-settling agent	1.0	1.0	1.0
Methoxy Propyl Acetate	4.0	7.0	4.0
Solvesso 100	4.0	7.0	4.0
Xylene	4.0	7.0	4.0
PR 101 Iron Oxide Red	60.0		
PY 42 Iron Oxide Yellow		50.0	
PW 6 Titanium dioxide			65.0
	100.0	100.0	100.0

EFKA® 6950

Viscosity chart



Application systems and results:

The pigment concentrates above have been incorporated under low shear forces into:

- Nitrocellulose system
- Polyester / melamine stoving enamel
- 2-Pack polyurethane system
- 2-Pack epoxy system

Tests have been carried out for: sedimentation, syneresis and gloss

	Nitrocellulose			Stoving Enamel			2-P Polyurethane			2-P Epoxy		
		Gloss			Gloss			Gloss			Gloss	
	Seeding	@20°	@60°	Seeding	@20°	@60°	Seeding	@20°	@60°	Seeding	@20°	@60°
PR 101 Iron Oxide Red	No	68	84	No	73	88	No	88	93	No	84	95
PW 6 Titanium Dioxide	No	76	90	No	78	90	No	86	93	No	103	101
PY 42 Iron oxide Yellow	No	70	87	No	79	90	No	88	94	No	97	104

Conclusion:

EFKA® 6950 Builds up a viscosity in the system during storage that prevents the settlement of the Pigments but can easily be broken down under low-shear forces.
The final result is a free-flowing behaviour of the system, which is a strong advantage in the use of Automatic dosing systems of pigment concentrates.
No negative influence on gloss, colour acceptance and levelling was observed in paints prepared from RMPC containing **EFKA® 6950**.