

EXILVA FOR PAINTS AND COATINGS

EXILVA NOW PROVIDES A NEW CHOICE FOR MUD-CRACK RESISTANCE

Exilva is a new performance enhancer for waterborne paints and coatings. Its unique combination of characteristics from water soluble polymers and insoluble fibers gives you a very versatile and efficient alternative to technologies currently available.

Exilva is characterised by its ability to form stable three dimensional networks of microfibers in solvents and is the product of choice for high quality architectural and industrial paints and coatings. One of the key properties Exilva offers, is the ability to reduce mud-cracking in paints, especially where those paints have a high application film build. The network formation of the Exilva microfibers has a high available surface area with functional OH-groups, enabling Exilva to both physically and chemically interact with its surroundings and to delocalize stresses which build during drying and lead to cracking.

WHAT ARE MUD-CRACKS?

Mud-cracking is where deep, irregular cracks resembling dried mud form in the dry paint film and this often has severe consequences for both decorative paints and protective coatings.

In decorative paints, mud-cracking may lead to reduced protection of the substrate and in protective coatings corrosion may take place within a short time. This is, in many cases, due to the direct exposure of the substrate. Chipping and flaking of the coating may also occur.

Mud-cracking is usually found in waterborne paints and can often be due to lack of control in the drying phase, or more specifically due to applied film thickness and temperature for film formation. Exilva reduces the tendency for mud-cracking during drying of acrylic pigmented systems. This in turn provides the opportunity to reduce coalescent levels and related VOC levels in your paints.

ANTI-MUD CRACK EFFECT WITH EXILVA

In this study, the anti mud-crack effect of adding Exilva to a 45% PVC exterior acrylic paint was compared to the same formulation based on a standard HEC. By use of an anti sag-meter, see the figure below, a film was prepared at multiple thicknesses, ranging from 14 through 60 Mils. At highly efficient dosages, here at 0.38% on total formula weight, Exilva provides increased crack resistance during curing from 2°C to 24°C (35°F to 75°F). With Exilva, no cracking was observed even at 60 Mils thickness, whereas the HEC paint displayed cracking for all thicknesses above 14 Mils.

HEC *Cracking > 14 Mils (0.36 mm)*



EXILVA® *No cracking; Pass 60 Mils (1.52 mm)*



The film reinforcement effect of Exilva is especially significant at low temperature film formation, offering huge benefits when applying Exilva in high quality exterior paints for cold climates. Moreover, Exilva enables increased applied film thickness, thereby reducing the number of applied film layers required, without comprising the final paint properties.

EXTERIOR ACRYLIC PAINT FORMULATION

The formulation for the exterior flat paint used in this study is given in the table below. It was based on a blend of acrylic and vinyl acrylic binders, with either hydroxyethyl cellulose (HEC) as a thickener or Exilva as a functional additive. In addition to the rheology modification, the formulation using Exilva displayed increased crack resistance during curing from 2°C to 24°C, outperforming the same formulation when based on HEC.

Print Formulation	With HEC		With Exilva®	
Material	lbs	%	lbs	%
Water	125.00	10.92	125.00	10.92
Hydroxyethyl Cellulose	3.50	0.31	0.00	0.00
Exilva	0.00	0.00	41.70	3.64
Tamol 1124	7.40	0.65	7.40	0.65
Triton CF 10	2.20	0.19	2.20	0.19
Propylene Glyco	8.20	0.72	8.20	0.72
Drewplus T-4507	2.00	0.17	2.00	0.17
Kathon LX (1.5%)	1.70	0.15	1.70	0.15
TiPure R-706	200.00	17.47	200.00	17.48
Optiwhite	50.00	4.37	50.00	4.37
Minex 4	175.00	15.28	175.00	15.29
GRIND				
Water	122.40	10.69	122.40	10.70
Rhoplex VSR 50	247.10	21.58	247.10	21.59
Rovace 9900	127.00	11.09	127.00	11.10
Drewplus T-4507	2.00	0.17	2.00	0.17
Texanol	5.80	0.51	5.80	0.51
Polyphase 663	7.20	0.63	7.20	0.63
Acrysol RM 2020NPR	19.60	1.71	19.60	1.71
Water	39.00	3.41	0.00	0.00
TOTAL	1145.10	100.00	1144.30	100.00
Conc. on total formulation	lbs	%	lbs	%
Hydroxyethyl Cellulose	3.50	0.31	0.00	0.00
Exilva	0.00	0.00	4.38	0.38
Water	286.40	25.01	284.72	24.88

PVC - 45.0% Volume solids - 37.2% VOC - < 50 g/L

For interest samples, general enquiries, or questions, please contact us at:

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