Use of Laviothix® P100 as rheological additive for water-based system formulations

In this work, **Laviothix® P100** was tested in various waterborne systems. In the first two formulations, **Laviothix® P100** lis evaluated against Bentone EW in different transparent warnishes for wood and the properties of the films are compared.

The later examples include a typical traffic paint application and an indoor wall coatings and show the effect of using **Laviothix® P100** in the formulation.

1. TRANSPARENT FORMULATION FOR WOOD

- ✓ Pre-gel preparation of **Laviothix® P100** and Bentone EW
- ✓ Measurement of pre-gel viscosity and pH
- ✓ Wood varnish preparation
- ✓ Measurement of the viscosity and thixotropic index (η) of the film

1.1 Pre-gel preparation

95.6% H_2O
3.8% inorganic rheological additive
0.6% NH_3 solution (28%)

	Brookfield Viscosity (cP)	pH
Laviothix® P100	5,000	10.8
Bentone EW	4,500	10.5

1.2 Transparent formulation for wood:

89 % acrylic resin (1)
10 % pre-gel
1 % newtonian synthetic thickener

	Brookfield Viscosity (20 RPM)	Brookfield Viscosity (2 RPM)	η (2/20)
Laviothix® P100	12,300	16,800	1.36
Bentone EW	7,700	9,000	1.17

The varnish appears completely transparent

2. TRANSPARENT FORMULATION FOR WOOD

- ✓ Pre-gel preparation of **Laviothix® P100** and Bentone EW
- ✓ Measurement of viscosity and pH of pre-gel
- ✓ Wood varnish preparation
- ✓ Measurement of the viscosity and thixotropic index (η) of the film

2.1 Pre-gel preparation

96.2% H_2O
3.8% inorganic rheological additive

	Brookfield Viscosity (cP)	pH
Laviothix® P100	7,800	9.8
Bentone EW	6,300	9.4

2.2 Trasparent formulation for wood:

89 % acrylic resin (2)
10 % pre-gel
1 % newtonian synthetic thickener

	Brookfield Viscosity (60 RPM)	Brookfield Viscosity (6 RPM)	η (6/60)
Laviothix® P100	9,100	18,000	1.99
Bentone EW	8,600	19,000	2.21

The varnish appears completely transparent

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3. TRAFFIC PAINT FORMULATION

- ✓ Pre-gel preparation of **Laviothix® P100**
- ✓ Traffic paint preparation
- ✓ Sagging test

3.1 Traffic paint formulation:

35 % acrilic resin 2
35 % $CaCO_3$
15 % TiO_2
14.4 % H_2O
0.6 % **Laviothix® P100**

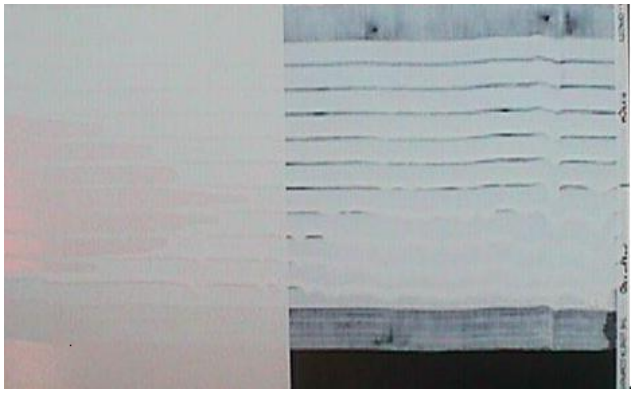

*Fig. 1: sag control chart of **Laviothix® P100***

4. INTERNAL COATING FORMULATION

30%	H_2O	30%	H_2O
0.1%	sodium hexametaphosphate	0.1%	sodium hexametaphosphate
0.3%	**hydroxyethilcellulose**	**0.2%**	**hydroxyethilcellulose**
		0.4%	**Laviothix® P100**
0.1%	defoamer	0.1%	defoamer
0.2%	bactericide	0.1%	bactericide
0.3%	ethylene glycol	0.3%	ethylene glycol
0.1%	dispersant	0.1%	dispersant
0.1%	coalescent	0.1%	coalescent
0.1%	NH_3 solution	0.1%	NH_3 solution
4%	PVA dispersion	3.8%	PVAl dispersion
3%	TiO_2	3%	TiO_2
61.6%	$CaCO_3$	61.6%	$CaCO_3$
0.1%	acrylic thickener	0.1%	acrylic thickener

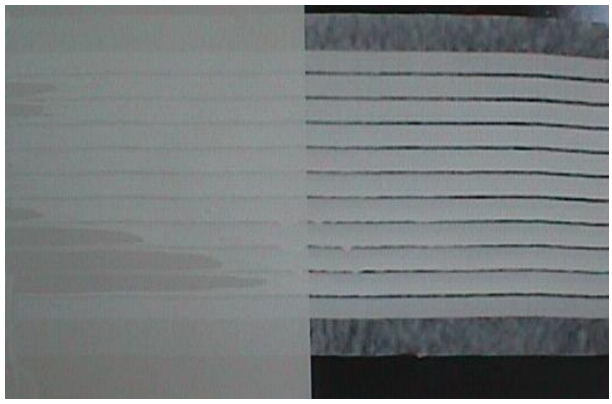

Fig. 2: sag control chart of hydroxyethilcellulose

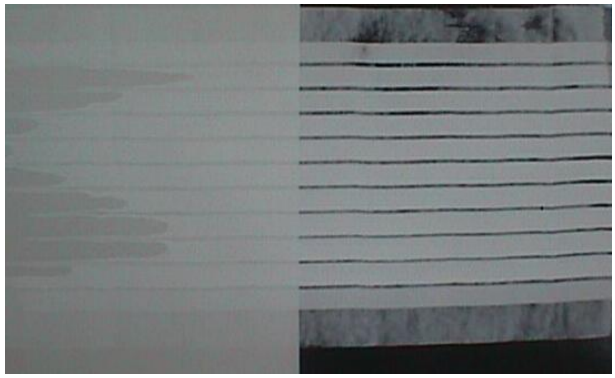

*Fig. 3: sag control chart of **hydroxyethilcellulose** and **Laviothix® P100***