

Public  
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Technical Marketing Wood Coatings  
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*Hostafine<sup>®</sup> —  
your choice for brilliant and  
transparent Wood Coatings*

ECS Nürnberg 2009



Exactly your chemistry.

# Content

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Exactly your chemistry.

- Why water-based brilliant & transparent wood finishes?
- Hostafine® Basics & Highlights
- Availability
- Information channels & promotional materials

# *Why water-based brilliant & transparent wood finishes?*

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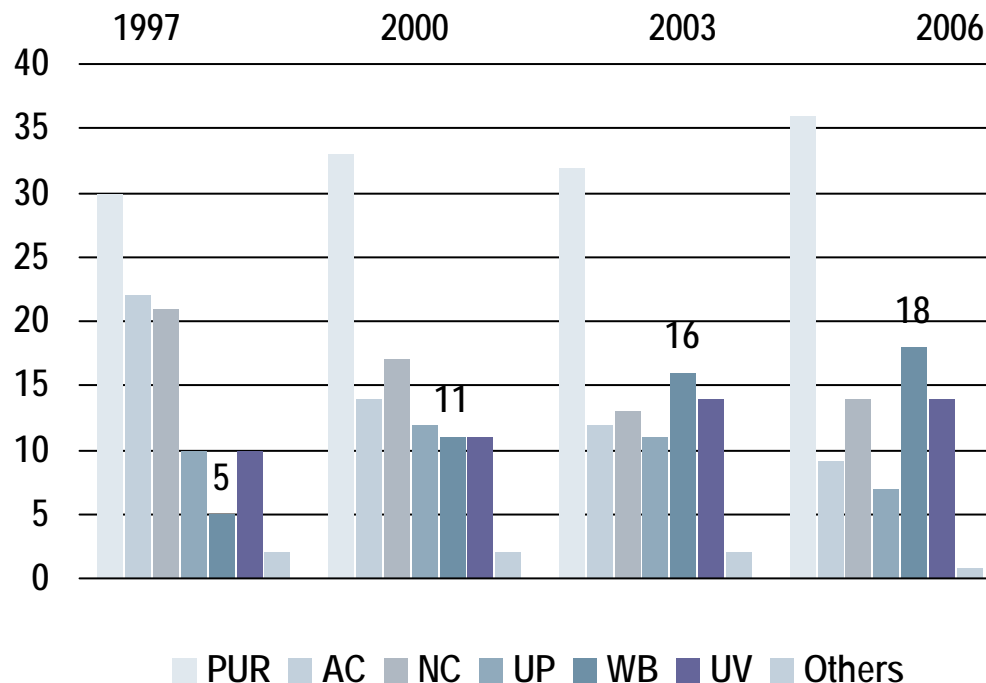


Exactly your chemistry.

- Regulation-compliance is one of the major industry challenges ...
- Implementation of VOC directives e.g. in Europe and USA force wood coatings manufacturers to alternative, low VOC technologies
  - Increasingly more stringent maximum VOC content limit values for paints and wood stains are and will be required
  
- Existing solutions to be compliant in production
  - Retaining solvent-based technology – use of high solids coatings
  - Water-borne coatings
  - UV-curing technology – 100% or water-based
  - Powder coatings

# *In the last decade, water-borne and UV-curing technologies gained momentum*

- About 80% solvent-based coatings in Wood Coatings market
- Market share development of different types of wood finishes (1997 – 2006\*)



\*internal and external sources

# *Coloration of water-borne wood finishes*

- Colorants help to create the desired wood aspect
  - Transparency is mandatory to conserve wood's natural beauty



Table, Red Gum Wood



Flooring, Mountain Ash

# *Hostafine<sup>®</sup> pigment preparations – Basics & Highlights*

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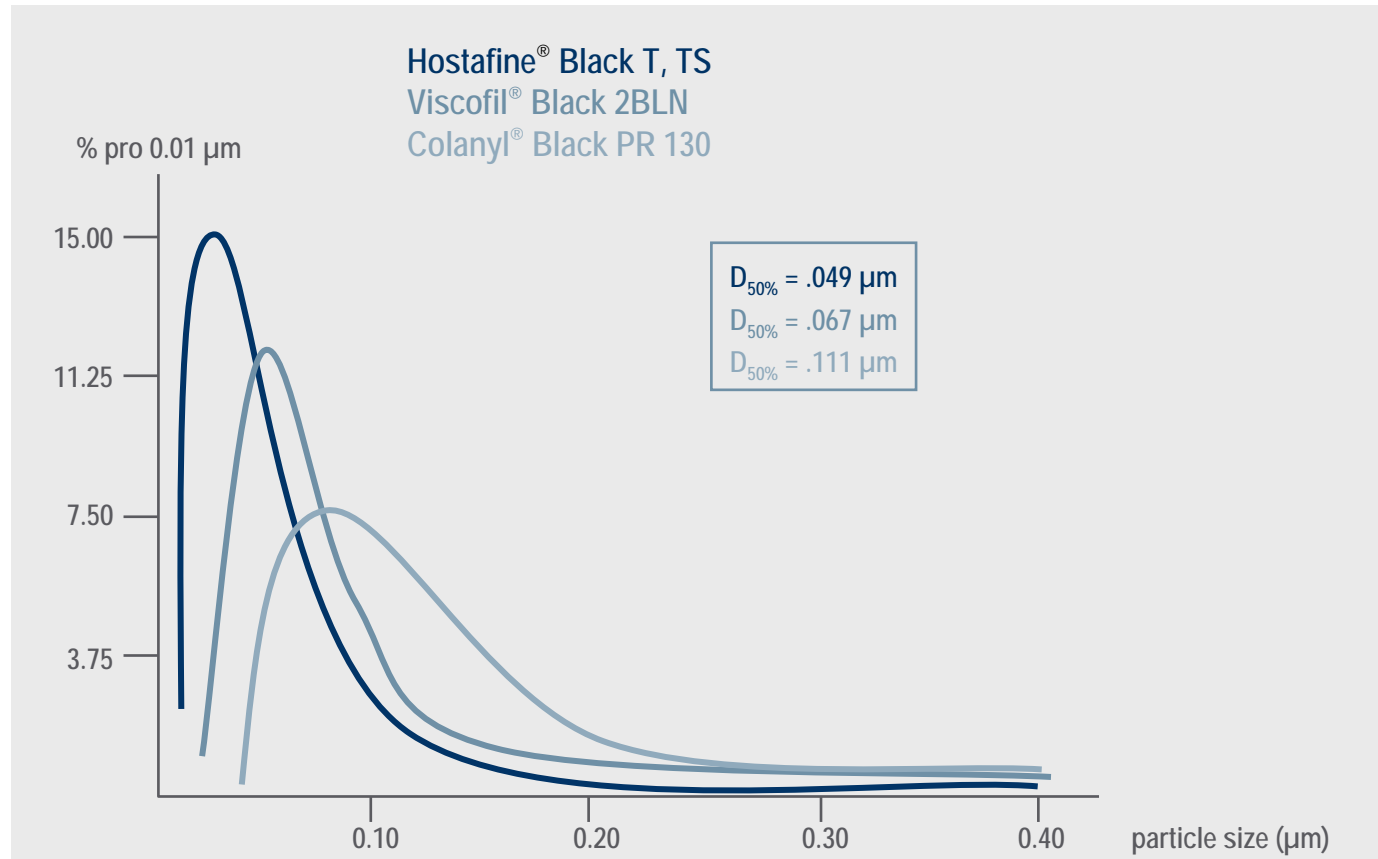
Exactly your chemistry.

- Transparent Hostafine<sup>®</sup> pigment preparations are the perfect choice for your next generation environment-friendly (water-based) brilliant wood finishes
- Hostafine<sup>®</sup> is a full range of **binder-free, aqueous pigment preparations** for water based wood stains and wood coatings
- Hostafine<sup>®</sup> consists of **pigment, wetting and dispersing agents, water, glycol (10%) and additives**

# Hostafine<sup>®</sup> Pigment Preparations – Particle Size Distribution

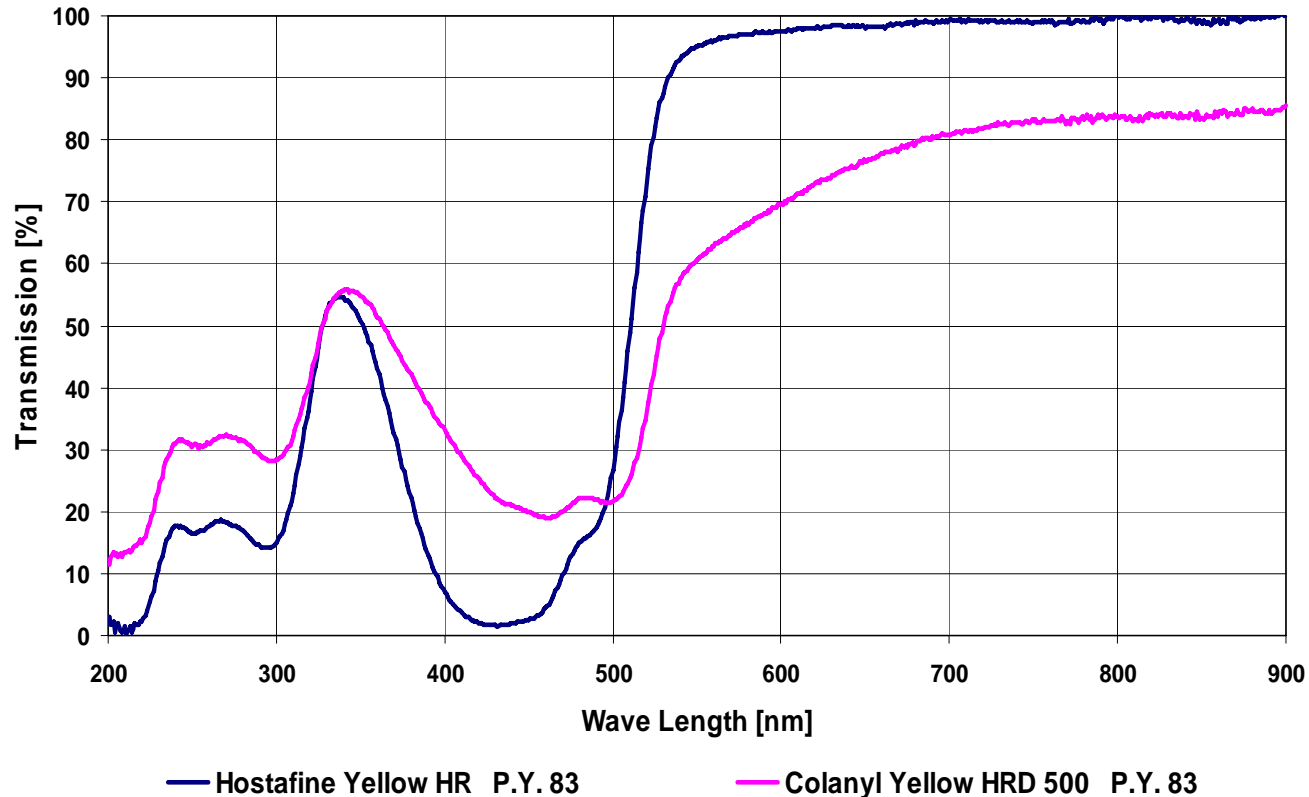


Exactly your chemistry.



# Hostafine<sup>®</sup> Pigment Preparations – Transparent versus Opaque Pigments

- Example: P. Yellow 83 – Hostafine<sup>®</sup> Yellow HR vs. Colanyl<sup>®</sup> Yellow HRD 500



- Transmission spectra of Hostafine<sup>®</sup> dispersions are similar to those of dye solutions

# *Hostafine® Pigment Preparations – Guide Formulation for WB wood stains*



Exactly your chemistry.

- Wood stains are preferably formulated with a binder
- Guide formulation

1 - 6 %	Hostafine® pigment preparation
2 - 8 %	Polymer emulsion e.g. Mowilith LDM 7717* or Acronal LR 8960**
97 - 86 %	De-ionized water
<hr/>	
100 %	

\*Celanese and \*\*BASF

# Hostafine<sup>®</sup> Pigment Preparations – Compatibility with Alcohol/Water mixtures



Exactly your chemistry.

- Stable in water-alcohol based formulations
- Test procedure – guide formulation

– Preparation of wood stain:

Hostafine <sup>®</sup>	2.2 – 5.0%	(1.0% based on pigment conc.)
Mowilith LDM 7717*	7.0%	
De-ionized water	88 – 90.8%	
		100%

Dilution by a) blending with Dowanol PM (1:1)  
b) blending with Ethanol (1:1)

- Storage stability is observed for two weeks with respect to sedimentation or breakdown of the solution

\*Celanese

# Hostafine<sup>®</sup> Pigment Preparations – Compatibility with Alcohol/Water mixtures



Exactly your chemistry.

## ■ Storage stability after two weeks

Hostafine <sup>®</sup>	Dilution with	
	50% Dowanol PM	50% Ethanol
Yellow GR	OK	OK*
Yellow HR	OK	OK (1 week)*
Red HF3S	OK	OK
Red FGR	OK	OK
Red D3G LP3881	OK	OK
Red F5RK VP3204	OK	OK*
Red P2GL	OK	OK
Rubine F6B	OK	OK
Magenta E VP 2609	OK	OK (1 week)*
Violet RL	OK	OK
Blue B2G	OK	OK
Green GN	OK	OK
Brown HFR	OK	OK
Black T 30 VP 2813	OK	OK

\*Also tested ok in Methanol

## ■ Hostafine<sup>®</sup> can be used in alcohol/water mixtures

## ■ The maximum tolerated alcohol level depends on stain recipe

# *Hostafine<sup>®</sup> Pigment Preparations – Colorants for Water-based UV-Coatings*

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Exactly your chemistry.

- Compatible with waterborne UV-curing binder systems
  
- Pigments influence curing behavior of UV-curable coatings by
  - competing with photoinitiators for the incident light (absorption and scattering)
  - in some cases interfering the film forming radical polymerization reaction (depending on the chemistry of the pigments)

# Hostafine<sup>®</sup> Pigment Preparations – Colorants for Water-based UV-Coatings



Exactly your chemistry.

## ■ Influence on curing was tested using a guide formulation

– Bayhydrol UV 2282 <sup>1)</sup>	60.0
– Dehydran 1293 <sup>2)</sup>	0.8
– Irgacure 2022 <sup>3)</sup>	0.5
– Byk 348 <sup>4)</sup>	0.5
– Wasser	27.3-35.1
– SchwegoPUR 8050 <sup>5)</sup>	0.9
– <b>Hostafine<sup>®*</sup></b>	<b>2.2-10.0</b>
	<hr/>
	100.0
– Curing conditions: 30 µm wet film, 5 m/min, Hg lamp, 160 W/cm	

\* depending on the type of Hostafine<sup>®</sup> and final pigment concentration (1% or 2%) in the wet coating

<sup>1)</sup> Bayer Material Science, <sup>2)</sup>Cognis Deutschland GmbH, <sup>2)</sup> Ciba Spezialitätenchemie GmbH, <sup>3)</sup> Byk-Chemie GmbH, <sup>4)</sup> Schwegmann GmbH & Co. KG

# Hostafine® Pigment Preparations – Colorants for Water-based UV-Coatings



Exactly your chemistry.

Hostafine®	Pendulum Hardness (König [sec.])			
	1%	2%	4%	8%
Pigment content (wet coating) (cured coating)	3,7%	7,1%	13,3%	23,5%
No Hostafine	230	230	230	230
Yellow GR	234	233	n.d.	n.d.
Yellow HR	235	236	n.d.	n.d.
Red HF3S	237	236	n.d.	n.d.
Red FGR	234	233	235	234
Red D3G LP 3381	232	231	n.d.	n.d.
Red F5RK VP 3204	236	234	n.d.	n.d.
Red P2GL	233	237	n.d.	n.d.
Rubine F6B	233	234	n.d.	n.d.
Magenta E VP 2609	234	232	n.d.	n.d.
Violet RL	227	233	n.d.	n.d.
Blue B2G	237	233	n.d.	n.d.
Green GN	236	237	n.d.	n.d.
Brown HFR LP 3300	237	237	n.d.	n.d.
Black T 30 VP 2813	233	233	n.d.	n.d.
Black TS 30 VP 3035	236	233	142	49

- Curing was not affected by the addition of Hostafine® at pigment loadings up to 7% (calculated on dry film)

*Higher durability in transparent wood stains made easy with Clariant's know-how and reliability in pigment preparations ...*

***Main Advantages:***

- Ultra-finely dispersed pigment dispersions (no particles > 1.0 µm)
  - 95 % pigment particles < 0.5 µm
  - High color strength & brilliance with outstanding transparency
- Superior fastness properties compared to dyes
  - Higher light fastness
  - No migration into WB and SB top coats
- Easy-to-handle liquid pigment preparation
  - Highly consistent quality
  - Low viscosity and very good sedimentation behavior
  - Use in tinting machines possible
- All Hostafines are APEO-free & compliant with EN 71-3

 **Transparent as dyes – fast as pigments**

# *Ideal colorants for reformulating transparent finishes from solvent- into water-based ...*



Exactly your chemistry.









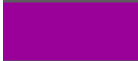

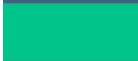
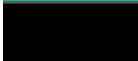
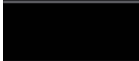
- Coloration of wood e.g. furniture, flooring, joinery and toys
- Transparent wood stains
  - Water-based
  - Water/alcohol combinations
- Tinted sealers and topcoats
- Water-based UV-curable coatings
- Suitable for tinting systems
- Colorants for wood impregnation (choice of color indices depending on application and durability requirements)

 **Ideal colorant for reformulating SB transparent finishes into WB systems**

# Availability of Hostafine® – Standard production samples



Exactly your chemistry.

	Color Index	Name		Light fastness
	P. Yellow 13	Hostafine® Yellow GR		6
	P. Yellow 83	Hostafine® Yellow HR		7
	P. Red 188	Hostafine® Red HF3S		7
	P. Red 112	Hostafine® Red FGR		7
	P. Red 170	Hostafine® Red F5RK VP3204		6-7
	P. Red 179	Hostafine® Red P2GL		8
	P. Red 184	Hostafine® Rubine F6B		5
	P. Red 122	Hostafine® Magenta E VP2609		7-8
	P. Violet 23	Hostafine® Violet RL		7-8
	P. Blue 15:3	Hostafine® Blue B2G		8
	P. Green 7	Hostafine® Green GN		8
	P. Black 7	Hostafine® Black T 30 VP2813		8
	P. Black 7	Hostafine® Black TS 30 VP3035*		8



\*glycol-free

VP development product, available as production quality

# Availability of Hostafine® – Lab samples



Exactly your chemistry.

	Color Index	Name		Light fastness
	P. Red 254	Hostafine®	Red D3G LP3381	>7-8 (in progress)
	P. Brown 25	Hostafine®	Brown HFR LP3300	8
	P. White 6	Hostafine®	White H LP3506	>7-8 (in progress)

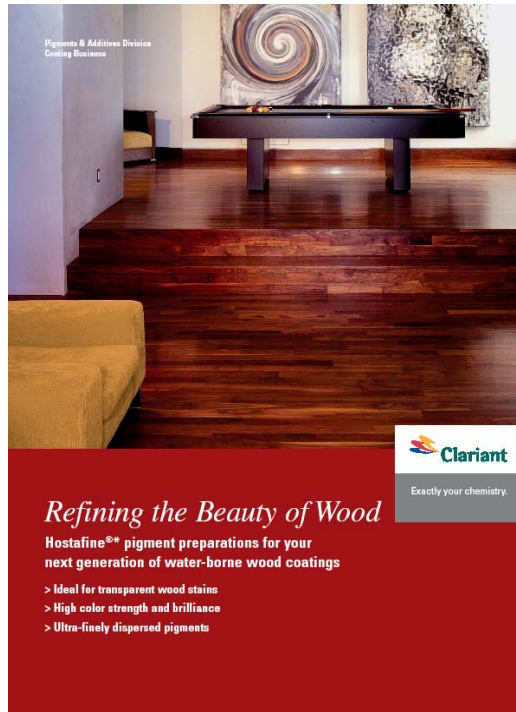
LP development product, available as lab sample

# Hostafine® Pigment Preparations – Promotional material



Exactly your chemistry.

## Hostafine® flyer



## Hostafine® Wood Stain Shade library



Currently under revision

This presentation can be downloaded: [www.pa.clariant.com](http://www.pa.clariant.com)

Visit us! CLARIANT Hall 7 – Booth 422

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*Thank you! Questions?*

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# *Back-up*

# Hostafine<sup>®</sup> Pigment Preparations – Fastness Properties



Exactly your chemistry.

Hostafine <sup>®</sup>	Light fastness (Full shade dispersion, 1%)	Overlacquer fastness to solvent based systems			
		NC lacquer	Acid curing lacquer	PES lacquer	PU lacquer
Yellow GR	6	5	5	5	5
Yellow HR	7	5	5	5	5
Red HF3S	7	5	5	5	5
Red FGR	7	5	5	5	5
Red F5RK VP 3204	6-7	5	5	5	5
Red P2GL	8	5	5	5	5
Rubine F6B	5	5	5	5	5
Magenta E VP 2609	7-8	5	5	5	5
Violet RL	7-8	5	5	5	5
Blue B2G	8	5	5	5	5
Green GN	8	5	5	5	5
Black T 30 VP 2813	8	5	5	5	5
Black TS 30 VP 3035	8	5	5	5	5

# Hostafine Pigment Preparations – Product Range



Exactly your chemistry.

Hostafine®	Colour Index	Chemical class	Pigment content approx. %
Yellow GR	P.Y. 13	Diarylide	40
Yellow HR	P.Y. 83	Diarylide	35
Red HF3S	P.R. 188	Naphtol AS	40
Red FGR	P.R. 112	Monoazo	45
Red F5RK VP3204	P.R. 170	Naphtol AS	35
Red P2GL	P.R. 179	Perylene	25
Rubine F6B	P.R. 184	Naphtol AS	40
Magenta E VP 2609	P.R. 122	Quinacridone	20
Violet RL	P.V. 23	Dioxazine	40
Blue B2G	P.B. 15:3	Phthalocyanine	30
Green GN	P.G. 7	Phthalocyanine	40
Black T 30 VP 2813	P.Bk. 7	Carbon black	30
Black TS 30 VP 3035	P.Bk. 7	Carbon black	33

# Hostafine Pigment Preparations – Product Range



Exactly your chemistry.

## ■ New products under development

Hostafine	Colour Index	Chemical class	Pigment content approx. %
Red D3G LP 3381	P.R. 254	Diketo-Pyrrolo-Pyrrole	35
Brown HFR LP 3300	P.Br 25	Benzimidazolone	25
White LP 3506	P.W. 6	Titaniumdioxide	31

- Classification of development products according to status
  - VP available as production quality
  - LP available as lab sample

# Hostafine Pigment Preparations – Particle Size Distribution

- Comparison of particle size distribution between Colanyl<sup>®</sup> and Hostafine<sup>®</sup> pigment preparations

Colanyl grade	Colanyl D <sub>50</sub> [nm]	Hostafine grade	Hostafine D <sub>50</sub> [nm]
Colanyl Yellow HR 130	100	Hostafine Yellow HR	65
Colanyl Red FGR 131	140	Hostafine Red FGR	90
Colanyl Green GG 131	110	Hostafine Green GN	60
Colanyl Black N 131	100	Hostafine Black T / TS	50

D<sub>50</sub>: 50% of the pigment particles are smaller than D<sub>50</sub> [nm]