

# **ADDISP<sup>™</sup> ECO** The 'One for All' Pigment Dispersant

#### No ball mill or pearl mill needed!

ADDISP<sup>™</sup> ECO is a universal reactive pigment dispersant partially sourced from biomass. As a 'One for All' solution, ADDISP<sup>™</sup> ECO excels in preparing organic and inorganic pigment concentrates with particle sizes below 5 microns by using only a dissolver.



Reduction of manufacturing costs & waste. Lower investment costs



Wide variety of pigments: organic, inorganic & carbon black





Dispersing with dissolver, no milling

with ball/pearl mill necessary



The pigment preparations that are formulated using ADDISP<sup>™</sup> ECO can be used for solvent-borne, water-borne and UV applications. Preparation of PR170 pigment concentrate using a dissolver is shown below.

#### Sudaperm Red 2963C

1	Demineralised water	33.5
2	ADDISP <sup>™</sup> ECO	15.0
3	Foamstop™ SX 47	0.2
4	Pigment	25.0
$\downarrow$	Disperse at high speed, 3000 RP	PM (≥6.3 m/s)
6	Demineralised water	26.2
7	Biocide	0.1
	Total	100.0

#### **Properties**

neness (µm)	0-5
e by DLS (nm)	466
nton Paar (mPa·s)	1794

Using the universal pigment concentrate enables the preparation of water-based and synthetic paints.

Water-based paint		
1 ADDISP™ ECO pigment concentrate	24.0	
2 Component A – WB PU binder	56.0	
3 Component B – NCO hardener	20.0	

#### Total

100.0



### Solvent-based paint

1	ADDISP™ ECO pigment concentrate	30.0
2	Synthetic transparent alkyd resin	70.0

Total





Pearl mill

Dissolver

## Solvent-based long-oil alkyd white 1:3



# **Pearl mill vs Dissolver** Colour development - Tinting



Water-based	L	а	b
Pearl mill	60.0	43.6	8.0
Dissolver	60.0	43.7	8.3
Δ	0.0	0.1	0.3
	ΔE = 0.3		

Solvent-based	L	а	b
Pearl mill	47.8	59.0	20.2
Dissolver	48.0	58.7	20.1
Δ	0.2	-0.3	-0.1
	ΔE = 0.4		

## Pigment particle size (nm)



Excellent colour development with pigment concentrate prepared with dissolver:

- ✓ No reduction in colour strength
- Similar redness with pigment concentrate prepared with a dissolver
- Similar pigment particle sizes achieved

Pearl mill



## Pigment Red PR170

## Colour difference after storage 2 wks 50 °C



Before storage	-
Dissolver	

After storage -Dissolver

	ΔE
Pearl mill	1.3
Dissolver	0.9

- ✓ Less difference in colour development with dissolver
- No sedimentation
- ✓ No serum



The pigment preparations that are formulated using ADDISP<sup>™</sup> ECO can be used for solvent-borne, water-borne and UV applications. Preparation of PB15:3 pigment concentrate using a dissolver is shown below.

#### Sudafast Blue 2784

1	Demineralised water	30.0
2	ADDISP <sup>™</sup> ECO	15.0
3	Foamstop™ SX 47	0.2
4	Pigment	35.0
$\downarrow$	Disperse at high speed, 3000 RPM (≥	:6.3 m/s)
5	Demineralised water	19.7
6	Biocide	0.1
	Total	100.0

#### **Properties**

Hegman fineness (µm)	0-5
Particle size - DLS (nm)	168
Viscosity Anton Paar (mPa·s)	683

Using the universal pigment concentrate enables the preparation of water-based and synthetic paints.

	water-based paint	
1	ADDISP™ ECO pigment concentrate	24.0
2	Component A – WB PU binder	56.0
3	Component B – NCO hardener	20.0

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#### Total

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100.0



#### Solvent-based paint

1	ADDISP™ ECO pigment concentrate	30.0
2	Synthetic transparent alkyd resin	70.0

Total





Pearl mill

Dissolver

## Solvent-based long-oil alkyd white 1:3



# **Pearl mill vs Dissolver** Colour development - Tinting



Water-based	L	а	b
Pearl mill	54.8	-19.2	-34.2
Dissolver	54.7	-19.2	-34.4
Δ	-0.1	0.0	-0.2
	ΔE = 0.2		

Solvent-based	L	а	b
Pearl mill	40.0	-18.1	-38.5
Dissolver	40.0	-18.2	-38.8
Δ	0.0	-0.1	-0.3
	ΔE = 0.3		





Excellent colour development with pigment concentrate prepared with dissolver:

- No reduction in colour strength
- Similar blueness with pigment concentrate prepared with a dissolver
- Similar pigment particle sizes achieved

Pearl mill



## Pigment Blue PB15:3

### Colour difference after storage 2 wks 50 °C



Before storage -Dissolver After storage -Dissolver

	ΔΕ
Pearl mill	0.1
Dissolver	0.1

- ✓ No difference in colour development
- ✓ No sedimentation
- ✓ No serum



The pigment preparations that are formulated using ADDISP<sup>™</sup> ECO can be used for solvent-borne, water-borne and UV applications. Preparation of PY74 pigment concentrate using a dissolver is shown below.

#### Hansa Brilliant Yellow 2GX 70-S

1	Demineralised water	35.0
2	ADDISP <sup>™</sup> ECO	20.0
3	Foamstop™ VF 35N	0.5
4	Pigment	30.0
5	Blanc fixe micro	10.0
$\downarrow$	Disperse at high speed, 3000 RPM (≥6.3	3 m/s)
6	Demineralised water	4.3
7	Biocide	0.1

#### **Properties**

Hegman fineness (µm)	0-5
Particle size by DLS (nm)	439
Viscosity Anton Paar (mPa·s)	5447
<u>.</u>	

#### Total

#### 100.0

Using the universal pigment concentrate enables the preparation of water-based and synthetic paints.

#### Water-based paint

1	ADDISP <sup>™</sup> ECO pigment concentrate	24.0
2	Component A – WB PU binder	56.0

3 Component B – NCO hardener 20.0

#### Total

100.0



### Solvent-based paint

1	ADDISP™ ECO pigment concentrate	30.0
2	Synthetic transparent alkyd resin	70.0

Total





# **Pearl mill vs Dissolver** Colour development - Tinting



Water-based	L	а	b
Pearl mill	88.8	3.8	56.1
Dissolver	88.6	3.6	59.3
Δ	-0.2	-0.2	3.2
	ΔE = 3.2		

Solvent-based	L	а	b
Pearl mill	84.3	7.9	80.5
Dissolver	84.5	7.6	83.3
Δ	0.2	-0.3	2.8
	ΔE = 2.8		

### Pigment particle size (nm)



# Excellent colour development with pigment concentrate prepared with dissolver:

- ✓ No reduction in colour strength
- Increased yellowness with pigment concentrate prepared with a dissolver
- Similar pigment particle sizes achieved

Pearl mill

Dissolver

### Solvent-based long-oil alkyd white 1:3



Pearl mill



## Pigment Yellow PY74

### Colour difference after storage 2 wks 50 °C



Before storage	-
Dissolver	

After storage -Dissolver

	ΔΕ
Pearl mill	0.5
Dissolver	0.2

- ✓ No change in viscosity
- Minimal difference in colour development
- ✓ No sedimentation
- ✓ No serum



The pigment preparations that are formulated using ADDISP<sup>™</sup> ECO can be used for solvent-borne, water-borne and UV applications. Preparation of PBk7 pigment concentrate using a dissolver is shown below.

#### **Printex G**

Demineralised water	40.0
ADDISP <sup>™</sup> ECO	15.0
Foamstop™ SX 47	0.2
Pigment	25.0
Disperse at high speed, 3000 RPM (≥	6.3 m/s)
Demineralised water	19.7
Biocide	0.1
Total	100.0
	Demineralised water ADDISP <sup>™</sup> ECO Foamstop <sup>™</sup> SX 47 Pigment Disperse at high speed, 3000 RPM (≥ Demineralised water Biocide Total

### Properties

Hegman fineness (µm)	0-5
Particle size by DLS (nm)	265
Viscosity Anton Paar (mPa·s)	319

Using the universal pigment concentrate enables the preparation of water-based and synthetic paints.

Water-based pain	t
1 ADDISP™ ECO pigment c	oncentrate 24.0
2 Component A - WB PU bi	inder 56.0
3 Component B - NCO hard	dener 20.0

#### Total

100.0



#### Solvent-based paint

1	ADDISP <sup>™</sup> ECO pigment concentrate	30.0
2	Synthetic transparent alkyd resin	70.0

Total





Pearl mill

Dissolver

### Solvent-based long-oil alkyd white 1:3



# **Pearl mill vs Dissolver** Colour development - Tinting



Water-based	L	а	b	
Pearl mill	42.7	-1.0	-5.9	
Dissolver	42.6	-1.0	-5.9	
Δ	-0.1	0.0	0.0	
	ΔE = 0.1			

Solvent-based	L	Α	b
Pearl mill	20.9	-0.6	-6.3
Dissolver	20.7	-0.6	-6.4
Δ	-0.2	0.0	-0.1
	ΔE = 0.2		

#### Pigment particle size (nm)



Excellent colour development with pigment concentrate prepared with dissolver:

- ✓ No reduction in colour strength
- Similar pigment particle sizes achieved

Pearl mill



## Pigment Black PBk7

## Colour difference after storage 2 wks 50 °C



Before storage	-
Dissolver	

After storage -Dissolver

	ΔΕ
Pearl mill	0.1
Dissolver	0.2

- ✓ No change in viscosity
- Minimal difference in colour development
- ✓ No sedimentation



# ADDISP<sup>TM</sup> ECO Starting point formulations Universal pigment concentrates

		Printex G	Tronox CR-826	Bayferrox 130 M	Sudaperm Red 2963C	Bayferrox 3920	Hansa Brilliant Yellow 2GX 70-S	Sudafast Green 2727C	Sudafast Blue 2784
	Colour index	PBK7	PW6	PR101	PR170	PY42	PY74	PG7	PB15:3
1	Demineralised water	35.0	20.1	20.0	33.5	20.0	35.0	20.0	30.0
2	ADDISP™ ECO	15.0	2.0	7.0	15.0	7.0	20.0	15.0	15.0
3	Foamstop™ SX 47	0.2	0.2	0.2	0.2	0.2	0.2*	0.2	0.2
4	Pigment	25.0	76.6	68.0	25.0	54.0	30.0	30.0	35.0
5	Blanc fixe micro						10.0		
6	Rheolate FX 1070					0.6			
		↓ Disperse at h	nigh speed, 30	)00 RPM (≥6.3 r	n/s) and add ex	tra water when	necessary:		
7	Demineralised water	5.0		4.5	7.0	8.4	4.7	34.7	4.0
		↓ After dispers	ing, 1000 RPM	M (≥2.1 m/s) an	d add:				
8	Demineralised water	19.7			19.2	9.3			15.7
9	Rheolate FX 1070		1.0						
10	Anti settling agent			0.2		0.4			
11	Biocide	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	Hegman fineness (µm)	0 - 5	< 1	< 1	0 - 5	< 1	0 - 5	0 - 5	0 - 5
	* For some pigment types like PY74, 0.	5 % Foamstop™ VI	= 35N is recom	nmended					

Miscellaneous paints and concentrates



## Water-based paint

1	ADDISP <sup>™</sup> ECO pigment concentrate	30.0
2	Water-based transparent paint	69.0
3	Rheology additive	1.0
	Total	100.0

## **Synthetic paint**

1	ADDISP <sup>™</sup> ECO pigment concentrate	30.0
2	Synthetic transparent resin	60.0
3	ShellSol D40	10.0
	Total	100.0

## Silica matting agent concentrate

1	Demineralised water	80.0
2	ADDISP™ ECO	1.0
3	Biocide	0.2
4	Foamstop™ VF 35N	0.3
5	Lingwe S-776L	15.0
6	Anti settling agent	0.6
7	Demineralised water	3.0
-	Total	100.0

## **Talc filler concentrate**

1	Demineralised water	49.7
2	ADDISP™ ECO	9.0
3	Foamstop™ SX 47	0.2
4	intalc 8 CG	40.5
5	Anti settling agent	0.6
	Total	100.0

#### Talc concentrates - Dispersant comparison

## Calcium carbonate filler concentrate

	Total	100.0
10	Co-solvent	0.5
9	Styrene acrylic co-polymer binder	34.0
8	Anti settling agent	0.6
7	Durcal 5	41.0
6	Foamstop™ VF 35N	0.2
5	Biocide	0.2
4	ADDISP™ ECO	2.3
3	CODIS™ 95	0.1
2	Kimicell KEC 6000	0.2
1	Demineralised water	20.9



**ADDISP™ ECO** 

Overnight stability, after stirring by hand

# ADDISP ECO – Tested pigments



Color index	Pigment name
Fillers	intalc 8 CS
Fillers	microtalc IT Extra
Fillers	Durcal 5
Matting agent	Lingwe S-776
PB 15:1	Monolite Blue CSN-N
PB 15:2	Sudafast Blue 2773
PB 15:3	Monolite Blue 515303
PB 15:3	Sudafast Blue 2784
PB 15:4	Hostaperm Blue BT 617-D
PB 15:4	Sudafast Blue 2796
PB 28	ChromaFer Blue B33
PB 29	Sudafast Blue 2662
PB 29	Ultramarine Blue 26
PB 36	ChromaFer Blue B22
PBk 7	Beblack 5319L
PBk 7 PBk 7	Beblack 5319L Birla 1080 UP-Raven
PBk 7 PBk 7 PBk 7	Beblack 5319L Birla 1080 UP-Raven Birla L-Raven
PBk 7 PBk 7 PBk 7 PBk 7	Beblack 5319L Birla 1080 UP-Raven Birla L-Raven Birla P14R Raven
PBk 7 PBk 7 PBk 7 PBk 7 PBk 7	Beblack 5319L Birla 1080 UP-Raven Birla L-Raven Birla P14R Raven Printex G
PBk 7 PBk 7 PBk 7 PBk 7 PBk 7 PBk 11	Beblack 5319L Birla 1080 UP-Raven Birla L-Raven Birla P14R Raven Printex G Bayferrox 3180BM
PBk 7 PBk 7 PBk 7 PBk 7 PBk 7 PBk 11 PG 7	Beblack 5319L Birla 1080 UP-Raven Birla L-Raven Birla P14R Raven Printex G Bayferrox 3180BM Heliogreen L8730
PBk 7 PBk 7 PBk 7 PBk 7 PBk 7 PBk 11 PG 7 PG 7	Beblack 5319L Birla 1080 UP-Raven Birla L-Raven Birla P14R Raven Printex G Bayferrox 3180BM Heliogreen L8730 Heliogreen L8735
PBk 7 PBk 7 PBk 7 PBk 7 PBk 7 PBk 11 PG 7 PG 7 PG 7	Beblack 5319L Birla 1080 UP-Raven Birla L-Raven Birla P14R Raven Printex G Bayferrox 3180BM Heliogreen L8730 Heliogreen L8735 Sudafast green 2727C
PBk 7 PBk 7 PBk 7 PBk 7 PBk 11 PG 7 PG 7 PG 7 PG 7 PG 17	Beblack 5319L Birla 1080 UP-Raven Birla L-Raven Birla P14R Raven Printex G Bayferrox 3180BM Heliogreen L8730 Heliogreen L8735 Sudafast green 2727C Colortherm green GX
PBk 7 PBk 7 PBk 7 PBk 7 PBk 11 PG 7 PG 7 PG 7 PG 17 PG 17	Beblack 5319L Birla 1080 UP-Raven Birla L-Raven Birla P14R Raven Printex G Bayferrox 3180BM Heliogreen L8730 Heliogreen L8735 Sudafast green 2727C Colortherm green GX ChromaFer Green G3M
PBk 7 PBk 7 PBk 7 PBk 7 PBk 11 PG 7 PG 7 PG 7 PG 17 PG 17 PG 50	Beblack 5319L Birla 1080 UP-Raven Birla L-Raven Birla P14R Raven Printex G Bayferrox 3180BM Heliogreen L8730 Heliogreen L8735 Sudafast green 2727C Colortherm green GX ChromaFer Green G3M ChromaFer Green G02
PBk 7 PBk 7 PBk 7 PBk 7 PBk 7 PBk 11 PG 7 PG 7 PG 7 PG 7 PG 17 PG 17 PG 50 PO 36	Beblack 5319L Birla 1080 UP-Raven Birla L-Raven Birla P14R Raven Printex G Bayferrox 3180BM Heliogreen L8730 Heliogreen L8735 Sudafast green 2727C Colortherm green GX ChromaFer Green G3M ChromaFer Green G02 Sudaperm Orange 2915
PBk 7 PBk 7 PBk 7 PBk 7 PBk 7 PBk 11 PG 7 PG 7 PG 7 PG 17 PG 17 PG 50 PO 36 PO 73	Beblack 5319LBirla 1080 UP-RavenBirla L-RavenBirla P14R RavenPrintex GBayferrox 3180BMHeliogreen L8730Heliogreen L8735Sudafast green 2727CColortherm green GXChromaFer Green G3MChromaFer Green G02Sudaperm Orange 2915Conoran Orange 5

Color Index	Pigment name
PR 3	Hansa Scarlet RNC
PR 101	Oxired Roja malaga
PR 101	Bayferrox 120M
PR 101	Bayferrox 130 BM
PR 101	ChromaFer Red OT-19103- 130
PR 101	ChromaFer Red 1130 MS
PR 122	Hostaperm Pink E-WDM250
PR 122	Sudaperm Pink 2997C
PR 122	Sudaperm Pink 2998
PR 122	Sudaperm Pink 2999
PR 122	Sudaperm Pink 3000
PR 170	Sudaperm Red 2963C
PV 15	Ultramarine Pink 19
PV 19	Sudaperm Violet 2995
PV 23	Sipfast RL-U
PW 6	Tronox CR-826
PY 3	Sudacolor Yellow 109
PY 42	Bayferrox 3905
PY 42 PY 42	Bayferrox 3905 Bayferrox 3910
PY 42 PY 42 PY 42	Bayferrox 3905 Bayferrox 3910 Bayferrox 3920
PY 42 PY 42 PY 42 PY 42	Bayferrox 3905 Bayferrox 3910 Bayferrox 3920 ChromaFer 9910 MS
PY 42 PY 42 PY 42 PY 42 PY 53	Bayferrox 3905 Bayferrox 3910 Bayferrox 3920 ChromaFer 9910 MS ChromaFer Yellow Y02
PY 42 PY 42 PY 42 PY 42 PY 53 PY 74	Bayferrox 3905 Bayferrox 3910 Bayferrox 3920 ChromaFer 9910 MS ChromaFer Yellow Y02 Hansa Brilliant 2970-S
PY 42 PY 42 PY 42 PY 42 PY 53 PY 74 PY 74	Bayferrox 3905 Bayferrox 3910 Bayferrox 3920 ChromaFer 9910 MS ChromaFer Yellow Y02 Hansa Brilliant 2970-S Sudafast yellow 117
PY 42 PY 42 PY 42 PY 42 PY 53 PY 74 PY 74 PY 74	Bayferrox 3905 Bayferrox 3910 Bayferrox 3920 ChromaFer 9910 MS ChromaFer Yellow Y02 Hansa Brilliant 2970-S Sudafast yellow 117 Hansa Brilliant 2GX 70-S
PY 42 PY 42 PY 42 PY 53 PY 74 PY 74 PY 74 PY 74 PY 110	Bayferrox 3905 Bayferrox 3910 Bayferrox 3920 ChromaFer 9910 MS ChromaFer Yellow Y02 Hansa Brilliant 2970-S Sudafast yellow 117 Hansa Brilliant 2GX 70-S Sudaperm Yellow 2925C
PY 42 PY 42 PY 42 PY 53 PY 74 PY 74 PY 74 PY 110 PY 139	Bayferrox 3905 Bayferrox 3910 Bayferrox 3920 ChromaFer 9910 MS ChromaFer Yellow Y02 Hansa Brilliant 2970-S Sudafast yellow 117 Hansa Brilliant 2GX 70-S Sudaperm Yellow 2925C Sudaperm Yellow 2935
PY 42 PY 42 PY 42 PY 53 PY 74 PY 74 PY 74 PY 74 PY 110 PY 139 PY 150	Bayferrox 3905 Bayferrox 3910 Bayferrox 3920 ChromaFer 9910 MS ChromaFer Yellow Y02 Hansa Brilliant 2970-S Sudafast yellow 117 Hansa Brilliant 2GX 70-S Sudaperm Yellow 2925C Sudaperm Yellow 2935 Yellow 4G
PY 42 PY 42 PY 42 PY 53 PY 74 PY 74 PY 74 PY 110 PY 139 PY 150 PY 154	Bayferrox 3905 Bayferrox 3910 Bayferrox 3920 ChromaFer 9910 MS ChromaFer Yellow Y02 Hansa Brilliant 2970-S Sudafast yellow 117 Hansa Brilliant 2GX 70-S Sudaperm Yellow 2925C Sudaperm Yellow 2935 Yellow 4G Sudaperm Yellow 2906
PY 42 PY 42 PY 42 PY 42 PY 53 PY 74 PY 74 PY 74 PY 74 PY 110 PY 139 PY 150 PY 150 PY 154 PY 180	Bayferrox 3905 Bayferrox 3910 Bayferrox 3920 ChromaFer 9910 MS ChromaFer Yellow Y02 Hansa Brilliant 2970-S Sudafast yellow 117 Hansa Brilliant 2GX 70-S Sudaperm Yellow 2925C Sudaperm Yellow 2935 Yellow 4G Sudaperm Yellow 2906 Benzimidazolone YH9-D
PY 42 PY 42 PY 42 PY 53 PY 74 PY 74 PY 74 PY 110 PY 139 PY 150 PY 150 PY 154 PY 180 PY 184	Bayferrox 3905 Bayferrox 3910 Bayferrox 3920 ChromaFer 9910 MS ChromaFer Yellow Y02 Hansa Brilliant 2970-S Sudafast yellow 117 Hansa Brilliant 2GX 70-S Sudaperm Yellow 2925C Sudaperm Yellow 2935 Yellow 4G Sudaperm Yellow 2906 Benzimidazolone YH9-D Durovan 5001C