

ELEMENTIS
SPECIALTIES

水性工业涂料体系 整体解决方案

2011.9
Walee Wang / 王全义
Technical service manager
Elementis Specialties, Inc
One-stop Total Solution Provider
一站式整体解决方案的伙伴

DEUCHEM
ELEMENTIS SPECIALTIES
海名斯·德谦

水性工业涂料常见问题

- ✓如何提升水性铝粉润湿分散性
- ✓如何改善水性铝粉的定向排列与悬浮性能
- ✓如何平衡水性体系的消泡抑泡与流平
- ✓怎样优化水性工业涂料的流变性能
- ✓如何提升水性工业涂料的耐腐蚀性能、耐水性？



DEUCHEM
ELEMENTIS SPECIALTIES
海名斯·德谦

One-stop Total Solution Provider
一站式整体解决方案的伙伴

Agenda/主要内容

- ✓NUOSPERSE® Wetting and Dispersing Agents /润湿分散剂
- ✓DAPRO® & Defom Defoamers/水性消泡与抑泡剂
- ✓DAPRO® DF Surface Tension Modifiers/表面张力调整剂
- ✓Hectorite Clay Based Thickener/ 锂蒙托石流变助剂
- ✓RHEOLATE® Polyurethane Associative Thickeners /聚氨酯聚醚复合型流变助剂
- ✓RHEOLATE® 299
- ✓NALZIN® FA 179 Corrosion-/ flash rust inhibitors/防闪锈剂



DEUCHEM
ELEMENTIS SPECIALTIES
海名斯·德谦

One-stop Total Solution Provider
一站式整体解决方案的伙伴

NUOSPERSE® Wetting and Dispersing Agents / 润湿分散剂

- RHEOLATE®
- BENTONE®
- THIXATROL®
- NUOSPERSE®
- RHEOX®
- DAPRO®
- TINT-AYD®



DEUCHEM
ELEMENTIS SPECIALTIES
海名斯·德谦

One-stop Total Solution Provider
一站式整体解决方案的伙伴

Dispersing and Wetting Agents/润湿分散剂

➤ **Dispersing agents/分散剂**
Dispersing agents are additives that provide optimal stability of pigment particles by **charge** and/or **steric stabilization**/通过空间位阻或电荷稳定颜填料

➤ **Wetting agents/润湿剂**
Wetting agents **reduce the interfacial tension** and improve pigment surface wetting/降低表面张力，提高表面润湿

(Many surfactants function as both)

DEUCHEM
ELEMENTIS SPECIALTIES
海名斯·德谦

One-stop Total Solution Provider
一站式整体解决方案的伙伴

Dispersing and Wetting Agents/润湿分散剂

润湿分散机理



DEUCHEM
ELEMENTIS SPECIALTIES
海名斯·德谦

One-stop Total Solution Provider
一站式整体解决方案的伙伴

Stabilisation/稳定机理

• 电荷稳定

Anionics Polymeric

• 空间位阻

Nonionics Polymeric

2009112 Only in polar medium - like water 7

How to improve color development /怎样解决色浆相容性问题

- Selecting a **nonionic** additive with the proper HLB to improve wetting (additive should have similar HLB to the paint system) /选择非离子表面活性剂提高基料润湿
- Selecting the proper, mostly **anionic**, hydrophilic surfactant for universal colorants and more hydrophobic **anionic** surfactant for non-polar colorants to improve dispersion /选择阴离子型表面活性剂，提高展色性能

2009112 8

NUOSPERSE® FX 365

Nonionic, multifunctional /非离子多功能润湿剂

- 90% active, in water /90%活性份
- Excellent wetting on inorganic&organic pigments/优异的润湿性能
- For water based industrial pigment concentrates/水性工业色浆
- For water based industrial coatings/水性工业涂料
- For water based base OEM-coats/水性汽车底色漆
- For WB flexo inks/水性油墨

2009112 9

NUOSPERSE® FX 600

Polymeric Dispersing Agent/聚合型分散剂

- 25% active, Polymeric dispersing agent for waterborne industrial paints, OEM, colorants / 25%聚合型分散剂，适合于水性工业漆，汽车，色浆等
- Improves milling, lowers mill base viscosity/提高研磨效率，降低研磨粘度
- Improved stability, gloss, opacity, color strength/提升稳定性，光泽，遮盖率及展色性
- Excellent compatibility with a wide range of "industrial vehicles"/优异的相容性

2009112 10

NUOSPERSE FA 620

Composition/组成 : anionic type polymer/阴离子型聚合物
Non-volatile/有效份 : ca. 50%

Feature and application/特点 :

- Improved color development/优异的展色性
- reduced rub-up and colour float/抗浮色发花
- highest pigment loading /高颜料
- lower viscosities/较低粘度
- optimal cost/performance ratio/良好的性价比
- Excellent wetting for metallic pigment/对铝粉具有优异的润湿性

2009112 11

NUOSPERSE® FX 600

优异的展色性

FX600/FX365 Competitor1/2

优异的耐水性

Competitor NUOSPERSE FX 600/FX365

2009112 12

NUOSPERSE® FX 600

水性丙烯酸氨基烤漆系统, TiO₂: 24%
NUOSPERSE FX-600 1.9%wt.

1. Primal AC 1533 / Cymel 303
2. NeoCryl XK 69 / Cymel 303
3. NeoCryl XK 69 / Maprenal MF 90

One-stop Total Solution Provider
一站式整体解决方案的伙伴

2009112 13

NUOSPERSE® FX 600

优异的耐盐雾性能 360小时,
水性工业底漆(苯丙)

**NUOSPERSE
FX-600**

Competitor

One-stop Total Solution Provider
一站式整体解决方案的伙伴

2009112 14

NUOSPERSE FX-600/ FX-365

Flow property after one month storage at 50°C
/优异的流动性能

75% Loading RO3097

58% Loading YZ1688

One-stop Total Solution Provider
一站式整体解决方案的伙伴

2009112 15

Pigment Dispersions for Waterborne Industrial Paints /水性工业色浆参考配方

Pigment	C.I.	NUO-SPERSE FX 365		NUO-SPERSE FX 600		Water	NUVIS FX 1070	SERDAS 7015
		%	%	%	%			
Bayferrox 130M	P.R. 101	60.0	9.0	5.8	24.5	0.2	0.5	
Bayferrox 3910	P.Y. 42	55.0	3.3	7.0	32.2	2.0	0.5	
Heliogen Blue L 7080 F	P.B. 15:3	40.0	11.0	3.0	45.5		0.5	
Hostaperm Green 8G	P.G. 36	45.0	11.0		39.5	4.0	0.5	
Hostaperm Rosa E	P.R. 122	30.0	6.0	2.0	59.5	2.0	0.5	
Irgazin DPP Red BO	P.R. 254	45.0	7.5		44.0	3.0	0.5	
Kronos 2310	P.W. 6	70.0	3.2	2.0	22.5	2.0	0.5	
Novapern Yellow FGL	P.Y. 97	45.0	1.1	5.0	48.1	0.3	0.5	
Special Black 250	P.Bk. 7	40.0	6.6	2.0	49.9	1.0	0.5	

One-stop Total Solution Provider
一站式整体解决方案的伙伴

2009112 16

NUOSPERSE FX-600/ FX-365

One-stop Total Solution Provider
一站式整体解决方案的伙伴

2009112 17

NUOSPERSE FA 620

Blank

NUOSPERSE FA620

优异的铝粉润湿性能

Aluminium pigment /BCS/water/wetting agent 0.8%

One-stop Total Solution Provider
一站式整体解决方案的伙伴

2009112 18

ELEMENTIS

RHEOLATE®
BENTONE®
THIXATROL®
NUOSPERSE®
RHEOX®
DAPRO®
TINT-AYD®

DAPRO® /Defom®
Defoamers/水性消泡与抑泡剂



2009112 19

Waterborne Defoamers/水性消泡剂 **ELEMENTIS**

Products/产品	Composition / 组成	Applications / 应用
DAPRO DF 1181	silicone modified dispersion / 改性有机硅分散体	water-based industrial coatings, protective and heavy duty coatings, coil coatings, wood coatings / 水性工业涂料
DAPRO DF 1492	modified polyol / 改性聚醇多元醇	water-based architectural and industrial coatings / 水性建筑涂料和工业涂料
DAPRO DF 1760	modified polyol, clear liquid, silicone free, / 改性聚醇多元醇, 不含有机硅	water-based can coatings, automotive OEM and refinishing, industrial coatings, wood coatings, coil coatings / 水性工业, 汽车, 卷材涂料, 木器
DAPRO DF 7015	mineral oil / wax, economic / 矿物油部分散体	water-based architectural coatings, colorants / 水性建筑涂料与色浆
DAPRO DF 7580	glycol di-ester, silicone free / 聚酯类, 不含有机硅	water-based clear coat, varnishes, high gloss system. 水性消漆高光体系
DAPRO DF 2162	Hydrophobic Silica/hydrocarbon/疏水碳氢复合物	Silicone free, good resistance to cartering, WB protective Coatings and industrial coatings/ 水性工业与防护涂料
Defom W-0506	Modified Silicone based dispersion/改性有机硅分散体	water-based industrial coatings, protective and heavy duty coatings, coil coatings, wood coatings / 水性工业涂料

DEUCHEM
ELEMENTIS SYSTEMS
海名斯·德谦

One-stop Total Solution Provider
一站式整体解决方案的伙伴

2009112 20

DAPRO DF Defoamers/消泡剂 **ELEMENTIS**

水性工业消泡剂

工业色漆体系 油漆

DAPRO DF-7015	DAPRO DF-1760
DAPRO DF-1181	DAPRO DF-1492
DAPRO DF-2162	DAPRO DF-7580
Defom W-0506	Defom W-0506

海名斯·德谦

One-stop Total Solution Provider
一站式整体解决方案的伙伴

2009112 21

DAPRO DF 7015 **ELEMENTIS**

Evaluation of ELEMENTIS Defoamers in the MAC 34 Polyurethandispersion from Alberdingk-Boley

Defoamer	Loading (%)	Head of foam (cm)	Density g/ml	Spill-coated glass panels
DAPRO®DF 880	0.50	2.3	0.65	n.ok (gel-particles)
DAPRO®DF 900	0.50	4.0	0.51	n.ok (gel-particles)
DAPRO®DF 975	0.50	2.6	0.52	n.ok (gel-particles)
DAPRO®DF 1760	0.50	1.2	0.74	ok
DAPRO®DF 2162	0.50	1.7	0.64	n.ok (gel-particles)
DAPRO®DF 3163	0.50	1.0	0.89	ok
DAPRO®DF 4164	0.50	1.0	0.77	n.ok (gel-particles)
DAPRO®DF 7005	0.50	1.8	0.70	n.ok (gel-particles)
DAPRO®DF 7010	0.50	0.6	0.92	n.ok (gel-particles)
DAPRO®DF 7015	0.50	1.6	0.77	n.ok (gel-particles)
Without defoamer: unstirred	--	0 cm	1.04	ok
Without defoamer	--	>10 cm	0.39	ok

海名斯·德谦

One-stop Total Solution Provider
一站式整体解决方案的伙伴

2009112 22

DAPRO DF 1760 **ELEMENTIS**

Evaluation of ELEMENTIS Defoamers in the APU 1062 Polyurethandispersion from Alberdingk-Boley

Defoamer	Loading (%)	Head-of-foam (cm)	Density g/ml	Spill-coated glass panels
DAPRO®DF 880	0.50	1.1	0.81	n.ok (gel-particles)
DAPRO®DF 900	0.50	1.0	0.80	n.ok (gel-particles)
DAPRO®DF 975	0.50	1.6	0.71	n.ok (gel-particles)
DAPRO®DF 1760	0.50	1.0	0.85	ok
DAPRO®DF 2162	0.50	0	1.02	n.i.O (Gelteilchen)
DAPRO®DF 3163	0.50	0	1.04	ok
DAPRO®DF 4164	0.50	0	1.02	n.ok (gel-particles)
DAPRO®DF 7005	0.50	0	1.02	n.ok (gel-particles)
DAPRO®DF 7010	0.50	0.2	1.00	n.ok (gel-particles)
DAPRO®DF 7015	0.50	0	1.01	n.ok (gel-particles)
Without Defoamer: unstirred	--	0	1.04	ok
Without Defoamer	--	>10	0.39	ok

DEUCHEM
ELEMENTIS SYSTEMS
海名斯·德谦

One-stop Total Solution Provider
一站式整体解决方案的伙伴

2009112 23

DAPRO DF 1760 **ELEMENTIS**

Evaluation of Elementis Defoamers in BASF SCX 8383 Acrylic emulsion system

→ Add while stirring	W/O	1	2	3
SCX 8383	20.00	20.00	20.00	20.00
Dreplus 210.745	--	--	--	--
DAPRO® DF 900	--	--	--	--
DAPRO® DF 1760	--	0.1	0.2	0.40
DAPRO® DF 2162	--	--	--	--
Acematt TS 100	0.50	0.50	0.50	0.50
Water	1.00	1.00	1.00	1.00
Density after stirring *	0.4758	--	--	--
Density after 1 h	0.6542	1.0444	1.0434	1.0421
Density after 16 h	1.0248	1.0452	1.0452	1.0448
Compatibility in matting paste	Foam	ok	ok	ok
Compatibility in paint	Foam	ok	ok	ok

* 15 minutes high speed mixer at 5 m/s

DEUCHEM
ELEMENTIS SYSTEMS
海名斯·德谦

One-stop Total Solution Provider
一站式整体解决方案的伙伴

2009112 24

DAPRO DF 2162

ELEMENTIS

Evaluation of Elementis Defoamers in BASF SCX 8383 Acrylic emulsion system

→ Add while stirring				
	W/O	1	2	3
SCX 8383	20.00	20.00	20.00	20.00
Dreuplus 210-745	-	-	-	-
DAPRO® DF 900	-	-	-	-
DAPRO® DF 1760	-	-	-	-
DAPRO® DF 2162	-	0.1	0.2	0.40
Acematt TS 100	0.50	0.50	0.50	0.50
Water	1.00	1.00	1.00	1.00
Density after stirring *	0.4758	-	-	-
Density after 1 h	0.5542	1.0436	1.0422	1.0419
Density after 16 h	1.0246	1.044	1.0434	1.0431
Compatibility in matting paste	Foam	Pin holes (fish eyes)	Pin holes (fish eyes)	Pin holes (fish eyes)
Compatibility in paint	Foam	ok	ok	ok

* 15 minutes high speed mixer at 5 m/s

2009112

德固赛·德谦

25

One-Stop Total Solution Provider
一站式整体解决方案供应商

DAPRO DF defoamers -水性环氧体系

ELEMENTIS

DAPRO DF 2162 /DF7015/DF1181 优异的抑泡性能

Loading:0.2%wt

DF2162 DF7015 DF1181 Com.1 Com.2 Blank

2009112

德固赛·德谦

26

One-Stop Total Solution Provider
一站式整体解决方案供应商

DAPRO DF defoamers -水性环氧体系

ELEMENTIS

DAPRO DF 1760 :
适合于清漆体系，不影响漆膜的透明性、光泽及流平性能，较少的漆膜缺陷

Blank

DAPRO DF 1760

Competitor

0.2%wt

2009112

德固赛·德谦

27

One-Stop Total Solution Provider
一站式整体解决方案供应商

DAPRO DF defoamers -水性环氧体系

ELEMENTIS

DAPRO DF 1181/ 2162 / 7015 : 推荐用于色漆与底漆体系，极佳的抑泡，同时对流平性能影响较小

0.4%wt

DAPRO DF-1181

DAPRO DF-2162

DAPRO DF-7015

2009112

德固赛·德谦

28

One-Stop Total Solution Provider
一站式整体解决方案供应商

RHEOLATE®

BENTONE®

THIXATROL®

NUOSPERS®

RHEOX®

DAPRO®

TINT-AYD®

Surface Tension Modifiers

DAPRO® Levaslip® Levaslip®

ELEMENTIS

2009112

德固赛·德谦

29

One-Stop Total Solution Provider
一站式整体解决方案供应商

Surface Tension Modifiers/流平剂

ELEMENTIS

DAPRO® Levaslip® Levaslip®

- 帮助基材润湿，改善流平
- 消除涂膜缺陷：
 - 橘皮
 - 缩孔
 - 露底
 - 针孔
 - 鱼眼

2009112

德固赛·德谦

30

One-Stop Total Solution Provider
一站式整体解决方案供应商

Surface Tension Modifiers/流平剂

ELEMENTIS

DAPRO® W-77 & DAPRO® U-99

- ✓ 50%，阴离子及非离子表面活性剂混合物，适合于所有水性工业涂料
- ✓ 不含硅和氟碳化合物
- ✓ 消除表面缺陷
- ✓ 提高底材润湿性能
- ✓ 极佳的重涂性能
- ✓ 在烤漆体系中使用稳定

DEUCHEM
海名斯·德谦

One-stop Total Solution Provider
一站式整体解决方案的伙伴

2009112 31

Surface Tension Modifiers/流平剂

ELEMENTIS

Typical Properties / 特性

Specifications	Dapro W-77	Dapro U-99
Solids %	50%	50%
Wt./Gal. (Lbs./Sp.Gr.)	8.6/1.03	8.4/1.01
Viscosity, cps	20-30	20-28
Surface Tension in Water at 0.5% (dynes/cm)	33	33
Flash Point °F/°C	123/51	123/51
FDA Cleared Non-Volatile Components	Yes	Yes
Suggested Level of Use %	0.25-1.0%	0.25-1.0%
VOC Lbs./Gal. (gr/L)	2.78/333	3.30/394

DEUCHEM
海名斯·德谦

One-stop Total Solution Provider
一站式整体解决方案的伙伴

2009112 32

Surface Tension Modifiers/流平剂

ELEMENTIS

	Levelol W-469	Levaslip W-461	Levaslip W-455
Composition/组成	Polyether modified polysiloxane/聚酯改性聚硅氧烷聚合物	Polyether modified polysiloxane/聚酯改性聚硅氧烷聚合物	Polyether modified polysiloxane/聚酯改性聚硅氧烷聚合物
Active content (%) /有效份	Ca.100	Ca. 80	Ca. 50
Feature/特点	Improve substrate wetting, Reduce surface tension, Provide film flow and leveling./提升底材润湿，降低表面张力	Reduce surface tension, imparts slip and mar resistance./降低表面张力，提高耐刮伤性能	Imparts slip, mar resistance and surface smoothness. Provide film flow and leveling./提升清爽，耐刮擦，改善流平

DEUCHEM
海名斯·德谦

One-stop Total Solution Provider
一站式整体解决方案的伙伴

2009112 33

Dynamic surface tension/动态表面张力

ELEMENTIS

DEUCHEM
海名斯·德谦

Primal WL-91/leveling agent 0.25%

One-stop Total Solution Provider
一站式整体解决方案的伙伴

2009112 34

Surface Tension Modifiers/流平剂

ELEMENTIS

Substrate Wetting efficiency / 优异的底材润湿性能

Control Levelol W-469 0.2%

Pure Acrylic Emulsion

DEUCHEM
海名斯·德谦

One-stop Total Solution Provider
一站式整体解决方案的伙伴

2009112 35

Surface Tension Modifiers/流平剂

ELEMENTIS

Control Levaslip 455 Levelol W-469

Primal WL-91/aluminium pigment /leveling agent 0.6%

DEUCHEM
海名斯·德谦

One-stop Total Solution Provider
一站式整体解决方案的伙伴

2009112 36

ELEMENTIS



BENTONE® Hectorite Clay Based Thickener / 锂蒙脱石增稠剂



37

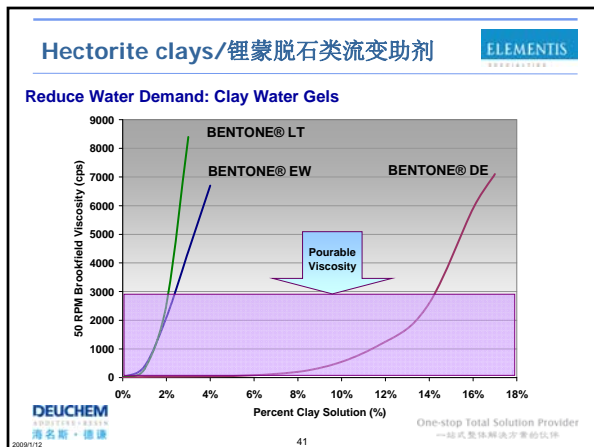
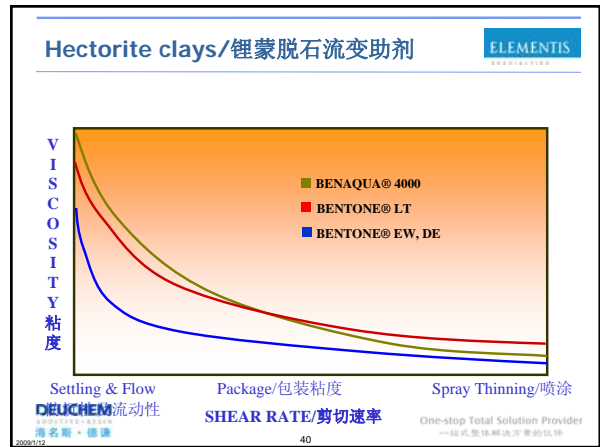
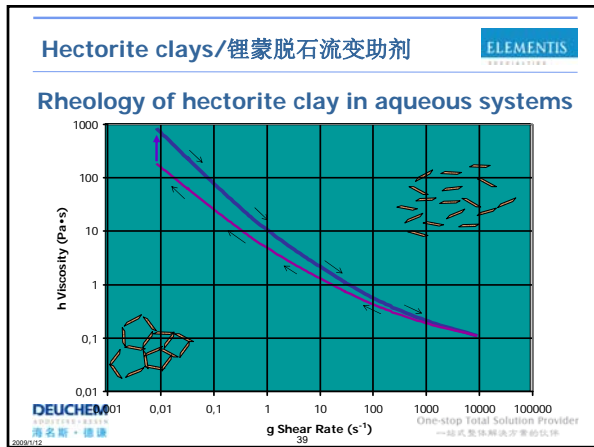
ELEMENTIS

Hectorite clays/ 锂蒙脱石流变助剂

Key characteristics/主要特性

- Give thixotropic flow and yield point / 优异的触变性及屈服值
- Highest suspension properties/最佳的悬浮性
- Key Properties/性能
 - Improved pump ability/提高泵送能力
 - Excellent sag control & suspension properties / 优异的抗流挂及悬浮性
 - Improved Syneresis/改善分水
 - Reduces viscosity change with change in temperature/降低涂料由于温度引起的粘度变化

38



ELEMENTIS

Hectorite clays/ 锂蒙脱石类流变助剂

BENTONE® LT -

- Organically modified clay/有机改性锂蒙脱石土
- Provide mid shear viscosity and in-can stability/ 提供中剪切粘度及罐内稳定性
- Suitable waterborne industrial coatings and colorants systems 适合于水性工业漆、高档水性建筑涂料、水性色浆

42

Hectorite clays/ 锂蒙脱石类流变助剂

BENTONE® EW - Refined modified clay

- Easy to disperse, excellent sag and suspension control
- 精细型锂蒙脱石粘土，易分散，极佳的抗流挂及悬浮性，适合于水性工业涂料、水性铝粉漆、珠光漆、水性木器漆

BENTONE® DE – Hyper dispersible clay

- Ultimate dispersibility, high solid pourable pre-gel 10% – 14%, improve sag & suspension control
- 超易分散锂蒙脱石粘土，可制成高固含预凝胶10%-14%，并可倾倒的预凝胶，提高抗流挂及悬浮性能
- 水性建筑涂料、工业漆等，水性色浆

One-stop Total Solution Provider
一站式整体解决方案的伙伴

2020/1/12 43

Hectorite clays/ 锂蒙脱石类流变助剂

BENTONE® LT

BENTONE® LT

- ✓ highly efficient / 高效
- ✓ imparts high viscosity / 较高的中低剪切粘度
- ✓ provides thermostable aqueous phase / 优异的储存稳定性

Brookfield Viscosity, CPs @ 10rpm, in Waterborne Protective Coatings Primer

Stormer Viscosity, KU in Waterborne Protective Coatings Primer

One-stop Total Solution Provider
一站式整体解决方案的伙伴

2020/1/12 44

Sag Control- 优异的抗流挂性能

BENTONE® LT

- ✓ Superior sag control
- ✓ 优异的抗流挂性能

Sag-resistance, Microns, Original Waterborne Protective Coatings Primer

Sag resistance, Microns, in Waterborne Protective Coatings Primer

One-stop Total Solution Provider
一站式整体解决方案的伙伴

2020/1/12 45

Storage Stability/ 优异储存稳定性

• BENTONE® LT

BENTONE® LT

- ✓ Prevents hard settlement / 防止硬沉淀
- ✓ Reduces syneresis / 抗分水
- ✓ Improves wash and scrub resistance / 提升耐洗刷性能

One-stop Total Solution Provider
一站式整体解决方案的伙伴

2020/1/12 46

Hectorite clays/ 锂蒙脱石类流变助剂

BENTONE® DE (New)
易分散型锂蒙脱石粘土

- Easy stir-in incorporation 优异的分散性
- Pourable Pregels: 10 - 14% 可制备更高固含的预凝胶 (10-14%)
- Excellent stability 更佳稳定性
- Improve pigment suspension 提高颜填料的悬浮性
- Control syneresis 抗分水
- Minimum affect on gloss 对光泽的影响更小

14% Pregel BENTONE® DE

One-stop Total Solution Provider
一站式整体解决方案的伙伴

2020/1/12 47

BENTONE® DE - 易分散性能

Ease of Dispersion

Milling Time (mins)	Spray Dried Hectorite Clay	BENTONE® DE
2	4% pregel	14% pregel
5	65 μm	12 μm
20	50 μm	12 μm
40	30 μm	12 μm
60	25 μm	12 μm

Dispermat 40mm @ 3000rpm

One-stop Total Solution Provider
一站式整体解决方案的伙伴

2020/1/12 48

Improved Stability/提升储存稳定性 ELEMENTIS

Two Weeks Syneresis / 优异的防沉性能

Industrial Baking Enamel B/O Acrylic Dispersion

DEUCHEM
海名斯·德谦

2009112 49

BENTONE® DE/增强铝粉排列 ELEMENTIS

BENTONE DE

- 有效防止铝粉沉淀
- 最佳的铝粉排列效果
- 优异的附着力
- 不影响掉银及耐醇性

Silver Metallic Coating In Acrylic Emulsion

水性铝粉漆的排列效果(Alberdingk AS 2615)

DEUCHEM
海名斯·德谦

One-stop Total Solution Provider
一站式整体解决方案的伙伴

2009112 50

ELEMENTIS

RHEOLATE®

BENTONE®

THIXATROL®

NUOSPERSE®

RHEOX®

DAPRO®

TINT-AYD®

RHEOLATE® Polyurethane Associative Thickeners / 聚氨酯聚醚缔合型增稠剂

DEUCHEM
海名斯·德谦

2009112 51

RHEOLATE® PU 增稠剂 ELEMENTIS

亲水链 疏水基团

$$R^2(OCH_2CH_2)_n-O-CO-NH-R^1-NH-CO-O-(CH_2CH_2O)_mR^2$$

micelles

基料/颜料/填料

DEUCHEM
海名斯·德谦

One-stop Total Solution Provider
一站式整体解决方案的伙伴

2009112 52

RHEOLATE® PU 增稠剂 ELEMENTIS

PEUPU(聚氨酯型缔合型) (经典型)

RHEOLATE® 212 > 提供ICI粘度和牛顿型流体, 环保型
> 提高流平性及漆膜丰满度, 极佳的抗飞溅性、储存稳定性、展色性

RHEOLATE® 244 > 提供中高剪切粘度, 优异的抗飞溅性
> 优异的展色性与储存稳定性

RHEOLATE® 278 > 提供良好中高剪切粘度, 在KU粘度和ICI粘度间保持最佳的平衡, 通用性强
> 优异的展色与储存稳定性

RHEOLATE® 255 > 提供中低剪切粘度, 优异的抗流挂, 适合于水性建筑与工业涂料

RHEOLATE® 266/288 > 提供低剪粘度, 优异的抗流挂与悬浮性, 适合于喷涂施工体系, 特别是水性工业涂料

DEUCHEM
海名斯·德谦

One-stop Total Solution Provider
一站式整体解决方案的伙伴

2009112 53

RHEOLATE® PU 增稠剂 ELEMENTIS

PEUPU(聚氨酯型缔合型) (经典型)

KU Viscosity

Shear Rate

RHEOLATE 212 (0.3%)

RHEOLATE 244 (1.2%)

RHEOLATE 278 (1.0%)

RHEOLATE 255 (0.7%)

RHEOLATE 266 (0.5%)

RHEOLATE 288 (0.3%)

DEUCHEM
海名斯·德谦

One-stop Total Solution Provider
一站式整体解决方案的伙伴

2009112 54

RHEOLATE® PU 增稠剂

ELEMENTIS

PEUPU(聚氨酯型缩合型) (经典型)

更佳亲水
更高IC粘度
对中游切粘度影响更小

更佳疏水
更低的剪切稀化
更有效地提高中剪切粘度

DEUCHEM
2009112 55 One-stop Total Solution Provider
海克斯·德谦 一站式整体解决方案专家伙伴

RHEOLATE® PU 增稠剂

ELEMENTIS

水性工业涂料用
环保型聚氨酯型缩合型流变助剂

PUR thickeners/ 聚氨酯缩合型	有效成分%	有机锡 (Y/N)	特性
RHEOLATE® FX 1010	50%	No	提供中低剪粘度, 高光泽, 无色透明, 提高喷涂及刷涂施工性
RHEOLATE® FX 1070	40%	No	提供中高剪粘度, 高光泽, 易添加, 无色透明, 优异的漆膜丰满度及流平
RHEOLATE® 299 (New)	25%	No	提供低剪粘度, 高光泽, 透明性佳, 易添加, 优异的抗流挂与雾化性能

DEUCHEM
2009112 56 One-stop Total Solution Provider
海克斯·德谦 一站式整体解决方案专家伙伴

RHEOLATE® PU 增稠剂

ELEMENTIS

DEUCHEM
2009112 57 One-stop Total Solution Provider
海克斯·德谦 一站式整体解决方案专家伙伴

RHEOLATE® PU 增稠剂

ELEMENTIS

Alberdingk 2512 PUA emulsion system

Results	RHEOLATE FX 1010	RHEOLATE FX 1070	RHEOLATE 288
Co-solvent	DAPRO FX-510	DAPRO FX-510	DAPRO FX-510
Loading % wt	0.94	0.94	0.94
Brookfield viscosity,CPs,initial test			
10 rpm	13040	4880	11960
20 rpm	8580	3740	6840
50 rpm	3970	2592	2960
100 rpm	2248	1884	1616
Stormer viscosity ,KU,initial	87.8	86.3	78.8
Brookfield viscosity,CPs,overnight			
10 rpm	13120	4520	12040
20 rpm	8560	3540	7100
50 rpm	4008	2440	3088
100 rpm	2260	1900	1660
Stormer viscosity ,KU,overnight	90.2	87.6	81.3

DEUCHEM
2009112 58 One-stop Total Solution Provider
海克斯·德谦 一站式整体解决方案专家伙伴

RHEOLATE® PU 增稠剂

ELEMENTIS

Alberdingk 2512 PUA emulsion system

Results	RHEOLATE FX 1010	RHEOLATE FX 1070	RHEOLATE 288
Co-solvent	DPh B	DPh B	DPh B
Loading % wt	0.94	0.94	0.94
Brookfield viscosity@CPs,Initial			
10 rpm	424	212	2760
20 rpm	414	208	2705
50 rpm	390	208	2144
100 rpm	374.4	208	1514
Stormer viscosity ,KU	58.6	53.5	81
Brookfield viscosity@CPs,Overnight			
10 rpm	512	318	2680
20 rpm	496	312	2670
50 rpm	438.6	278	2180
100 rpm	374	245	1520
Stormer viscosity ,KU	59.4	53.5	81.2

DEUCHEM
2009112 59 One-stop Total Solution Provider
海克斯·德谦 一站式整体解决方案专家伙伴

RHEOLATE® PU - PUA system

ELEMENTIS

Note: 50% AC 2512 Clear System, RA= 0.94%wt loading

DEUCHEM
2009112 60 One-stop Total Solution Provider
海克斯·德谦 一站式整体解决方案专家伙伴

RHEOLATE® PU -PUD system

ELEMENTIS

Brookfield viscosity @CPs, in Bayer CUR99 PU dispersion system, 0.6% wt

RHEOLATE® FX 1010 and RHEOLATE® 288 both gave excellent thickening efficiency in PUD dispersion / RHEOLATE® FX 1010 和 RHEOLATE® 288 提供优异的增稠性能

DEUCHEM
海名斯·德谦
One-stop Total Solution Provider
一站式整体解决方案的伙伴

2009/1/2 61

High gloss acrylic clearcoat/高光清漆

Neocryl XK 95 – DSM

ELEMENTIS

	Solids %固含	Brookfield 10 rpm	Sag um/抗流挂	Gloss 60° /Haze	Appearance/外观	Water resistance/耐水性
Original (PU+ASE)	0.30	6400 mPa.s	400 um	67/442	milky/奶白	一般
RHEOLATE 288	0.08	7600	400	114/332	Clear/透明	优异
Comp 1- PU	0.10	6000	400	99/270	milky/奶白	一般
comp 2 - PU	0.15	6800	400	114/325	Milky/奶白	一般
Comp 3 - ASE	0.22	6400	>500	67/448	milky/奶白	一般

RHEOLATE 288: Highest efficiency/高效 Best water resistance/最佳耐水 Equal application/优异的施工性 Clearest wet & dry film/最佳透明度

DEUCHEM
海名斯·德谦
One-stop Total Solution Provider
一站式整体解决方案的伙伴

2009/1/2 62

Exterior wood coatings, semi-gloss / 外用木器半光涂料

ELEMENTIS

Raw Materials	wt%
SCX 8383	20
DAPRO DF 2162	0.4
Acematt TS 100	0.5
Water	1
SCX 8383	65
Dowanol PhB	2.5
Texanol	5
Ultraube D-819	3
PUR thickeners	1.5
DAPRO W-77	0.5
Colorant	0.2
Colorant	0.39
Colonyl Black	0.01
Total	100

DEUCHEM
海名斯·德谦
One-stop Total Solution Provider
一站式整体解决方案的伙伴

2009/1/2 63

RHEOLATE® 299 (New)

BENTONE®
THIXATROL®
NUOSPERSER®
RHEOX®
DAPRO®
TINT-AYD®

Polyurethane Associative Thickeners
APE-free and Organotin-free
/不含有机锡和APE

DEUCHEM
海名斯·德谦
One-stop Total Solution Provider
一站式整体解决方案的伙伴

2009/1/2 64

RHEOLATE® 299

ELEMENTIS

- **PHYSICAL PROPERTIES**
- Composition polyether polyurethane dispersion/聚氨酯缩合型流变助剂
- Colour / 颜色: Form White liquid / 半透明状
- Density / 比重: 1.04 g/cm3
- Viscosity / 粘度: 5000 mPa.s, 10 rpm
- Non-volatile / 活性份: 25%wt
- Volatile / 挥发份: 75% (57% water/水/18% diethylene glycol monobutyl ether/二乙醇单丁醚)

DEUCHEM
海名斯·德谦
One-stop Total Solution Provider
一站式整体解决方案的伙伴

2009/1/2 65

RHEOLATE® 299

ELEMENTIS

- **KEY PROPERTIES/特性**
- APE-free and organotin-free/不含APE 和有机锡
- PH independent/对PH不敏感
- Highly efficient/高效
- Strongly shear thinning flow behaviour/剪切稀化佳
- Excellent sag resistance and anti-settling/优异的抗流挂
- Good flow and leveling/良好的流平与流动
- Limited influence on water sensitivity and corrosion resistance/良好的耐水性和耐腐蚀性能
- Excellent optical properties of the final coatings/优异的透明性与光泽

DEUCHEM
海名斯·德谦
One-stop Total Solution Provider
一站式整体解决方案的伙伴

2009/1/2 66

RHEOLATE® 299

Applications:/主要应用

- Pigmented and clear waterborne industrial coatings /水性高光面漆与清漆
- Waterborne industrial wood&plastic coatings/水性木器与塑胶涂料
- Waterborne Protective Coatings coatings/水性金属防腐涂料
- Aqueous sealants/水性胶粘剂

海名斯·德谦

2009112

67

One-stop Total Solution Provider
一站式整体解决方案的伙伴

RHEOLATE® PU Thickeners

海名斯·德谦

2009112

68

One-stop Total Solution Provider
一站式整体解决方案的伙伴

RHEOLATE® 299

海名斯·德谦

2009112

69

One-stop Total Solution Provider
一站式整体解决方案的伙伴

RHEOLATE® 299_ WB Industrial Coatings /水性工业面漆 (Formula)

Raw Materials	Function	Parts by weight [%]
Operation 1: Lay in the denoted order under stirring		
Demin. Water	Solvent	4.12
Butylglycol	Co-Solvent	1.17
Ammoniac 25%	Neutral Agent	0.11
DAPRO®DF 1760	Defoamer	0.06
NUOSPERS®600	Dispersing Agent	1.00
NUOSPERS®365	Dispersing Agent	0.33
Operation 2: Add under stirring in operation 2		
KRONOS 2100	Pigment	20.50
Operation 3: Disperse 15 minutes at 21 m/s		
Operation 4: Lay in the denoted order (main vessel)		
Sotolux 6764	Resin	68.4
Ammoniac 25%	Neutral Agent	0.16
DAPRO®DF 1760	Defoamer	0.05
Demin water	Solvent	0.84
Operation 5: Add operation 1-3 in operation 4		
Operation 6: Mix separately and add under stirring in operation 1-5		
Texanol	Co-Solvent	1.25
MPA	Co-Solvent	1.15
Epilman TXB	Co-Solvent	0.15
Soflytol 104 (50% in DPM)	Defoamer	0.55
Operation 7: Adjust the necessary viscosity		
RHEOLATE®299	Rheological Additive	0.16
Total		100.00

海名斯·德谦

2009112

70

One-stop Total Solution Provider
一站式整体解决方案的伙伴

RHEOLATE® 299_ WB Industrial Coatings /水性工业面漆 (Results)

Additive	RHEOLATE 299	RHEOLATE 206	RHEOLATE 288	RHEOLATE 125	Competitor
Loading	0.16%	0.19%	0.09%	1.35%	0.12%
pH-value	8.1	8.1	8.1	8.6	8.1
Flow-Cup 6mm	18-19"	19"	18-19"	18-19"	19"
KU	75	78	77	78	77
ICI	0.4	0.5	0.4-0.5	0.9	0.4-0.5
Brookfield viscosity spindle 4					
10 rpm	6080	2620	2960	5120	4780
20 rpm	3840	2180	2460	3100	3410
50 rpm	1796	1504	1620	1612	1862
100 rpm	994	1054	1020	1000	1056

海名斯·德谦

2009112

71

One-stop Total Solution Provider
一站式整体解决方案的伙伴

RHEOLATE® 299_ WB Industrial Coatings /水性工业面漆 (Flow Behaviour)

海名斯·德谦

2009112

72

One-stop Total Solution Provider
一站式整体解决方案的伙伴

RHEOLATE® 299_ WB Wood Coatings / 水性木器清漆 (Neocryl XK-12)

ELEMENTIS

Sag Control, Microns, overnight

Gloss, 60° in XK-12

➤ Best Sag Control/最佳的抗流挂
➤ Without influence on gloss (60 Degree)/高光泽

One-stop Total Solution Provider
一站式整体解决方案的伙伴

RHEOLATE® 299_ WB Wood Coatings / 水性木器清漆 (Neocryl E-129)

ELEMENTIS

Raw materials	RHEOLATE 299	RHEOLATE 288	Competitor
Loading%wt(50%)	2	2	1.6
Neocryl E-129	70	70	70
Water	17.1	17.1	17.1
Levelol 469	0.3	0.3	0.3
DPM	5	5	5
DPhB	3	3	3
DAPRO DF-1760	0.3	0.3	0.3
SLIP-AYD FS 444	0.3	0.3	0.3
PUR Thickeners	2	2	1.6
Water	2	2	2.4
Total	100	100	100

DEUCHEM
海名斯·德谦

One-stop Total Solution Provider
一站式整体解决方案的伙伴

RHEOLATE® 299_ WB Wood Coatings / 水性木器清漆 (Neocryl E-129)

ELEMENTIS

Brookfield Viscosity, CPs @60rpm, in Neocryl E-129

Brookfield Viscosity, CPs @60rpm, in Neocryl E-129

➤ Brookfield Viscosity:
RHEOLATE 299>RHEOLATE 288> Competitor

DEUCHEM
海名斯·德谦

One-stop Total Solution Provider
一站式整体解决方案的伙伴

RHEOLATE® 299_ WB Wood Coatings / 水性木器清漆 (Neocryl E-129)

ELEMENTIS

Sag Control, Microns, in Neocryl E-129

Gloss, 60°, in Neocryl E-129

➤ Sag Control/抗流挂:
RHEOLATE 299>RHEOLATE 288> Competitor

DEUCHEM
海名斯·德谦

One-stop Total Solution Provider
一站式整体解决方案的伙伴

RHEOLATE® 299_ WB Sliver Metallic Coating / 水性铝粉漆

ELEMENTIS

Raw materials	Sample A wt%	Sample B wt%
	RHEOLATE 299 / BENTONE DE	RHEOLATE FX 1010 / BENTONE DE
Thickeners		
Mill-Base		
Water	15.52	14.52
DPhB	3.7	3.7
BCS	3.7	3.7
Alberdingk AS 2615	55	55
DAPRO DF1760	0.5	0.5
BENTONE DE (10%pre-gel)	5	5
RHEOLATE 299	2	/
RHEOLATE FX1010 (50%)	/	3
<i>Dispersing for around 10 minutes, then add below ALUMINIUM PIGMENT Paste</i>		
PM	4.5	4.5
Water	2.6	2.6
NUOPERSE FX365	0.28	0.28
Hydrolan S2156	7	7
Levelol W-469	0.2	0.2
Total	100	100

DEUCHEM
海名斯·德谦

One-stop Total Solution Provider
一站式整体解决方案的伙伴

RHEOLATE® 299_ WB Sliver Metallic Coating / 水性铝粉漆

ELEMENTIS

➤ RHEOLATE 299 和 BENTONE DE 搭配使用, 获得良好的雾化效果和铝粉排列效果

DEUCHEM
海名斯·德谦

One-stop Total Solution Provider
一站式整体解决方案的伙伴

Thank You !!!

www.elementis-specialties.com

Walee Wang (Mr.)
Technical Service Manager

Walee.Wang@elementis.com
Phone : +86 -13816116438

CHINA
Elementis Specialties, Inc.
99, Liangyang Road,
Songjiang Industrial Zone,
Shanghai 201613 China.
Tel: +86.21.5774 0348-706
Fax: +86.21.5774 5356

Disclaimer

The information in this publication is, to the best of our knowledge, true and accurate, but since the conditions of use are beyond our control, no warranty is given or to be implied in respect of such information. In every case, caution must be exercised to avoid violation or infringement of statutory obligations and any rights belonging to a third party. We are, at all time, willing to study customers' specific outlets involving our products in order to enable their most effective use.

91

Information and Samples

For more information on Elementis Specialties products, please contact:

EUROPE

Elementis Specialties GmbH
Stalberger Street 370,
50933 Köln,
Germany
Tel: +49.221.2923 2000
Fax: +49.221.2923 2010

REST OF ASIA

Elementis Specialties, Inc.
Lot PT 55, 64 & 65, Jalan Hulu Tinggi 26/6,
Section 26, 40400 Shah Alam,
Selangor Darul Ehsan, Malaysia
Tel: +603.5191 9979
Fax: +603.5191 6811

AMERICAS

Elementis Specialties, Inc.
PO Box 700, 329 Wyckoffs Mill Road
Highstown, New Jersey 08520, USA
della.adkins@elementis-na.com
Tel: +1.609.443 2505
Fax: +1.609.443 2422

CHINA

Elementis Specialties, Inc.
Deuchem (Shanghai) Chemical Co., Ltd.
99, Liangyang Road
Songjiang Industrial Zone
Shanghai 201613 China.
Tel: +86.21.5774 0348
Fax: +86.21.5774 5356

www.elementis-specialties.com

Disclaimer

The information in this publication is, to the best of our knowledge, true and accurate, but since the conditions of use are beyond our control, no warranty is given or to be implied in respect of such information. In every case, caution must be exercised to avoid violation or infringement of statutory obligations and any rights belonging to a third party. We are, at all time, willing to study customers' specific outlets involving our products in order to enable their most effective use.

92