

ELEMENTIS

SPECIALTIES

New Eco-friendly Wetting Agents and PUR thickeners Introduction

新环保型润湿剂与聚氨酯流变助剂介绍

Walee Wang / 王全义
Technical Service Manager



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一站式整体解决方案的伙伴

Agenda/ 内容概要

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- Current Eco-friendly Coating Popular Problems/目前水性环保型涂料常规问题解析
- New APE-free Wetting Agent NUOSPERSE ® FN211/新环保低起泡型非离子润湿剂NUOSPERSE ® FN211
- Waterborne PUR Thickeners History&Progress/水性PUR缔合型流变助剂最新发展
- The 3rd Generation Nonionic PUR Rheology Modifiers/新一代环保型非离子PUR缔合型流变助剂
- How to optimize Eco-friendly Coatings Performance With The 3rd Generation PUR Thickeners/如何应用新型非离子PUR缔合型流变助剂来优化涂料配方

Current Eco-friendly Coating Popular Problems/ 环保型涂料常规问题解析

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- APE/VOC/Odor/Organic Tin/环保问题
- Balance between sag control and leveling / 平衡性能
- Thickening efficiency / 增稠效率
- Color development and rub-up issues / 展色性能
- Spatter resistance / 抗飞溅
- Scrub resistance / 耐湿擦
- Water resistance/Gloss / 耐水性 / 光泽
- Compatibility issues with different binders/相容性问题

NUOSPERSE® FN 211

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Typical properties/物性

- Appearance 20°C: clear liquid/透明液体
- Ion type: nonionic/非离子型表面活性剂
- Active content %m: 99-100%
- HLB value: approx 12.5

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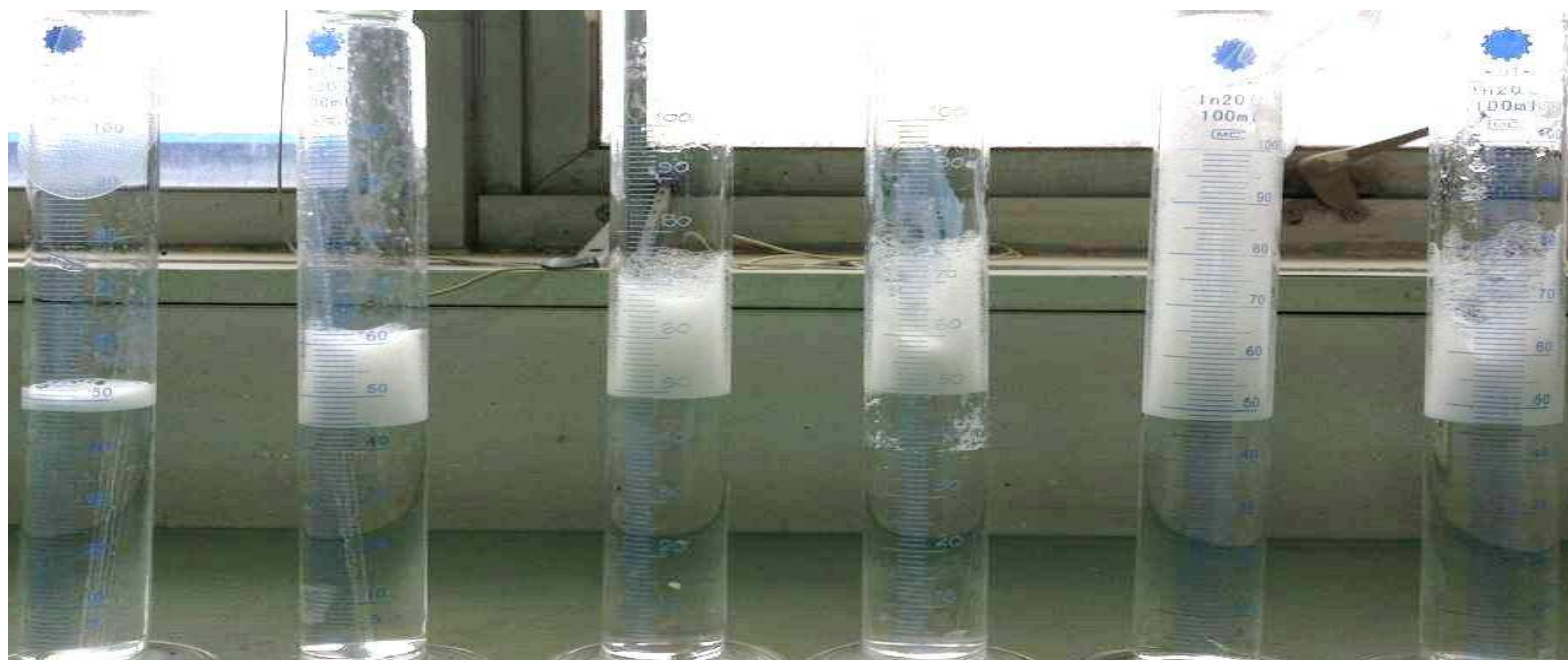
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- Labeling free, APE-free, NO-VOC, low odor/环保型，不含 APE,VOC，净味型
- Excellent Low-temperature stability/优异低温储存稳定性
- Less foaming in water/低起泡性能
- To improve color development, reduces flocculation, highest pigment loading/提高展色性能，有效抗浮色发花
- Used in NO-VOC, low odor paints and pigment concentrates/适合环保净味型涂料与色浆
- To improve paints storage stability/提升储存稳定性能

NUOSPERSE® FN 211

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Less foaming/极佳的低起泡性能 (0.2% in Water)



NUOSPERSE® FN 211 NUOSPERSE® FN270

Com.1

Com.2

Com.3

Com.4

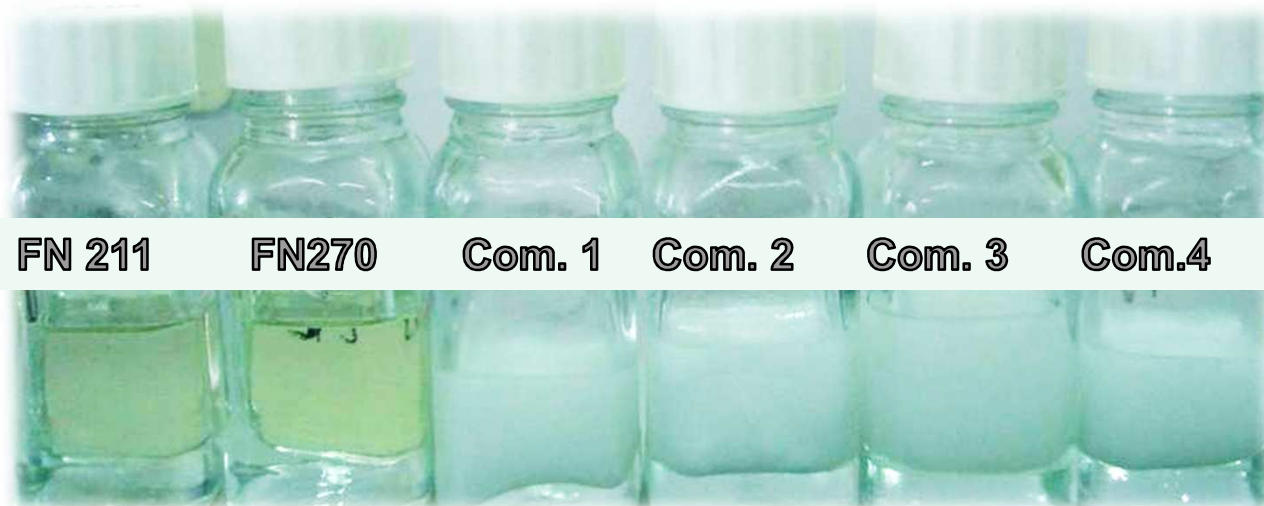
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Excellent Low-temperature stability (after a week at 2°C)
/良好的低温储存稳定性



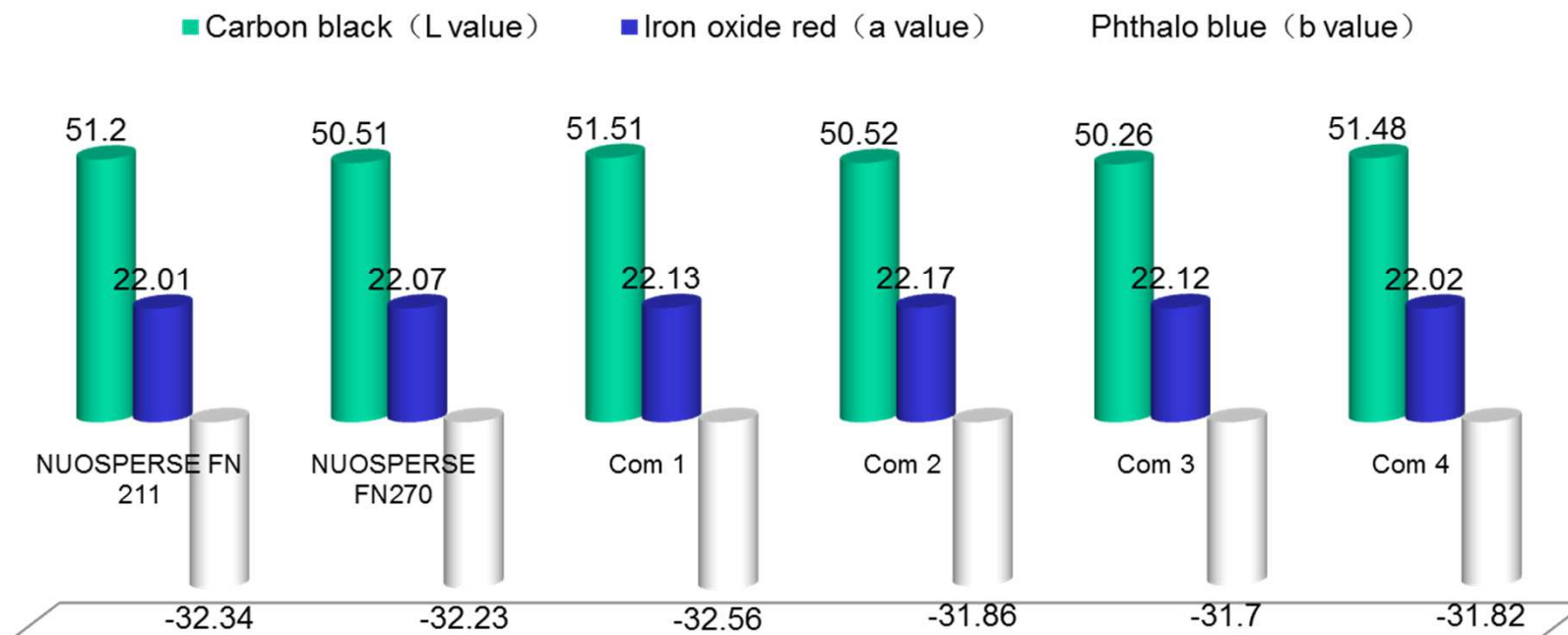
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Color development ,in 60% PVC interior wall paint system
based on Styrene Acrylic Emulsion

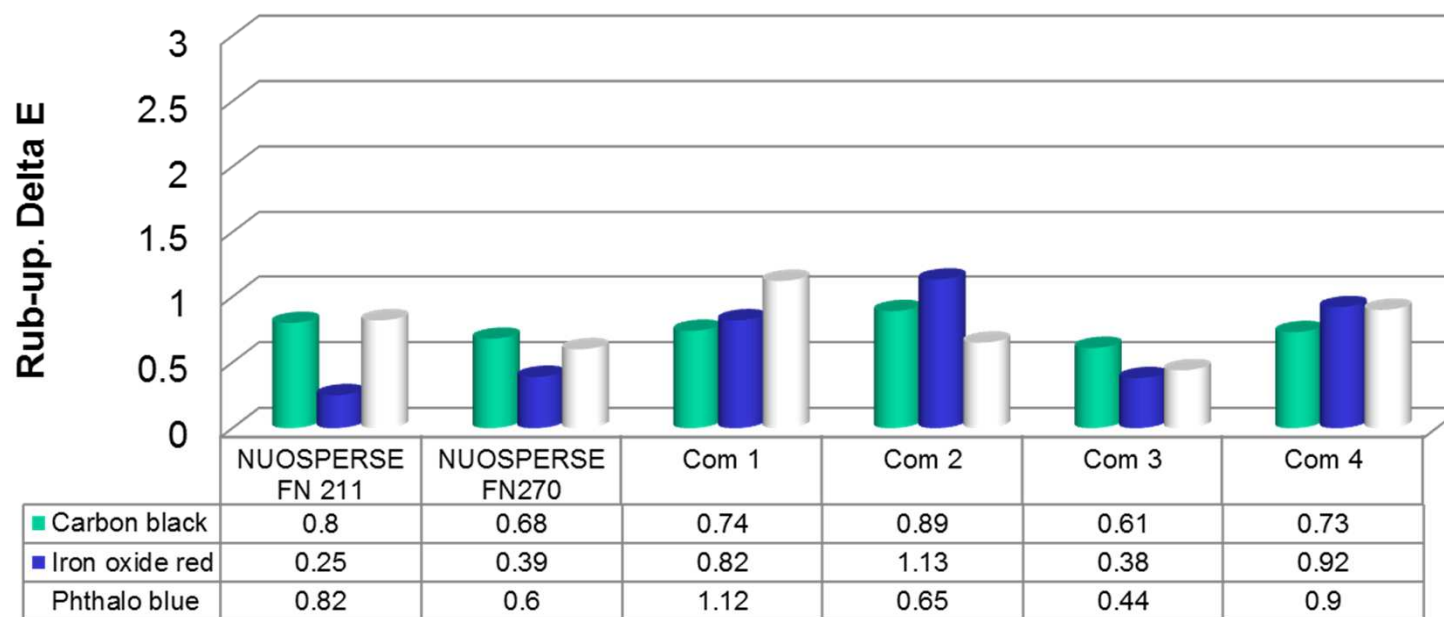


NUOSPERSE ® FN 211 提供良好展色性能

NUOSPERSE® FN 211

ELEMENTIS
SPECIALTIES

Rub-up Delta E, in 60% PVC interior wall paint system
based Styrene Acrylic Emulsion

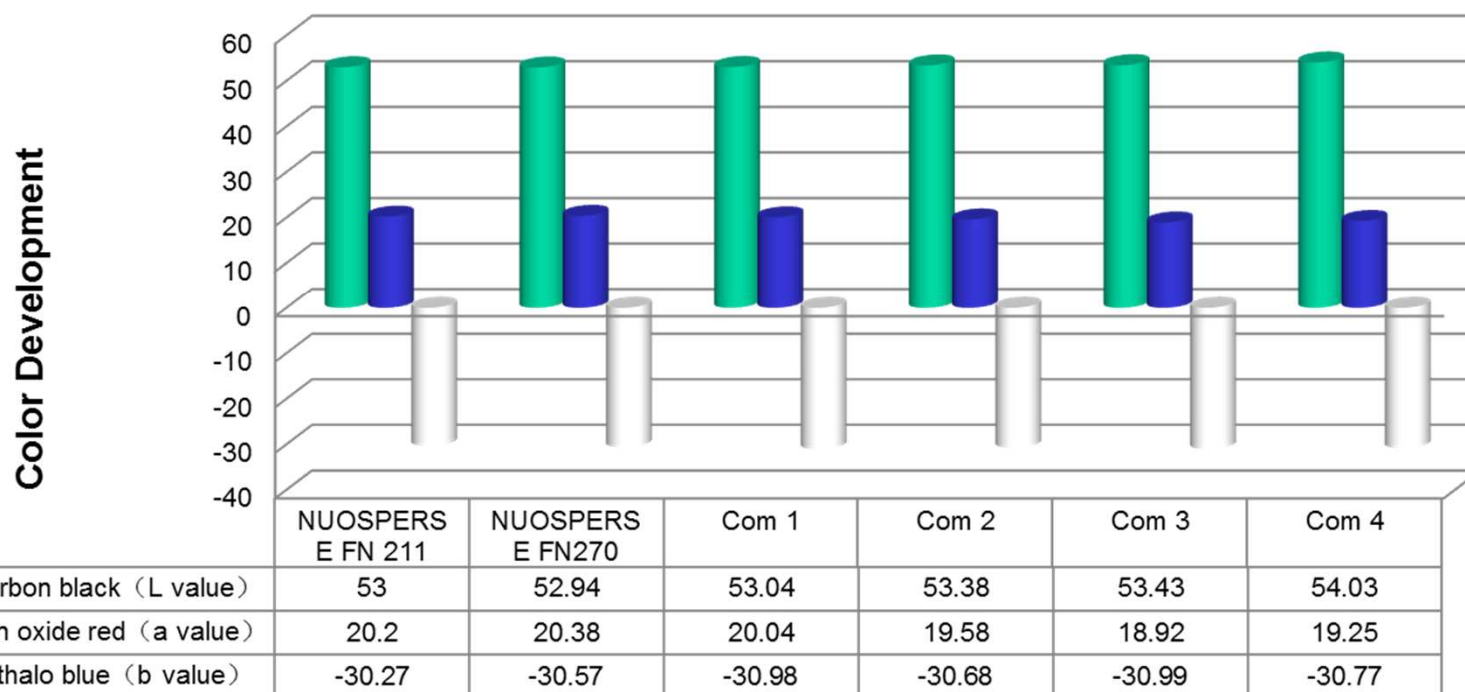


NUOSPERSE® FN 211 提供良好的指擦色性能.

NUOSPERSE® FN 211

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SPECIALTIES

Color development , in 56% PVC interior wall paint system
based on VAE Emulsion

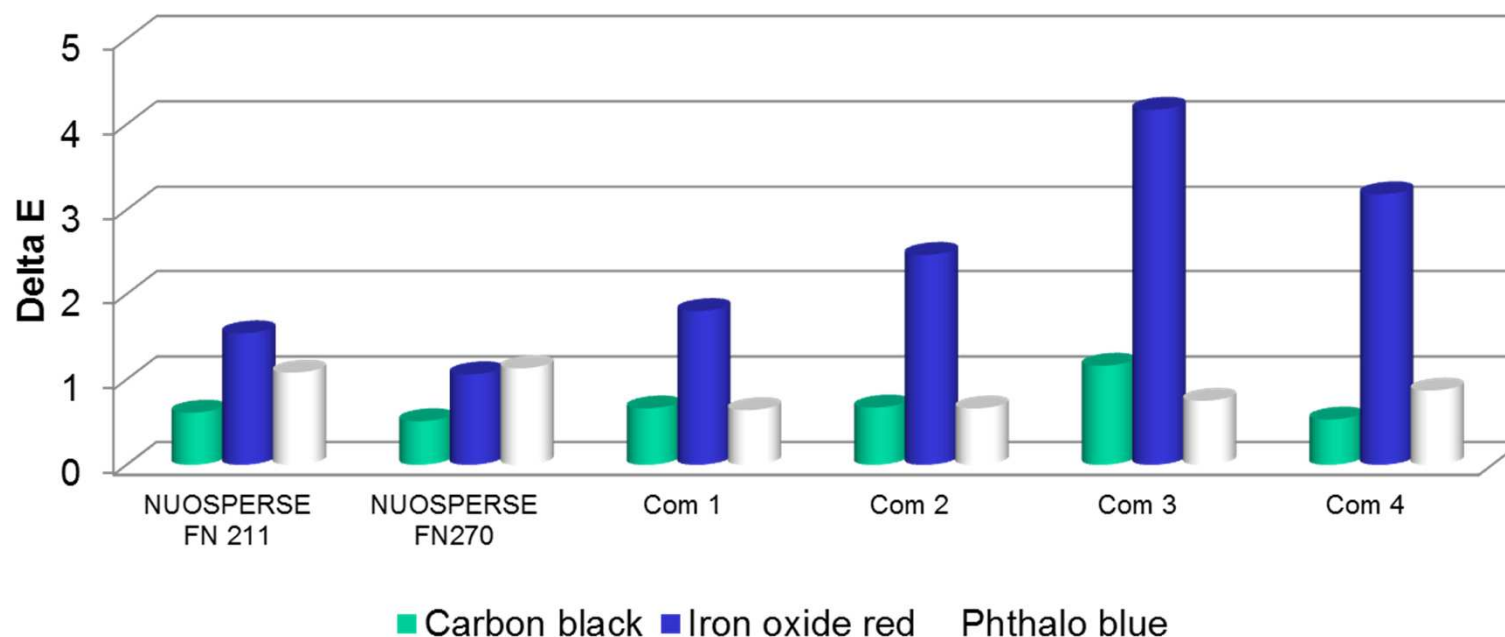


NUOSPERSE ® FN 211 提供良好的展色性能

NUOSPERSE® FN 211

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Rub-up Delta E, in 56% PVC interior wall paint system
based on VAE emulsion



NUOSPERSE ® FN 211 提供良好的指擦色性能.



RHEOLATE®

BENTONE®

THIXATROL®

NUOSPERSE®

RHEOX®

DAPRO®

TINT-AYD®

Waterborne PUR Thickeners History&Progress

/水性PUR缔合型流变助剂最新发展

RHEOLATE 200 series (第一代-经典型)

RHEOLATE 600 series (第二代-环保型)

RHEOLATE CVS series (第三代-环保功能型)

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RHEOLATE[®] PU Thickeners / PU 增稠剂

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Key features 特征

- pH independent (2-12) 不受pH 影响 (2-12)
- Excellent flow & leveling 优异流态与流平
- Excellent spatter resistance 优异抗飞溅性能
- Easy to use and not affected gloss 易添加，同时不影响光泽
- Flowable liquid 流动液体
- Provide High shear viscosity build 主要提供中高剪切粘度
- Water resistance 优异的耐水性

RHEOLATE ® PU Thickeners

/ PU 增稠剂

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R-350 R-212 R-244 R-278 R-300 R-255 R-266 R-288

←
/Hydrophilic/亲水型

Hydrophobic/疏水型 →

- Good syneresis control/抗分水
 - Excellent flow & leveling/流动流平
 - Low package efficiency/低包装效率
 - High shear build/高剪切粘度
 - Good color acceptance/展色性佳
- Good flow and leveling/流动
 - High shear thinning/剪切稀化
 - Low shear build & KU/低剪粘度
 - Fair color acceptance/较弱展色
 - Associative viscosity development/优异的缔合性



RHEOLATE®

BENTONE®

THIXATROL®

NUOSPERSE®

RHEOX®

DAPRO®

TINT-AYD®

RHEOLATE CVS® 10/ RHEOLATE CVS® 11

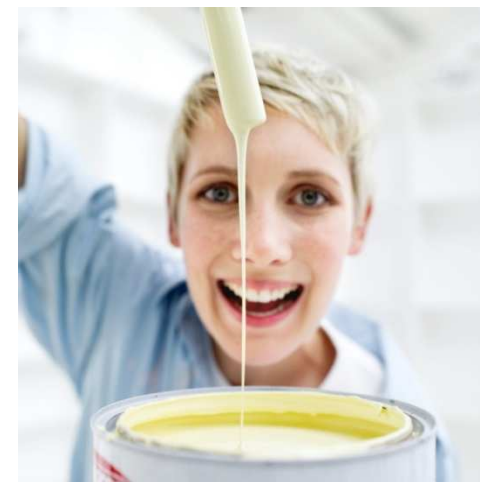
**The New Generation Nonionic PUR
Rheology Modifiers/新一代非离子PUR
缔合型流变助剂**

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➤ Newer Eco-friendly Rheological needs identified:

/环保型流变助剂新需求

- Improved thickening efficiency/提升增稠效率
- Improved sag/flow balance/提升流挂与流平平衡性
- Color viscosity stability/调色漆的粘度稳定性
- Improved color properties/提升展色性能



RHEOLATE CVS® was developed to provide a solution
可以提供解决方案

RHEOLATE CVS®

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- RHEOLATE CVS® thickeners are non-ionic associative rheology modifiers designed for use in low to zero VOC binder systems. 非离子缔合型流变助剂，应用与环保型水性涂料体系

➤ RHEOLATE CVS® -10

- Effective KU builder targeted to improve viscosity loss on tinting./提供良好的KU粘度，同时具有优异的调色稳定性能

➤ RHEOLATE CVS® -11

- Effective KU builder with some ICI viscosity contribution. /提供良好的KU粘度和ICI粘度，极佳的流动流平性能，优异的调色稳定性

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RHEOLATE CVS® Key Benefits/优点

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- ✓ Low odor, VOC-free, APE-free/净味、不含VOC,不含APE
- ✓ Good balance of sag resistance, and brushability/在抗流挂/刷涂性之间保持优异的平衡性能
- ✓ Superior levelling property/极佳的流平性能
- ✓ Superior viscosity stability on colorant addition/极佳的调色稳定性能
- ✓ Good roller spatter resistance/优异的抗飞溅
- ✓ Excellent storage stability/优异的储存稳定性



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RHEOLATE CVS® /主要技术参数

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Typical Characteristics/主要技术参数

	RHEOLATE CVS® 10	RHEOLATE CVS® 11
Type	Highly efficient KU builder/提供中低剪切粘度	Efficient mid-shear thickener/提供中剪切粘度
% active solids	15	20
Compliance	APE free	APE free
% VOC	0.01	0.01

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* VOC determined by ASTM D 6883-03

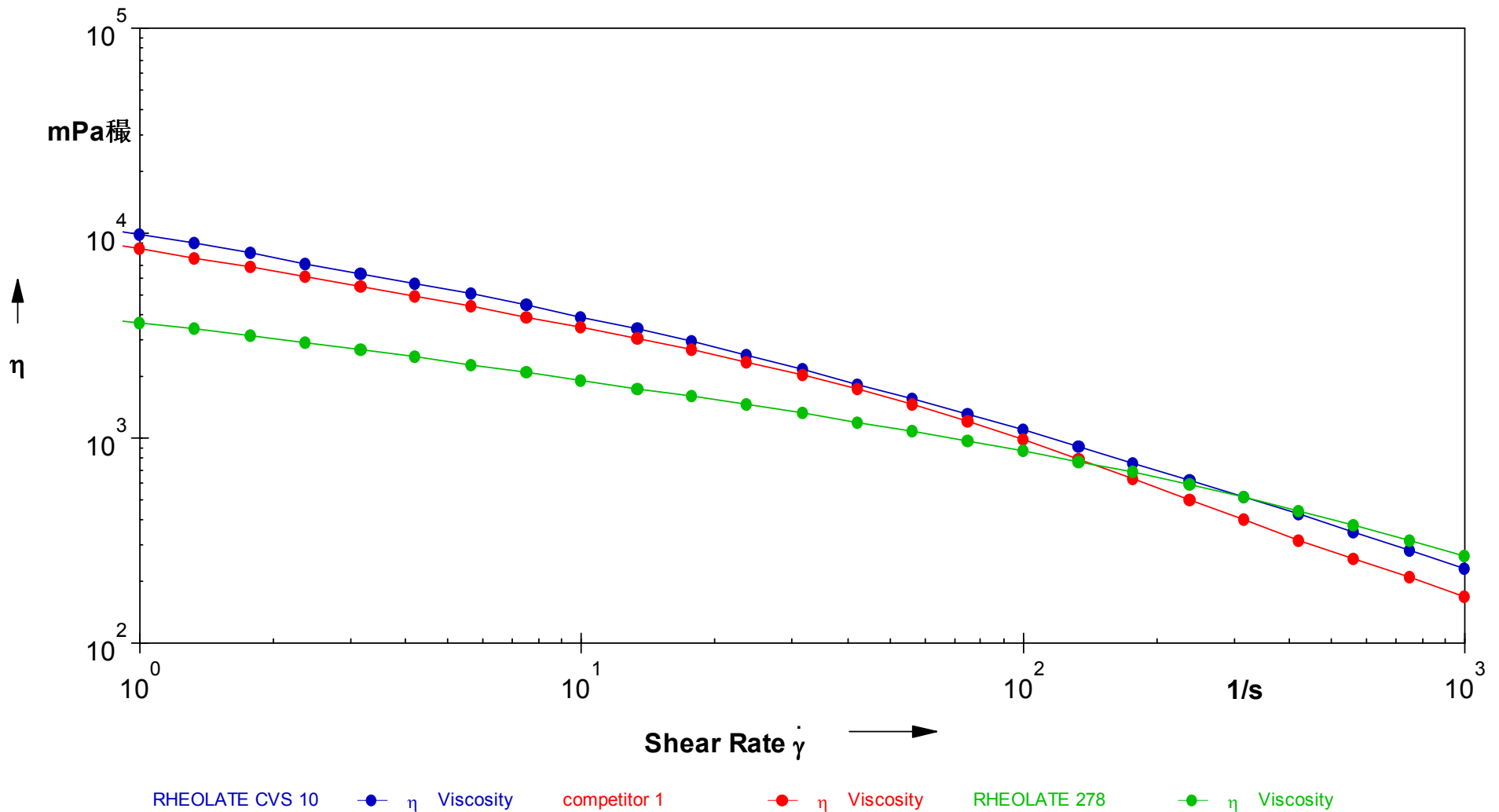
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RHEOLATE CVS ® 10

PVC 40% Acrylic Rheograms /流变图



Flow Behaviour Comparison

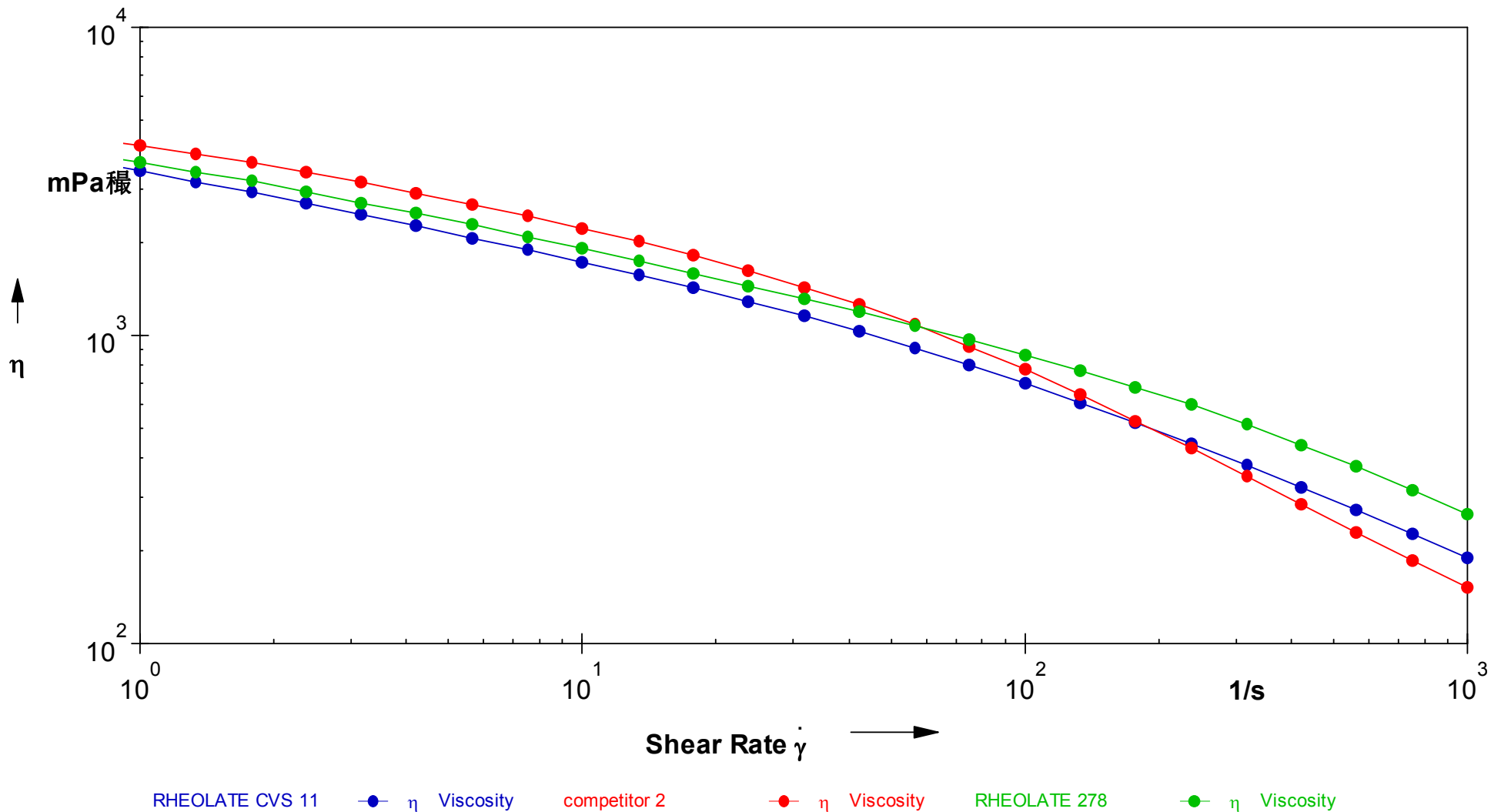


RHEOLATE CVS ® 11

PVC 40% Acrylic Rheograms /流变图



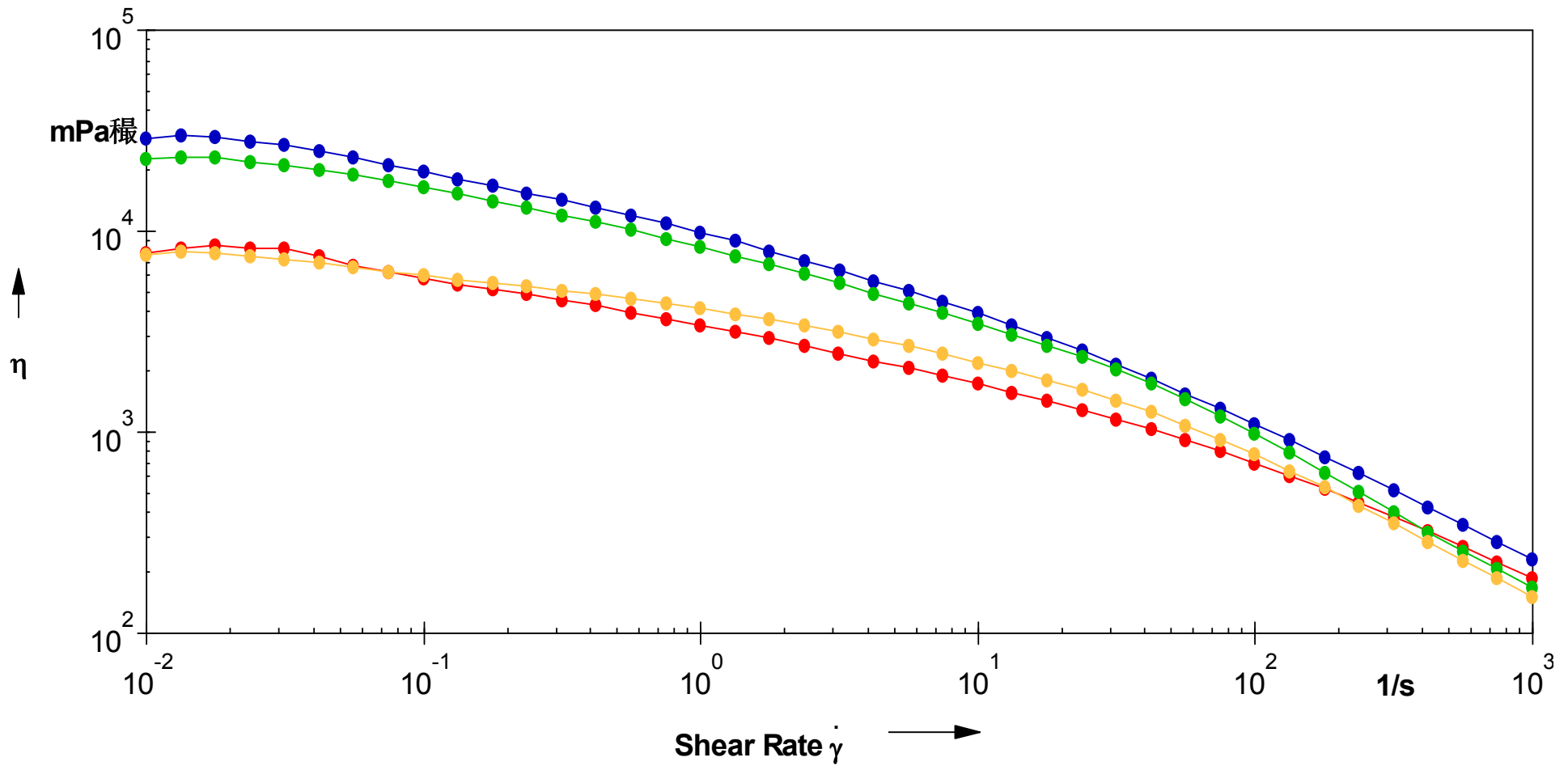
Flow Behaviour Comparison



RHEOLATE CVS ® 10

PVC 40% Acrylic Rheograms /流变图

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CVS 10

CVS 11

competitor 1

competitor 2

● η Viscosity

● η Viscosity

● η Viscosity

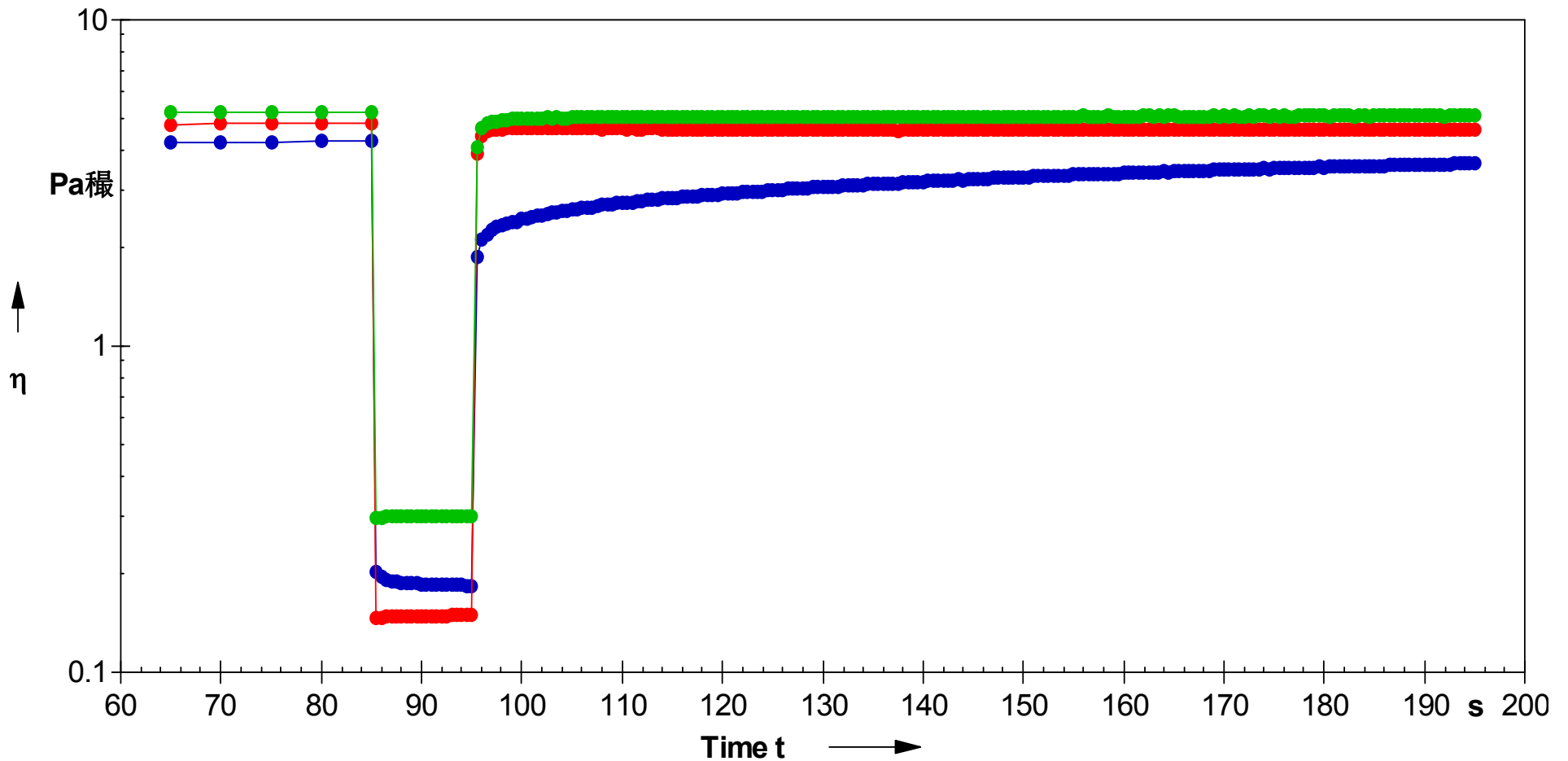
● η Viscosity

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RHEOLATE CVS ® 11

PVC 40% Acrylic Thixatropy Test/触变测试

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CVS11

● η

competitor 2

● η

RHEOLATE 678

● η

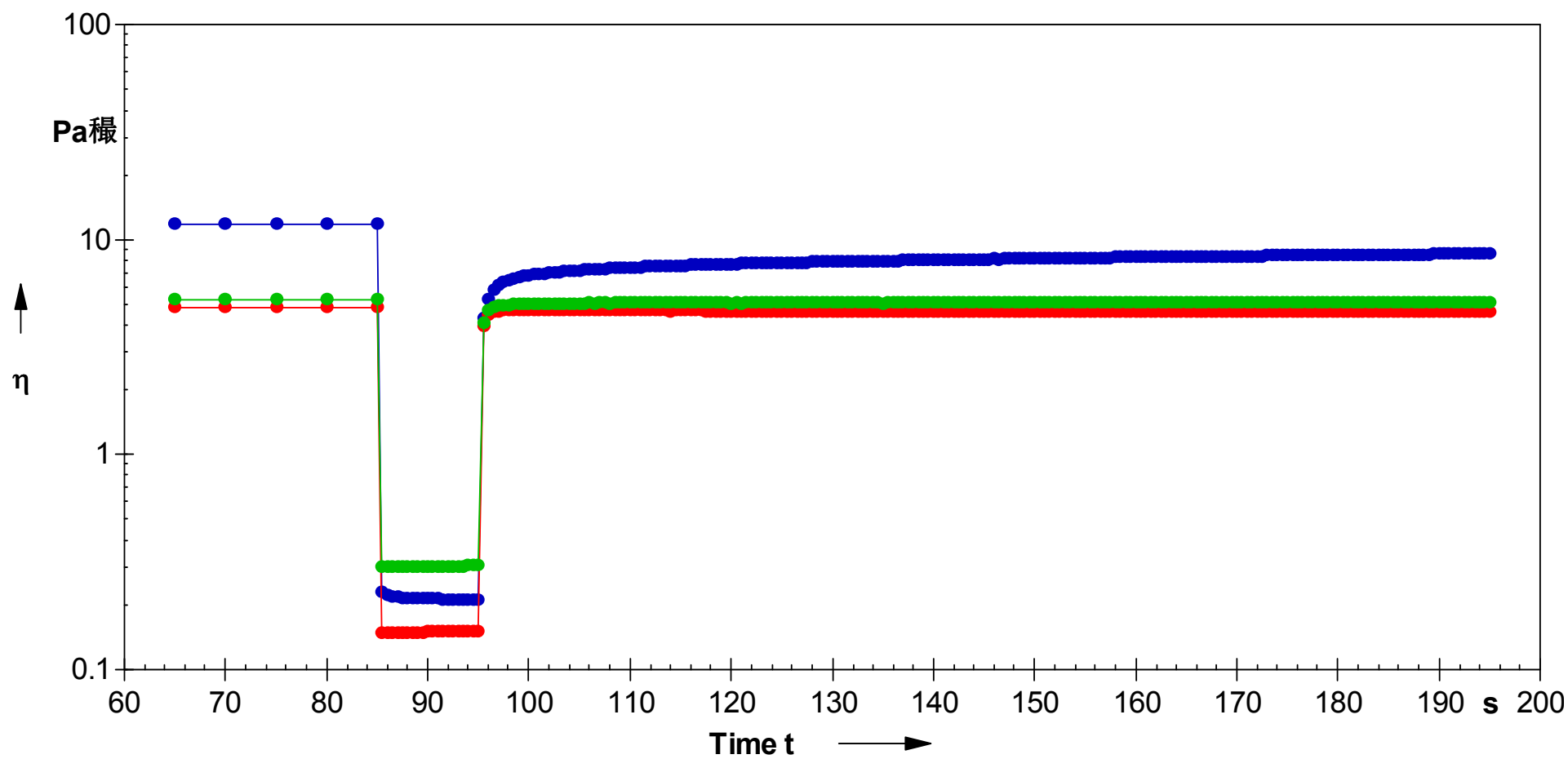
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RHEOLATE CVS[®] 10 PVC 40% Acrylic

Thixatropy/触变测试

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CVS10

—●— η

competitor 2

—●— η

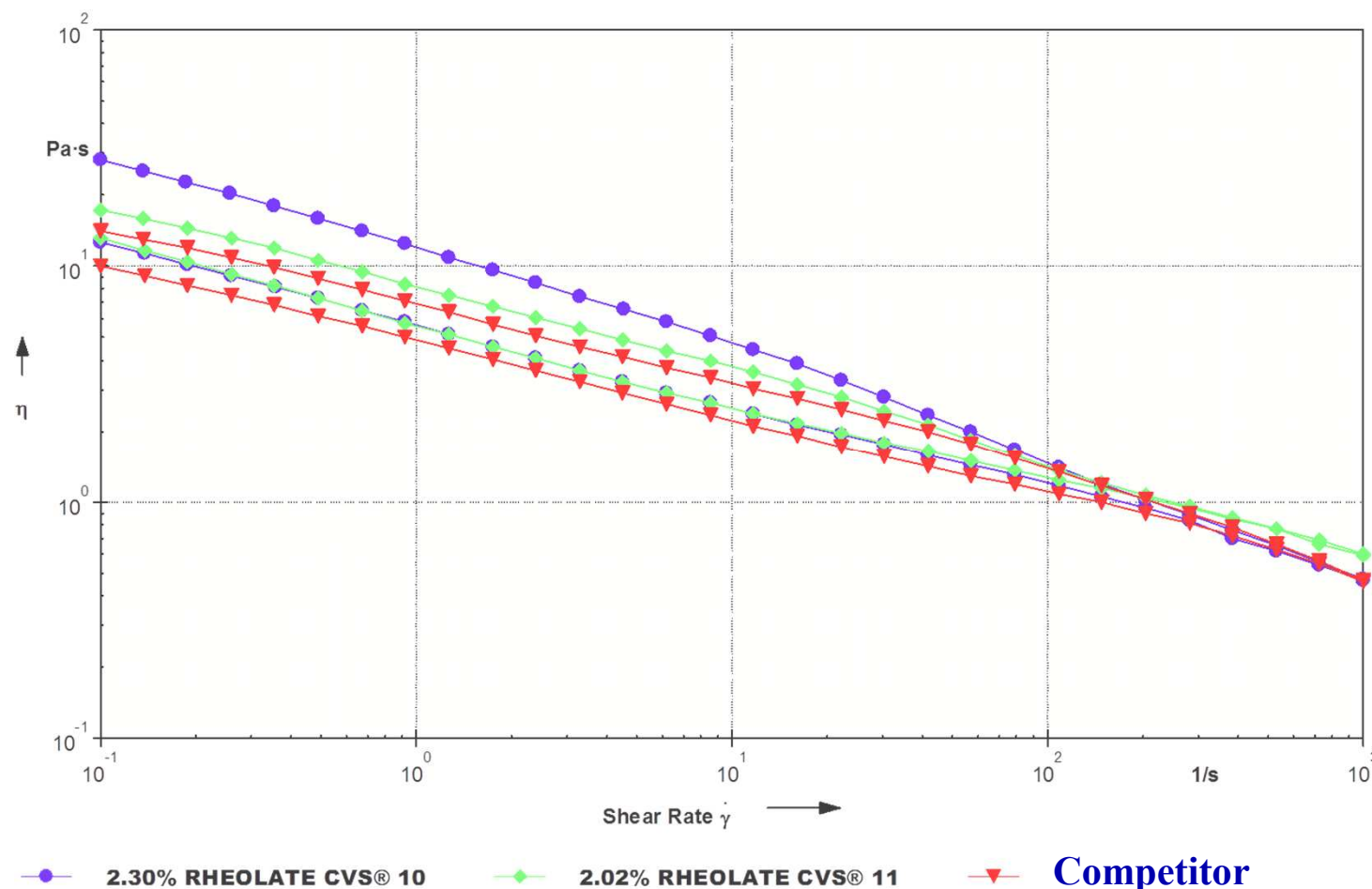
RHEOLATE 678

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PVC 50% Styrene Acrylic Acronal S 790 Rheograms /流变图

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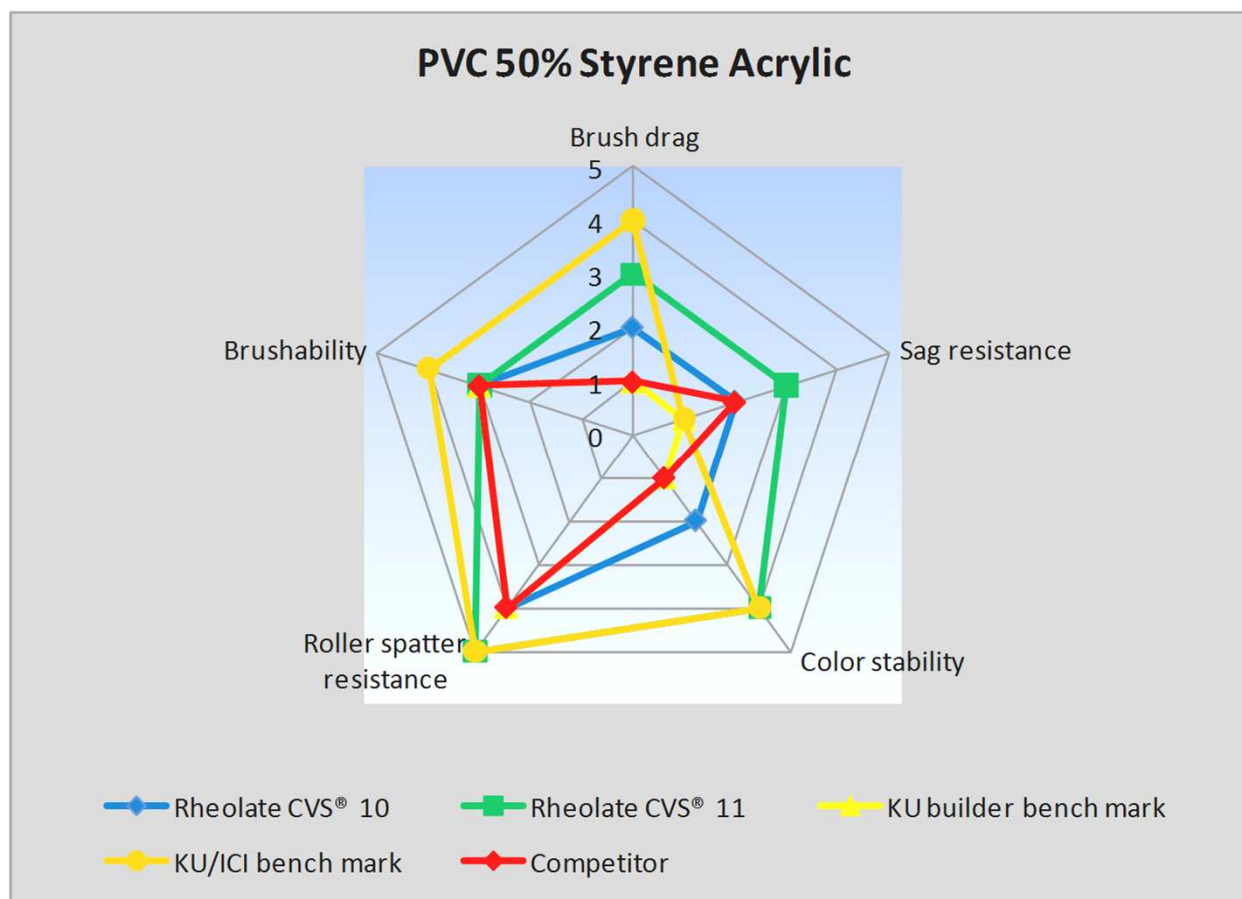
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PVC 50% Styrene Acrylic

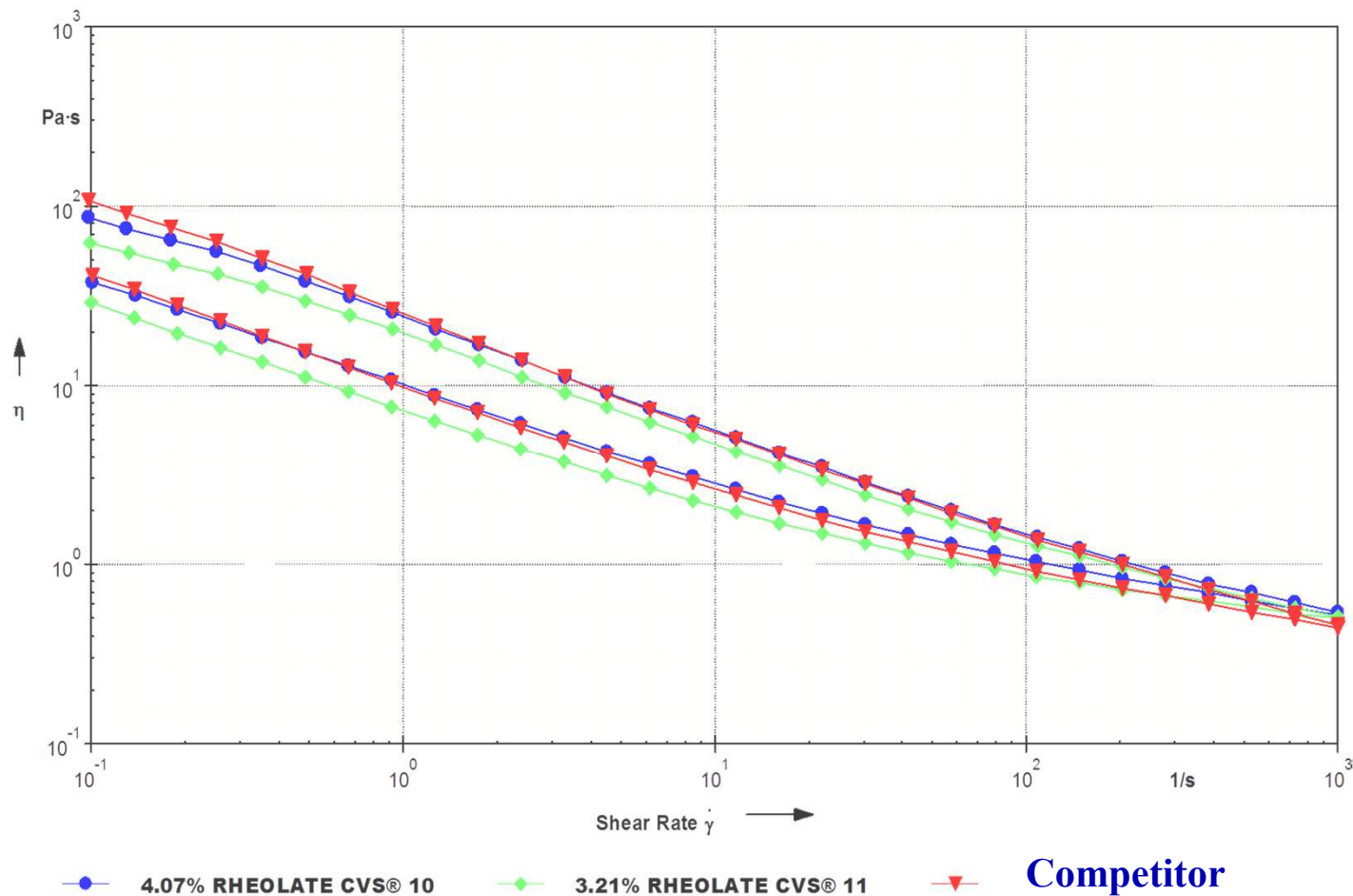
- Key property overview/主要性能小结

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PVC 50% Vinylacetate/ Ethylene (VAE) Mowilith LDM 1871 Rheograms/流变图

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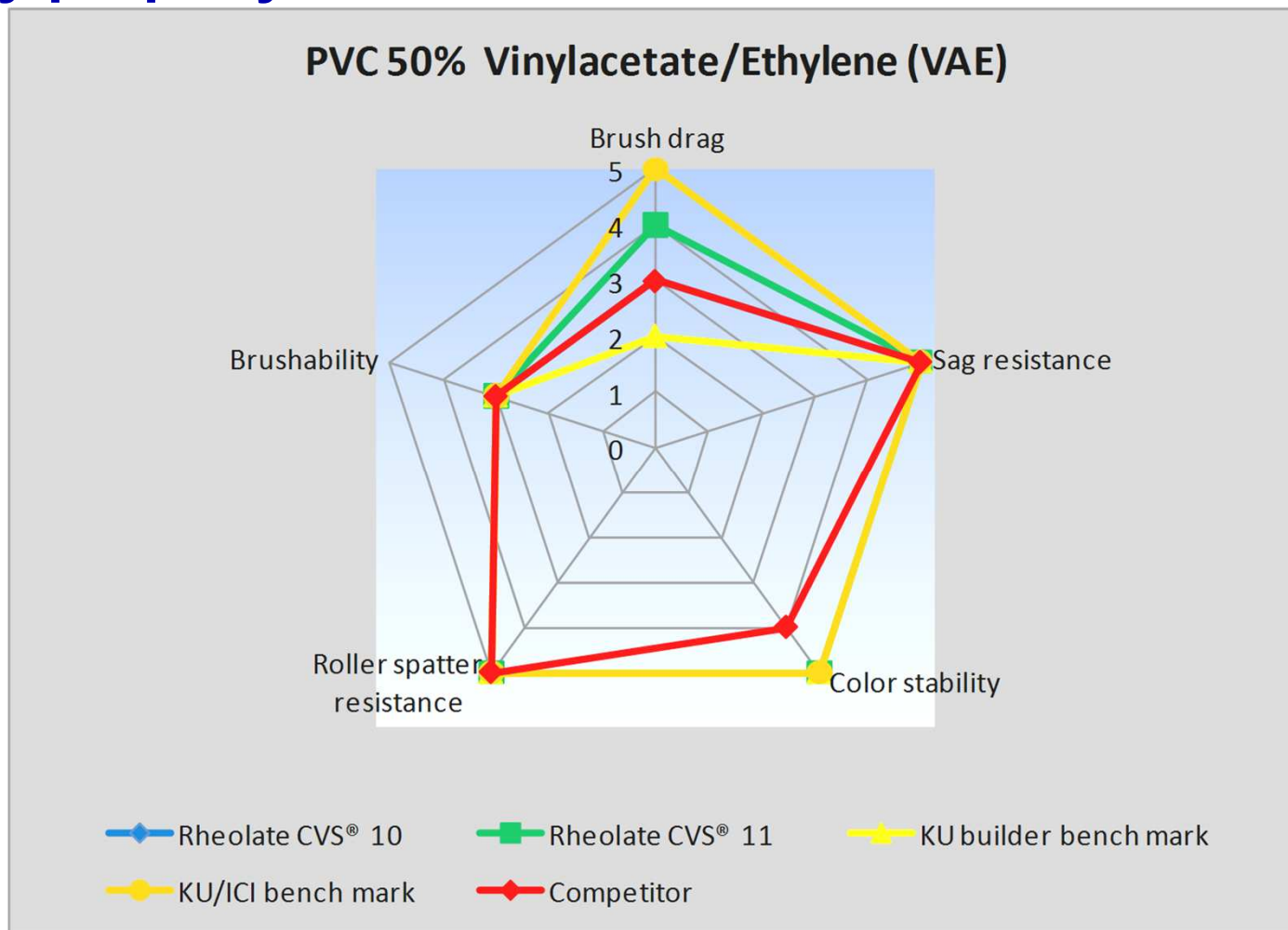
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PVC 50% Vinylacetate/ Ethylene (VAE)

- Key property overview / 主要性能小结

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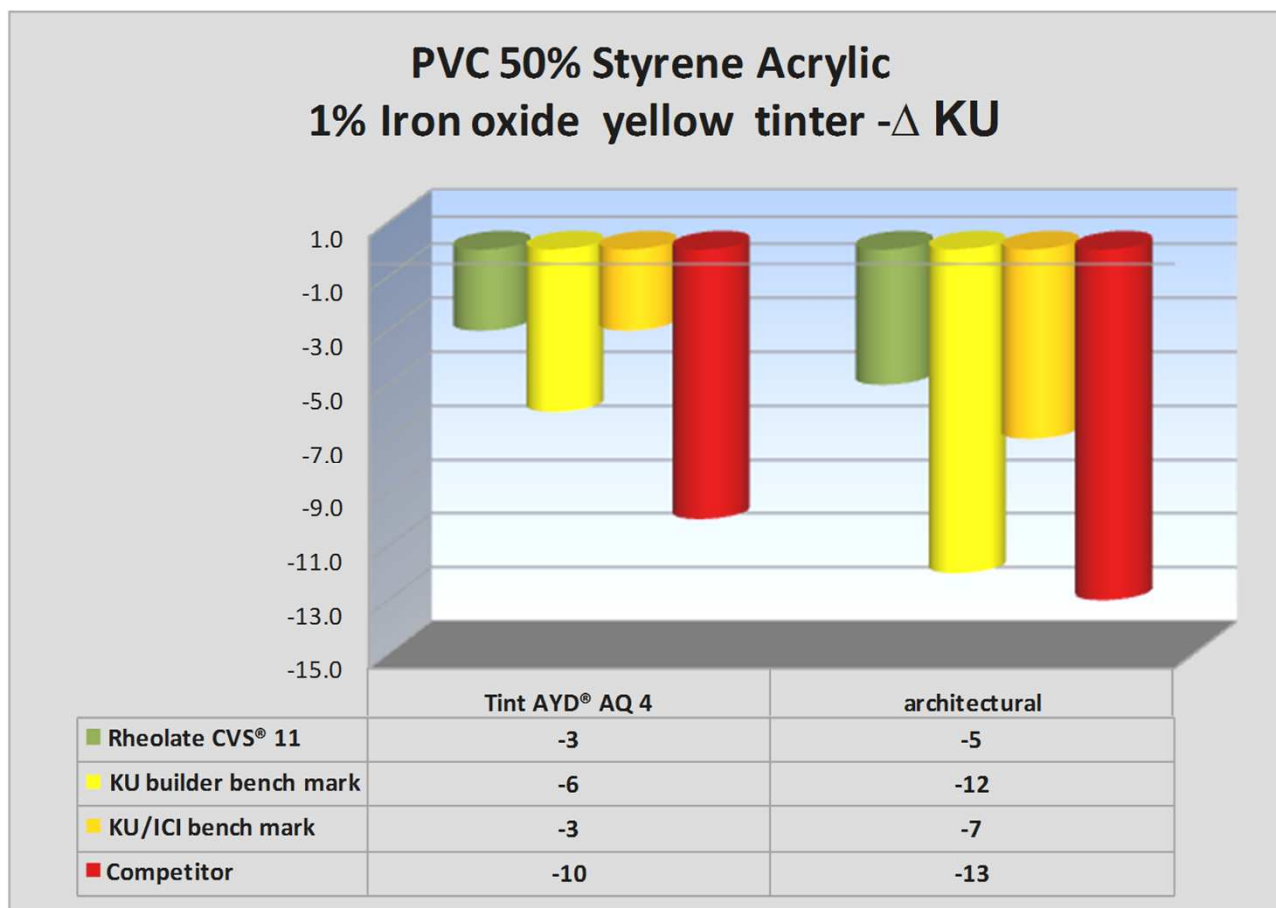
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Delta KU on tinting/调色后KU变化

PVC50% Styrene Acrylic 1% Iron oxide tinter / 铁红色浆

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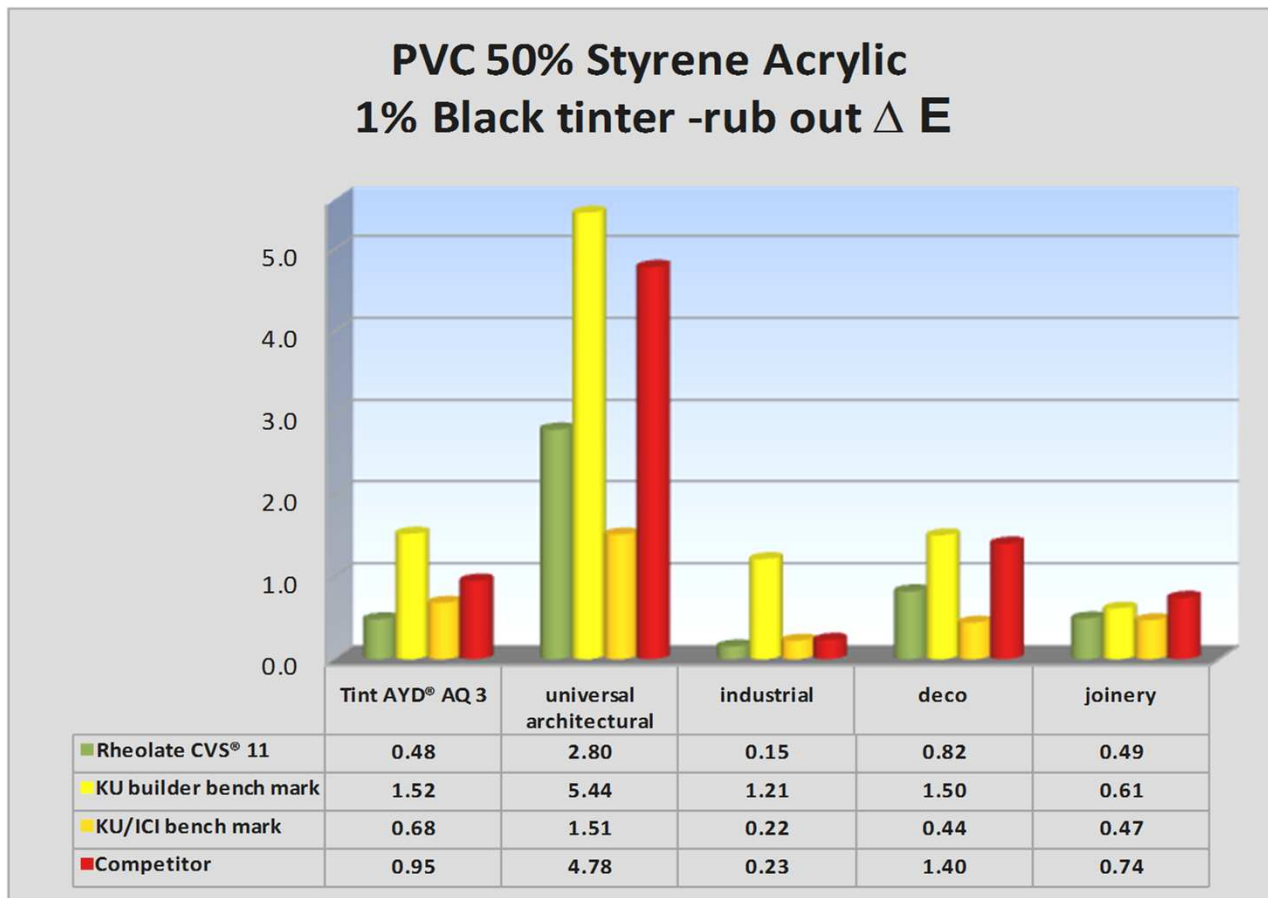
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Rub out Delta E/指擦色色差

PVC50% Styrene Acrylic 1% Black tinter

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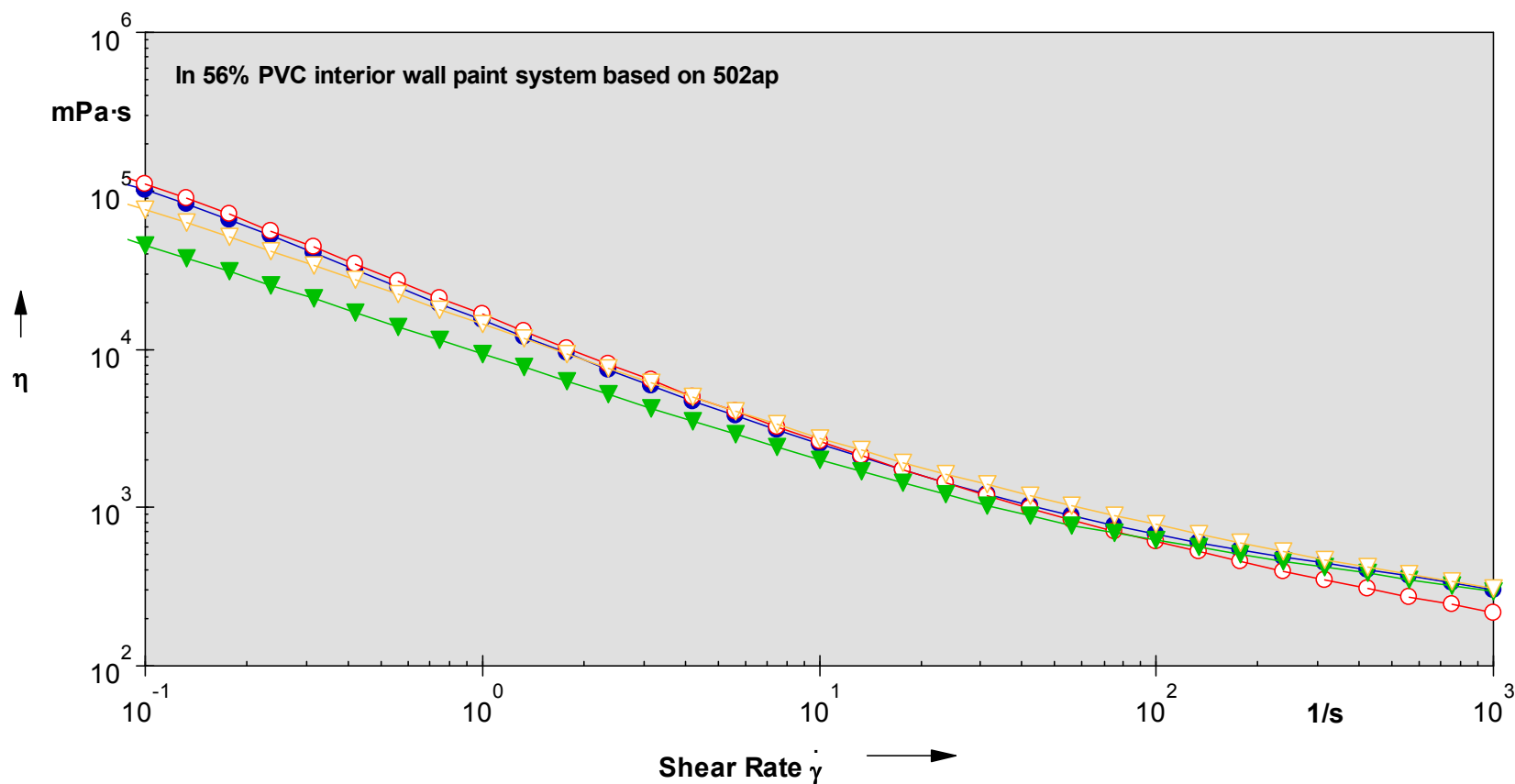
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PVC 56% Styrene Acrylic Acronal Eco 502ap Rheograms/流变图

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—●— R-AP 425/R-CVS11

—▼— R-AP 425/R-678

—○— HEC/R-AP 425/R-CVS11

—▽— R-AP 425/R-FX1070

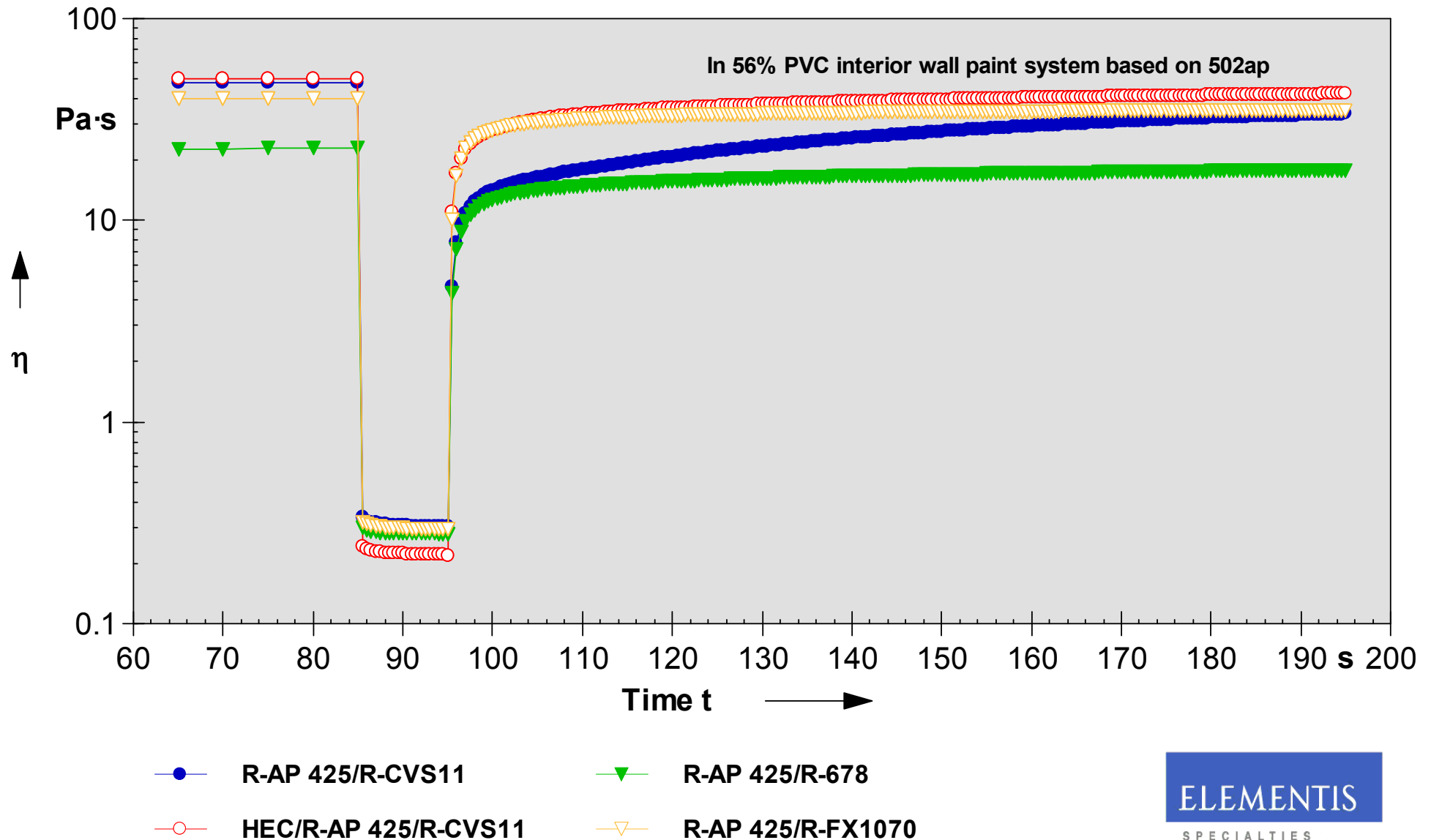
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PVC 56% Styrene Acrylic Acronal Eco 502ap

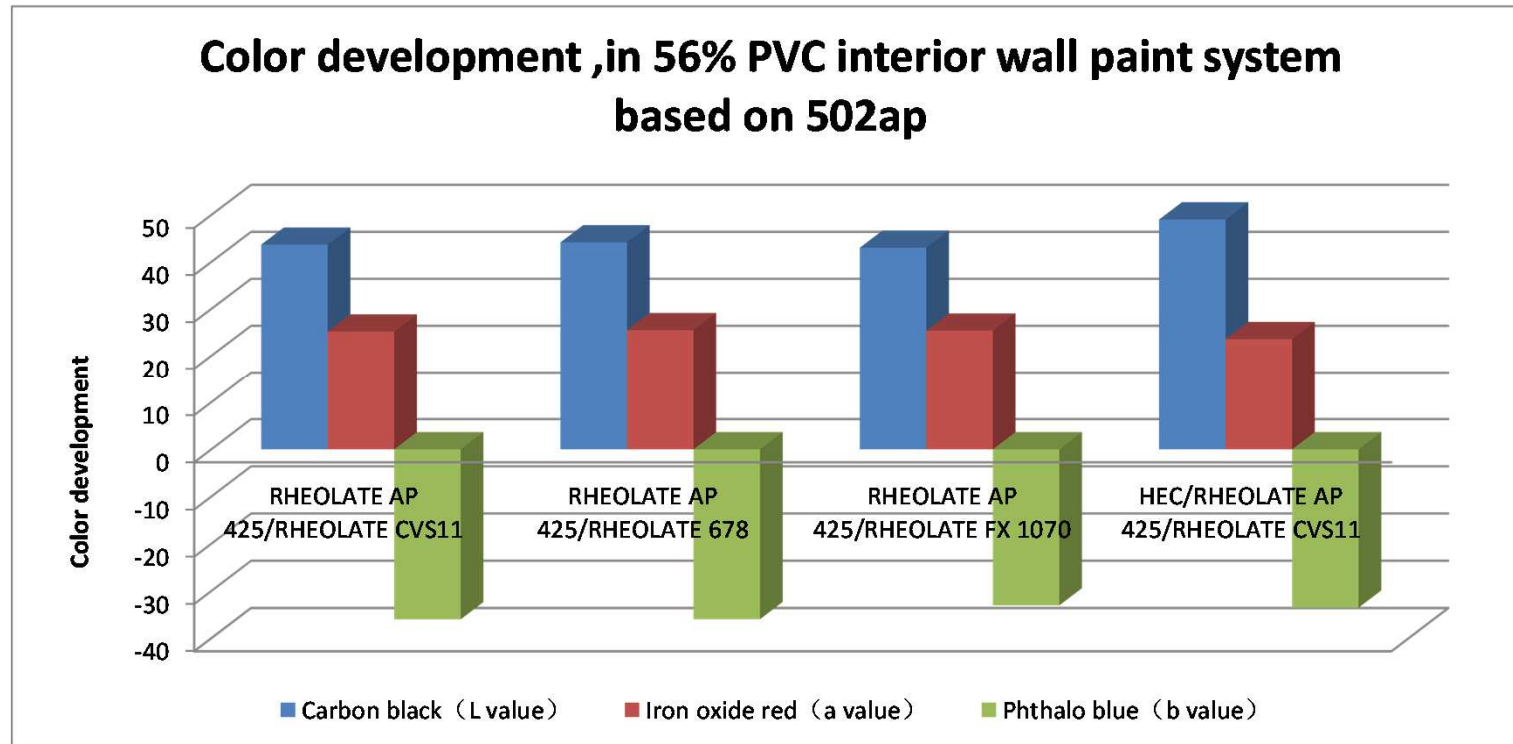
Thixatropy Test/触变测试



PVC 56% Styrene Acrylic Acronal Eco 502ap

Color Development/展色性比较

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PVC 56% Styrene Acrylic Acronal Eco 702ap Rub out results/指擦色比较

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R-AP 425/R-CVS11 HEC/R-AP 425/R-CVS11



R-AP 425/R-CVS11 HEC/R-AP 425/R-CVS11



R-AP 425/R-CVS11 HEC/R-AP 425/R-CVS11

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Summary/结论

- Very low VOC, APE/VOC free, Organic Tin free/绿色环保型
- Improved balance of flow and sag/提升流挂与流平平衡
- Improved viscosity loss upon tinting/提升粘度稳定性
- Requires less KU builder in formulation/较少用量
- Provides more predictable application properties/更佳的施工性
- Improved syneresis/提升抗分水性能
- Improved color properties/提升展色性能
- Excellent compatibility with various binders/适合不同的乳液体系

Thank You !!

www.elementis-specialties.com

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