

A photograph of laboratory glassware, including a volumetric flask, a beaker, and a graduated cylinder, all containing clear liquid. Several long, green, blade-like leaves are placed in the beaker and the graduated cylinder, partially submerged in the liquid. The glassware is set against a plain, light-colored background.

Adding future
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additive solutions

Asia



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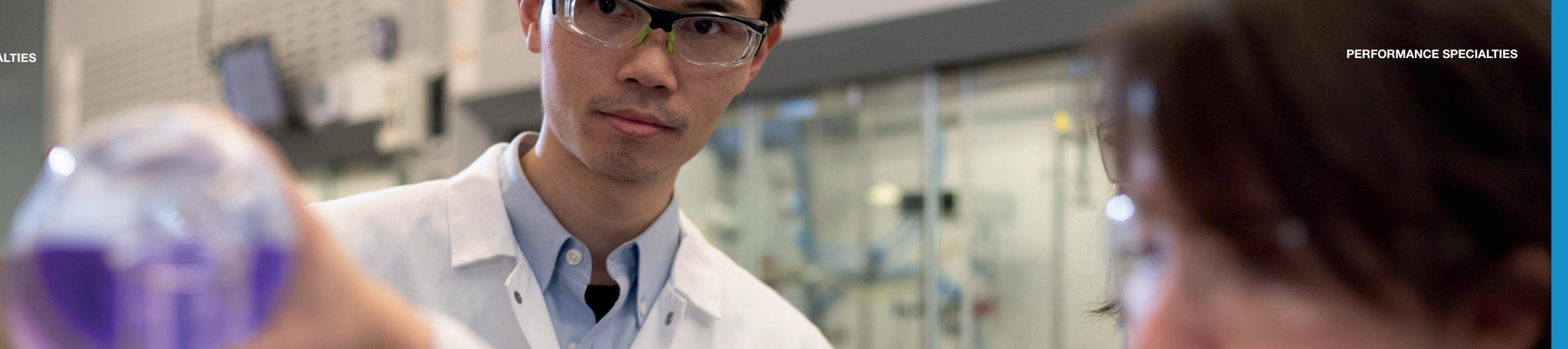
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About ELEMENTIS

Elementis is a leading global supplier of specialty chemicals, delivering essential attributes to a wide range of industries. We provide rheology modifiers and complementary specialty additives to manufacturers of industrial coatings, decorative paints, inks, construction solutions, adhesives and sealants, ceramics, water treatment and oil and gas drilling fluids.

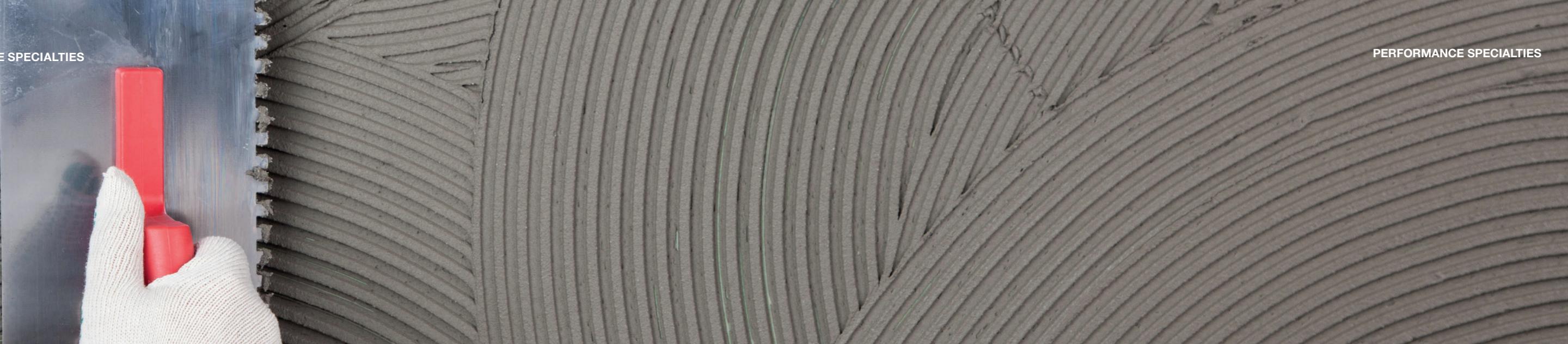
Innovation and sustainability are at the core of our operations. We focus on creating solutions that enhance performance and sustainability for our customers.

Our technology addresses performance needs through rheological additives, wetting and dispersing agents, defoamers, adhesion promoters, and other performance-enhancing additives. Our globally recognized brands, such as BENTONE®, RHEOLATE®, THIXATROL®, THIXCIN®, BENATHIX®, BENAQUA®, CHARGUARD™, M-P-A®, DAPRO®, NUOSPERSE®, HYPMOMER and BENATHIX® reflect our commitment to quality and innovation.

We work closely with our customers to develop tomorrow's solutions for bio-based, waterborne, solventborne, and solvent-free systems, enhancing the appearance, feel, workability and stability of their products.

We continue to leverage our expertise in high-performing ingredients to boost our customers' product performance and introduce new technologies to the markets we serve.

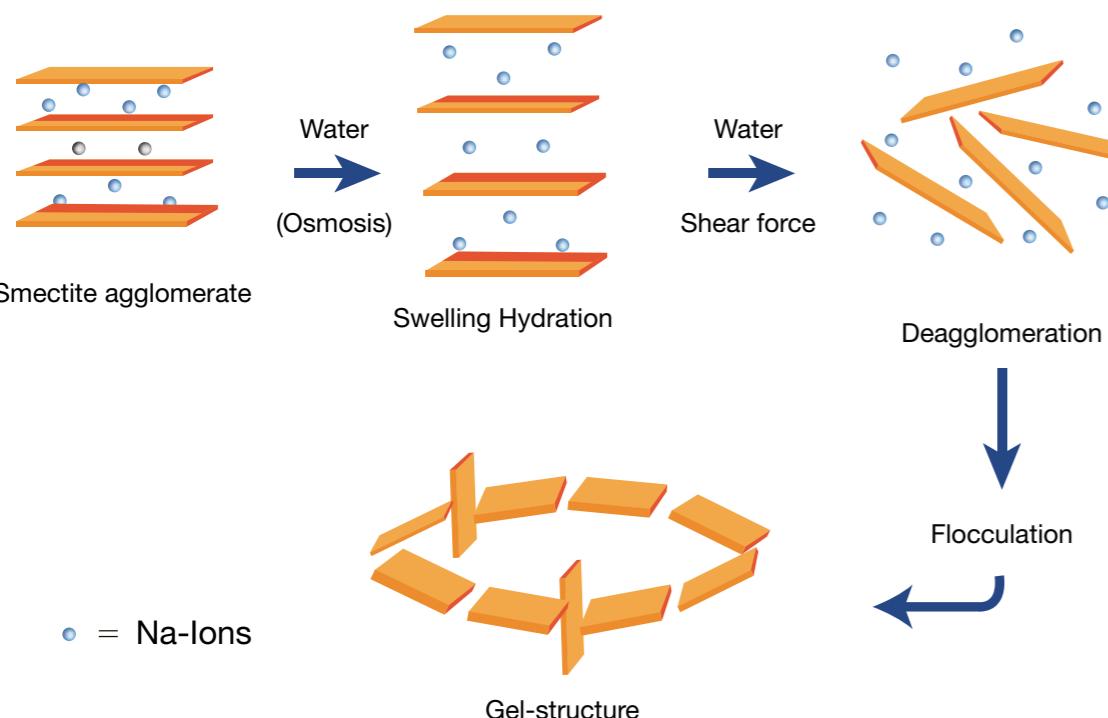
| Aqueous Systems | Non-Aqueous Systems |
|--|--|
| Rheological additives | |
| BENTONE® & BENAQUA® (natural clay-based) | BENTONE®, BENATHIX & BENGEL® (organoclays) |
| RHEOLATE® & DeuRheo (NiSAT, ASE & HASE) | THIXCIN® & THIXATROL® |
| THIXATROL® (PA wax & EVA wax dispersion) | DeuRheo & M-P-A® |
| Dispersing and Wetting | |
| NUOSPERSE® & Disponer | NUOSPERSE® & Disponer |
| Defoamers | |
| DAPRO® & Defom | DAPRO® & Defom |
| Slip and leveling additives | |
| SLIP-AYD®, Levelol & SUPREAD™ | SLIP-AYD®, Levelol & Levaslip |
| Specialty additives | |
| NALZIN® | Adherant |
| DAPRO® | Catacure |
| DeuAdd | DeuAdd |
| Hydroxyl acrylic resins | |
| | Hypomer |



Rheology Modifiers

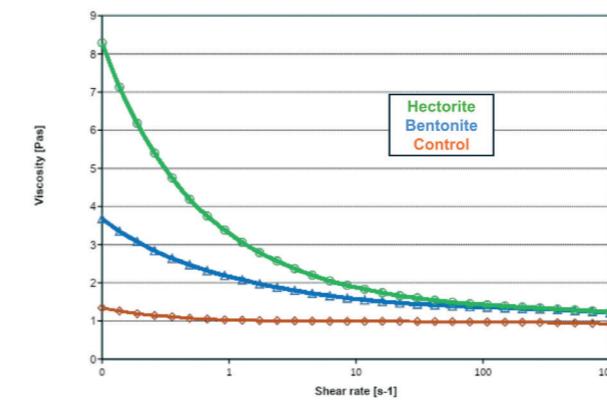
BENTONE® Clays for aqueous systems

Hectorite, a naturally occurring clay mineral, is particularly notable for its unique properties and efficiency as a rheology modifier. It is a lithium magnesium silicate that swells due to the hydration of sodium ions located on the clay platelets, which push the platelets apart and allow the clay to form a gel-like structure.



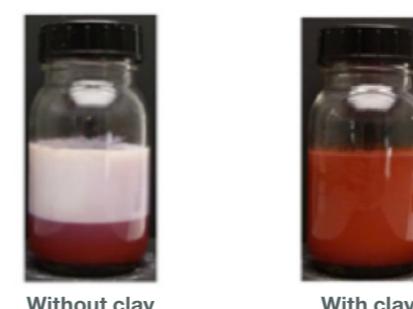
Hectorite's distinctive platelet shape and high surface area make it exceptionally effective in building viscosity and structure, thus providing excellent sag control and suspension properties in WB systems.

Due to the much smaller particle size of the hectorite (compared to bentonite) the pseudoplasticity created in a system is much stronger and BENTONE® hectorites are more efficient:



BENTONE® clays benefits:

- Long-term rheological stability of the formulation
- Film/ bead (thickness) control
- Suspension of particles resulting in homogeneous matrix and smooth surfaces
- Workability - improved spray process/ extrusion
- In construction products: improved sag/slump resistance, less pumping pressure necessary, easier cleaning of application tools and reduced stickiness when (partially) replacing cellulosics
- Hectorite is a material of natural origin and we use environmentally friendly extraction procedures and strict zero waste and circular policy in cleaning and milling procedures.



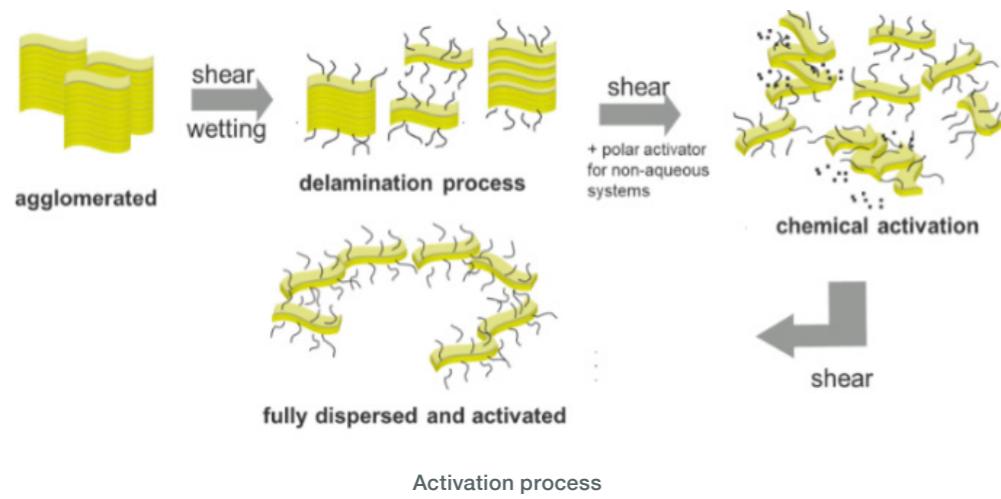
| Product Name | Composition | Description | Solventborne | Waterborne | Application | | | | | | | | | | | | Shear Rate | | | | | | | | | |
|----------------|------------------------|---|--------------|------------|------------------------|-------------------|---------------|----------------------------|--------------------------|--------------|------------------|-----------------------|---------------|-----------------------------|----------------------------|-----------------|---------------|------------------|------------------|--------|----------------|---------------|---------------|------------------------|------|------------------|
| | | | | | Architectural coatings | | | Industrial coatings | | | Construction | | | Others | | | | | | | | | | | | |
| | | | | | Exterior coatings | High PVC coatings | Flat coatings | Semi-gloss/ gloss coatings | Water reducible coatings | Can coatings | Car-OEM coatings | Car refinish coatings | Coil coatings | General industrial coatings | Marine protective coatings | Plastic coating | Wood coatings | Asphalt emulsion | Concrete coating | Grouts | Plaster/stucco | Roof coatings | Tile adhesive | Adhesives and sealants | Inks | Leather coatings |
| BENAQUA® 4000 | Modified smectite clay | Hectorite clay-polymer for textured, spray applied and high build coatings. | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| BENAQUA® 5000 | Modified smectite clay | Hectorite clay composite for adhesives and grouts. | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| BENTONE® DE | Modified smectite clay | Hyperdispersible hectorite clay for waterborne decorative and industrial coatings. | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| BENTONE® DY | Modified smectite clay | Modified clay to improve sag resistance and flow in waterborne systems. | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| BENTONE® EW NA | Modified smectite clay | Hectorite clay for suspension control for waterborne systems. | • | • | • | ○ | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| BENTONE® GS | Modified smectite clay | Hectorite clay for waterborne adhesives/sealants and construction systems. | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| BENTONE® HC | Modified smectite clay | Refined hectorite for waterborne adhesives, sealants, high PVC emulsion paints, water treatment, etc. | • | • | • | ○ | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| BENTONE® HD | Modified smectite clay | Hyperdispersible hectorite clay for industrial coatings. | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| BENTONE® LT | Modified smectite clay | Modified hectorite clay for waterborne paints. | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| BENTONE® CT | Smectite clay | Hectorite clay for waterborne construction systems, 50% active. | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| BENTONE® OC | Smectite clay | Hectorite clay for waterborne construction systems, 50% active | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| BENTONE® WBS | Smectite clay | Recommended for plasters, mortars and renderings based on lime, cement and gypsum. | • | • | • | • | ○ | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |

• Highly recommended ○ Recommended



BENTONE® Organoclays for non-aqueous systems

Hectorite modified with quaternary ammonium compounds becomes an organoclay suitable for solvent-borne systems. This modification process transforms the hydrophilic nature of the clay into a more organophilic (oil-loving) form, making it highly effective and versatile additive for various non-aqueous formulations.



BENTONE® organoclays benefits:

- Enhanced stability (e.g. anti-sedimentation)
- Film/ bead (thickness) control
- Suspension of particles resulting in homogeneous matrix and smooth surfaces
- Enhanced workability (spray/ extrusion)
- Orientation of effect pigments
- In powder coating applications: uniform edge coverage, texture effects possible and improved bulk flow and corrosion resistance
- For activation at low-shear forces, we offer super dispersible grades, such as BENTONE SD®



Pregel without/ with polar activator

Solvent compatibility

Organoclays are compatible with most resin systems, including acrylics, epoxies, and polyurethane. The choice of BENTONE® and BENGEL® additives depends on the solvent and the resin used in the system. BENTONE® and BENGEL® rheological additives are available in conventional and super dispersible form for easier incorporation.

| Product type | Low Polarity systems | Mid polarity systems | High Polarity Systems | Activation | |
|------------------------|---|--|--|--------------------------|------------------|
| | Aliphatic Solvents, Mineral Spirits, Isopars, Naphtha, etc. | Aromatic and Hydrocarbon Solvents, Xylene, Toluene, etc. | Aldehydes, Acetates, Alcohols, Esters, Ethers, Glycols, Ketones. | Polar activator required | Easy to disperse |
| Conventional type | BENTONE® 34, BENTONE® 1000, BENGEL® 434, BENGEL® 908 | | | • | |
| | BENTONE® 52, BENTONE® 38* | | BENTONE® 27*, BENTONE® 57 | • | • |
| Easy dispersible type | BENGEL® 818 | BENGEL® 828 | | • | |
| | BENGEL® 958, BENTONE® 54 | | | • | |
| Super dispersible type | BENGEL® 988 | | | • | |
| | BENTONE SD® -1 | | | • | |
| | BENTONE SD® -3* | | BENTONE SD® -2, BENATHIX® | • | • |

* Hectorite-based

BENTONE® and BENGEL® organoclays

| Product name | Composition | Description | Solventborne | Waterborne | Application | | | | | | | | | | Polarity | | | | | |
|----------------|-------------|--|--------------|------------|-----------------|---------------------|------------------|-----------------------|---------------|-----------------------------|----------------------------|-----------------|---------------|---------|---------------|------------------------|------|------------------|-----|--------|
| | | | | | Deco | Industrial coatings | | | | Construction | | | Others | | | | | | | |
| | | | | | Long-oil alkyls | Can coatings | Car-OEM coatings | Car refinish coatings | Coil coatings | General industrial coatings | Marine protective coatings | Plastic coating | Wood coatings | Asphalt | Roof coatings | Adhesives and sealants | Inks | Leather coatings | Low | Medium |
| BARAGEL® 3000 | Organoclay | Organically modified bentone clay for low polarity systems. | • | | | • | | | | • | | | | | • | • | • | • | • | |
| BENATHIX® | Organoclay | Easy to disperse modified smectite clay for unsaturated polyester, platisols and putties. | • | | | | | | | | | | | | | • | • | | • | |
| BENGEL® 434 | Organoclay | Conventional organoclay for wide range of low polarity systems. | • | | | | ○ | | | • | • | • | • | | | • | • | • | • | |
| BENGEL® 818 | Organoclay | Organoclay for low polarity applications. | • | | | | ○ | • | • | • | • | • | • | | | • | • | • | • | |
| BENGEL® 828 | Organoclay | Super dispersible rheological additive that greatly simplifies the formulation and manufacture of paint systems that contain moderate to high polarity solvents. | • | | | | | • | • | • | • | • | • | | | • | • | | | • |
| BENGEL® 908 | Organoclay | General purpose and highly cost effective organoclay designed for low to medium polarity aliphatic and aromatic coating systems. It also works well in other high polarity systems. | • | | | | | | • | • | • | • | • | | | • | • | • | • | |
| BENGEL® 958 | Organoclay | A grade that is easy to disperse and provides good thixotropy, sag resistance, and anti-settling properties. It is recommended to be used in diverse low to medium polarity binders and solvent systems. | • | | • | ○ | ○ | • | ○ | • | • | ○ | ○ | ○ | • | • | • | • | • | |
| BENGEL® 968 | Organoclay | Designed for low to medium polarity coating systems. It can be used for versatile coating applications and provides good compatibility, viscosity increase as well as anti-settling properties. | • | | | | | | | | • | ○ | ○ | • | | | | | • | • |
| BENGEL® 988 | Organoclay | Easy to incorporate and designed for use in low to high polarity system containing aliphatic solvents, aromatic solvents, ketones, esters, glycol ethers and alcohols. | • | | | ○ | ○ | ○ | ○ | • | • | • | • | | | | | • | • | • |
| BENTONE SD® -1 | Organoclay | Super dispersible organoclay for low polarity applications. | • | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | |
| BENTONE SD® -2 | Organoclay | Super dispersible organoclay for high polarity applications. | • | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | |
| BENTONE SD® -3 | Organoclay | Super dispersible hectorite-based organoclay for intermediate polarity applications. | • | | | • | ○ | ○ | ○ | • | • | ○ | ○ | ○ | ○ | | • | • | • | |
| BENTONE® 1000 | Organoclay | High performance organoclay for low to intermediate polarity systems. | • | | • | • | | | | | • | | | | • | | • | • | • | |
| BENTONE® 27 | Organoclay | Conventional hectorite-based organoclay for high polarity systems, polyol, epoxy, etc. | • | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | |
| BENTONE® 34 | Organoclay | Conventional organoclay for wide range of low polarity solvent systems. | • | | • | ○ | ○ | ○ | ○ | ○ | • | • | • | • | • | • | • | • | • | |
| BENTONE® 38 | Organoclay | Conventional hectorite-based organoclay for intermediate polarity organic solvent systems. | • | | | • | • | • | • | • | • | • | • | ○ | • | | • | • | • | |
| BENTONE® 52 | Organoclay | Conventional organoclay for intermediate polarity solvent systems. | • | | | | ○ | ○ | | | • | • | • | • | ○ | | | ○ | • | |
| BENTONE® 54 | Organoclay | Easy to disperse organoclay for low to mid-polarity solvent systems. | • | | • | | | • | | | • | | • | • | • | • | • | • | • | |
| BENTONE® 57 | Organoclay | Conventional organoclay for high-polarity solvent systems. | • | | | | | | | | • | • | | | | | • | | | • |
| BENTONE® 54K | Organoclay | Easy to disperse organoclay for low to intermediate polarity organic systems. | • | | | ○ | ○ | • | ○ | • | • | • | ○ | ○ | | • | • | • | • | |

• Highly recommended ○ Recommended



RHEOLATE® NiSAT - nonionic synthetic associative thickeners for aqueous systems

One of the most significant advantages of ELEMENTIS wide range of RHEOLATE® NiSAT thickeners is their versatility, offering the ability to design taylor-made rheology profiles, catering to different shear conditions — low, mid, and high shear.

Being non-ionic, they can be used across a broad pH spectrum, making them suitable for a wide range of formulations. These rheological additives do not require special activation and can be added at various stages of the production process.

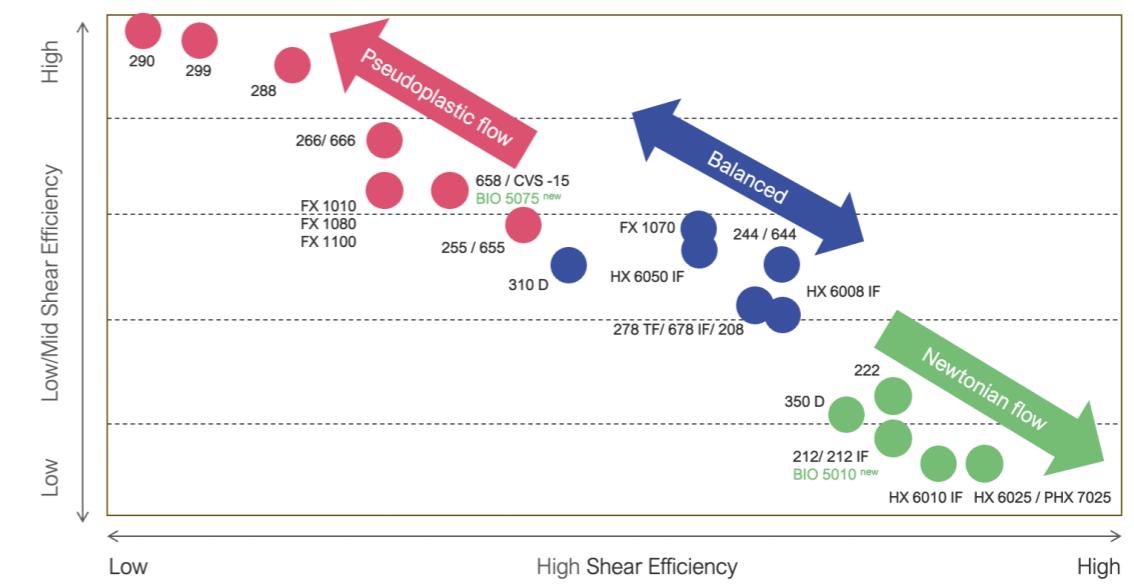
The NiSAT technology can be used alone or in combination with other RHEOLATE® or BENTONE® products.

| RHEOLATE® BIO NiSAT benefits | RHEOLATE® POWDER NiSAT benefits |
|---|--|
| >90% bio-based carbon content | Powder form (100% active) |
| Low odor | Higher efficiency compared to liquid counterpart |
| High film builds with outstanding flow & leveling | Preservative-free |
| Compatible with all resin systems | Surfactant-free |
| Easy incorporation and use | No specific activation necessary |
| Good storage stability | Suitable for modular production process |
| | No risk of freezing |
| | Lower transport volumes – fuel savings |

RHEOLATE® NiSAT benefits:

Broad range of RHEOLATE® NiSAT for different application techniques to achieve optimum application properties:

- Enhanced spatter resistance, hiding power and sag resistance
- Perfect levelling and adequate transfer to substrate
- Improved atomization/ creation of very fine droplets
- Uniform film thickness
- Suitable for systems with pH 2-12
- No negative impact on water resistance and corrosion resistance
- RHEOLATE® Powder NiSAT with 100% active content for improved sustainability
- RHEOLATE® BIO NiSAT with > 90% Bio-based carbon content certified



RHEOLATE® thickeners

| Product Name | Composition | Description | Solventborne | Waterborne | Application | | | | | | | | | | | | | | | | Shear Rate | | | |
|---|---------------------------|--|--------------|------------|------------------------|-------------------|---------------|----------------------------|--------------------------|------------------|-----------------------|---------------|-----------------------------|----------------------------|-----------------|---------------|------------------|------------------|--------|----------------|---------------|---------------|------------------------|------|
| | | | | | Architectural coatings | | | | Industrial coatings | | | | Construction | | | | Others | | | | | | | |
| | | | | | Exterior coatings | High PVC coatings | Flat coatings | Semi-gloss/ gloss coatings | Water reducible coatings | Car-OEM coatings | Car refinish coatings | Coil coatings | General industrial coatings | Marine protective coatings | Plastic coating | Wood coatings | Asphalt emulsion | Concrete coating | Grouts | Plaster/stucco | Roof coatings | Tile adhesive | Adhesives and sealants | Inks |
| Nonionic associative thickeners (NiSAT) | | | | | | | | | | | | | | | | | | | | | | | | |
| RHEOLATE CVS® -10 | Polyurethane solution | Excellent low-mid shear viscosity builder, provides good balance of sag, flow and leveling, reduced viscosity loss on tinting, excellent color properties and syneresis control. | | • | • | | • | • | • | | | | • | | | • | • | • | • | • | • | • | | |
| RHEOLATE CVS® -15 | Polyurethane solution | Highly efficient, zero VOC , mid-shear viscosity builder with minimum KU drop upon tinting. | | • | • | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | |
| RHEOLATE® 212 | Polyurethane solution | Excellent high-shear viscosity builder. Highly Newtonian profile with little influence on mid-shear viscosity. Used often in combination with RHEOLATE® 666, RHEOLATE® 655, or RHEOLATE CVS® thickeners for ideal balance of properties. | | • | • | • | ○ | • | ○ | ○ | ○ | • | • | • | • | • | • | • | • | • | • | | | |
| RHEOLATE® 212 IF | Polyurethane solution | Isothiazolinone (BIT/CMIT/MIT)-free version of RHEOLATE® 212. | | • | • | • | ○ | • | ○ | ○ | ○ | • | • | • | • | • | • | • | • | • | • | | | |
| RHEOLATE® 222 | Polyurethane solution | Highly efficient high-shear viscosity builder for aqueous applications, provides excellent flow and levelling. | | • | • | • | ○ | • | ○ | ○ | ○ | • | • | • | • | • | • | • | • | • | • | | | |
| RHEOLATE® 244 | Polyurethane solution | Good high-shear viscosity build. Higher KU build in small particle-size binders than RHEOLATE® 212. Best balance of KU/ICI viscosities, ideal for use as sole thickener in small particle-size binders. | | • | • | • | ○ | • | • | • | • | | • | | | | | | | | ○ | ○ | | |
| RHEOLATE® 255 | Polyurethane solution | Good mid-shear viscosity builder, especially with small particle-size binders. Works well in flat through gloss paints. | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | |
| RHEOLATE® 266 | Polyurethane solution | Excellent low-shear viscosity builder. Highly pseudoplastic rheology, excellent for spray and thick film application. | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | |
| RHEOLATE® 278 TF | Polyurethane solution | Excellent mid-high shear viscosity builder. Can be used as the sole thickener in quality acrylic flats and eggshell finishes. | | • | • | • | ○ | • | • | • | • | • | • | • | • | • | • | • | • | • | • | ○ | | |
| RHEOLATE® 288 | Polyurethane solution | Suitable for high-gloss, clear and pigmented coatings and haze-free architectural and industrial finishes. | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | |
| RHEOLATE® 290 | Polyurethane solution | Highly efficient viscosity builder under low-shear conditions, provide strong shear thinning flow behavior which makes it ideal for spray applications. | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | |
| RHEOLATE® 299 | Polyurethane solution | Highly efficient thickener that provides excellent sag resistance on spraying. | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | |
| RHEOLATE® 310D | Polyether polyol solution | Excellent mid-shear viscosity builder. Good color, sag resistance, and suspension properties. Less sensitive to higher HLB surfactants. Best used in combination with RHEOLATE® 350 for good overall balance of properties. | | • | • | • | • | • | • | • | • | • | ○ | • | • | • | • | • | • | • | ○ | ○ | | |
| RHEOLATE® 350D | Polyether polyol solution | Excellent high-shear viscosity build, great synergy with RHEOLATE CVS® rheology modifiers, excellent color properties and good syneresis resistance. More contribution on the mid-shear viscosity than RHEOLATE® 212. | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | |

• Highly recommended ○ Recommended

RHEOLATE® thickeners

| Product Name | Composition | Description | Solventborne | Waterborne | Application | | | | | | | | | | | | | | | | | | Shear Rate | | | | |
|---|-----------------------|--|--------------|------------|------------------------|-------------------|---------------|----------------------------|--------------------------|------------------|-----------------------|---------------|-----------------------------|----------------------------|-----------------|---------------|------------------|------------------|--------|----------------|---------------|---------------|------------------------|------|------------------|---|---|
| | | | | | Architectural coatings | | | | Industrial coatings | | | | Construction | | | | Others | | | | | | | | | | |
| | | | | | Exterior coatings | High PVC coatings | Flat coatings | Semi-gloss/ gloss coatings | Water reducible coatings | Car-OEM coatings | Car refinish coatings | Coil coatings | General industrial coatings | Marine protective coatings | Plastic coating | Wood coatings | Asphalt emulsion | Concrete coating | Grouts | Plaster/stucco | Roof coatings | Tile adhesive | Adhesives and sealants | Inks | Leather coatings | | |
| Nonionic associative thickeners (NiSAT) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RHEOLATE® 644 | Polyurethane solution | Low VOC, solvent free, APE-free, provides efficient thickening in high and mid-shear viscosity ranges | | | • | • | ○ | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | ○ | ○ | | |
| RHEOLATE® 655 | Polyurethane solution | Low VOC, solvent-free, APE-free, provides thickening efficiency primarily in the medium-shear rate range viscosity. | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | |
| RHEOLATE® 658 | Polyurethane solution | Excellent mid-shear viscosity builder, especially with small particle-size binders. Works well in low and zero VOC flat through gloss paints. | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | ○ | ● | |
| RHEOLATE® 666 | Polyurethane solution | Low VOC, solvent free, APE-free, provides viscosity at low and medium-shear rates and provides effective flow and leveling control. | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | ● | ○ | |
| RHEOLATE® 678 IF | Polyurethane solution | RHEOLATE® 678 IF is a solvent-free version of RHEOLATE® 278. | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | ○ | ● | ○ |
| RHEOLATE® FX 1070 | Polyurethane solution | Zero VOC liquid rheology modifier for high shear viscosity in aqueous coatings. | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | ● | ● |
| RHEOLATE® FX 1010 | Polyurethane solution | Rheology modifier for low to mid shear viscosity. provides good sag resistance, and anti-settling properties. | | | • | | | | | | | | | | | | | | | | | | | | ● | ○ | ● |
| RHEOLATE® FX 1080 | Polyurethane solution | Very low VOC, high efficiency, high active content polyurethane mid-shear thickener for the use in aqueous coatings. | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | ○ | ● | |
| RHEOLATE® HX 6008 IF | Polyurethane solution | Efficient, Zero VOC, APEO free, high-shear builder. Excellent efficiency with both hydrophobic and hydrophilic resins with some low-shear contribution. | | | • | • | • | ○ | • | • | ○ | ○ | • | • | • | • | • | • | • | • | • | • | • | ● | ● | ○ | ● |
| RHEOLATE® HX 6010 IF | Polyurethane solution | Highly efficient, zero VOC, APEO free, Newtonian high-shear builder. Excellent efficiency with hydrophobic resins with exceptional application properties. | | | • | • | • | ○ | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | ● | ● | |
| RHEOLATE® HX 6025 | Polyurethane solution | Zero VOC, APEO free, high-shear builder. Excellent stain resistance and applied hide | | | • | • | • | ○ | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | ● | ● | |
| RHEOLATE® HX 6050 IF | Polyurethane solution | Highly efficient, zero VOC, APEO free, high-shear builder. Excellent efficiency with hydrophilic resins and significant low-shear contribution. | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | ● | ○ | ● |
| Powdered NisATs | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RHEOLATE® 208 | Polyurethane powder | Powdered rheology modifier, excellent mid-shear viscosity builder. | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | ○ | ● | ○ |
| RHEOLATE® FX 1100 | Polyurethane powder | Powdered, high efficiency, NiSAT for low to mid shear viscosity build in sustainable waterborne systems | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | ○ | ● | ● | |
| RHEOLATE® PHX 7025 | Polyurethane powder | Zero VOC, high-shear builder. Excellent stain resistance and applied hide. Powdered rheology modifier for sustainable formulations | | | • | • | • | ○ | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | ● | | |

● Highly recommended ○ Recommended

RHEOLATE® acrylic thickeners for aqueous systems

RHEOLATE® alkali swellable rheological additives are free-flowing liquids, based on acrylic copolymer chemistry and are known for their ability to swell and thicken when neutralized with alkali.

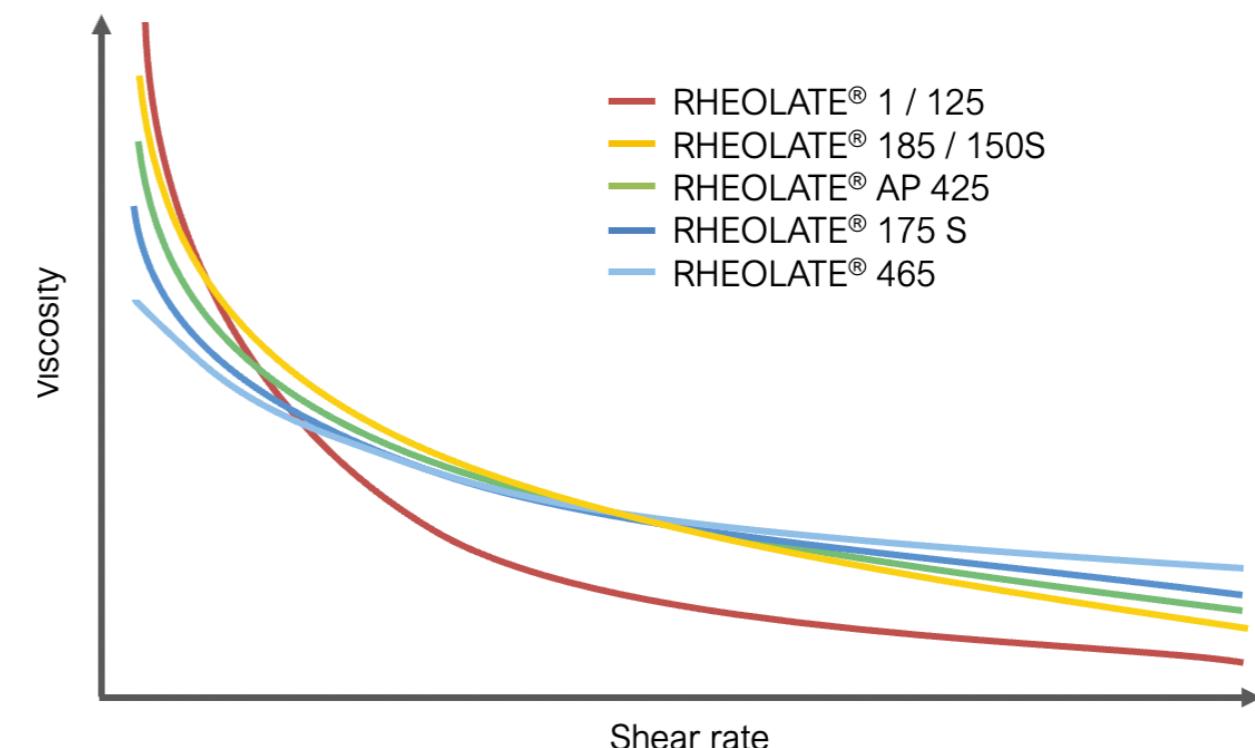
Each product enhances viscosity development, flow and application properties and can easily be post-added in the manufacturing process of various aqueous systems, including paints, coatings, adhesives, and construction materials.

RHEOLATE® ASE/HASE benefits:

Broad range of RHEOLATE® ASE/HASE thickeners are available for different application techniques to achieve optimum application properties:

- Easy to incorporate at different stages of production
- Resistant to microbiological and enzyme spoilage
- Long-term stability in the final product.
- Providing a balanced flow and sag resistance
- Potential use as full or partial replacements for HEC and HMHEC

Schematic comparison of flow / precise flow is latex dependent



RHEOLATE® thickeners

| Product Name | Composition | Description | Solventborne | Waterborne | Application | | | | | | | | | | | | | | | | Shear Rate |
|--------------------|----------------------|---|--------------|------------|------------------------|-------------------|---------------|----------------------------|--------------------------|------------------|-----------------------|---------------|-----------------------------|----------------------------|-----------------|---------------|------------------|------------------|--------|----------------|---------------|
| | | | | | Architectural coatings | | | | Industrial coatings | | | | Construction | | | | Others | | | | |
| | | | | | Exterior coatings | High PVC coatings | Flat coatings | Semi-gloss/ gloss coatings | Water reducible coatings | Car-OEM coatings | Car refinish coatings | Coil coatings | General industrial coatings | Marine protective coatings | Plastic coating | Wood coatings | Asphalt emulsion | Concrete coating | Grouts | Plaster/stucco | Roof coatings |
| Acrylic thickeners | | | | | | | | | | | | | | | | | | | | | |
| RHEOLATE® 1 | Acrylic emulsion | Excellent low shear ASE-type viscosity builder. Cost-effective replacement for medium molecular weight HEC with improved sag and settling for low PVC systems, including wood, architectural, and industrial coatings. | | | ● | ○ | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| RHEOLATE® 135 | Acrylic emulsion | Excellent performance in high PVC and contractor grade paints. Good contribution to mid and high shear viscosity. Provides excellent film build, leveling and spatter resistance. | | | ● | ○ | ● | ● | ● | ● | | | | | ○ | ● | ● | ● | ● | | ○ |
| RHEOLATE® 150S | Acrylic emulsion | Excellent low shear viscosity builder. Most pseudoplastic of all HASE products shown. Cost-effective alternate to high molecular weight HEC. Recommended for interior paints. | | | ● | ○ | ● | ● | ● | ○ | ○ | ○ | ● | ○ | ○ | ● | ○ | ● | ● | ● | ● |
| RHEOLATE® 175S | Acrylic emulsion | Excellent mid to high shear viscosity builder. Provides excellent film build, leveling and spatter resistance. | | | ● | ○ | ● | ● | ● | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ● | ○ | ● | ● | ● |
| RHEOLATE® 185 | Acrylic emulsion | Excellent low-shear acrylic thickener that was developed to replace HEC in interior and exterior formulations, giving improved applied hide and reduced spatter. | | | ● | ○ | ● | ● | ○ | ○ | ○ | ○ | | | | ● | ○ | ● | ● | ● | ● |
| RHEOLATE® 465 | Acrylic emulsion | HASE thickener with unique flow and leveling properties. Works well across all decorative latex systems. | | | ● | ○ | ○ | ● | ● | ● | ● | ○ | ○ | ○ | ○ | ○ | ○ | ● | ○ | ○ | ○ |
| RHEOLATE® AP 425 | Acrylic emulsion | Economical and versatile hydrophobically modified alkali swellable thickener designed to fully or partially replace cellulosic thickeners in a variety of waterborne systems. | | | ● | ○ | ○ | ● | ● | ● | ● | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ● | ● | ● |
| DeuRheo WT-115 | Anionic-polyacrylate | A highly efficient alkali swellable acrylic associate thickener (HASE). It is easy to use with excellent thickening effect, flow and leveling. When applied by roller it eliminates spattering and has good syneresis resistance. | | | ● | ○ | ○ | ○ | ○ | ○ | ○ | | ● | | | | | ● | ● | ● | ● |

● Highly recommended ○ Recommended

THIXATROL® organic thixotropes

THIXATROL® and THIXCIN® organic thixotrope rheological additives for non-aqueous systems are based on castor wax derivatives and polyamides.

They typically need appropriate wetting and a certain activation temperature window to achieve optimum performance.

THIXATROL® benefits:

- Imparting thixotropy/ pseudoplastic flow characteristics
- Perfect rheology modifier for spray application and extrusion process
- Excellent sag resistance at extremely high film thickness
- Uniform film formation also at low film thickness

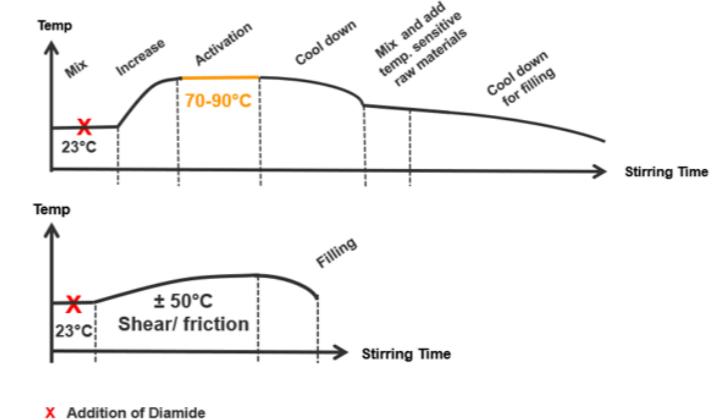
THIXATROL® AS and PM benefits:

- Higher efficiency compared to references and mineral based rheological additives
- Lower activation temperature (from 40°C onwards)
- Shorter process times allowing for time savings and leading to higher production capacity
- Wider temperature activation window resulting in more robust process
- Improved storage stability of final formulation
- Higher elasticity in final application compared to mineral based rheological additives

M-P-A® Anti-settling Agents

M-P-A® are ready-to-use anti-settling agents for water- and solventborne systems used for improving storage stability of the final formulation while not having negative impact on the application viscosity.

Old high temperature process vs. optimized process



| Product | Renewable content (ISO 16128 calculated) in % | Renewable carbon content* in % |
|--------------------|---|--------------------------------|
| THIXATROL® AS 8053 | 69,7 | 78,3 |
| THIXATROL® PM 8056 | 72,0 | 81,8 |
| THIXATROL® PM 8058 | 74,8 | 82,5 |
| THIXATROL® MAX | 86,8 | 92,3 |

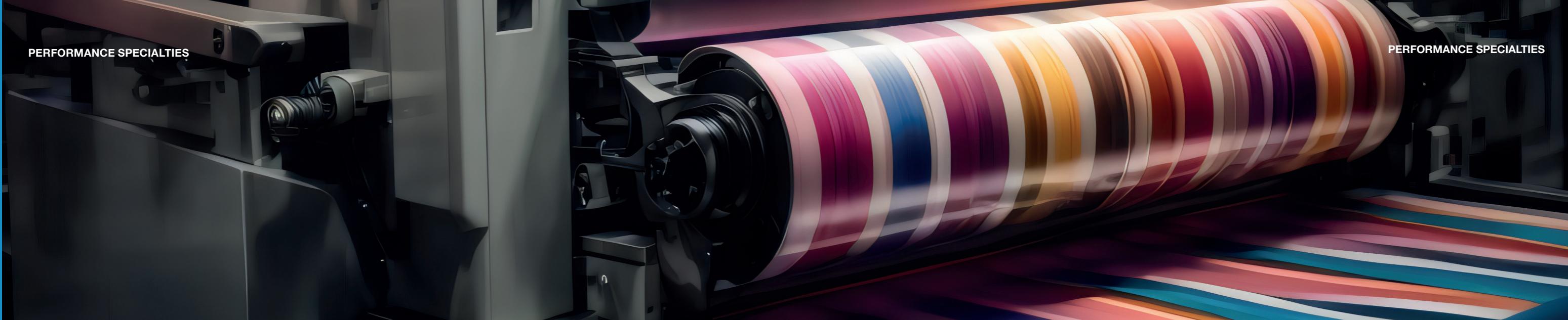
*%Renewable carbon calculates percentage of renewable carbon to total organic carbon, as per ASTM D6866, and can be validated via measurement of 14C content

| Product name | Composition | Description | Solvent | Solid % | Solventborne | Waterborne | Applications | | | | | | | | | | Polarity | | |
|----------------------|--|---|------------------------------------|---------|--------------|------------|---------------------|------------------|-----------------------|---------------|-----------------------------|----------------------------|-----------------|---------------|---------------|------------------------|------------------|------|---|
| | | | | | | | Industrial coatings | | | | | Construction | | Others | | | | | |
| | | | | | | | Can coatings | Car-OEM coatings | Car refinish coatings | Coil coatings | General industrial coatings | Marine protective coatings | Plastic coating | Wood coatings | Roof coatings | Adhesives and sealants | Leather coatings | Inks | |
| Anti settling agents | | | | | | | | | | | | | | | | | | | |
| M-P-A® 202P | Polyolefin wax | Polyolefin wax dispersion anti-settling agent for highly efficient control of pigment settling. | Xylene | 19-21 | ● | | ● | ● | ● | ● | ● | ● | ● | ● | | | ● | ● | ● |
| M-P-A® 1075 | Organic compound | Solid paste, easy incorporation, anti-settling agent for virtually all water-reducible and butanol compatible coatings system. | Butanol | 45 | | ● | | | | | ● | ○ | | | | | | | ● |
| M-P-A® 1078-X | Organic compound | Very soft paste, anti-settling agent for industrial coatings | Xylene | 40 | ● | | | | | | ● | | | | | | | ○ | ● |
| M-P-A® 20-X | Complex polyolefin compound | Translucent soft paste rheological additive which prevents pigment settling in solventborne coatings. It is especially designed to prevent settling in non-aqueous systems with no significant increase in viscosity. | Xylene | 20 | ● | | | | | | ● | | | | | | | ○ | ● |
| M-P-A® 2000-X | Organic compound | Easy incorporated, highly efficient, liquid, pourable anti-settling and sag control agent. | Xylene | 20 | ● | | ● | ● | | ● | ● | ● | ● | ● | ○ | | | ○ | ● |
| M-P-A® 24X | Complex polyolefin compound and xylene | Translucent paste thixotropic rheological additive for solventborne coatings. It prevents pigment settling and gives good suspension. | Xylene | 24 | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | |
| M-P-A® 60-X | Organic compound | Soft paste anti-settling agent dispersed in xylene. | Xylene | 24 | ● | | ○ | ○ | ○ | ○ | ● | ● | ○ | ○ | | | | ○ | ● |
| DeuRheo 201 | Polyethylene wax | A polyethylene wax dispersion based anti-settling agent which can be handled easily and dispersed rapidly. | Xylene/IPA | 10 | ● | | ● | ● | | ● | ● | ● | ● | ● | ● | | | ● | ● |
| DeuRheo 201P | Polyethylene wax | A polyethylene wax dispersion based anti-settling agent which can be handled easily and dispersed rapidly. | Xylene/IPA | 10 | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ○ | ● | ● |
| DeuRheo 202 | Polyethylene wax | An anti-settling agent for highly filled solventborne coatings. | Xylene | 20 | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | ● | |
| DeuRheo 202P | Polyethylene wax | A polyethylene wax dispersion based anti-settling agent for highly efficient control of pigment settling. | Xylene | 20 | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | ● | ● |
| DeuRheo 202SP | Polyethylene wax | A polyethylene wax dispersion based anti-settling agent for highly efficient control of pigment settling. | Xylene | 25 | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | ● | |
| DeuRheo 211 | Polyethylene wax | A polyethylene wax dispersion based anti-settling agent which can be handled easily and dispersed rapidly. | Xylene | 10 | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | ● | |
| DeuRheo 211F | Polyethylene wax | An aromatic free polyethylene wax dispersion based anti-settling agent, which can be handled easily and dispersed rapidly. | n-butyl Acetate/ Methylcyclohexane | 10 | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● |
| DeuRheo 212 | Polyethylene wax | A polyethylene wax dispersion based anti-settling agent for highly efficient control of pigment settling. | Xylene | 20 | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | ● | |
| DeuWax FA-110 | Polyethylene wax | Flattening agent for silky smooth surfaces, improves scratch resistance of flattening silica. | Xylene/n-butyl acetate | 10 | ● | | | | | | | | ● | ● | | | ● | ● | |
| DeuWax FA-115 | Polyethylene wax | Unique wax based dispersion which gives exceptional flattening and slip resistance to paint films. | Toluene | 15 | ● | | | | | | | | ● | ● | | | ● | ● | |
| RHEOLATE 2001 | Polyolefin wax dispersion | Highly efficient, pourable liquid anti-settling additive | | 24 | | ● | | | | | ● | | ● | ● | | | | | ● |

● Highly recommended ○ Recommended

| Product name | Composition | Description | Solvent | Solid % | Solventborne | Waterborne | Applications | | | | | | | | Polarity | | | |
|-----------------------|---------------------------------|---|--|---------|--------------|------------|---------------------|------------------|-----------------------|---------------|-----------------------------|----------------------------|-----------------|---------------|---------------|------------------------|------|------------------|
| | | | | | | | Industrial coatings | | | | Construction | | Others | | | | | |
| | | | | | | | Can coatings | Car-OEM coatings | Car refinish coatings | Coil coatings | General industrial coatings | Marine protective Coatings | Plastic coating | Wood coatings | Roof coatings | Adhesives and sealants | Inks | Leather coatings |
| Rheological additives | | | | | | | | | | | | | | | | | | |
| THIXATROL® P2100W | Proprietary organic | Organic thixotrope that provides excellent anti-sagging, anti-settling effect and improves the orientation of metallic pigments in industrial coatings. | Water/propylene glycolmonomethyl ether | 16 - 20 | | ● | | ● | | | ● | | | | | | | |
| THIXATROL® 5020W | Modified EVA emulsion | Improvement of orientation of effect pigments and anti-sagging and anti-settling effect. | Water | 18 - 22 | | ● | | ● | ● | | ● | | ● | ● | | ● | ● | |
| THIXATROL® 5050W | Modified EVA copolymer emulsion | Excellent orientation of metallic & pearlescent pigments in coating films through particle's steric hindrance mechanism. Slight effect on low shear viscosity at increased dosage levels. | Water | 18 - 22 | | ● | | ● | ● | | ● | | ● | ● | | ● | ● | |
| THIXATROL® AS 8024 | Proprietary organic | Special grade for sag resistance at elevated temperatures during application process. | | 100 | ● | | | | | | | ● | | | | ● | ● | ● |
| THIXATROL® AS 8053 | Proprietary organic | Low temperature activation and highly effective organic thixotrope for solventborne and high solids systems, very suitable for adhesives and sealants. | N.A. | 100 | ● | | | | | | | ● | | | | ● | ● | ○ |
| THIXATROL® PM 8056 | Proprietary organic | Low temperature activation and highly effective organic thixotrope for solventborne and high solids systems. | N.A. | 100 | ● | | | | | | | ● | | | | ● | ● | ● |
| THIXATROL® PM 8058 | Proprietary organic | High performance organic thixotrope with easy activation; works with most solventborne systems especially those containing high alcohol content. | N.A. | 100 | ● | | | | | | | ● | | | | ● | ● | ● |
| THIXATROL® MAX | Proprietary organic | Cost effective seed-resistant, powdered diamide thixotrope for solventborne and high solids systems. | N.A. | 100 | ● | | | | | | | ● | | | | ● | ● | ● |
| THIXATROL® PLUS | Proprietary organic | Provides viscosity, thixotropy and sag control in both conventional and high build systems. | N.A. | 100 | ● | | | | | | | ● | | | | ● | ● | ● |
| THIXCIN E | Castor oil derivative | Powdered thixotrope, chemically the same as THIXCIN® R, but less dusty. | N.A. | 100 | ● | | | | | | | | ○ | | | ● | | ● |
| THIXCIN R | Castor oil derivative | Organic thixotrope for low polarity aliphatic systems. | N.A. | 100 | ● | | | | ● | | | | ○ | | | ● | | ● |
| THIXATROL® P200A | Polyamide wax | Polyamide paste thixotrope in aromatic solvents for solventborne systems. | Aromatic 100, ethanol | 20 | ● | | | ● | ● | | ● | ● | ● | ● | | | | ● |
| THIXATROL® P220X | Polyamide wax | Polyamide paste thixotrope in xylene for solventborne systems. | Xylene/alcohols | 20 | ● | | | ● | ● | | ● | ● | ● | ● | | | | ● |
| THIXATROL® P230X | Polyamide wax | Polyamide paste thixotrope in xylene for solventborne systems. | Xylene/alcohols | 20 | ● | | | ● | ● | | ● | ● | ● | ● | | | | ● |
| THIXATROL® P240X | Special polyamide wax | Polyamide paste thixotrope for solventborne systems. | Xylene/alcohols | 20 | ● | | | ● | ● | | ● | ○ | ● | ● | | | | ● |
| THIXATROL® P260X | Special polyamide wax | Polyamide paste thixotrope for solventborne systems. | Xylene/alcohols | 20 | ● | | | | | | ● | ○ | | | | | | ● |
| DeuRheo 229 | Polyamide wax | A special polyamide wax dispersion, which prevents pigments or fillers from settling and sagging. | Xylene/alcohols | 20 | ● | | | ● | ● | | ● | ● | ● | ● | | ○ | ● | ● |
| Others | | | | | | | | | | | | | | | | | | |
| DeuRheo 2810 | Modified polyurea | A liquid rheology modifier for solventborne coatings. it does not require a specific activation temperature for incorporation. | N-methyl pyrrolidone | 50-54 | ● | | | ○ | ○ | | ● | ● | ● | ● | | ● | | ● |
| DAPRO BEZ 75 | Sulphonated castor wax | Anti-settling agent especially for aromatic-free systems and efficient chemical activator for organoclays. | Water | 75 | ● | | | ● | | | ● | ● | ● | ● | | ● | ● | ● |

● Highly recommended ○ Recommended



Wetting & Dispersing Agents

NUOSPERE® and Disponer wetting & dispersing agents

NUOSPERE® and Disponer wetting and dispersing agents provide good wetting and dispersing performance for inorganic and organic fillers and pigments. They are widely compatible with aqueous, solvent-based and solvent-free coatings, construction, adhesives & sealants formulas. They are essential agents for achieving uniform dispersion of pigments and fillers and improved stability which directly impacts the quality and durability of the final product.

NUOSPERE® wetting and dispersing agents benefits:

- Rapid pigment/ filler wetting
- Full colour and maximum tinting strength development
- Long-term stability (anti-settlement/ flocculation resistance)
- Increased mill output
- Good flow at high pigment/ filler loading
- Compatibility with a broad range of formulations
- Elimination of floating, flooding and rub-up
- Maximum colour acceptance of all bases

Wetting and dispersing agents

| Product name | Composition | Description | Actives % | Solventborne | Waterborne | Compatibilizer | Architectural coatings | | | Industrial coatings | | | Construction | | Others | | Pigments | | | | | | | | | | | | | | |
|--------------------------------------|---------------------|---|-----------|--------------|------------|----------------|------------------------|-------------------|---------------|-------------------------------|--------------------------|--------------|------------------|-----------------------|---------------|-----------------------------|----------------------------|------------------|---------------|------------------|---------------|------------------------|------|------------------|-------|-------------------|--------------|--------------------------|-----------------------------|-----------------------------|---------------------|
| | | | | | | | Exterior coatings | High PVC coatings | Flat coatings | Semi-gloss and gloss coatings | Water reducible coatings | Can coatings | Car-OEM coatings | Car refinish coatings | Coil coatings | General industrial coatings | Marine protective coatings | Plastic coatings | Wood coatings | Asphalt emulsion | Roof coatings | Adhesives and sealants | Inks | Leather coatings | White | Extenders/fillers | Carbon black | Oxides, sienna and umber | Organic yellow, orange, red | Organic red, violet, purple | Phthalo blue, green |
| Wetting agents for waterborne system | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NUOSPERE® FN 211 | Nonionic surfactant | APE and VOC free, low foaming. | 100.0 | • | • | • | • | • | • | • | • | Can coatings | Car-OEM coatings | Car refinish coatings | Coil coatings | General industrial coatings | Marine protective coatings | Plastic coatings | Wood coatings | Asphalt emulsion | Roof coatings | Adhesives and sealants | Inks | Leather coatings | White | Extenders/fillers | Carbon black | Oxides, sienna and umber | Organic yellow, orange, red | Organic red, violet, purple | Phthalo blue, green |
| NUOSPERE® FN 265 | Nonionic surfactant | APE and VOC free wetting agent for waterborne decorative paints and colorant systems. | 90.0 | • | • | • | • | • | • | • | • | Can coatings | Car-OEM coatings | Car refinish coatings | Coil coatings | General industrial coatings | Marine protective coatings | Plastic coatings | Wood coatings | Asphalt emulsion | Roof coatings | Adhesives and sealants | Inks | Leather coatings | White | Extenders/fillers | Carbon black | Oxides, sienna and umber | Organic yellow, orange, red | Organic red, violet, purple | Phthalo blue, green |
| NUOSPERE® FN 270 | Nonionic surfactant | APE and VOC free wetting agent for waterborne decorative base paints, low foaming. | 100.0 | • | • | • | • | • | • | • | • | Can coatings | Car-OEM coatings | Car refinish coatings | Coil coatings | General industrial coatings | Marine protective coatings | Plastic coatings | Wood coatings | Asphalt emulsion | Roof coatings | Adhesives and sealants | Inks | Leather coatings | White | Extenders/fillers | Carbon black | Oxides, sienna and umber | Organic yellow, orange, red | Organic red, violet, purple | Phthalo blue, green |

• Highly recommended o Recommended

Wetting and dispersing agents

| Product name | Composition | Description | Actives % | Applications | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|---|-------------------|------------------------|---------------|-------------------------------|--------------------------|--------------|------------------|-----------------------|---------------|-----------------------------|----------------------------|------------------|---------------|------------------|---------------|------------------------|------|------------------|-------|-------------------|--------------|--------------------------|-----------------------------|-----------------------------|---------------------|
| | | | | Architectural coatings | | | Industrial coatings | | | Construction | | Others | | Pigments | | | | | | | | | | | | | |
| Solventborne | Waterborne | Compatibilizer | Exterior coatings | High PVC coatings | Flat coatings | Semi-gloss and gloss coatings | Water reducible coatings | Can coatings | Car-OEM coatings | Car refinish coatings | Coil coatings | General industrial coatings | Marine protective coatings | Plastic coatings | Wood coatings | Asphalt emulsion | Roof coatings | Adhesives and sealants | Inks | Leather coatings | White | Extenders/fillers | Carbon black | Oxides, sienna and umber | Organic yellow, orange, red | Organic red, violet, purple | Phthalo blue, green |
| Wetting agents for waterborne system | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NUOSPERE® FX 365 | Nonionic surfactant | Pigment wetting and dispersing agent for industrial systems. | 90.0 | ● | ● | ○ | ○ | ○ | ● | ● | ● | ● | ● | ● | ● | ○ | ○ | ● | ● | ● | ● | ● | ● | ● | ● | | |
| NUOSPERE® 2006 | Anionic surfactant | Wetting agent and color acceptance improver. | 76.0 | ○ | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | ○ | ○ | ○ | |
| Disponer W-18 | Non-ionic surfactant | Non-ionic wetting, dispersing, anti-floating, anti-flooding and emulsion stabilizer for waterborne systems. | 100.0 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| Disponer W-19 | Non-ionic surfactant | Non-ionic wetting, dispersing, anti-floating, anti-flooding and emulsion stabilizer for waterborne systems. | 100.0 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| NUOSPERE® W-33 | Mixture of wetting and dispersing agents | Dispersing agent for waterborne systems, organic yellows, reds, carbon blacks and whites | 32.0 | ● | ○ | ○ | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| Dispersing agents for waterborne and universal pigment dispersions | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NUOSPERE® 2000 | Hydrophilic humectant | Liquid carrier and humectant with pigment dispersing functionality for low-VOC universal colorants. | 71.0 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| NUOSPERE® W-22 | Mixture of wetting and dispersing agents | Dispersing agent for waterborne systems, organic yellows, reds, carbon blacks and whites. | 29.0 | ● | ○ | ○ | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| NUOSPERE® W-30 | Anionic dispersant | A wetting and dispersing agent for the manufacture of highly concentrated, low viscosity waterborne pigment dispersions. | 42.0 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| NUOSPERE® FA 620 | Anionic dispersant | Wetting and dispersing agent for pigment concentrates. | 50.0 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| NUOSPERE® FX 7500W | Polymeric dispersant | Highly efficient dispersant for waterborne industrial applications. | 40.0 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| NUOSPERE® FX 7600W | Polymeric dispersant | Universal dispersant for all kind of pigments. Good colour strength development and stabilisation of carbon black pigments. Preferable for resin-containing pigment preparations. | 35.0 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |

● Highly recommended ○ Recommended

Wetting and dispersing agents

| Product name | Composition | Description | Actives % | Solventborne | Waterborne | Compatibilizer | Applications | | | | | | | | | | | | | | | | | | | | | | |
|--|--|--|-----------|--------------|------------|----------------|------------------------|-------------------|---------------|-------------------------------|--------------------------|--------------|------------------|-----------------------|---------------|-----------------------------|----------------------------|------------------|---------------|------------------|---------------|------|------------------|-------|-------------------|--------------|--------------------------|-----------------------------|-----------------------------|
| | | | | | | | Architectural coatings | | | | Industrial coatings | | | | Construction | | Others | | Pigments | | | | | | | | | | |
| | | | | | | | Exterior coatings | High PVC coatings | Flat coatings | Semi-gloss and gloss coatings | Water reducible coatings | Can coatings | Car OEM coatings | Car refinish coatings | Coil coatings | General industrial coatings | Marine protective coatings | Plastic coatings | Wood coatings | Asphalt emulsion | Roof coatings | Inks | Leather coatings | White | Extenders/fillers | Carbon black | Oxides, sienna and umber | Organic yellow, orange, red | Organic red, violet, purple |
| Dispersing agents for waterborne and universal pigment dispersions | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NUOSPERE® FX 504 | Ammonium salt of a polycarboxylic acid | Pigment dispersant for deco coatings. | 30.0 | | ● | ○ | ● | ● | | | | | | | | | | | | ○ | ● | | | | ● | ● | | | |
| NUOSPERE® FX 600 | Multi-functional polymer | Pigment dispersant for industrial and deco coatings and colorants. | 25.0 | | ● | | | | | | | | | | ● | ● | ● | ● | ● | ● | ○ | ● | ● | ● | ● | ● | ● | ○ | |
| NUOSPERE® FX 605 | Sodium salt of a polycarboxylic acid | Pigment dispersant for deco coatings. | 45.0 | | ● | | | ● | ● | | | | | | | | | | | | | ● | | ● | ● | ● | ● | | |
| NUOSPERE® FX 618 | Ammonia neutralized copolymer | Hydrophobic copolymer dispersant, intended for use in high performance interior and exterior waterbased coatings. Good compatibility with NiSat's. | 35.0 | | ● | | ● | | | | | ● | ● | | | | | | | | ● | | | ● | ● | ● | ● | | |
| NUOSPERE® FX 631 | NaOH neutralized copolymer | General purpose dispersant for coatings and inorganic pigment dispersions. Good compatibility with NiSAT's. | 25.0 | | ● | | ● | | | | | ● | ● | | | | | | | | ● | | | ● | ● | ● | ● | | |
| NUOSPERE® FX 665 | Ammonia neutralized copolymer | Hydrophobic dispersant with excellent water resistance for waterborne industrial and high performance deco paints. | 22.0 | | ● | | ● | | | | | ● | ● | | | | | | | | ● | | | ● | ● | ● | ● | | |
| NUOSPERE® FA 115 | Anionic dispersant | Additive to improve the incorporation of universal colorants into base paints. | 50.0 | | ● | ● | | | | | | | | ● | | | | | | | | | ○ | ○ | ○ | ○ | ○ | | |
| NUOSPERE® FA 182 | Anionic surfactant | Wetting agent and color acceptance improver for dispersion paints; also used to reduce resistance of electrostatic spray paints. | 65.0 | ● | ● | ● | | | | | | | | | | | | | | | | | | | | | | | |
| NUOSPERE® FA 196 | Phosphate ester | Pigment dispersant for carbon blacks and organic pigments. | 91.0 | ● | ● | ● | | | | | | ○ | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | |
| Disponer W-518 | Ammonium salt of a polycacrylic acid | Low foaming polymeric dispersing agent which works effectively for a wide variety of pigments and extenders used in waterborne coatings. | 34.0 | | ● | | ● | ● | ● | | | ● | ● | | | | | | | | ● | ● | ● | ● | ● | ● | ● | | |

● Highly recommended ○ Recommended

Wetting and dispersing agents

| Product name | Composition | Description | Actives % | Solventborne | Waterborne | Compatibilizer | Applications | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|---|-------------|--------------|------------|----------------|------------------------|-------------------|---------------|-------------------------------|--------------------------|--------------|------------------|-----------------------|---------------|-----------------------------|----------------------------|------------------|---------------|------------------|---------------|------------------------|------|------------------|-------|-------------------|--------------|--------------------------|-----------------------------|-----------------------------|---------------------------|
| | | | | | | | Architectural coatings | | | | Industrial coatings | | | | Construction | | Others | | Pigments | | | | | | | | | | | | |
| Wetting and dispersing agent for solventborne system | | | | | | | Exterior coatings | High PVC coatings | Flat coatings | Semi-gloss and gloss coatings | Water reducible coatings | Can coatings | Car-OEM coatings | Car refinish coatings | Coil coatings | General industrial coatings | Marine protective coatings | Plastic coatings | Wood coatings | Asphalt emulsion | Roof coatings | Adhesives and sealants | Inks | Leather coatings | White | Extenders/fillers | Carbon black | Oxides, sienna and umber | Organic yellow, orange, red | Organic red, violet, purple | Pthalocyanine blue, green |
| NUOSPERE® 2008 | Anionic dispersant | Pigment dispersant for carbon blacks and organic pigments. | 100.0 | ● | ● | ● | | | | | ● | | ○ | | ○ | ○ | ○ | ○ | ○ | | | | | ● | ● | ● | ○ | ○ | ○ | | |
| NUOSPERE® AP 657 | High molecular weight polyester | Pigment dispersant for industrial and deco coatings and primers. | 70-75 | ● | | | | | | | | | | | ● | ● | | | | | | | ● | ● | ● | ● | ○ | ○ | ○ | | |
| NUOSPERE® 757 | High molecular weight polyester | Pigment dispersant for industrial and deco coatings and primers. | 70-75 | ● | | | | | | | | | | | ● | ● | ● | | | | | | ● | ● | ● | ● | ● | ○ | ○ | ○ | |
| NUOSPERE® FX 9086 | Polymeric dispersant | Dispersant for industrial coatings. | 50.0 | ● | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | ● | ○ | ○ | ○ | |
| NUOSPERE® FX 9200 | Polymeric dispersant | NUOSPERE® FX 9200 is suitable for solventborne and non-solvent inks. It provides good wetting and dispersing performance to organic pigments and carbon blacks. | 100.0 | ● | | | | | | | | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | | |
| NUOSPERE® FX 9360 | Highly branched copolymer containing multiple anchoring groups | It provides good wetting and dispersing performance to organic pigments and carbon blacks. | 40.0 | ● | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | | ○ | ● | ● | ● | ● | ● | ● | | |
| Disponer 903 | Modified polysiloxane | Additive to eliminate floating, flooding and silking in multi-pigment system. Post addition possible. | 8.5-10.5 | ● | | | | | | | | | | | ○ | ○ | ○ | ○ | ● | ● | ● | | ○ | ○ | ○ | ○ | ○ | ○ | | | |
| Disponer 904 | High molecular weight | Wetting dispersing, anti-floating and anti-flooding agent for solventborne paints. | 49.0 - 51.0 | ● | | | | | | | | | | | ○ | ○ | ○ | ○ | ● | ● | ● | | ● | ● | ● | ● | ● | ● | | | |
| Disponer 904S | Solution of polycarboxylic acid polymer with modified polysiloxane | Additive for polar and non-polar systems. Activity for the most part independent of the binder. For systems based on alkyd, epoxy, acrylic resins, PUR, polyesters and vinyl compounds. | 49.0 - 51.0 | ● | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | ● | ● | | | |
| Disponer 912 | Solution of a salt of polyamide and polyester, electroneutral | Suitable for use with various organic and inorganic pigments. Higher pigment loadings are possible with lower viscosities. | 48.0 - 52.0 | ● | | | | | | | | | | | ○ | ○ | ○ | ○ | ● | ○ | ● | | ● | ● | ● | ● | ● | ● | | | |

● Highly recommended ○ Recommended

Wetting and dispersing agents

| Product name | Composition | Description | Actives % | Solventborne | Waterborne | Compatibilizer | Applications | | | | | | | | | | | | | | | | | |
|--|---|---|-------------------------------|--------------------------|--------------|--------------------|------------------------|---------------|-----------------------------|----------------------------|------------------|---------------|------------------|---------------|------------------------|--------|------------------|----------|-------------------|--------------|--------------------------|-----------------------------|-----------------------------|---------------------|
| | | | | | | | Architectural coatings | | | Industrial coatings | | | | Construction | | Others | | Pigments | | | | | | |
| Exterior coatings | High PVC coatings | Flat coatings | Semi-gloss and gloss coatings | Water reducible coatings | Can coatings | Car - OEM coatings | Car refinish coatings | Coil coatings | General industrial coatings | Marine protective coatings | Plastic coatings | Wood coatings | Asphalt emulsion | Roof coatings | Adhesives and sealants | Inks | Leather coatings | White | Extenders/fillers | Carbon black | Oxides, sienna and umber | Organic yellow, orange, red | Organic red, violet, purple | Phthalo blue, green |
| Wetting and dispersing agent for solventborne system | | | | | | | | | | | | | | | | | | | | | | | | |
| Disponer 923S | Electroneutral amine salt of polycarboxylic acid with modified polysiloxane | Exceptional pigment wetting, dispersing, anti-settling, flooding and floating additive. Acts as activator for bentonites. | 38.0 - 41.0 | ● | | | | | | ○ | ○ | ○ | ○ | ● | ○ | | | ● | ● | ● | ● | ● | | |
| Disponer 9250 | Solution of a copolymer with acidic groups | Excellent wetting and dispersing agent for the stabilization of inorganic pigment | 48.5 - 51.5 | ● | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ○ | ○ |
| Disponer 929 | Anionic surfactant | An unique dispersant specifically for carbon black, excellent color development and flocculation stability | 48.0 - 51.0 | ● | | | | | | | | | | ● | | | | | ● | ● | ● | ● | ● | |
| Disponer 983 | High molecular weight polymer | Polymeric dispersant for wetting and dispersing of carbon black, prevents pigment reflocculation. | 52.5 - 54.5 | ● | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ○ | ○ | ○ | ○ | ● | |
| Disponer 9850 | High molecular weight polymer solution | Developed for organic pigment, exhibits excellent dispersing and wetting performance. | 44.0 - 47.0 | ● | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ○ | ● | ● | ● | ● | ● |

● Highly recommended ○ Recommended



Defoamers and Specialties

DAPRO® and Defom Defoamers

DAPRO® and Defom defoamers are based on a variety of active materials to provide air release and bubble-breaking for most applications such as paints, coatings, inks, adhesives & sealants and construction products. They help prevent and eliminate foam formation, which can cause defects and reduce the efficiency of production processes.

DAPRO® defoamers benefits:

- Excellent antifoaming and defoaming properties
- Easy to use and incorporate
- Good compatibility
- Very good long-term efficiency

Defoamers

| Product Name | Composition | Description | Solventborne | Waterborne | Application | | | | | | | | | | | | | | | | | | | | | |
|-----------------|----------------------------------|--|--------------|------------|------------------------|--------------|---------------|----------------------------|--------------------------|--------------|------------------|-----------------------|---------------|-----------------------------|----------------------------|-----------------|---------------|------------------|----------|--------|----------------|---------------|---------------|------------------------|--------------------|------|
| | | | | | Architectural coatings | | | | Industrial coatings | | | | Construction | | | | Others | | | | | | | | | |
| | | | | | Deco grind | Deco letdown | Flat coatings | Semi-gloss/ gloss coatings | Water reducible coatings | Can coatings | Car-OEM coatings | Car refinish coatings | Coil coatings | General industrial coatings | Marine protective coatings | Plastic coating | Wood coatings | Asphalt emulsion | Concrete | GROUTS | Plaster/stucco | Roof coatings | Tile adhesive | Adhesives and sealants | Emulsion synthesis | Inks |
| DAPRO® AP 1622 | Modified polysiloxane solution | Has outstanding defoaming properties in a variety of solvent systems. Easy to incorporate in solventborne coatings and inks. | ● | ● | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | ● | | | |
| DAPRO® AP 7010 | Dispersion of wax in mineral oil | It is specially recommended for systems with good emulsifying properties, such as surfactant stabilised emulsions and emulsion paints. The product shows very good long-term efficiency. | | ● | | ● | ● | | | | | | | ● | ● | ● | ○ | | | | | | | | ● | |
| DAPRO® AP 7015S | Dispersion of wax in mineral oil | A defoamer for waterborne systems with good emulsifying properties. It has excellent anti-foaming and de-foaming effects. | | ● | | ● | ● | ● | | | | | | ● | ● | ○ | ● | | | | | ● | ● | ● | ● | ● |

● Highly recommended ○ Recommended

Defoamers

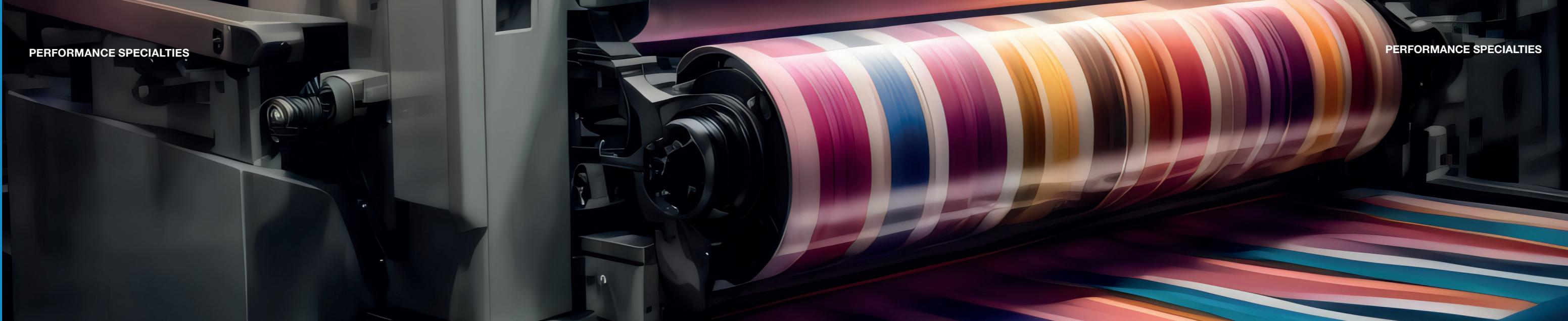
| Product Name | Composition | Description | Solventborne | Waterborne | Application | | | | | | | | | | | | | | | | | | | | | |
|-----------------|--|--|--------------|------------|------------------------|--------------|---------------|----------------------------|--------------------------|--------------|------------------|-----------------------|---------------|-----------------------------|----------------------------|-----------------|---------------|------------------|----------|--------|----------------|---------------|---------------|------------------------|--------------------|------|
| | | | | | Architectural coatings | | | | Industrial coatings | | | | Construction | | | | Others | | | | | | | | | |
| | | | | | Deco grind | Deco letdown | Flat coatings | Semi-gloss/ gloss coatings | Water reducible coatings | Can coatings | Car-OEM coatings | Car refinish coatings | Coil coatings | General industrial coatings | Marine protective coatings | Plastic coating | Wood coatings | Asphalt emulsion | Concrete | Grouts | Plaster/stucco | Roof coatings | Tile adhesive | Adhesives and sealants | Emulsion synthesis | Inks |
| DAPRO® AP 7072 | Modified polysiloxane solution | Effective in high quality rubber applications and provides excellent foam suppression and defoaming performance. DAPRO® AP 7072 is readily dispersible in water. | | • | | | | | | | | | | | | | | | | | | | | • | • | • |
| DAPRO® DF 605 | Silicone emulsion | An excellent defoamer for water based elastomeric coatings, mastics and water reducible industrial coatings | | • | | | | | | ○ | | | | | | | | | ○ | • | • | • | • | • | • | |
| DAPRO® DF 675 | Blend of glycols and modified polysiloxanes | Useful in high quality decorative and no-VOC decorative coating for maintaining gloss and minimizing surface defects | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | |
| DAPRO® DF 677 | Silicone emulsion | An excellent defoamer for water based industrial coatings and inks. | | • | | | | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| DAPRO® DF 7005 | dispersion of wax in mineral oil, Silicone free | Silicone free mineral oil type defoamer for deco paints application with long-term efficiency | | • | • | • | • | • | | | | | | | | | | | | | | | | • | | |
| DAPRO® DF 7073 | An emulsion of water, hydrophobic silica and mineral oil | Water dispersible foam control agent for decorative paints and coatings. It is effective in a broad range of high PVC paint systems by providing rapid bubble break at low concentrations. DAPRO® DF 7073 has little to no effect on gloss. | | • | | | • | | | | | | | | | | | | | | | | | | | |
| DAPRO® DF 7079 | A blend of hydrophobic silica in mineral oil | Excellent foam control as both the grind and let down defoamer in paints and coatings. It is particularly effective in semi-gloss and high gloss paints in providing rapid bubble break at low concentrations. | | • | | | | • | | | | | | | | | | • | • | • | • | | | | • | |
| DAPRO® DF 7160 | Hydrophobic silica blending with mineral oil | Easy disperse for pressure sensitive adhesive, latex synthesis and ink application with excellent antifoam and defoaming performance. Shows excellent foam control, less microfoam and increase coating speed while roller coating adhesive latex on BOPP film to reduce film transparency concern after processing. | | • | | | | • | • | | | | | | | | | • | | | | | | • | • | • |
| DAPRO® BIO 9910 | Fine dispersion of wax in vegetable oil | Vegetable oil based defoamer for waterborne applications; excellent compatibility, fast defoaming performance and good long-term persistency | | • | | | | • | • | | | | | | | | | • | • | ○ | | | | | | • |
| DAPRO® PD 801W | A blend of liquid defoamer on an inert carrier | Effective in the defoaming of entrained air in drywall joint compounds and other dry mixes | | • | | | | | | | | | | | | | | | | | • | • | • | | | |
| DAPRO® PD 829 | A blend of liquid defoamer on an inert carrier | Effective at preventing air entrainment in drywall joint compounds and other dry mixes | | • | | | | | | | | | | | | | | | | • | • | • | | | | |

• Highly recommended ○ Recommended

Defoamers

| Product Name | Composition | Description | | Solventborne | Waterborne | Application | | | | | | | | | | | | | | | | | | | | | | |
|--------------|---|--|--|--------------|------------|------------------------|--------------|---------------|----------------------------|--------------------------|--------------|---------------------|-----------------------|---------------|-----------------------------|----------------------------|-----------------|---------------|------------------|----------|--------|----------------|---------------|---------------|------------------------|--------------------|------|-----|
| | | | | | | Architectural coatings | | | | | | Industrial coatings | | | | | | Construction | | | | Others | | | | | | |
| | | | | | | Deco grind | Deco letdown | Flat coatings | Semi-gloss/ gloss coatings | Water reducible coatings | Can coatings | Car-OEM coatings | Car refinish coatings | Coil coatings | General industrial coatings | Marine protective coatings | Plastic coating | Wood coatings | Asphalt emulsion | Concrete | Grouts | Plaster/stucco | Roof coatings | Tile adhesive | Adhesives and sealants | Emulsion synthesis | Inks | FRP |
| Defom 2700 | Foam destroying polymer silicone-free | A silicone-free bubble releasing and anti-foaming agent for solventborne or solvent-free systems. It is more suitable for epoxy, unsaturated polyester and UV curing coatings. | | • | | | | | | | | | | | • | • | | • | | | | | | • | | | | |
| Defom 3200 | Foam destroying polymer silicone-free | A silicone-free bubble releasing and anti-foaming agent for solventborne and solvent-free systems. | | • | | | | | | | | | | | • | • | | • | | | | | | • | • | | | |
| Defom 3500 | Foam destroying polymer silicone-free | A silicone-free bubble releasing and anti-foaming agent for solventborne and solvent-free systems, especially in deaeration of high filler content wood primer. | | • | | | | | | | | | | | • | | | • | | | | | | • | • | • | • | |
| Defom 5300 | Modified polysiloxane | A bubble releasing, anti-foaming agent for high build PU coatings. | | • | | | | | | | | | | | • | • | • | • | • | • | • | • | | | | • | | |
| Defom 5400 | Modified polysiloxane | A solventborne bubble releasing, anti-foaming agent characterized by its improved compatibility. | | • | | | | | | | | | | | • | • | • | • | • | • | • | • | | | | • | | |
| Defom 5500 | Modified polysiloxane | A bubble releasing, anti-foaming agent for solventborne coatings. | | • | | | | | | | | | | | ○ | • | • | ○ | ○ | • | • | • | • | | | • | | • |
| Defom 5800F | Modified polysiloxane | An aromatic-free defoamer used in solventborne coatings. | | • | | | | | | | | | | | • | • | • | • | • | • | • | • | | | | • | | |
| Defom 6500 | Modified polysiloxane | A bubble releasing, anti-foaming agent for solventborne coatings. | | • | | | | | | | | | | | ○ | • | • | ○ | ○ | • | • | • | • | | | • | | |
| Defom 6800 | Polysiloxane containing hydrophobic particles | A bubble releasing, anti-foaming agent for thick film epoxy floor coatings and silk screen ink. | | • | | | | | | | | | | | | | • | • | | | | | | | • | • | • | |
| Defom W-082 | Mixture of mineral oil and hydrophobic particle | A hydrocarbon based waterborne defoamer, exhibit excellent antifoaming and defoaming effect. | | | • | | | • | • | | | | | | | | | | | | | | | | • | • | • | • |
| Defom W-086 | Mixture of mineral oil and hydrophobic particle | Hydrocarbon based waterborne defoamer, exhibits excellent anti-foaming and defoaming properties. Disperses well in water. | | | • | | | • | • | | | | | | | | | | | | | | | | • | • | • | |

• Highly recommended ○ Recommended



Slip and leveling additives

Basic Principles

DAPRO®, Levaslip and Levelol leveling and slip agents are based on modified polysiloxane and polyacrylate chemistries. They improve surface slip and leveling by quickly migrating to the coating surface and reduce surface tensions of the drying films. They promote levelling and eliminate the development of Benard cells, thus providing a uniform surface and color. In addition, the structures of the modified polysiloxanes provide a low coefficient of friction on coating surface after drying and enhance surface smoothness, slip and anti-scratch properties.

Polysiloxane leveling agents can negatively impact recoatability of dried films if they are too incompatible with other paint components or degrade under high temperature. Where the use of polysiloxane leveling agents is not recommended, Levelol polyacrylate leveling agents are the best alternatives for systems requiring good recoatability such as primers. They not only enhance film smoothness, but also promote leveling speed and substrate wetting. For very demanding applications, fluorocarbon-modified additives such as Levelol 837 and Levelol 839 are recommended.

Slip and leveling additives

| Product Name | Composition | Description | Solvent | Non-volatile content [%] | Application | | | | | | | |
|------------------|-----------------------|---|--|-----------------------------|----------------------------|-----------------|---------------|------------------------|--------|------------------|---|---|
| | | | | | Industrial coatings | | | | Others | | | |
| Can coatings | Car-OEM coatings | Car refinish coatings | Coil coatings | General industrial coatings | Marine protective coatings | Plastic coating | Wood coatings | Adhesives and sealants | Inks | Leather coatings | | |
| SLIP-AYD® FS 444 | Modified polysiloxane | Slip and mar resistance agent for a wide range of applications such as waterborne and polar solventborne applications | Dipropylene glycol ether | 50.0 | ● | ● | ● | ● | ● | ● | ● | ● |
| Levaslip 411 | Modified polysiloxane | Improves slip and leveling properties, reduces craters, fish eyes and pinholes. | Toluene | 7.2 | ● | ● | ● | ● | ● | ● | ● | ● |
| Levaslip 432 | Modified polysiloxane | Provides leveling, slip and substrate wetting, enhances orientation of matting silica to achieve uniform appearance. | Xylene/ethyleneglycol monobutyl ether/ toluene | 13.5 | ● | ● | ● | ● | ● | ● | ● | ● |

● Highly recommended ○ Recommended

Slip and leveling additives

| Product Name | Composition | Description | Solvent | Non-volatile content [%] | Solventborne | Waterborne | Application | | | | | | | | |
|---------------|---|---|---|--------------------------|--------------|------------|---------------------|------------------|-----------------------|---------------|-----------------------------|----------------------------|-----------------|---------------|---|
| | | | | | | | Industrial coatings | | | | Others | | | | |
| | | | | | | | Can coatings | Car-OEM coatings | Car refinish coatings | Coil coatings | General industrial coatings | Marine protective coatings | Plastic coating | Wood coatings | |
| Levaslip 435 | Modified polysiloxane | Provides excellent slip, anti-silicone effect, reduces coating's defects such as pinholes and craters on contaminated substrates. | None | >98.0 | • | | | | | ○ | | ○ | ○ | ● | ● |
| Levaslip 455 | Modified polysiloxane | Enhances leveling, slip and anti-floating properties. Provides anti-blocking for both water and solventborne applications. | Ethyleneglycol monobutyl ether | 50.0 | • | • | | | | ● | | ○ | ○ | ● | ● |
| Levaslip 466 | Modified polysiloxane | Good flow, leveling and slip performance, excellent wetting properties. Prevents surface defects. | Xylene/ethyleneglycol monobutyl ether | 24.0 | • | | ● | | ● | ● | ● | ● | ● | ● | ● |
| Levaslip 810 | Modified polysiloxane | A modified polysiloxane, imparts leveling and slip performance. | N.A. | >90.0 | • | | | | | ● | ○ | ● | ● | ● | ● |
| Levaslip 836 | Modified polysiloxane | Good compatibility and recoatability in various non-aqueous coatings, enhances orientation in metallic and mat coatings. | Xylene/isobutanol | 24.0 | • | | | | | ● | ● | ● | ● | ● | ● |
| Levaslip 866 | Modified polysiloxane | An additive to increase mar resistance and to improve slip as well as surface flow, suitable for solventborne systems. | Xylene/ethyleneglycol phenyl ether | 24.5 | • | | | | | ● | ● | ● | ● | ● | ● |
| Levaslip 875 | Modified polysiloxane | Polysiloxane surface additive with excellent compatibility, anti cratering, slip and leveling for wood coatings and general industrial coatings. | Aromatic hydrocarbon solvent/r-btyrolactone | 50.0 | • | | | | | ● | ● | ● | ● | ● | ● |
| Levaslip 876 | Modified polysiloxane | Good compatibility polysiloxane surface additive to provide good substrate wetting, anti-cratering performance, slip and excellent leveling for wood coatings, and general industrial coatings. | Xylene/ethyleneglycol phenylether | 13.0 | • | | | | | ● | ● | ● | ● | ● | ● |
| Levaslip 879 | Modified polysiloxane | Excellent slip performance, good compatibility and recoatability. | N.A. | >94.0 | • | | | ● | | ● | ● | ● | ● | ● | ● |
| Levelol 495 | Acrylic copolymer | Non-silicone flow and leveling agent, reduces craters and pinholes. | Xylene | 50.0 | • | | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Levelol 835 | Acrylic copolymer | Improves flow and leveling, good compatibility and intercoat adhesion. | Xylene | 50.0 | • | | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Levelol 837 | Fluorocarbon modified polyacrylate | Excellent substrate wetting, improves flow and leveling, good compatibility and intercoat adhesion. | Xylene | 70.0 | • | | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Levelol 839 | Fluorocarbon modified polyacrylate | An aromatic free, flow and leveling agent used in solventborne coatings. It can reduce the surface tension of a coating system, and shows good substrate wetting. It prevents crater, pinhole, and fisheye defects. | Propylene glycol monomethylether acetate | 50.0 | • | | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Levelol TSP | High boiling point solvents with surfactant | Leveling, anti-blushing, anti-popping agent, helps release of entrapped air. | Aromatic hydrocarbon solvent | 100.0 (active) | • | | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Levelol W-469 | Modified polysiloxane | Silicone type substrate wetting agent for waterborne systems. | N.A. | ca. 100.0 | | • | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| SUPREAD™ 3410 | Modified polysiloxane | Excellent substrate wetting and anti-cratering property, low foaming tendency, specially developed for waterbased industrial coatings for wood, plastic, metal, etc. | N.A. | >90.0 | | • | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| DAPRO® W-77 | Anionic surfactant mix | Interfacial tension modifier for industrial coatings and inks. | Butoxyethanol / Ethanol / Water | 50.0 | | • | | | | ● | ● | ● | ● | ● | ● |

● Highly recommended ○ Recommended



Specialty additives

Rust Inhibitors

NALZIN® FA 179 and NALZIN® FA 180 are flash rust and corrosion inhibitors for waterborne coatings to counteract flash rusting. They may be used as inhibitors against in-can corrosion as well.



| | After 1 hr. | After 2 hr. | After 3 hr. | After 24 hr. |
|--------------------------|-------------|-------------|-------------|--------------|
| +0.30 wt% NALZIN® FA 179 | 0 | 0 | 0 | 0 |
| Blank | 6 | 6 | 16 | 90 |

NALZIN® Flash rust inhibitors

NALZIN® flash rust inhibitor support the reduction of flash-rust formation and minimize in-can corrosion.

Adhesion Promoters

Elementis supplies a range of Adherant and DAPRO® adhesion promoters to improve adhesion of coating films on various substrates. Adherant 1121 is an amino silane coupling agent which improves the adhesion of air-dry alkyd paints to glass and metal substrates. It also improves the salt spray resistance of epoxy coating film when subject to high humidity or water immersion conditions.

Adherant ADP is a non-silicone polymeric compound that improves adhesion of paint film on non-ferrous substrates. Used mainly in baking paints, it improves the flexibility and impact resistance of paint films and shows good thermostability. Adherant ADP does not discolor at elevated temperature.

Adherant APW is an additive that improves intercoat adhesion and binding of metal pigments in the paint film. It also improves the flexibility and chemical resistance of paint films of acrylic and alkyd baking paints.

Adherant CP-7540 is a chlorinated polyolefin modified acrylic resin that gives excellent adhesion property in solventborne primers for PP bumpers. DAPRO® ACP- 16W is an APEO and VOC-free waterborne acrylic modified chlorinated polyolefin dispersion that provides excellent adhesion on polypropylene (PP) and thermoplastic polyolefin (TPO) substrates. DAPRO® ACP-16W can be used as the main resin or combined with other resins. It may be formulated into clear coat or colored coat for waterborne automotive basecoats, adhesives and inks, etc.

DAPRO® Coalescing agent and plasticizer

DAPRO® FX 514 is used for the reduction of the film formation temperature. In adhesive formulations it shows a plasticizing effect depending on use level.

Specialty additives

| Product Name | Composition | Description | Solventborne | Waterborne | Application | | | | | | | | | | | | | | | | | | | | |
|-----------------------|--|--|--------------|------------|-------------------|-------------------|---------------|----------------------------|--------------------------|--------------|------------------|-----------------------|---------------|-----------------------------|----------------------------|-----------------|---------------|------------------|----------|--------|----------------|---------------|---------------|------------------------|------|
| | | | | | Exterior coatings | High PVC coatings | Flat coatings | Semi-gloss/ gloss coatings | Water reducible coatings | Can coatings | Car OEM coatings | Car refinish coatings | Coil coatings | General industrial coatings | Marine protective coatings | Plastic coating | Wood coatings | Asphalt emulsion | Concrete | Grouts | Plaster/stucco | Roof coatings | Tile adhesive | Adhesives and sealants | Inks |
| Adhesion promoters | | | | | | | | | | | | | | | | | | | | | | | | | |
| DAPRO® ACP-16W | Chlorinated polyolefin modified acrylic emulsion | Promotes adhesion of waterborne coatings and inks on polypropylene substrates. | • | • | | | | | | | • | • | • | | | | • | | | | • | | | | |
| Adherant 1051 | Epoxy silane | Improves adhesion of solvent-borne coatings to inorganic surfaces. | • | | | | | | | | • | • | | • | • | | | • | | | • | • | | | |
| Adherant 1121 | Amino silane | Promotes adhesion of paint to glass and metal substrates and enhances salt spray resistance. | • | • | | | | | | | • | • | | • | • | | • | | | • | • | | | | |
| Adherant ADK | Non-silicone polymeric solution | Improves adhesion of OPP laminating inks on PET film. Does not effect gloss or color strength of printing inks. | • | | | | | | | | | | | | | | • | • | | | • | • | | | |
| Adherant ADP | Non-silicone polymeric compound | Improves adhesion of stoving paints on non-ferrous substrates. | • | | | | | | | | | | | • | • | • | | | | | | | | | |
| Adherant APC | Non-silicone polymeric solution | Improves adhesion of 2K PU coatings on polycarbonates. | • | | | | | | | | | | | | | | • | • | | | | | | | |
| Adherant APW | Non-silicone polymeric solution | Improves inter-coat adhesion and fixing of aluminum flakes. | • | | | | | | | | | | | | | | • | • | • | | • | | | | |
| Adherant CP-7540 | Chlorinated polyolefin modified acrylic resins | Improves adhesion of primer on PP substrates. | • | | | | | | | | • | • | | | | | | | • | | | | | | |
| Adherant PPB | Chlorinated PP | Improves adhesion of primer on PP substrates. | • | | | | | | | | • | | | | | | | • | | | | • | | | |
| Coalescents | | | | | | | | | | | | | | | | | | | | | | | | | |
| DAPRO® FX 514 | Plasticizer | Coalescing agent for VOC compliant systems. | | | • | • | ○ | • | • | | | | | | | | | | | • | • | | | | |
| Flash rust inhibitors | | | | | | | | | | | | | | | | | | | | | | | | | |
| NALZIN® FA 179 | Zinc complex in a mixture of solvents | Liquid flash rust inhibitor for waterborne systems. | | | • | | | | | | • | | | • | • | | | | | | | | | | |
| NALZIN® FA 180 | Zinc complex in a mixture of solvents | Liquid flash rust inhibitor for waterborne systems. | | | • | | | | | | • | | | • | • | | | | | | | | | | |
| Amine Neutralizer | | | | | | | | | | | | | | | | | | | | | | | | | |
| DeuAdd MA-95 | Aminoalcohol | Neutralizer to adjust and stabilize pH of waterborne systems. | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | | |
| Catalysts | | | | | | | | | | | | | | | | | | | | | | | | | |
| Catacure KB | Acidic polymer | Curing catalyst for melamine baking paint. | • | | | | | | | | | | | | • | | | | | | | | | | |
| Catacure KC | Amine salt of p-toluenesulfonic acid | Blocked curing catalyst for fully alkylated melamine baking paints, enables lower baking temperatures or shorter baking times. | • | | | | | | | | | | | | • | | | | | | | | | | |

• Highly recommended ○ Recommended



Hydroxyl acrylic resins

Basic principles

Polyurethanes coatings are two-component systems consisting of hydroxyl acrylic resins, pigments, additives and solvents on the one part, and isocyanate curing agents on the other part. They provide many good features such as excellent mechanical properties, decorative properties (high gloss, high film build), weathering resistance, chemical resistance, and adhesion to a wide range of substrates.

The coating film can be cured under ambient drying and low temperature baking conditions. Film gloss and appearance can be customized on demand. Because of these features, they are widely used in protective coatings, marine coatings, auto refinishes, metal coatings, general industrial coatings, coatings for public transport (buses, trains, trucks, etc.) and ACE machineries (agriculture, construction and earth moving), plastic coatings, wood coatings, etc.

Hypomer MT-series of high performance matting resins Hypomer MT-2550F and Hypomer MT-2550K are hydroxyl acrylic resins that give excellent matting effect yet better clarity and transparency than conventional 2K PU coatings containing silica matting agents. Apart from the excellent optical properties, these resins also provide good hand feel, slip as well as excellent adhesion on plastic substrates such as ABS and ABS/PC. A key benefit of these resins is their gloss consistency over a wider range of dry film thickness compared to the conventional system in spray application.

Both Hypomer MT-2550F and Hypomer MT-2550K allow the formulation of coatings with varying degrees of gloss (from full matt to semi-gloss finishes) by combining with other hydroxyl acrylic resins. The resultant coatings can be used in various industrial applications such as 3C products (computers, communication and consumer), automotive interior and exterior coatings, auto refinishes, wood coatings and inks.

Hypomer FS-2060A for special substrate

Hypomer FS-2060AF is an aromatic-free hydroxyl acrylic resin developed for difficult-to-adhere substrates such as aluminum and its alloys, galvanized sheet, chrome plated sheet, polycarbonate, ABS/PC, nylon, etc. It also shows good pigment wetting and compatibility with CAB. It can be formulated into pigmented coatings and metallic coatings with excellent substrate/intercoat adhesion, good film properties and ease of application.

Hypomer FS-4075AF

Hypomer FS-4075AF is a new generation of high solid content and low viscosity hydroxyl acrylic resin with no benzene, toluene and xylene present. It effectively reduces the VOC of a paint formulation and is more environmentally friendly. In spray application, Hypomer FS-4075AF provides excellent film performance including long/short wavelength leveling, high film build, high gloss and DOI. With all these benefits, it is suitable for high quality paint film coatings, such as automotive coatings, car refinish coatings and railway coatings.

Resins

| Product Name | Composition | Description | Non-volatile content % | OH % | Application | | | | | |
|-------------------|----------------------------|---|------------------------|------|------------------|-----------------------|-----------------------------|------|-----------------|--------------|
| | | | | | Car-OEM coatings | Car Refinish coatings | General industrial coatings | Inks | Plastic coating | Wood coating |
| Hypomer AC-7435 | Acrylic copolymer | Fast drying, good hardness, good adhesion to plastic surfaces. Good water sweat and alcohol resistance. | 48.0 - 52.0 | N.A. | | | | | ● | |
| Hypomer AC-7450 | Acrylic copolymer | Rapid drying, good adhesion to plastics, alcohol resistance. | 48.0 - 52.0 | N.A. | | | | | ● | |
| Hypomer FS-1560 | Hydroxyl acrylic copolymer | Fast drying, Good adhesion on plastic substrates | 59 - 62 | 0.9 | | | ● | | ● | |
| Hypomer FS-2050 | Hydroxyl acrylic copolymer | Rapid drying, good adhesion to plastics. | 49.5 - 52.0 | 1.00 | ● | ● | ● | | ● | |
| Hypomer FS-2052 | Hydroxyl acrylic copolymer | Fast drying, weather resistance, good compatibility with CAB. | 48.0 - 52.0 | 1.00 | ● | ● | ● | ● | ● | |
| Hypomer FS-2060A | Hydroxyl acrylic copolymer | Good adhesion on plastic and metal substrates. Good weather resistance. | 59 - 61 | 1.2 | | ● | ● | | ● | |
| Hypomer FS-2060B | Hydroxyl acrylic copolymer | Automobile refinishes, plastic coatings. | 58.0 - 62.0 | 1.20 | ● | ● | ● | | ● | ● |
| Hypomer FS-2451 | Hydroxyl acrylic copolymer | Fast drying and high hardness, good adhesion to plastic substrates. Good alcohol resistance, good orientation of metallic pigments, good compatibility with cellulose acetobutyrate (CAB) and nitrocellulose. | 48.0 - 52.0 | 1.20 | ● | ● | ● | | ● | |
| Hypomer FS-2451F | Hydroxyl acrylic copolymer | Fast drying, high hardness, good solvent resistance, good adhesion to plastic substrates, good orientation of metallic pigments, more environmentally friendly solvent. | 48.0 - 52.0 | 1.20 | ● | ● | ● | | ● | |
| Hypomer FS-2460A | Hydroxyl acrylic copolymer | Good adhesion to plastics, excellent weather and yellowing resistance. | 59.0 - 62.0 | 1.44 | ● | ● | ● | | ● | ● |
| Hypomer FS-2820 | Hydroxyl acrylic copolymer | Good adhesion to plastics, excellent weather and yellowing resistance. | 59.0 - 62.0 | 1.68 | ● | ● | ● | | ● | ● |
| Hypomer FS-2860A | Hydroxyl acrylic copolymer | High film build, gloss and DOI, good leveling, good pigment wetting. | 58.0 - 61.0 | 1.68 | ● | ● | ● | | ● | ● |
| Hypomer FS-2970B | Hydroxyl acrylic copolymer | High film build, high gloss. | 67.5 - 70.0 | 2.03 | ● | ● | ● | | ● | |
| Hypomer FS-2970F | Hydroxyl acrylic copolymer | High film build, gloss and DOI, good leveling, good pigment wetting. | 67.0 - 71.0 | 2.03 | ● | ● | ● | | ● | |
| Hypomer FS-3060 | Hydroxyl acrylic copolymer | Low viscosity, excellent film build, gloss and DOI, fast curing speed, excellent hardness and solvent resistance, pigment dispersibility. | 59.0 - 62.0 | 1.80 | ● | ● | ● | | ● | ● |
| Hypomer FS-3270 | Hydroxyl acrylic copolymer | High film build, high gloss, DOI. | 68.0 - 72.0 | 2.24 | ● | ● | ● | | ● | ● |
| Hypomer FS-3270F | Hydroxyl acrylic copolymer | High film build, High gloss, DOI, Good curing speed, hardness, Gasoline and solvent resistance | 68~72 | 2.24 | | ● | ● | | ● | |
| Hypomer FS-3566F | Hydroxyl acrylic copolymer | Excellent film build, gloss and DOI, fast cure, long pot-life, low VOC, BTX-free. | 63.0 - 67.0 | 2.28 | ● | ● | ● | | ● | ● |
| Hypomer FS-4075AF | Hydroxyl acrylic copolymer | High solids low viscosity, good leveling, high film build. | 73.0 - 77.0 | 3.00 | ● | ● | ● | | ● | |
| Hypomer FS-4365A | Hydroxyl acrylic copolymer | Automobile refinish, transportations and industrial applications. | 63.0 - 66.0 | 2.80 | ● | ● | ● | | ● | |
| Hypomer FS-4470 | Hydroxyl acrylic copolymer | High solid with low viscosity, high gloss and film build, good leveling. | 68.0 - 72.0 | 3.10 | ● | ● | ● | | ● | |
| Hypomer FS-4660P | Hydroxyl acrylic copolymer | Superior gloss and DOI, good leveling, solvent resistance. | 57.5 - 61.5 | 2.76 | ● | ● | ● | | ● | ● |
| Hypomer FX-2050 | Hydroxyl acrylic copolymer | Rapid drying, good adhesion to plastic substrates. | 50.0 - 52.0 | 1.00 | ● | ● | ● | | ● | |
| Hypomer FX-2060A | Hydroxyl acrylic copolymer | Good adhesion on plastics Good adhesion on metal substrates Good weather resistance | 58 - 61 | 1.20 | ● | ● | ● | | ● | |

● Highly recommended ○ Recommended

Resins

| Product Name | Composition | Description | Non-volatile content % | OH % | Application | | | | | |
|------------------|----------------------------|--|------------------------|------|------------------|-----------------------|-----------------------------|------|-----------------|--------------|
| | | | | | Car-OEM coatings | Car Refinish coatings | General industrial coatings | Inks | Plastic coating | Wood coating |
| Hypomer FX-2060D | Hydroxyl acrylic copolymer | Fast drying Good hardness Good solvent resistance | 58 - 61 | 1.20 | ● | ● | ● | | ● | |
| Hypomer FX-2451F | Hydroxyl acrylic copolymer | Fast drying and high hardness, good adhesion to plastic substrates, good alcohol resistance, more environmentally friendly solvent composition. | 48.0 - 52.0 | 1.20 | ● | ● | ● | | ● | |
| Hypomer FX-2820 | Hydroxyl acrylic copolymer | Good weather resistance Good pigment wetting | 59.5 - 63.0 | 1.68 | ● | ● | ● | | ● | |
| Hypomer FX-2820F | Hydroxyl acrylic copolymer | Good pigment wetting, good weather resistance, more environment friendly solvent composition. | 58.0 - 62.0 | 1.68 | ● | ● | ● | | ● | ● |
| Hypomer FX-2860A | Hydroxyl acrylic copolymer | High gloss, good hardness, rapid drying, fast curing, solvent resistant, good film build. | 58.0 - 62.0 | 1.68 | ● | ● | ● | | ● | ● |
| Hypomer FX-2970A | Hydroxyl acrylic copolymer | High film build, gloss and DOI. | 67.5 - 70.5 | 2.03 | ● | ● | ● | | ● | |
| Hypomer FX-3270 | Hydroxyl acrylic copolymer | High film build, high gloss, DOI. | 67.0 - 71.0 | 2.24 | ● | ● | ● | | ● | ● |
| Hypomer FX-4660 | Hydroxyl acrylic copolymer | High gloss, superior leveling, hardness and high crosslinking density. | 58.5 - 61.5 | 2.76 | ● | ● | ● | | ● | ● |
| Hypomer MT-2350 | Hydroxyl acrylic copolymer | Good matting function, easy incorporation, less sedimentation. | 48.0 - 52.0 | 1.17 | ● | ● | ● | ● | ● | ● |
| Hypomer MT-2550F | Hydroxyl acrylic copolymer | Matting resin, yields better transparency than conventional matt coatings based on silica matting agents, smooth film with excellent touch feel, good weathering resistance. | 48.5 - 52.0 | 1.25 | ● | ● | ● | ● | ● | ● |
| Hypomer MT-2550K | Hydroxyl acrylic copolymer | Based on the polymer in Hypomer MT-2550F but contains a more environmentally friendly solvent mixture. | 48.5 - 52.0 | 1.25 | ● | ● | ● | ● | ● | ● |

● Highly recommended ○ Recommended

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ELEMENTIS



Unique chemistry,
sustainable solutions