

ELEMENTIS

SPECIALTIES

Rheology leadership plus so much more...

Performance Additives for Printing Inks

Dispersants

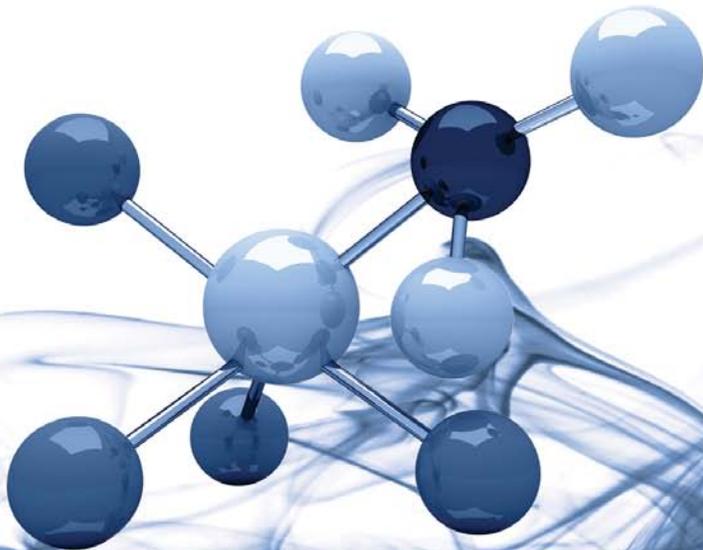
Defoamers

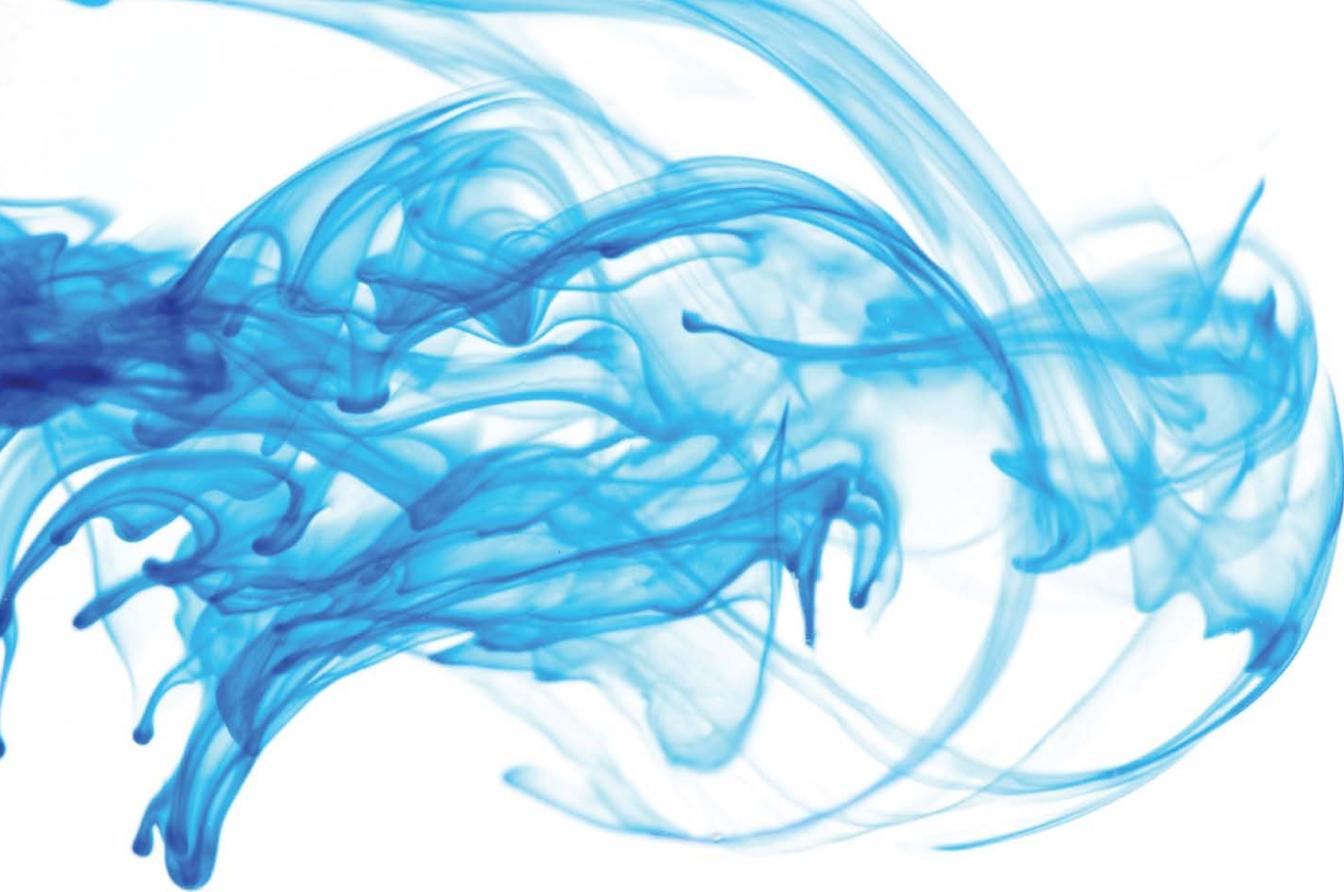
Surface Tension Modifiers

Wetting Agents

Rheology Modifiers

Waxes





Elementis Specialties is a leading worldwide manufacturer of specialty additives and pigment dispersions, serving a wide range of industries, including the coatings, inks, adhesives, and construction sectors.

Get to know us better.

We'll show you how it works.

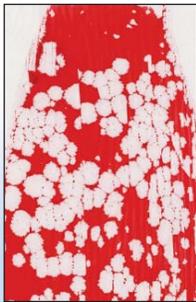


Defoamers

DAPRO® Defoamers provide excellent foam control in water, solvent, and UV inks. They can be used to control the foaming problems typically encountered during pigment milling, ink manufacturing, and the printing process. DAPRO® Defoamers provide high effectiveness over a wide pH range and have excellent long-term stability. They are available in silicone-free or silicone-modified compositions.

Surface Tension Modifiers and Substrate Wetting

DAPRO® Surface Tension Modifiers eliminate film defects caused by surface tension differences between the ink and the substrate. They promote ink flow and leveling while improving ink transfer, adhesion, and ink appearance. All Elementis surface tension modifiers are silicone-free and provide excellent recoatability.



No additive



With DAPRO® W-77



Defoamers for Inks

	Composition	Suggested Use Level (%)	Production Process Foaming	Application	Mill Base	Let-Down	Clear Coatings	Pigment Dispersions	Performance
DAPRO® DF 1492 DAPRO® DF 1760	Modified polyols, silicone-free	0.5 - 1.0	■	■	■	■	■	■	Most forgiving and easiest to incorporate. Prevents foaming during manufacturing or processing. Can be incorporated at any stage of ink manufacturing. Recommended for water-based flexo and gravure inks.
DAPRO® DF 900	Dispersion of olefinic solids, silicone-free	0.5 - 1.0	■	■	■	■		■	Effective over wide pH range and has excellent stability. Resists cratering, provides improved flow and leveling. May cause gloss reduction. Recommended for water-based flexo and gravure inks.
DAPRO® DF 975	Dispersion of olefinic solids, silicone-free	0.5 - 1.0	■	■	■			□	Effective over wide pH range and has excellent stability. Resists cratering, provides improved flow and leveling. May cause gloss reduction. Recommended for water-based flexo and gravure inks.
DAPRO® DF 5300	Polysiloxane in aromatic solvent	0.05 - 0.2	■	■	■	■	■	■	Effective in solvent-based toluene coatings and inks; prevents microfoams generated during high-shear manufacturing and application processes.
DAPRO® DF 5800F	Polysiloxane in aromatic-free solvent	0.05 - 0.2	■	■	■	■	■	■	Effective in solvent-based coatings and inks; prevents microfoams generated during high-shear manufacturing and application processes.
DAPRO® DF 6800	Polysiloxane modified solvent-free	0.05 - 0.2	■	■	■	■	■	■	Effective in thick-film systems, such as screen inks and solvent-based inks; prevents microfoams generated during high-shear manufacturing and application processes.
DAPRO® DF 7580	Organic ester-based, oil- and silicone-free	0.5 - 1.0	■	■	■	■			Excellent defoamer for high gloss coatings and inks. Does not cause gloss reduction or surface defects. Recommended for water-based pigment dispersions and liquid inks.
DAPRO® DF 7005	Dispersion of olefinic solids, silicone-free	0.5 - 1.0	■	■	■	■		■	Effective over wide pH range and has excellent stability. Resists cratering, provides improved flow and leveling. May cause gloss reduction. Recommended for water-based flexo and gravure inks.
DAPRO® DF 7015	Silicone-modified dispersion of olefinic solids	0.2 - 1.0	■	■	■	■		■	Effective over wide pH range and has excellent stability. Resists cratering, provides improved flow and leveling. May cause gloss reduction. Recommended for water-based flexo and gravure inks.
DAPRO® NA 1622	Silicone-modified hydrocarbon blend	0.05 - 0.2	■	■	■	■	■	■	Effective in solvent-based toluene coatings, prevents micro foams generated during high-shear manufacturing and application processes.

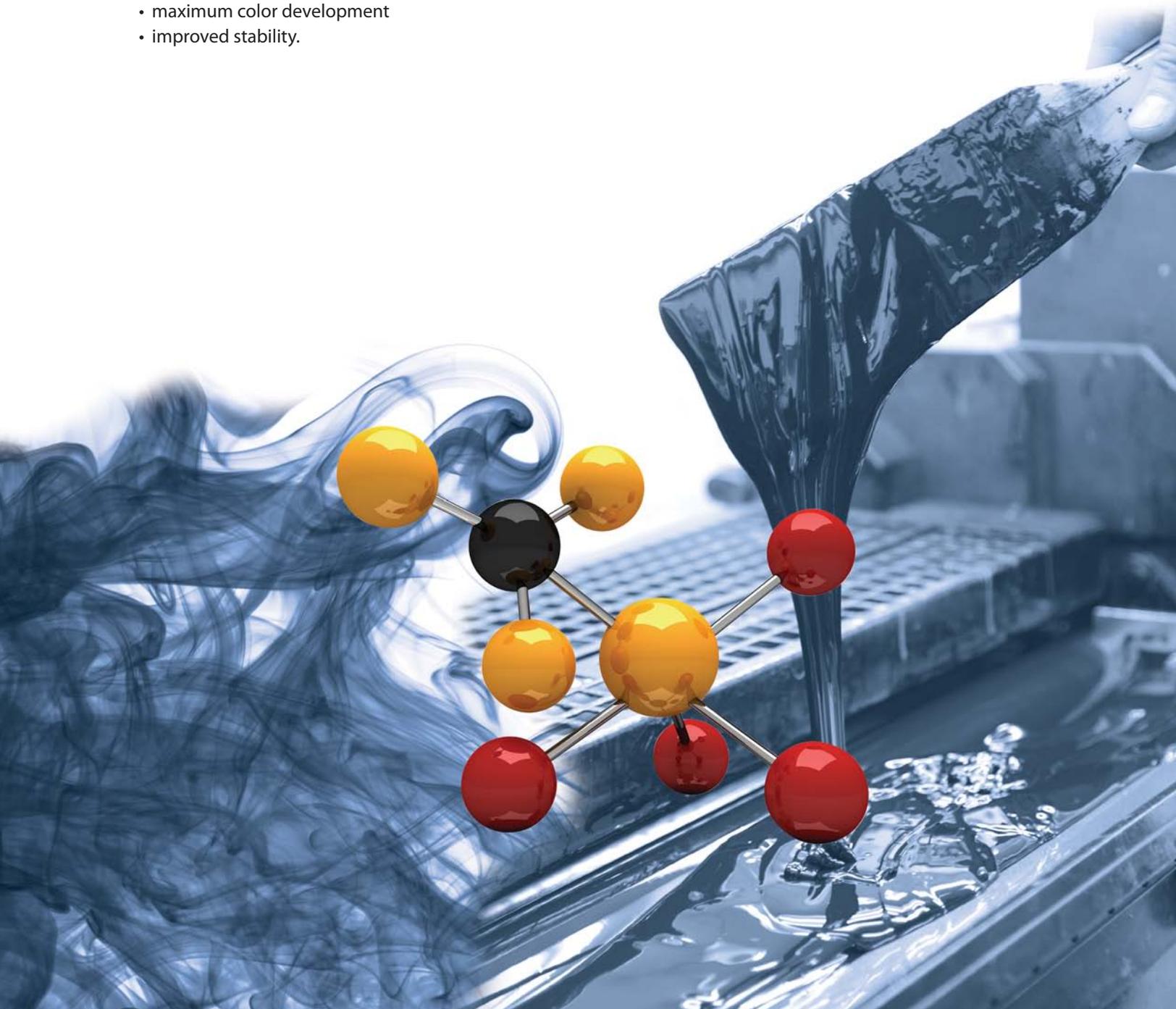
■ Recommended □ Can be used

Dispersant and Wetting Additives

NUOSPERSE® Pigment Dispersing Additives stabilize pigment dispersions, fully develop color strength, eliminate settling, and improve shelf-life stability. Fully dispersed pigments will have minimal impact on gloss and have a low tendency to flocculate or agglomerate.

The right dispersant in water, solvent, or UV inks provides:

- rapid pigment wetting
- good flow at high pigment loading
- increased mill output
- maximum color development
- improved stability.



Dispersing Agents for Printing Inks

	Composition	Suggested Use Level (%)	Organic Pigments	Carbon Blacks	TiO ₂ Clays CaCO ₃	Metallics	Iron Oxides	UV Pigment Dispersions	Performance
NUOSPERSE® FX 600	Polymeric/Anionic APE-free	2.0 - 10.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		Excellent pigment wetting/dispersing agent for carbon blacks and blue pigments. Provides good flow at high pigment load, increased mill output, maximum color strength.*
NUOSPERSE® FX 505	Polyacrylate ammonium salt; APE-free	2.0 - 10.0			<input checked="" type="checkbox"/>				Excellent pigment wetting/dispersing agent for titanium dioxide and extender pigments. Provides good flow at high pigment load, increased mill output, eliminates hard settling.*
NUOSPERSE® FX 605	Polyacrylate sodium salt; APE-free	2.0 - 10.0			<input checked="" type="checkbox"/>				Excellent pigment wetting/dispersing agent for titanium dioxide and extender pigments. Provides good flow at high pigment load, increased mill output, eliminates hard settling.*
NUOSPERSE® W-22 NUOSPERSE® W-33	Nonionic/Anionic surfactants	2.0 - 10.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	Excellent pigment wetting/dispersing agent for organic pigments such as yellows, reds, and blacks. Provides improved flow at high pigment load, increased mill output, and maximum color strength. NUOSPERSE® W-33 is APE-free.*
NUOSPERSE® W-28 NUOSPERSE® W-39	Nonionic/Anionic surfactants	2.0 - 10.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	Excellent pigment wetting/dispersing agent for organic pigments such as blues, naphthols, and quinacridones. Provides excellent flow at high pigment load, increased mill output, maximum color strength. NUOSPERSE® W-39 is APE-free.*
NUOSPERSE® W-30	Nonionic/Anionic surfactants; APE-free	2.0 - 10.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Universal pigment dispersing agent for all types of organic pigments, such as yellows, reds, and blues. Provides excellent flow at high pigment load, increased mill output, and maximum color strength. W-30 does not promote foam and will not lower gloss.*
NUOSPERSE® FA 196	Proprietary	2.0 - 10.0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Excellent pigment wetting/dispersing agent for carbon blacks for solvent-based ink dispersions. Provides excellent flow at high pigment load, increased mill output, and maximum color strength.†
NUOSPERSE® 9100	Modified acrylic polymer	0.05 - 0.2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	100% active powder. Excellent pigment wetting agent for all types of pigments. Soluble in most UV monomers.†
NUOSPERSE® 9850	Polymeric Proprietary	2.0 - 10.0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Polymeric dispersing agent designed for use in solventborne systems. Excellent for carbon black and organic pigments.†

Recommended Can be used

* Recommended for water-based systems

† Recommended for solvent systems

Rheological Additives for Solvent, Oil, and UV Inks

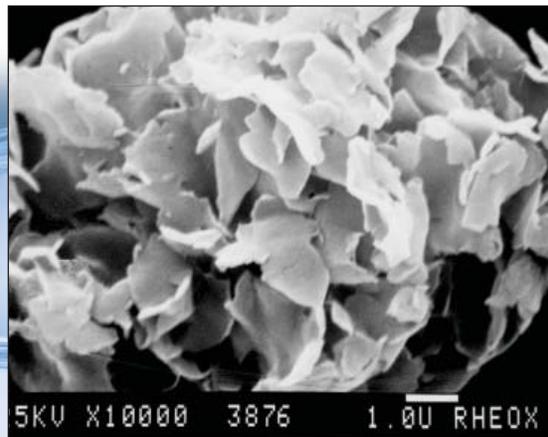
BENTONE®, **BENTONE SD®**, **BARAGEL®**, **THIXCIN®**, **THIXATROL®**, and **M-P-A®**

BENTONE®, BENTONE SD®, and BARAGEL® Organoclay Rheological Additives are reaction products of highly purified smectite clay (bentonite or hectorite) and a quaternary ammonium salt. Properly selected and activated, BENTONE® organoclays provide the printing ink manufacturer with a reliable means of controlling rheological performance, tack, misting, penetration, and emulsification in paste ink systems while providing excellent anti-settling properties to liquid ink systems. BENTONE® additives effectively impart rheological control in all types of paste inks, including litho news, web offset heatset, and sheet-fed as well as letterpress. They are also useful in metal decorating and UV curable inks.

THIXCIN® and THIXATROL® Organic Rheological Additives are based on castor oil derivatives, modified castor oil derivatives, polyamide, or polyester amides. These additives are designed to be used in solvent and UV curable inks and must be subjected to appropriate wetting, de-agglomeration, and dispersion forces (at elevated temperature) to reach an activated state. The most appropriate choice of organic rheological additive for any given system depends on the required

rheology, solvent types, processing temperature, and manufacturing equipment. Organic rheological additives are also suitable for solvent-free systems, such as high solids and UV curable inks. Optimum processing temperatures are typically higher than for solvent-rich systems.

M-P-A® Anti-settling Agents are a series of anti-settling additives based on straight-chain ethylene chemistry. These additives are designed to aid in pigment suspension without building viscosity. They perform through chain entanglement and can be used alone or in combination with a thixotrope for added performance. Product selection is typically dependent on the solvent and reactivity of the system to be modified.



Activated organoclay
in an ink oil

Rheological Additives for Solvent and UV Printing Inks

	Composition	% Active	Form	Coldset	Heatset	Sheet-fed	UV	Screen	Gravure	Flexo	Performance
BENTONE® 34	Modified bentonite clay	100	Powder	■	■	□			■	■	Excellent rheology control for petroleum oil news and publication gravure inks. Requires milling; polar activation recommended.
BENTONE® 38	Modified hectorite clay	100	Powder				□	■			Excellent rheology control for solvent screen and PVC plastisol inks. Requires milling; polar activation recommended.
BENTONE® NP-10	Modified bentonite clay	100	Powder	■	■	■	□		□		Designed for mineral oil, petroleum solvents, or vegetable oil systems. Very easy to disperse; does not require milling.
BENTONE SD® 1	Modified bentonite clay	100	Powder	■	■	■					Designed for mineral oil, petroleum solvent ink systems. Very easy to disperse; does not require milling.
BARAGEL® 3000	Modified bentonite clay	100	Powder	■	■	■	■				Superior rheology for mineral oil, petroleum solvent ink systems. Easy to disperse, superior efficiency, also excellent for UV offset inks.
BENTONE SD® 2	Modified bentonite clay	100	Powder				■	□	■	■	Excellent rheology control for UV curable offset, plastisol (PVC) screen and alcohol-based liquid inks. May require milling.
THIXATROL® ST	Modified castor oil derivative	100	Powder				■	■			UV curable screen inks, aliphatic solvent-based screen inks. Provides exceptional thixotropy. Requires heat activation.
THIXATROL® MAX	Diamide	100	Powder				■	■			UV curable screen inks, high-polar solvent-based screen inks. Provides best rheological properties versus other rheology modifiers. Requires heat activation.
THIXATROL® UV 1104	Polyester	100	Liquid				■	■	□	□	Liquid rheological additive for UV curable offset and screen inks. Provides excellent rheology control. Easy to use. Pourable and pumpable.
THIXATROL® 18	Polyamide	65	Liquid		■	■		■			Liquid rheological additive for conventional offset and screen inks. Provides superior rheology and mist control. Easy to use. Pourable and pumpable.
M-P-A® 4020BA	Proprietary	20	Liquid						■	■	Anti-settling agent for HAPS-free aromatic and high polarity ink systems.
M-P-A® 60MS	Proprietary	20	Paste						■	■	Anti-settling agent for aliphatic and aromatic ink systems.

■ Recommended □ Can be used



Rheological Additives for Water-based Inks

BENTONE® and RHEOLATE®

BENTONE® clay products for water-based ink systems are based on hectorite, a naturally occurring smectite clay. Hectorite is a hydrophilic swelling clay composed of silicate sheets that delaminate in water to provide gel structure. Because of this property, hectorite clays have the ability to thicken water and are widely used as rheological additives in water-based systems. BENTONE clay products are typically used in water-based flexo and gravure inks to improve the rheological, ink hold-out, and settling properties of the inks.

RHEOLATE® products include alkali-swellaable thickeners, associative thickeners, and anti-settling additives. These products are based on hydrophobically modified polyether polyols (PEPO), hydrophobically modified polyurethanes (HEUR), hydrophobically modified acrylic acid co-polymers (HASE), and acrylic acid co-polymers (ASE).

Based on the desired rheological properties, RHEOLATE® additives provide excellent thickening and anti-settling properties to water-based flexo, gravure, and inkjet inks.

Rheological Additives for Water-based Printing Inks

	Composition	% Active	Form	Screen	Flexo	Gravure	Inkjet	OPV	Performance
RHEOLATE® 1	ASE	30	Liquid		■	■	■		Alkali-swellaable thickener. Versatile, can be used in a variety of printing ink applications. Requires pH range of 7-9.
RHEOLATE® 150	HASE	30	Liquid	■	■	■	■		Hydrophobically modified alkali-swellaable thickener. Excellent low-shear viscosity builder.
RHEOLATE® 420	HASE	30	Liquid	■	■	■	■		Hydrophobically modified alkali-swellaable thickener. Excellent efficiency in water-based inks. Requires pH range above 7. Balanced flow properties.
RHEOLATE® 450	HASE	30	Liquid	■	■	■	■	□	Hydrophobically modified alkali-swellaable thickener. Excellent efficiency in water-based inks. Requires pH of 7-9 range.
RHEOLATE® 212	HEUR	20	Liquid		■	■		■	Associative thickener designed to develop a Newtonian flow behavior in inks. Excellent flow and leveling. Does not require pH adjustment.
RHEOLATE® 350	PEPO	50	Liquid		■	■		□	Associative thickener designed to develop a Newtonian flow behavior in inks. Excellent efficiency, flow and leveling. Does not require pH adjustment.
RHEOLATE® 255 RHEOLATE® 655	HEUR	25/20	Liquid		■	■		□	Associative thickener designed to develop excellent viscosity in pigmented flexo inks. RHEOLATE® 655 is APE- and VOC-free.
RHEOLATE® 278 RHEOLATE® 678	HEUR	25/25	Liquid		■	■		■	Associative thickener designed to develop excellent viscosity in OPV flexo and gravure inks. RHEOLATE® 678 is APE- and VOC-free.
RHEOLATE® 288	HEUR	25	Liquid	■				□	Associative thickener designed to develop excellent viscosity in screen inks. Provides shear thinning rheological profile. Provides excellent gloss. Does not require pH adjustment.
RHEOLATE® 2001	Proprietary	25	Liquid		■	■	■		Post-add, anti-settling agent for liquid ink systems with no influence on viscosity.
BENTONE® EW NA	Hectorite clay	100	Powder		■	■			Clay-based anti-settling agent for liquid ink systems.

■ Recommended □ Can be used

Wax Additives

SLIP-AYD® Surface Conditioner Additives are based on low molecular weight polyethylene and other synthetic and natural waxes. They reduce the coefficient of friction and/or increase the apparent film hardness of inks.

SLIP-AYD® Dispersions include polyethylene, hard polymeric waxes, and carnauba waxes, each dispersed in a variety of solvents or solvent/vehicle blends. These dispersions are stable and will not recrystallize, gel, or settle on aging. The solvents and vehicles have been selected for optimum performance in the widest range of ink systems. The degree of dispersion has been carefully controlled for uniformly reproducible results.



No wax



With SLIP-AYD® SL 1606



Wax Additives for Printing Inks

	Composition	% Active	Solvent	Form	Flexo	Gravure	OPV	UV	Screen	Inkjet	Thermal Printing Performance
SLIP-AYD® 340 E	Polyethylene wax emulsion	40	Water	Liquid	■	■	■			■	Excellent resistance to blocking and abrasion, good slip for water-based inks and OPV applications.
SLIP-AYD® SL 508	Carnauba wax dispersion	17.8	IPA	Liquid	□	□	□		□		Very low coefficient of friction; very good resistance to marring and scuffing; excellent product release for solvent- and water-based inks.
SLIP-AYD® SL 523	Polymeric wax dispersion	18	IPA	Liquid	■	■	■		□		Provides excellent slip and good block resistance to solvent-based inks. Very little effect on gloss.
SLIP-AYD® SL 300	High melt polyethylene dispersion	30	Water	Liquid	■	■	□	■	■		Excellent resistance to blocking and abrasion for water-based inks. May cause gloss reduction.
SLIP-AYD® SL 1606	Polyethylene	100	N/A	Powder	■	■	■	■	■		Excellent rub and abrasion resistance. Excellent dispersability in water and polar solvents.
SLIP-AYD® SL 555	Polyolefin carnauba blend	100	N/A	Powder				■	■		Very low coefficient of friction and excellent product release for UV-curable inks.
SLIP-AYD® FS 444	Organic polysiloxane	50	Glycol ether	Liquid	■	■	■	■	■		Excellent slip and mar resistance. Does not impact gloss.

■ Recommended □ Can be used

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