

PAINTS & COATINGS | AMERICAS

GRAPHIC ARTS

Water-based polymers for overprint
varnishes, primers and inks



ZSCHIMMER & SCHWARZ

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CHEMISTRY TAILOR-MADE

Zschimmer & Schwarz is a global supplier of chemical auxiliaries and specialties headquartered in Lahnstein near Koblenz, Germany. The family business was founded in Chemnitz in 1894 and is positioned across industries with different business divisions.

Our core business is the development, production and supply of tailor-made chemical auxiliaries for the leather, fur, ceramic, textile and chemical fiber industries. Manufacturers of cleaning agents, personal care products, paints and coatings, lubricants and industrial applications all over the world trust in the company's chemical specialties as well.

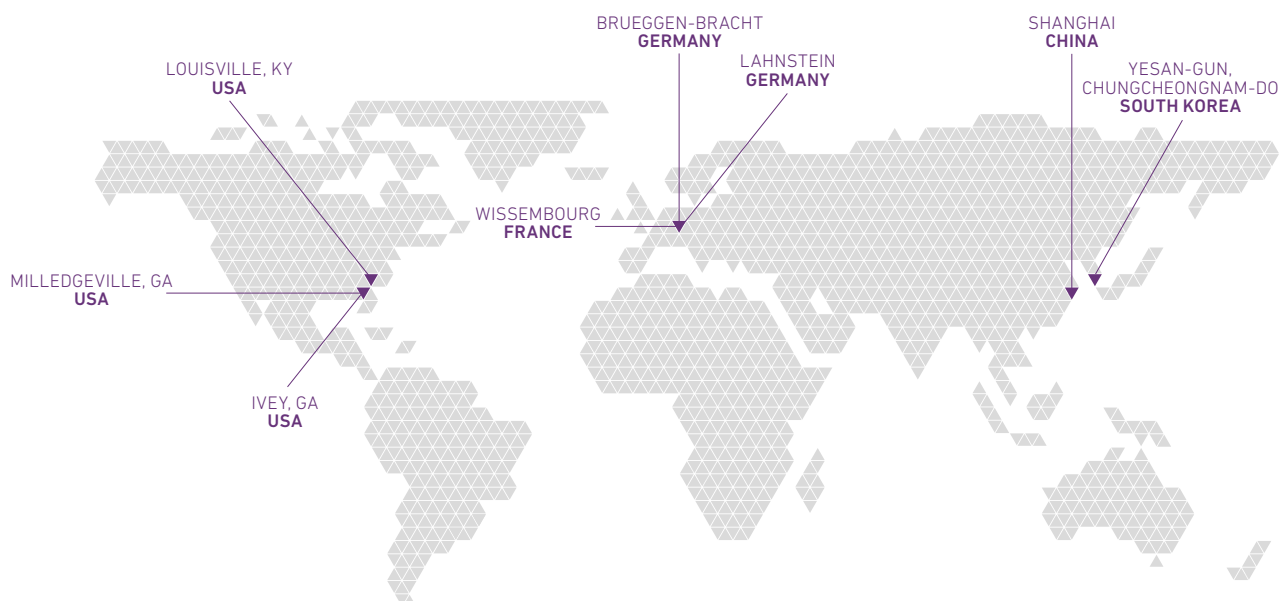
A FAMILY BUSINESS WITH A GLOBAL FORMULA FOR SUCCESS

The corporate group Zschimmer & Schwarz comprises 28 companies in 16 countries on five continents, 20 of which have their own production facilities. Our customers can always rely on a uniform quality standard worldwide and equally on the high service orientation of our local experts.

BRINGING YOUR IDEAS TO THE SURFACE

The portfolio of the Paints & Coatings Division serves a wide range of end-use applications from the industrial coatings and graphic arts sectors. We offer technologies and materials for the treatment and coating of surfaces such as wood, paper, metal, textile and concrete for best results. Innovative polymer technologies, tailored to the application and requirements of our customers, provide the necessary "plus" in the formulation. As specialists in environmentally conscious, water-based polymers, we offer optimized customer solutions with the highest standards of quality and cost-effectiveness, which we are producing at our sites in Europe, North America and Asia.

Whether it's raw materials or tailored and ready-to-use customer solutions – we will help you find the right products. We will happily accompany you on the way to your formulation in order to jointly create added value for your customer.





TECHNOLOGIES

High-quality print products with the highest demands on appearance and durability require optimally matched binder systems. As experts in environmentally friendly aqueous dispersions, Zschimmer & Schwarz offers tailor-made products for a wide variety of formulations in the graphic arts sector through precise control of the polymerization process.

Since visually appealing and durable results can often only be achieved in a multi-layer build-up with primer or overprint varnish, Zschimmer & Schwarz has also developed water-based polymers for this purpose, which we adapt to your applications on request.

ALKALI-SOLUBLE TECHNOLOGY – RESIN SOLUTIONS

Our alkali-soluble polymers are based on polyacrylic and polymethacrylic acids with high electrostatic repulsion. They are available with different acid numbers, molar weights and glass transition temperatures as a clear solution in water.

The resin solutions offer excellent dispersibility of pigments and high compatibility and stability in various formulation types. This provides improved wetting and increased gloss of formulations. Unlike dispersing additives, these resins form a hard, water-soluble film at room temperature and are thus part of the binder. In addition, adhesion can be positively influenced on some substrates.

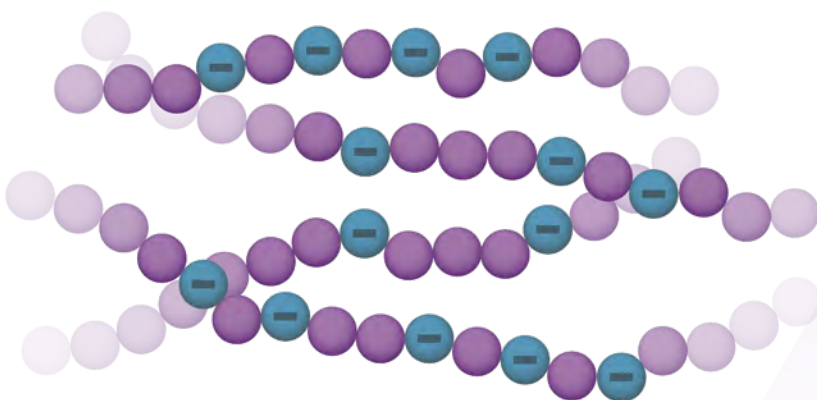
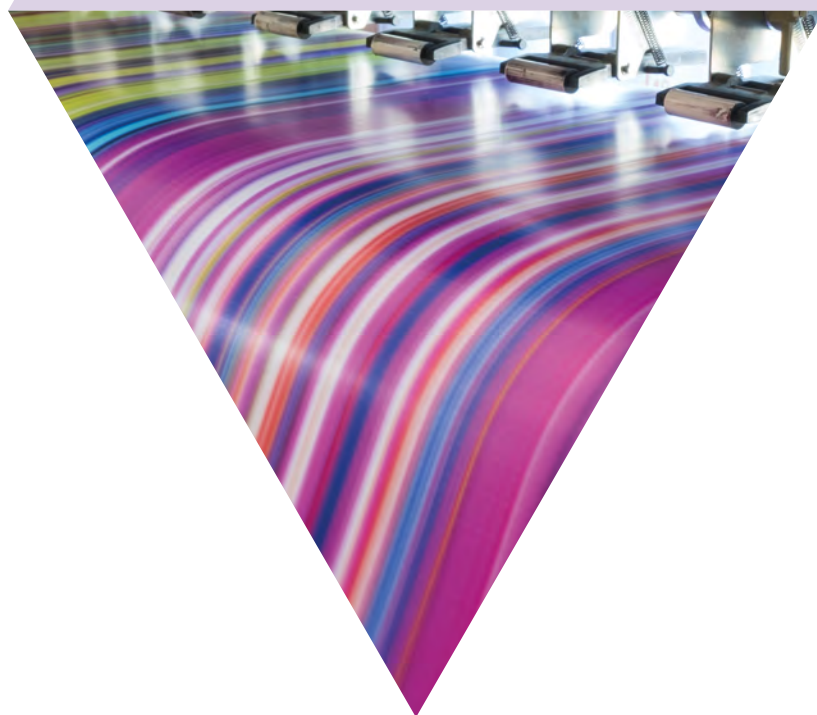
FEATURES & BENEFITS

Dispersing

- ▶ Excellent wetting and dispersibility of pigments
- ▶ High compatibility and stability in multiple formulation types
- ▶ Improves the wetting of formulations
- ▶ Improves gloss

Binding

- ▶ Formation of a hard, water-soluble film at room temperature
-

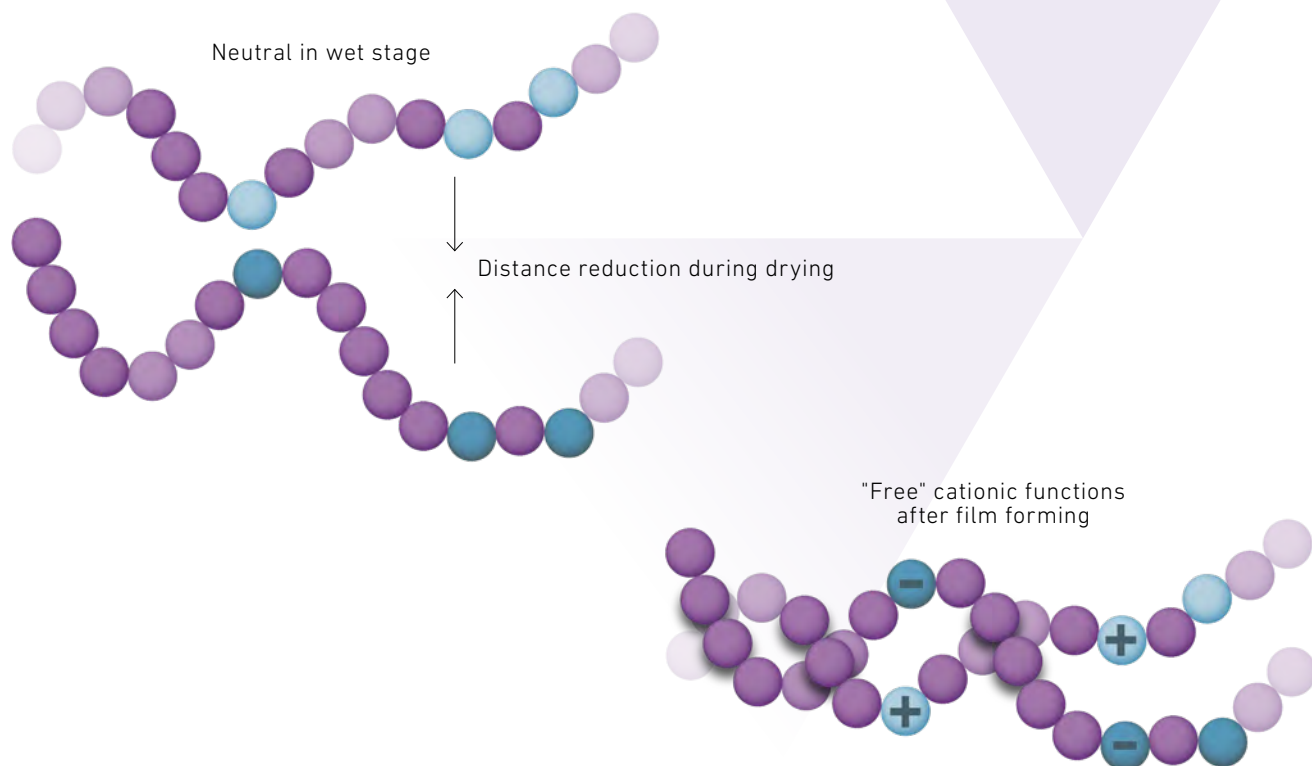


INTERPENETRATING POLYMER NETWORK (IPN)

The IPN involves two different ionic structures in the same polymer network at a neutral pH value. Overall, the polymer exhibits an anionic behavior and can thus be formulated like an anionic polymer. Cationic functionalities then form during drying, providing excellent stain and dye blocking without the compatibility problems common to cationic polymers. Adhesion to various substrates such as paper and board, labels as well as metallized substrates is also improved. At the same time, VOC requirements for the formulation remain low.

FEATURES & BENEFITS

- ▶ Enables cationic functionalities in anionic formulations
- ▶ Excellent stain and dye blocking
- ▶ Excellent adhesion to multiple substrates like paper and board, labels as well as metallized substrates
- ▶ High compatibility with other resins and additives
- ▶ Low VOC requirements to formulate coatings

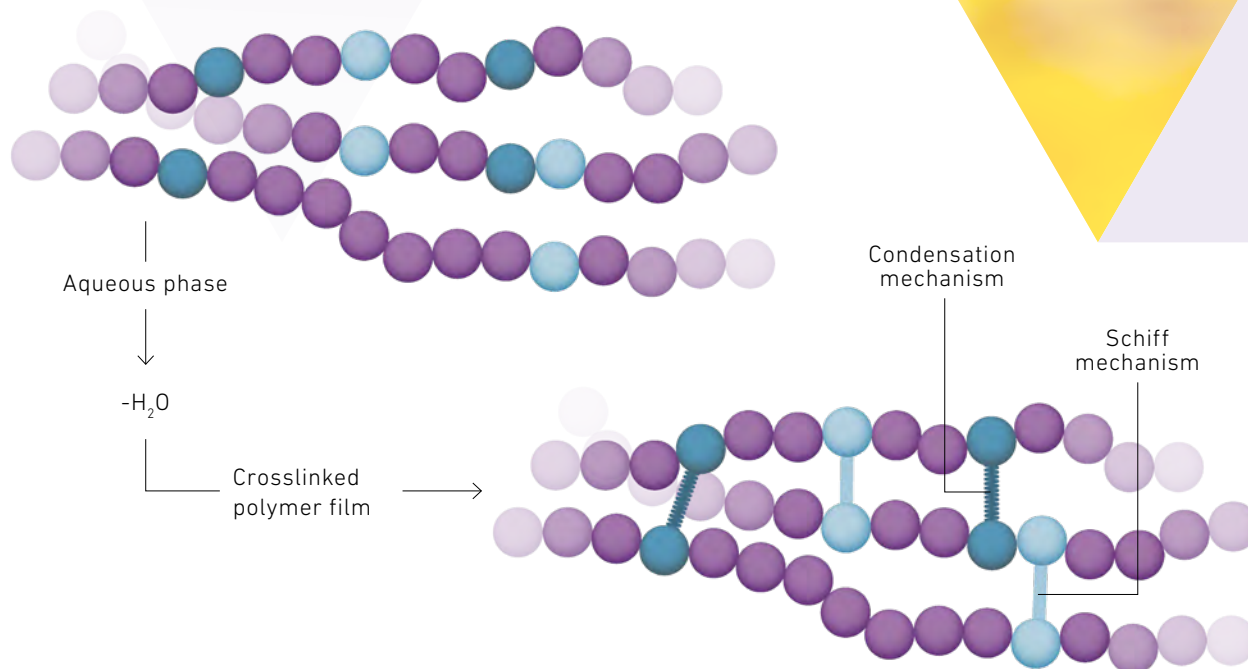


SELF-CROSSLINKING TECHNOLOGY

Our portfolio includes polymer dispersions with two different crosslinking mechanisms on the same polymer backbone. The self-crosslinking of the polymers takes place only during film formation by drying at room temperature. In this way, the typical properties of a crosslinked polymer can be achieved without limiting storage stability. High-performance coatings as well as overprint varnishes benefit from this in particular.

FEATURES & BENEFITS

- ▶ Increased chemical resistance
- ▶ Stain resistance
- ▶ Water resistance
- ▶ Good adhesion properties
- ▶ Room-temperature curing with long-term shelf stability



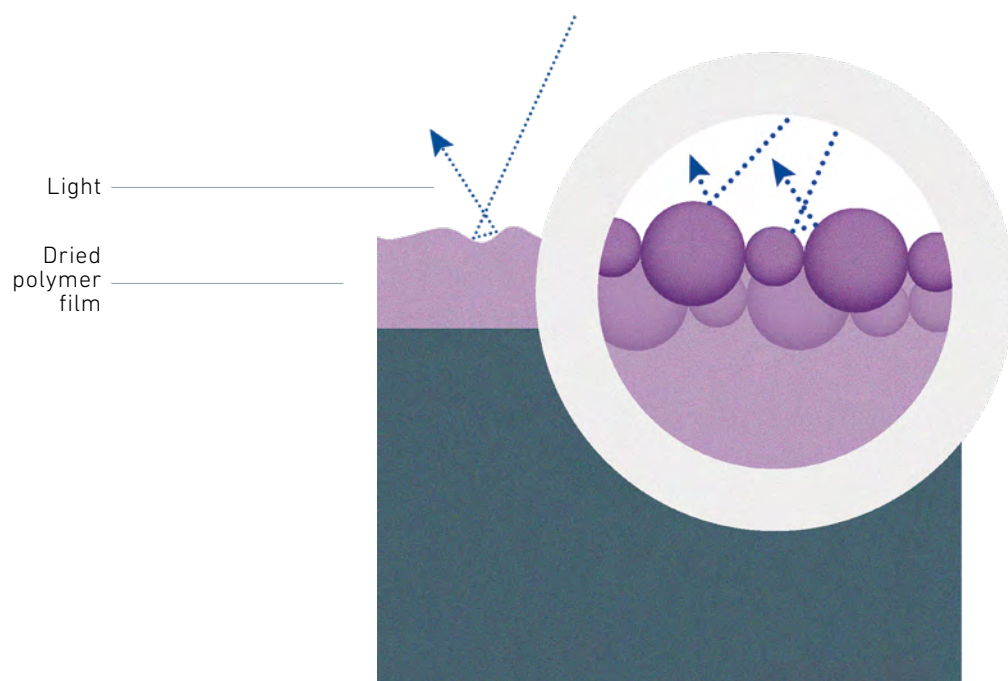
INHERENTLY MATTE TECHNOLOGY

Using a proprietary process, Zschimmer & Schwarz offers an inherently matte acrylate polymer. After drying, a film with low gloss, high flexibility and excellent stability is formed. This technology also provides excellent adhesion to various substrate types.

The polymer is a matte binder and not a “liquid matting agent”, meaning it can be formulated as a conventional (water-based) acrylic polymer, replacing the binder. It can be used as a single binder or in a blend with polyurethanes and has low foaming and low VOC requirements. The time- and labor-consuming incorporation of solid matting agents is completely eliminated, making the formulation much simpler, more stable and more economical. Unlike conventional matting agents, the matte polymer also has excellent transparency.

FEATURES & BENEFITS

- ▶ Easy to formulate with low foaming
 - ▶ Low VOC demand
 - ▶ Stable – no settling of the polymer
-

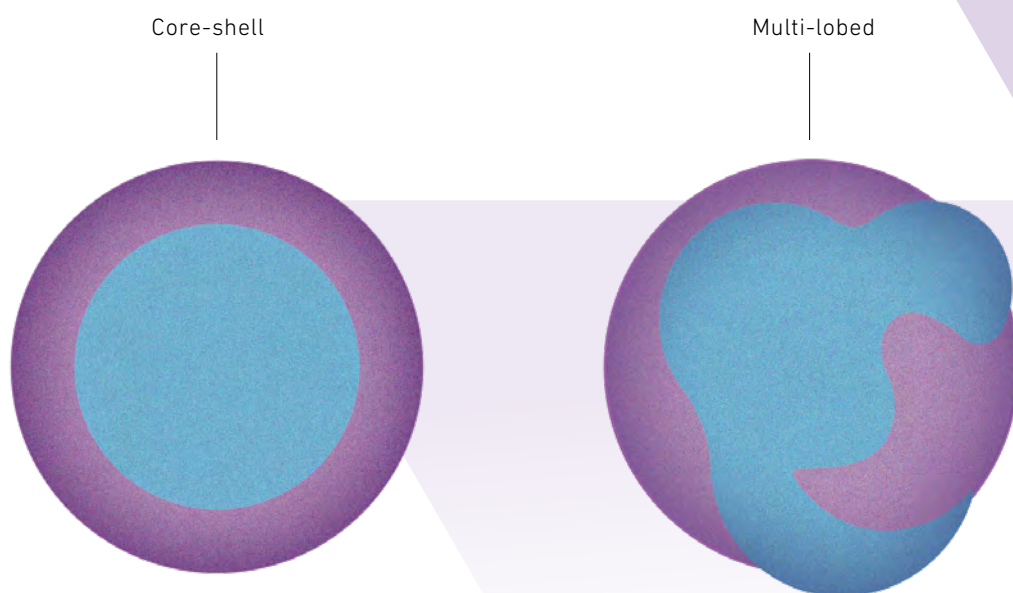


MULTIPHASE TECHNOLOGY

Using a two-step synthesis process, multiphase technology combines two different types of polymers in the same polymer network. This allows a balanced combination and thereby an overall improvement of the physical properties of the two polymers. This process also means that no or only a small amount of emulsifiers is required. Thus, some of these products are approved for indirect food contact.

FEATURES & BENEFITS

- ▶ Very low to zero emulsifier content
 - ▶ Good balance between hardness, chemical resistance and film forming
 - ▶ Excellent adhesion to multiple substrates
 - ▶ Compliant with Swiss Ordinance for indirect food contact
-

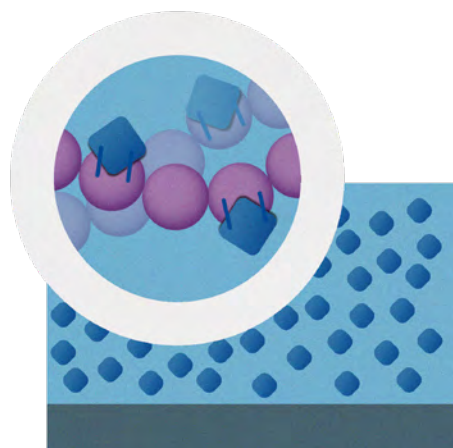


WAX-HYBRID TECHNOLOGY

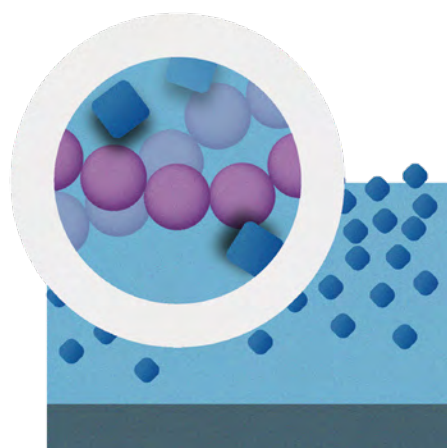
Our wax-hybrid technology is a patented process for combining wax and acrylate in a single polymer network. This prevents the wax from migrating to the surface as it dries, resulting in a more uniform film composition that improves the appearance and performance of the coating. The hybrid polymer exhibits anionic behavior and broad compatibility with other water-based polymers. The positive properties of waxes, such as increased slip or abrasion resistance and improved water resistance, can thus be optimally utilized.

FEATURES & BENEFITS

- ▶ Even distribution in liquid and dried form
- ▶ Enhanced wear resistance
- ▶ Improved water resistance
- ▶ Soft and flexible, good response to buffing for scratch repair and gloss
- ▶ Slip resistance



Wax hybrid



Conventional wax

PRODUCT PORTFOLIO

RESINS FOR OPV, PRIMER AND INKS

PRODUCT	PRODUCT DESCRIPTION	IONICITY	SOLID APPROX. [%]	pH	MFFT [°C]	Tg [°C]
SYNPRINT AC 2910	Inherently matte acrylic self-crosslinking polymer	Anionic	45	7.5	0	0
SYNPRINT AC 5151	Multiphase acrylic copolymer	Anionic	43	7.5	20	N/A
SYNPRINT AC 6054	IPN acrylic polymer	Anionic	41	7.5	8	8
SYNPRINT AC 7056	Alkali-soluble acrylic copolymer	Anionic	39	5.5	20	36
SYNPRINT AC 7150	Alkali-soluble acrylic polymer	Anionic	30	7.0	90	88
SYNPRINT AC 9010	Self-crosslinking acrylic polymer	Anionic	42	7.5	45	53
SYNPRINT AC 9037	Self-crosslinking acrylic polymer	Anionic	42	7.5	25	N/A
SYNPRINT AC 9039	Self-crosslinking acrylic polymer	Anionic	42	7.5	15	29
SYNPRINT AC 9113	Self-crosslinking acrylic polymer	Anionic	42	7.2	15	29

FEATURES & BENEFITS					
	OPV	PRIMER	PAPER & BOARD	METALLIZED SUBSTRATES	PLASTIC FILMS
Inherently matte acrylic polymer, film with low gloss, high flexibility and excellent stability, excellent adhesion to various substrate types; it is recommended to fortify SYNPRINT AC 2910 with another resin such as SYNPRINT AC 5151 or similar to improve the overall film properties	▲		▲		
Very high gloss, flexibility with excellent printability, high compatibility with waxes and other additives, excellent adhesion to flexible films and foils, no VOCs required to formulate coating	▲	▲	▲	▲	▲
Excellent adhesion to multiple substrates, low heat seal temperature requirements, high compatibility with other resins and additives, good ink receptiveness and anchoring		▲	▲	▲	
Good adhesion on metallized foil, excellent blocking resistance and water resistance		▲		▲	
Excellent pigment dispersing ability, high gloss and holdout, excellent ink transfer and printability, good compatibility with acrylic emulsions, easy to use in ink and OPV, APEO-free, low odor, compliant with Swiss Ordinance and FDA regulations	▲	▲	▲		
Self-crosslinking, excellent chemical and alkali resistance, excellent water submersion resistance; film has very high gloss, hardness with good printability; low addition of VOCs required to formulate coating	▲		▲	▲	
Self-crosslinking, excellent water submersion resistance, excellent adhesion to multiple substrates; film has very high gloss, flexibility with good printability; no VOCs required to formulate coating	▲		▲		
Excellent adhesion to multiple substrates such as PET; film has high gloss and flexibility with good printability; excellent let-down binder for water-based printing inks, no VOCs required	▲	▲		▲	▲
Excellent adhesion to multiple substrates such as PET; film has high gloss and flexibility with good printability; excellent let-down binder for water-based printing inks, no VOCs required	▲	▲		▲	▲

▲ = Highly recommended ▲ = Recommended

PRODUCT PORTFOLIO

ADDITIVES FOR OPV, PRIMER AND INKS

PRODUCT	PRODUCT DESCRIPTION	IONICITY	SOLID APPROX. [%]	pH	MFFT [°C]
WAXES					
SYNTRAN® WA 1065	Wax-hybrid acrylic	Nonionic / anionic	38	9.1	35
SYNTRAN® WA 1075	Wax-hybrid acrylic	Anionic	38	9.2	20
GRINDING RESINS					
SYNTRAN® DR 7011	Alkali-soluble acrylic polymer	Anionic	25	7.6	20
SYNTRAN® DR 7015	Alkali-soluble acrylic polymer	Anionic	30	7.5	> 100
SYNTRAN® DR 7055	Alkali-soluble acrylic polymer	Anionic	25	8.0	66
SYNTRAN® DR 7060	Alkali-soluble acrylic polymer	Anionic	25	7.0	70
SYNTRAN® DR 7102	Carboxylated acrylic copolymer	Anionic	35	6.6	> 100
SYNTRAN® DR 7105	Alkali-soluble acrylic polymer	Anionic	30	7.0	90
HARDNESS MODIFIERS					
SYNTRAN® AC 1012	Acrylic copolymer	Anionic	28	7.6	N/A
SYNPRINT AC 5111	Multiphase acrylic copolymer	Anionic	44	7.0	> 90

FEATURES & BENEFITS

Patented acrylic olefin graft technology. This unique incorporation of olefin onto the backbone of the acrylic provides a high coefficient of static friction, slip resistance, burnishing resistance, internal mar resistance and UV stability (non-yellowing).

Patented acrylic olefin graft technology. This unique incorporation of olefin onto the backbone of the acrylic provides a high coefficient of static friction, slip resistance, burnishing resistance and UV stability (non-yellowing). This connection of wax and acrylate avoids natural migration of the generally lower-density wax to the surface during drying, resulting in better compatibility of the wax with acrylic systems and more uniform film application.

Polymeric surfactant technology designed to improve wetting and incorporation of pigments or additives into water-based pigment concentrates and coatings. Used as a grinding resin in pigment dispersions, it improves color development of organic pigments and carbon black.

Polymeric surfactant technology designed to provide excellent wetting and incorporation of pigments or additives into water-based coatings.

Polymeric surfactant technology designed to provide excellent wetting and incorporation of pigments or additives into water-based coatings. Free of ammonia.

Polymeric surfactant technology designed to provide excellent wetting and incorporation of pigments or additives into water-based coatings; used as a grinding resin in pigment dispersions, it improves the color development of organic pigments, carbon black and titanium dioxide.

Polymeric surfactant technology designed to provide excellent wetting and incorporation of pigments or additives into water-based coatings.

Polymeric surfactant technology designed to improve dispersibility and color development of water-based pigment concentrates and coatings and can be used for both inorganic and organic pigment dispersions. Used as a grinding resin, it shows excellent rheology control and storage stability with multiple pigment types. Compliant with Swiss Ordinance and FDA for indirect food contact.

Hard, non-film-forming acrylic polymer for use as an additive (5–20%) in formulations to improve hardness, sandability, block resistance and stackability.

Hard emulsion, fast drying, APEO-free, low odor; compliant with Swiss Ordinance.



Chemistry tailor-made

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