

PAINTS & COATINGS | EUROPE INCL. TURKEY

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 fibre 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.

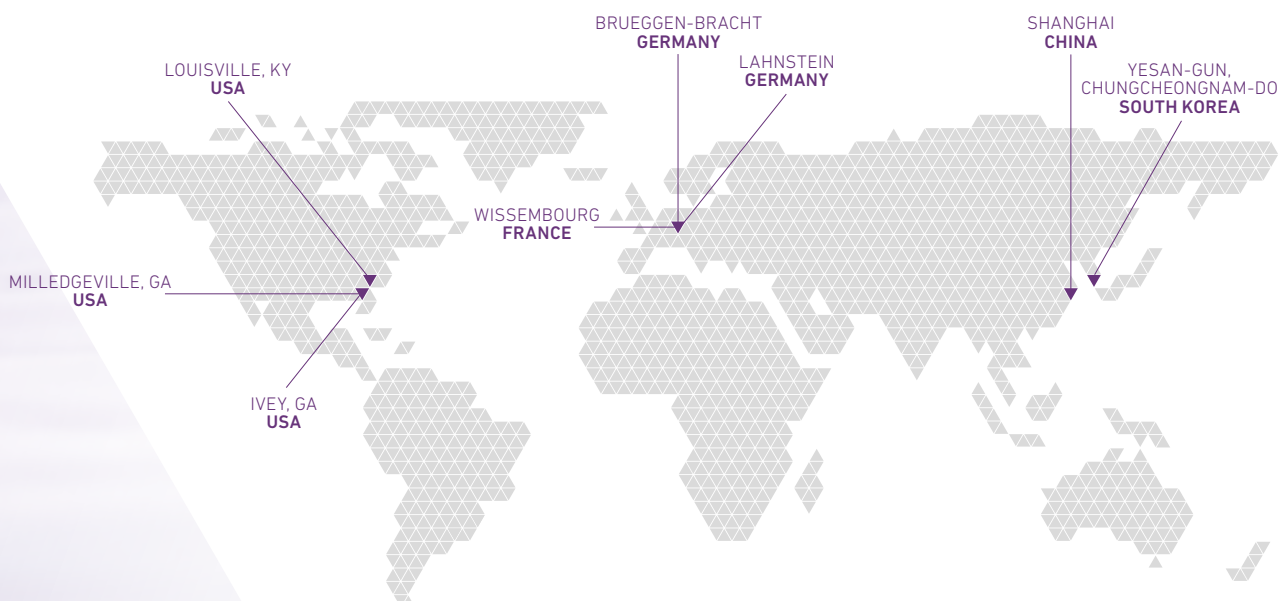
A FAMILY BUSINESS WITH A GLOBAL FORMULA FOR SUCCESS

The corporate group Zschimmer & Schwarz comprises 28 companies in 16 countries on five continents, 21 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 optimised 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 polymerisation process.

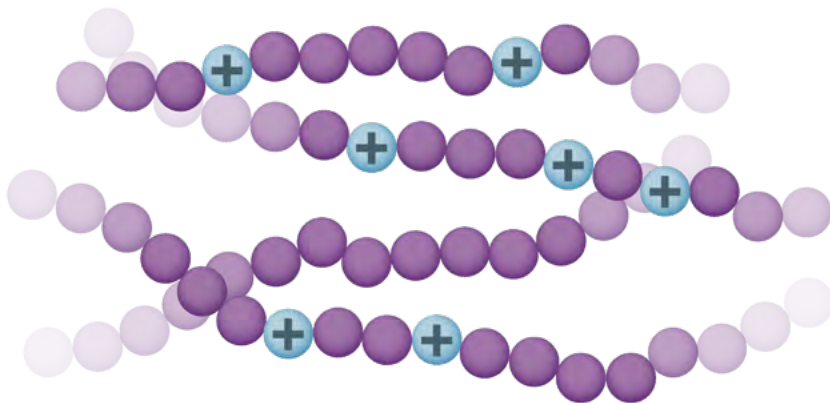
Since visually appealing and durable results can often only be achieved in a multi-layer build-up with primer or overprint varnish, Zschimmer & Schwarz has also developed water-based polymers for this purpose, which we adapt to your applications on request.

CATIONIC TECHNOLOGY

Zschimmer & Schwarz offers polycationic systems with an optimal acidic pH range and high charge density. Cationic resins provide excellent adhesion to various critical anionic surfaces and form an excellent ink-receptive layer. By complexing anionic structures such as water-soluble soils, these products show outstanding stain blocking. On porous substrates, the small particle size also leads to good penetration into the substrate, which further improves adhesion and protection. These properties make these polymers especially well suited for use in various applications in the graphic arts sector.

FEATURES & BENEFITS

- ▶ Excellent adhesion to various problematic surfaces
 - ▶ Film shows excellent ink receptiveness
 - ▶ Superior stain blocking
 - ▶ Forms soft to medium-hard films
 - ▶ Colourless and glossy films
 - ▶ Suitable for highly pigmented and low-VOC systems
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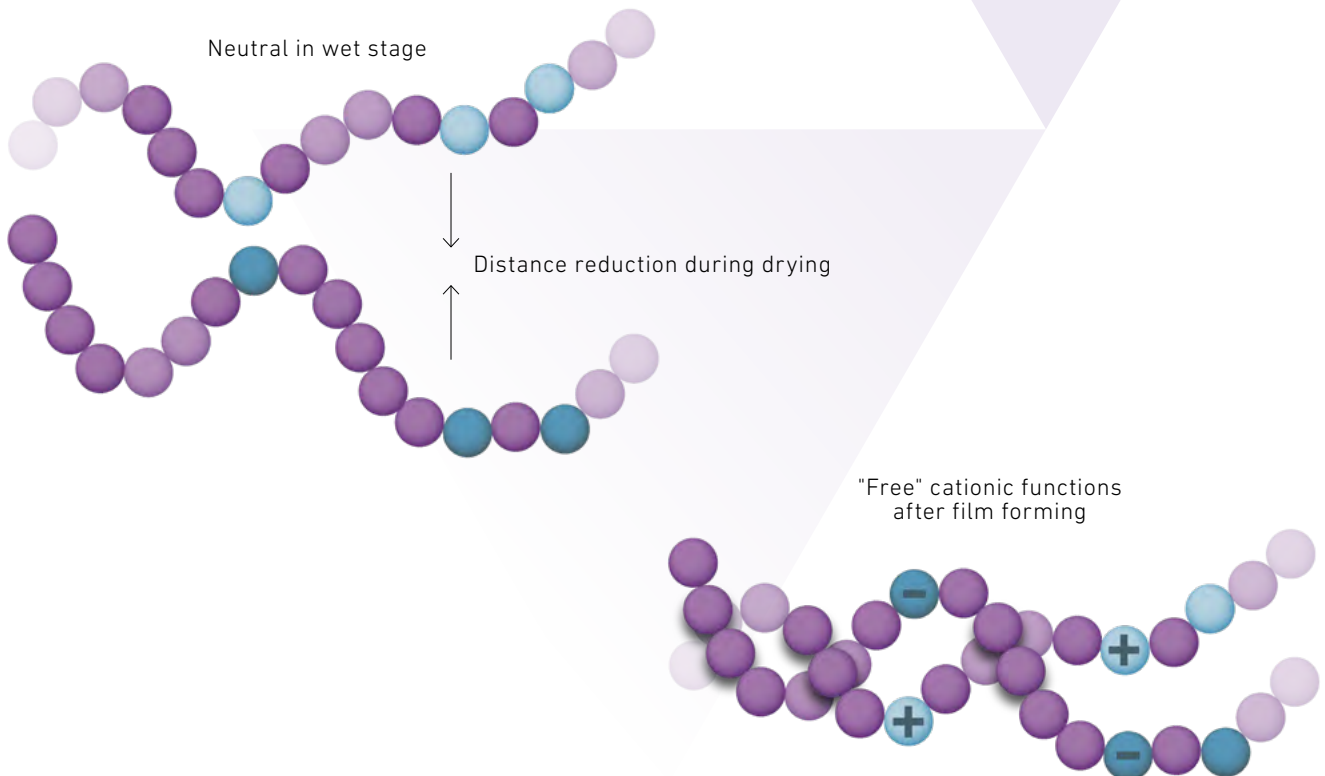


INTERPENETRATING POLYMER NETWORK (IPN)

The IPN involves two different ionic structures in the same polymer network at a neutral pH value. Overall, the polymer exhibits an anionic behaviour 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 metallised substrates is also improved. At the same time, no or low addition of VOCs is required to formulate coatings.

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 metallised substrates
- ▶ High compatibility with other resins and additives
- ▶ No or low addition of VOCs required to formulate coatings

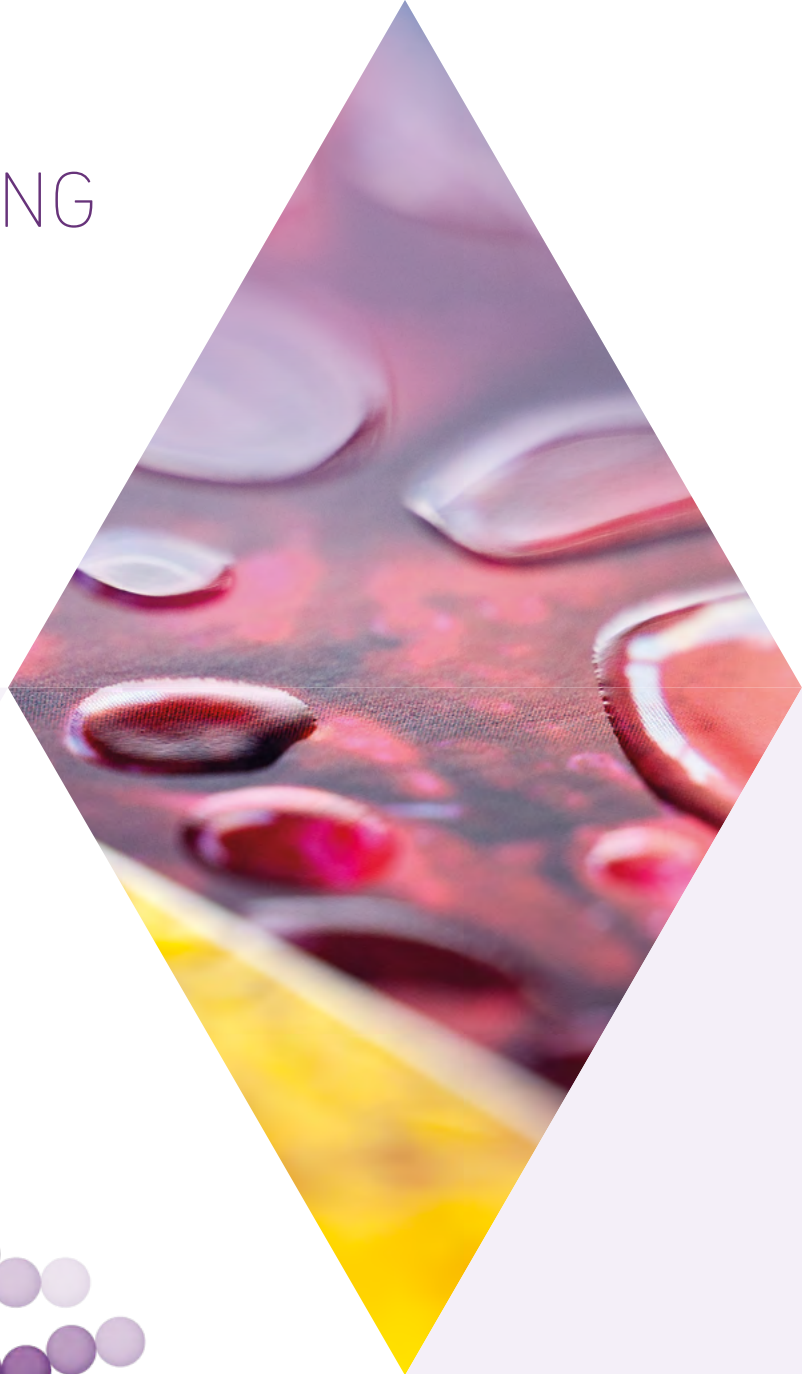
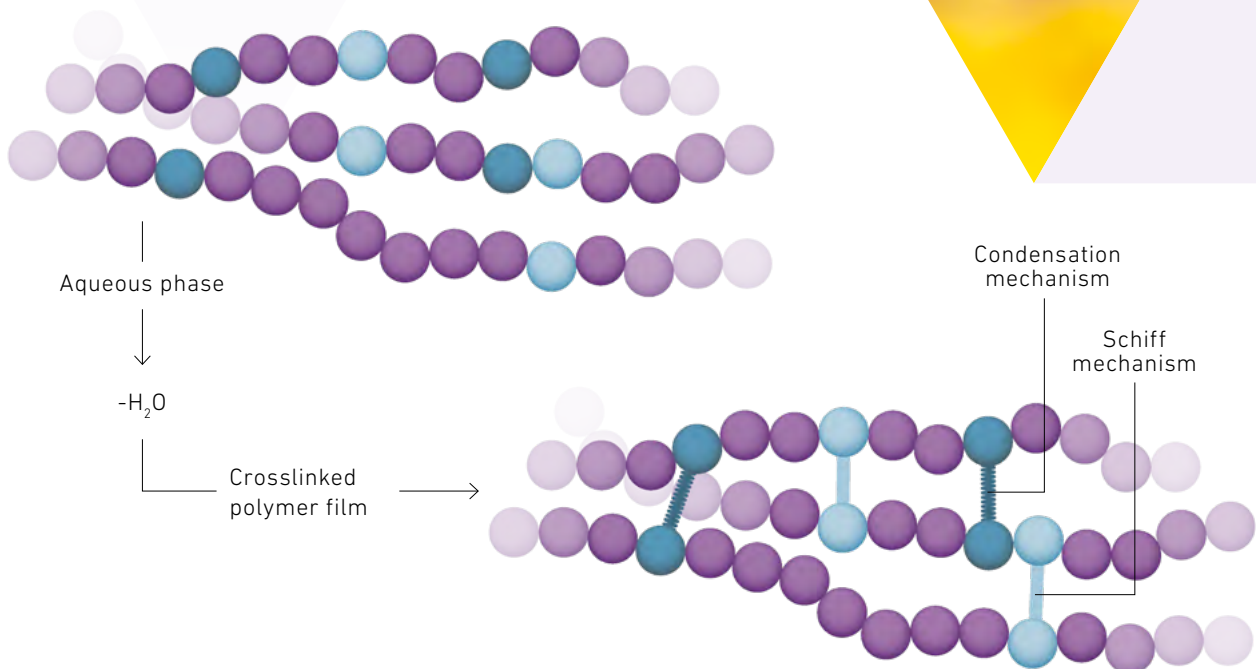


SELF-CROSSLINKING TECHNOLOGY

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



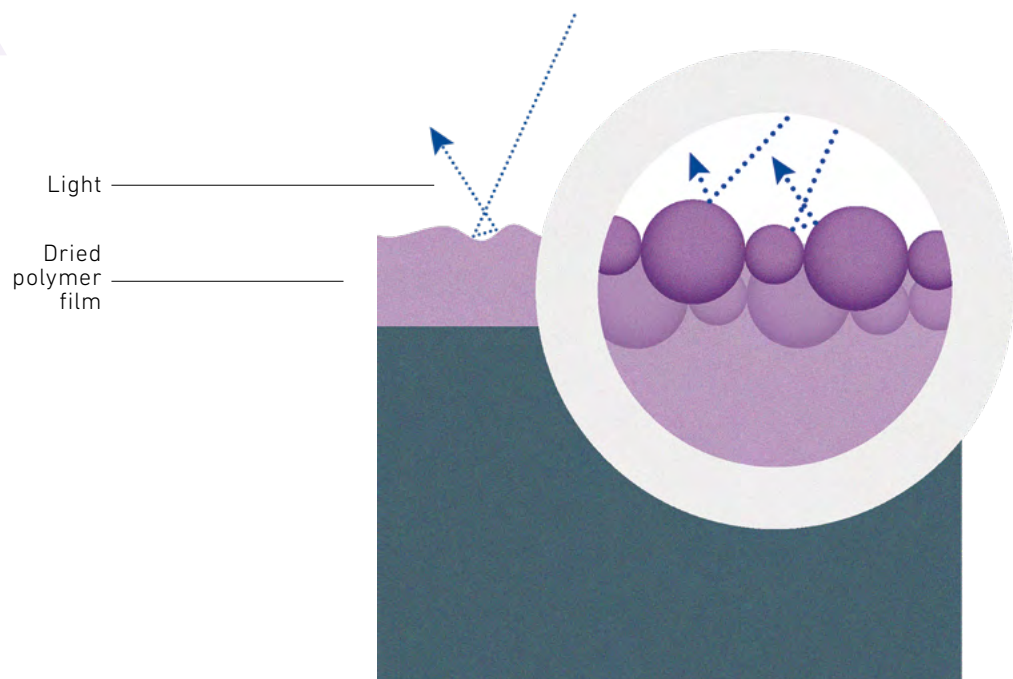
INHERENTLY MATTE TECHNOLOGY

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, has low foaming, and no or low addition of VOCs is required to formulate coatings. The time- and labour-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
-

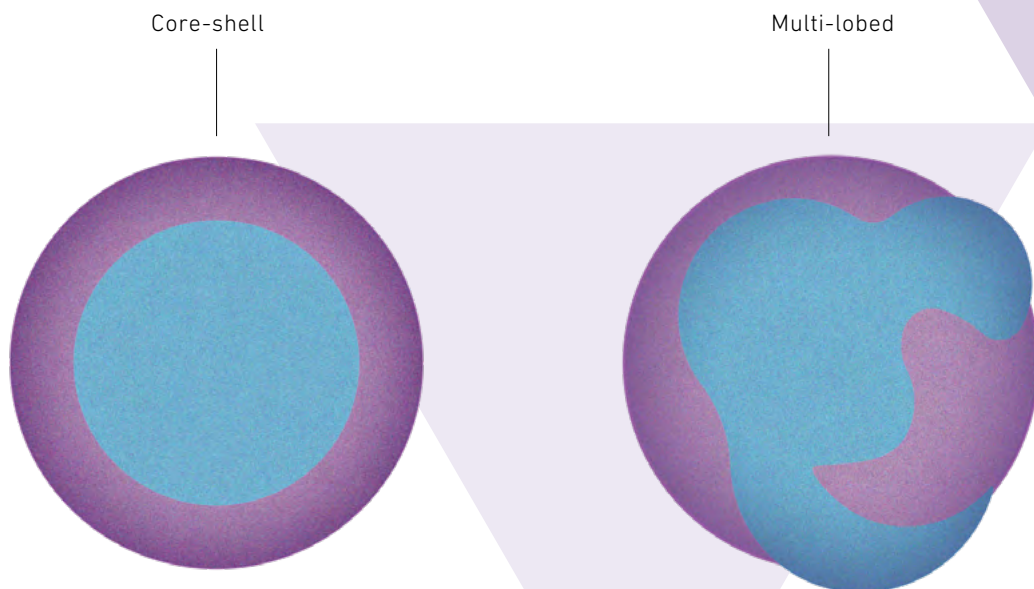


MULTIPHASE TECHNOLOGY

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
-

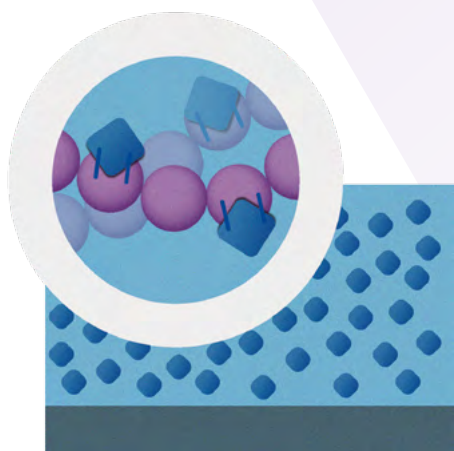


WAX-HYBRID TECHNOLOGY

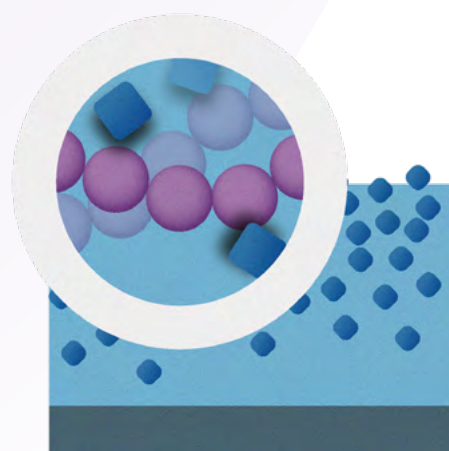
Our wax-hybrid technology is a patented process for combining wax and acrylate in a single polymer network. This prevents the wax from migrating to the surface as it dries, resulting in a more uniform film composition that improves the appearance and performance of the coating. The hybrid polymer exhibits anionic behaviour 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 utilised.

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

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.

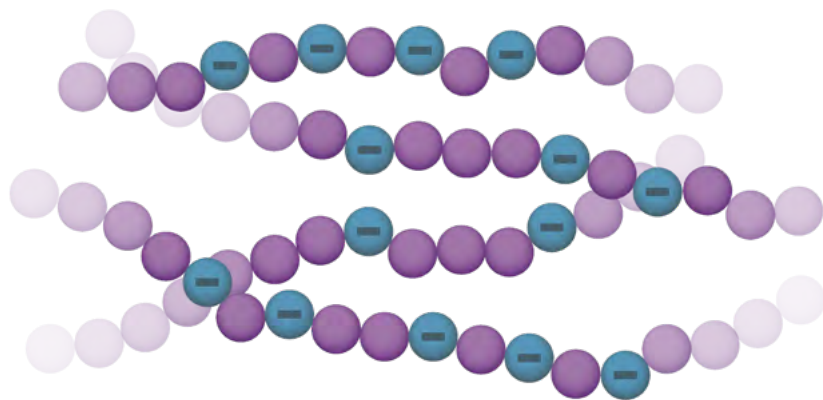
FEATURES & BENEFITS

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
-





PRODUCT PORTFOLIO

RESINS FOR OPV, PRIMER AND INKS

PRODUCT	PRODUCT DESCRIPTION	IONICITY	SOLID APPROX. [%]	pH	MFFT [°C]	Tg [°C]
SYNPRINT AC 2920	Inherently matte self-crosslinking acrylic polymer	Anionic	45	7.5	30	30
SYNPRINT AC 4110	Cationic acrylic copolymer	Cationic	35	5.7	< 10	25
SYNPRINT AC 4120	Cationic acrylic copolymer	Cationic	35	5.6	22	49
SYNPRINT AC 5121	Multiphase acrylic copolymer	Anionic	44	7.1	20	N/A
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 7110	Alkali-soluble acrylic polymer	Anionic	30	7.0	70	88
SYNPRINT AC 9113	Self-crosslinking acrylic polymer	Anionic	42	7.2	15	29

FEATURES & BENEFITS

OPV
PRIMER
PAPER & BOARD
METALLISED
SUBSTRATES
PLASTIC FILMS

Inherently matte polymer for very low- to medium-gloss OPVs and printing inks; it forms a low-gloss film without the additional use of waxes or powdered matting agents and gives a slightly soft touch to the surface with excellent blocking and water resistance; compatible with both organic and inorganic pigment pastes, does not affect the colour of the ink

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Excellent adhesion to a wide variety of substrates, excellent bonding of anionic inks, universal stain-blocking properties, APEO- and cosolvent-free, for low-VOC formulations

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Water-based, cationic acrylic copolymer solution recommended for primers with excellent adhesion on paper/paperboards and labels; films formulated with SYNPRINT AC 4120 work as a receptive layer for water-based anionic inks

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▲

Good levelling, good adhesion on paper and board, very flexible, low odour, good water resistance; good suitability for marker pen applications; compliant with Swiss Ordinance

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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

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Excellent adhesion to multiple substrates, low heat seal temperature requirements, high compatibility with other resins and additives, good ink receptiveness and anchoring

▲

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▲

Good adhesion on metallised foil, excellent blocking resistance and water resistance

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▲

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 odour; compliant with Swiss Ordinance and FDA regulations

▲

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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

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▲ = Highly recommended ▲ = Recommended

PRODUCT PORTFOLIO

ADDITIVES FOR OPV, PRIMER AND INKS

PRODUCT	PRODUCT DESCRIPTION	IONICITY	SOLID APPROX. [%]	pH	MFFT [°C]
WAXES					
SYNTRAN® WA 1001	Hard polyethylene wax emulsion	Nonionic / anionic	35	9.5	N/A
SYNTRAN® WA 1005	Hard polyethylene wax emulsion	Nonionic / anionic	35	8.7	N/A
SYNTRAN® WA 1065	Wax-hybrid acrylic	Nonionic / anionic	38	9.2	35
GRINDING RESINS					
SYNTRAN® DR 7061	Alkali-soluble acrylic polymer	Anionic	25	7.1	77
SYNTRAN® DR 7101	Alkali-soluble acrylic polymer	Anionic	30	7.0	70
HARDNESS MODIFIER					
SYNPRINT AC 5111	Multiphase acrylic copolymer	Anionic	44	7.0	>90

FEATURES & BENEFITS

Hard and high melting polyethylene wax emulsion, melting range 122–139 °C; abrasion and scratch resistance, anti-blocking. It can improve the friction resistance and anti-blocking properties of the surface.

Hard and high melting polyethylene wax emulsion, melting range 130–140 °C; abrasion and scratch resistance, anti-blocking; excellent compatibility with all known water-based polymer dispersions

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).

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 colour development of organic pigments, carbon black and titanium dioxide

Polymeric surfactant technology designed to improve dispersibility and colour 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 emulsion, fast drying, APEO-free, low odour; compliant with Swiss Ordinance



Chemistry tailor-made

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