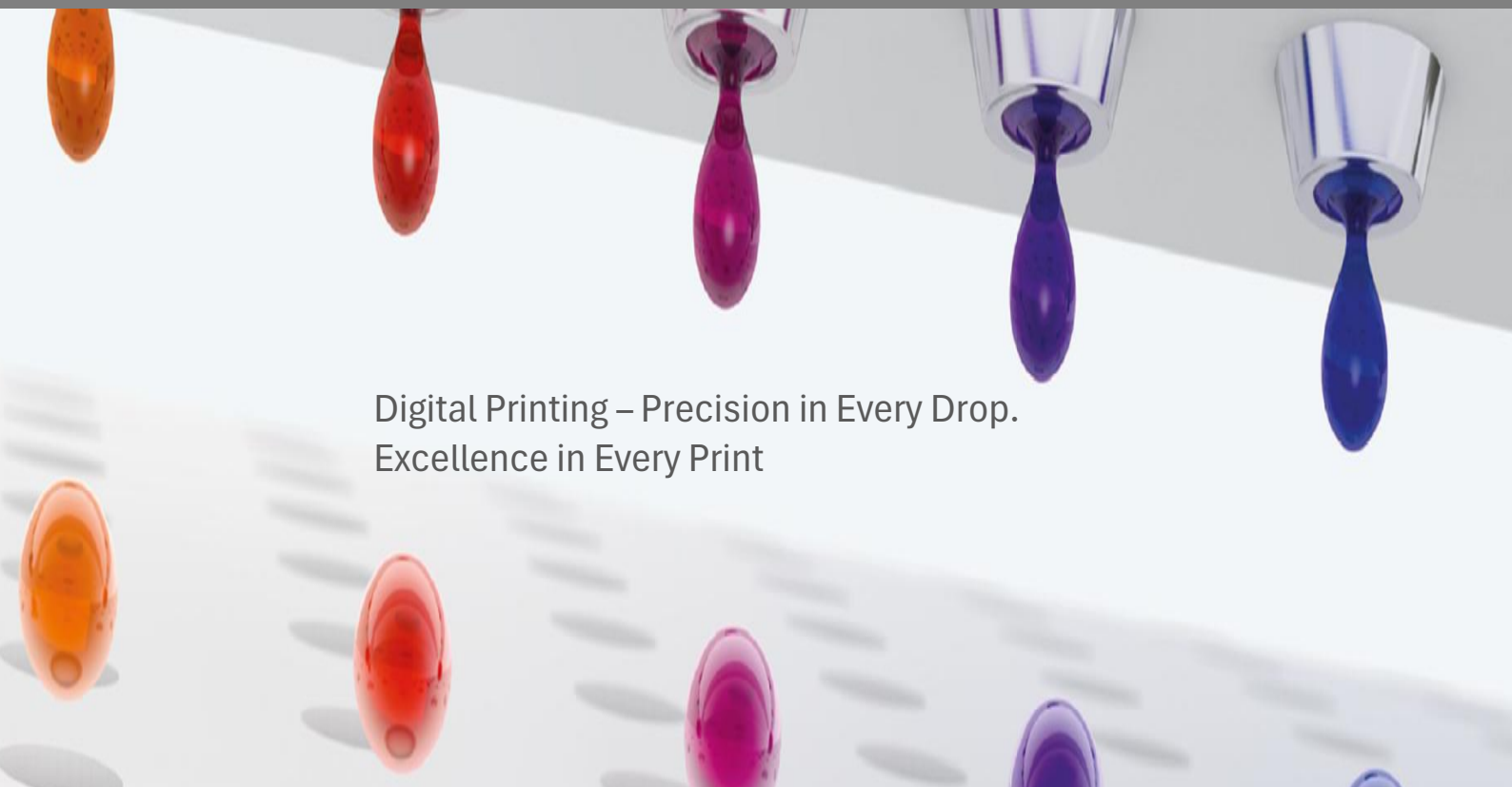
CHEMICAL Varena T.P.T
PRODUCTS FOR A SECURE FUTURE

VARADEX
PRINTING INK SOLUTIONS

PRINTING INK RESIN & ADDITIVE SOLUTIONS

Binders and additives for water-based & solvent-based printing inks and overprint varnishes



Digital Printing – Precision in Every Drop.
Excellence in Every Print

Acrylic Resins for the Packaging & Printing Industries

When it comes to packaging adhesives and printing, look no further than VARENA CHEMICAL. We have years of industry experience in developing acrylic resins that are perfect for various types of printing inks, as well as for use in adhesives and packaging. Our polymers can impart several beneficial properties, such as:

- Improved gloss for flexographic and gravure inks
- Improved flow and hold-out for printing inks
- Excellent adhesion to a variety of substrates
- Superior image sharpness and color

Our water-based acrylic resins can be used in many different applications, such as:

- Screen printing inks
- Flexographic inks
- Gravure inks
- Adhesives
- Packaging Coatings
- Ink Jet

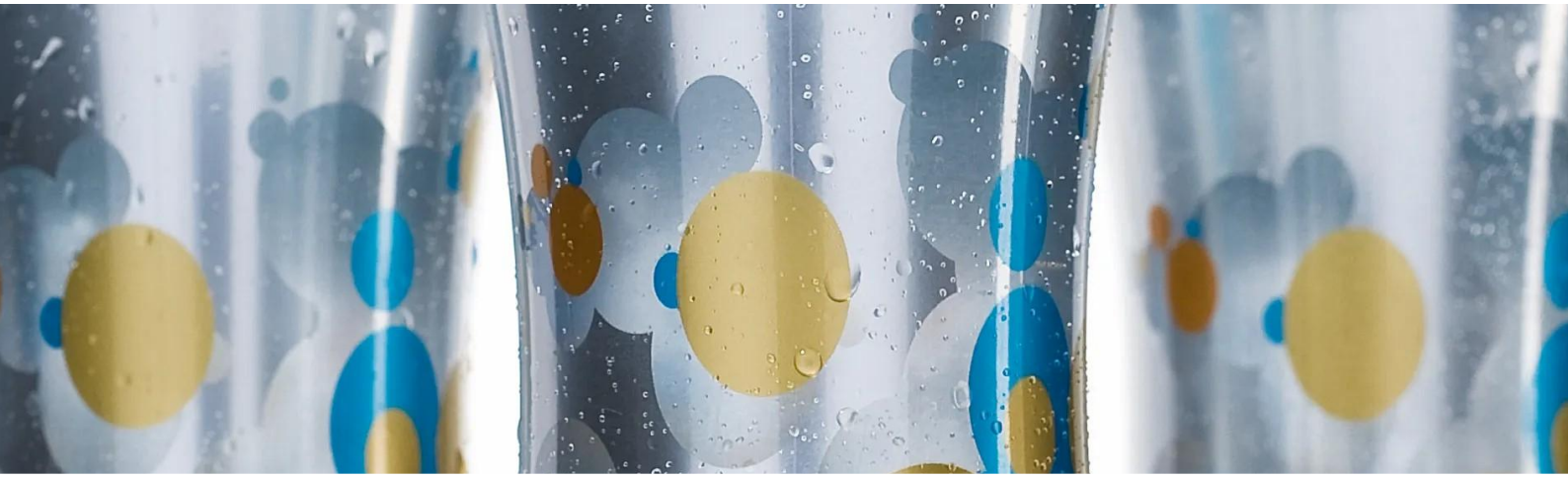
VaraDex; Acrylic resins, water-based dispersions for printing inks and OPV´s

Product	Monomer	Supply Form [%]	pH value	MFFT [C°]	Viscosity [mPa.s]/20°C	Main uses and characteristics
PI 5525	Acrylic resin solution	25 in water	8.0-9.0	-	200 – 800	General purpose, flexographic- and gravure inks and overprint varnishes.
PI 5520 M	Acrylic resin solution MEA-neutralized	25 in water	8.0-9.0	-	200 – 800	Solvent-free pigment pastes, flexographic- and gravure inks and overprint varnishes.
PI 5540	Acrylic resin solution water/IPA 2:1	40 in water/IP	8.0-9.0	-	2.500 – 3.000	General purpose, flexographic- and gravure inks and overprint varnishes.
PI 5543	Acrylic resin solution water/IPA 2:1 MEA-neutralized	40 in water	8.0-9.0	-	3.000 – 4.000	For high pigment concentrations, A wide range of flexographic and gravure printing inks are obtained with this product.
PI 5560	Acrylic resin solution	40 in water	8.0-9.0	-	max. 2.000	Solvent-free, high solid resin, flexographic- and gravure inks and overprint varnishes.
PI 5522	Styrene copolymer dispersion	40 in water	8.0-8.5	0	3.000 – 5.000	For matt overprint varnishes.
PI 5563	Styrene acrylic dispersion DEMA-neutralized	52 in water	8.5-9.5	0	300 – 800	Heat resistance, high gloss printing inks and coatings, storage stable with metallic pigments.
PI 5573	Styrene acrylic dispersion	45 in water	7.5-8.5	50	max. 1.000	High gloss OPV´s with fast drying and good resistance properties.
PI 5590	Styrene acrylic dispersion	45 in water	8.0-8.5	70	400 – 600	High gloss, fast drying, excellent block- and water resistance, for flexographic rotogravure and overprint.
PI 5510	Alkaline soluble acrylic dispersion anionic dispersion	40 in water	5.0-7.0	8	max. 1.000	Low MFT, high flexibility, excellent adhesion, excellent alcohol tolerance, excellent adhesion on various substrates and excellent pigment wetting for flexo-/ gravure inks and overlay or overprint varnishes.
PI 5570	Acrylic solution dispersion	25 in water	8.0-9.0	-	max. 500	Cross linkable with melamine resin, very hard polymer, very good compatible with acrylic emulsions,
PI 5545	Acrylic dispersion	50 in water	4.0-6.0	3	50 – 300	APEO-free polymer emulsion, for blister lacquers.
PI 5521	Acrylic dispersion	30 in water	approx. 5.5	-	200 – 400	Cationic solution, good adhesion to plastics and aluminum, good water-compatibility.
PT 5877	Starch copolymer dispersion	40 in water	3.0-5.0	28	max. 800	Ammonia and amine free, for thin papers.
PT 5882	Starch copolymer dispersion	50 in water	7.5-9.0	28	max. 300	Ammonia and amine free, for thin papers.
PAC 5504	Emulsion polymer based on methyl methacrylate, carboxylated	40 in water	3.5-4.3	55	10 – 40	Let-down vehicle for water-based flexographic and gravure-printing inks (for corrugated board, card board, paper bags,...) (post-print), excellent transfer, very good compatibilities, excellent printability, fast drying, high viscosity stability (even with Litholrubinred) and **complies with the requirements for use in contact with food of BgVV and FDA (certificate of conformity for BgVV).**
JAC 5661	Acrylic colloidal emulsion	44 in water	1.8-2.4	-	60	Acrylic colloidal emulsion for use in inks for pre-print and post-print corrugated board and kraft paper applications, good transfer and printability, excellent hot mar resistance, low cost in use. Tg = 70°C.
AD 5304	Acrylic dispersion	25 in water	7.0-9.0	-	max. 1.000	Digital printing, Tg = 60°C.
AD 5370	Acrylic dispersion	25 in water	8.0-10.0	-	3.000 – 5.000	Digital printing, self-adhesives printing coating.
AD 5330	Acrylic dispersion	25 in water	7.0-9.0	-	max. 1.000	Digital printing, Tg = 70°C.
AD 5552	Acrylic dispersion	50 in water	3.0-5.0	-	max. 500	Amine free polymer emulsion for water-based inks and varnishes for paper and board applications.

Ink resin solutions suitable for different substrates

VaraDex; Acrylic resins, water-based dispersions for printing inks and OPV´s

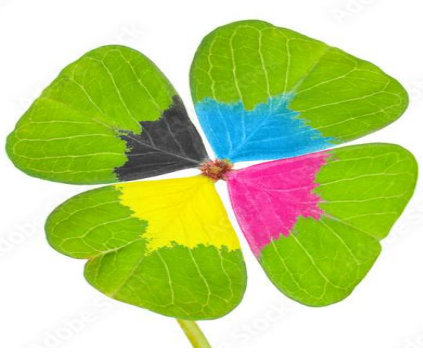
Product	Monomer	Supply Form [%]	pH value	MFFT [C°]	Viscosity [mPa.s]/20°C	Main uses and characteristics
AP 8832	Styrene acrylate dispersion	40 in water	8.0-9.0	56	5.000 – 6.000	Metallic printing inks.
AP 8846	Acrylic solution	35 in water	7.0-7.5	<0	2.500 – 3.000	Metallic printing inks, excellent ink stability.
AP 8859 S	Shellac supported	49 in water	8.0-8.5	>100	200 – 800	High gloss, printing inks.
AP 8880	Styrene acrylate dispersion	47 in water	8.5-9.0	<0	800 – 1.500	Good adhesion on nonporous substrates, paper, paperboard and foils.
AP 8895	Acrylate dispersion	49 in water	8.0-9.0	5	1.250 – 2.750	Ice water crinkle resistance.
AP 8830 OR	Styrene acrylate dispersion	46 in water	8.0-8.5	12	1.500 – 2.500	Excellent grease and oil resistance.
AP 8840	Styrene acrylate dispersion	44 in water	8.0-9.0	75	500 – 1.000	Designed for use in inks and overprint varnishes requiring very high gloss and high heat resistance.
AP 8850	Styrene acrylate dispersion	45 in water	8.0-9.0	0	300 – 800	Excellent high gloss dispersion.
AP 8887	Styrene acrylate dispersion	50 in water	8.0-9.0	65	300 – 700	No crinkles on thin paper.
AP 8860	Styrene acrylate dispersion	50 in water	8.0-8.5	75	200 – 600	Fast drying, high film hardness.
AP 8820 CP	Styrene acrylate dispersion	20 in water	9.5-10.0	-	2.000 – 3.000	For carbon black pigments.
AP 8855 HR	Styrene acrylate dispersion	41 in water	8.0-9.0	0	200 – 600	Heat resistance up to 240 °C.
AP 8890 WR	Styrene acrylate dispersion	45 in water	7.5-8.5	5	1.500 – 2.500	Fast drying, ice water resistance, flexible.
AP 8897 AS	Acrylate dispersion	48 in water	8.0-8.5	0	500 – 1.000	Anti slip.
AP 8819	Pure acrylic dispersion	40 in water/IP	8.0-9.0	-	2.500 – 3.000	Emulsifier-free, aqueous acrylic solution. Used for production of flexographic and gravure inks and overprint varnishes. Offers very good compatibility with polystyrene-, acrylic- and methacrylic polymers, most various pigments, pigment dispersions, water dilutable colourings and fillers. Tg: 48°C.
PG 8813	Acrylate dispersion	50 in water	4.0-6.0	3	max. 1.000	For the production of low-cost aqueous gravue and grinding.
AA 8888 Z	Metal-reinforced pure acrylate	24 in water	8.0-8.8	-	50 – 300	Primer for aluminium coated paper. Transparent coatings on the basis of this binder can be applied by means of alkaline remove the cleaner again. Water-based products that improve adhesion between a variety of inks and all common substrates and extrudates.



METALLIC INK SOLUTIONS
For All Your Label and Packaging Needs

	Technical Properties							Application				
product	Monomer	Non volat.. Content DIN EN ISO 3251 [%]	pH value DIN 53785	Density DIN 51757 [g/cm³]	Tg [°C]	MFT [°C]	Viscosity 20°C, del. from Brookfield, ISO 2555 [mPa.s]	Gravure inks	Flexographic inks	Overprint varnish	Abrasion resistance wet / dry	Blocking stability
VaraDex 5521	Cationic pure acrylic solution	30	5.0-6.5	1.05	43	/	150-800		■			
VaraDex 8832	Styrene acrylic dispersion	40	8.0-90	1.05	47	56	5000-6000	■	■			
VaraDex 8846	Acrylic solution	35	7.0-7.5	1.06	25	<0	2500-3000		■			
VaraDex 5590	Styrene acrylic dispersion	45	7.8-8.8	1.07	98	70	400-600	■	■	■		■
VaraDex 5540	Acrylic solution/IPA 2:1	40	8.0-9.0	1.02	48	/	2500-3000		■	■		
VaraDex 5563	Styrene acrylic dispersion, DMEA-neutralized	52	8.5-9.5	1.06	0	0	300-800		■			
VaraDex 8840	Styrene acrylic dispersion	44	7.8-9.0	1.08	48	75	500-1000		■	■		
VaraDex 8895	Acrylic dispersion	49	7.8-9.0	1.05	5	5	1250-2750	■	■	■		
VaraDex 8855	Styrene acrylic dispersion	41	7.8-9.0	1.06	0	0	200-600	■	■	■		
VaraDex 8860	Styrene acrylic dispersion	50	7.8-8.5	1.06	98	75	200-600	■	■	■		
VaraDex 8859	Shellac supported polystyrene dispersion	49	7.8-8.8	1.05	91	>100	200-800		■		■	
VaraDex 5877	Starch copolymer dispersion	40	3.0-5.0	1.06	/	28	<800	■	■			■
VaraDex 5882	Starch copolymer dispersion	50	7.5-9.5	1.04	/	28	<300	■	■			

Specific Properties											Main uses and principal characteristics
High speed printing	Oil / Greece resistance	Gloss	Good compatibility	Hot seal resistance	Pigment stability	Good adhesion	Fast drying	Transparent	Water resistance	Re-solubility	
						■	■			■	Good adhesion to plastic foils
		■									Metallic printing inks
■		■			■						Metallic printing inks, excellent ink stability
■		■	■				■	■	■		High gloss, fast drying, excellent blocking- and water resistance
					■	■				■	General purpose
		■		■	■	■				■	Heat resistance, high gloss
		■		■						■	Heat resistance, very high gloss
		■	■			■			■		Good adhesion to film and other non-porous substrates, ice water crinkle resistance
		■		■		■			■		Heat resistance up to 240°C, highest gloss
		■	■				■				Fast drying, high film hardness
		■				■	■				High gloss, fast drying, high solids at low viscosity
	■				■					■	High renewable raw material content, very good alcohol stability, very high gloss, fast drying, good re-solubility
■			■				■			■	For thin papers, outstanding printability, excellent re-solubility, fast drying, good compatibility



VaraDex METALLIC PRINTING INKS

TECHNOLOGIES FOR A SECURE FUTURE

Delivering brilliant metallic finishes with **excellent ink stability**, our metallic ink solutions are designed to provide outstanding print performance, consistent quality, and long-lasting visual impact across a wide range of label and packaging applications.

VARABIOMER
VARENA BIOPOLYMERE

Sustainable Products

This products are gentle on the environment and support the paint manufacturer inmaintaining compliance with an increasingly demanding regulatory framework.

GREEN POLYMER

RENEWABLE RESINS

The main challenge for paint manufacturers is to meet the growing consumer demand for improved performance, sustainability and safety in a cost-effective way. Meeting low VOC legislation, reducing the carbon footprint of alkyd paints or developing advanced, durable water-based alkyd resins requires specialist expertise and support. We cover all these aspects and much more.

Today's printing inks and coatings are not only much more efficient than just a few decades ago, they are also much more environmentally friendly and healthier, for example through the continuous reduction of volatile solvents. But now it is time to go one step further and research bio-based alkyd resins for inks and coatings.

VaraDex BIOMER PT 5882

Biomer-Dextrin- Modified Copolymer Dispersion Based on Renewable Raw Materials

VaraDex BIOMER PT 5882 has been developed especially as a let-down binder for the coating of extremely thin papers. The product prevents of paper waves and crinkling.

	Value	Unit	Test Method
Non-volatile content, 1h/125 °C	50 ± 1	%	DIN EN ISO 3251
Strorage stability at 50 °C	min. 30 days	-	-
Viscosity, Brookfield, 20 °C	max. 300	mPa.s	DIN EN ISO 2555
pH-value	5.5 – 9.0	-	DIN ISO 976
Density, 20 °C	appr. 1.04	g/cm³	DIN EN ISO 2811-1
MFFT	28	°C	-
Freeze-/thaw stability	5	cycles	DIN ISO 1147
Delivery form	50% in water	%	-

VaraDex BIOMER PT 5877

Biomer-Styrene-Copolymer Dispersion Based on Renewable Raw Materials

An acrylic copolymer biobased emulsion using renewable resources instead of a portion of petrochemical raw materials designed for formulation of aqueous printing inks and overprint varnishes.

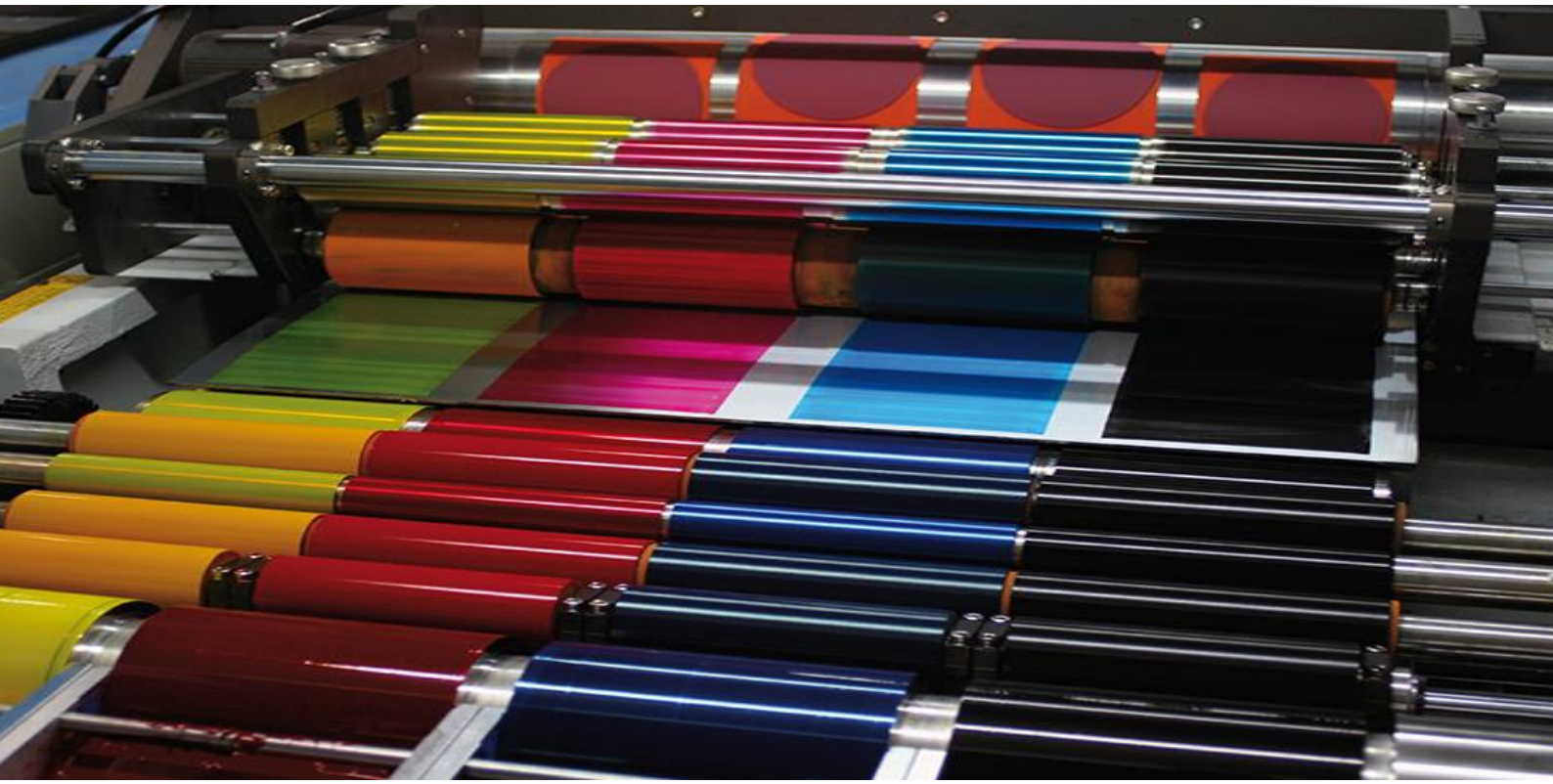
	Value	Unit	Test Method
Non-volatile content, 1h/125 °C	40 ± 1	%	DIN EN ISO 3251
Viscosity, Brookfield, 20 °C	200 - 800	mPa.s	DIN EN ISO 2555
pH-value	3.0 – 5.0	-	DIN ISO 976
Density, 20 °C	appr. 1.06	g/cm³	DIN EN ISO 2811-1
MFFT	28	°C	-
Freeze-/thaw stability	2	cycles	DIN ISO 1147
Delivery form	40% in water	%	-

SYNTHORA Additives for water-based rotogravure, flexographic, screen inks and overprint varnishes

Anti-blocking	Anti-creating	Cross-linking	Defoaming	Dispersing
SlipSil 551 SlipSil 553 AdiTech 905	WetCore 345	AdiTech 905	FoamStop AQUA 210 FoamStop AQUA 242	WetDisperse 840W WetDisperse 846W WetDisperse 870W

VaraDex's binders and SYNTHORA additives offer a wide range of applications in the field of printing inks. The unique properties are numerous: some binders have for example a high proportion of renewable raw materials, others are particularly heat-resistant or are compatible for high printing speeds.

VARENATHOR ADDITIVES



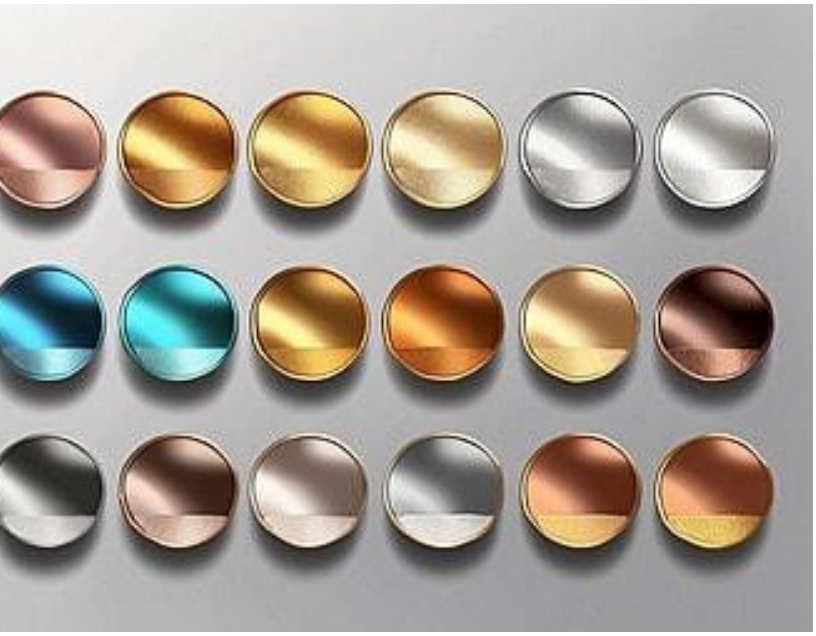
Leveling	Mar resistance	Slip smoothness	Substarte wetting	Water resistance
WetCore 345 SlipSil 585 FlowAdd FL 100 FlowAdd FL 151	SlipSil 551 THORWAX E 8510	SlipSil 551 SlipSil 553	WetCore 345 FlowAdd FL 100 FlowAdd FL 151	AdiTech 905

Offset Printing

Offset printing is the perfect solution for cost-effective printing large quantity orders. It offers consistent high-quality images, accurate color reproduction, and crisp professional print quality.

With VaraDex offset printing BINDERS & ADDITIVES, you have the ability to make specialty inks, such as metallics, and match specific Pantone Colors.

METALLIC INK SOLUTIONS
For All Your Label and Packaging Needs



VaraDex

Binders and additives for offset printing for the highest print quality.

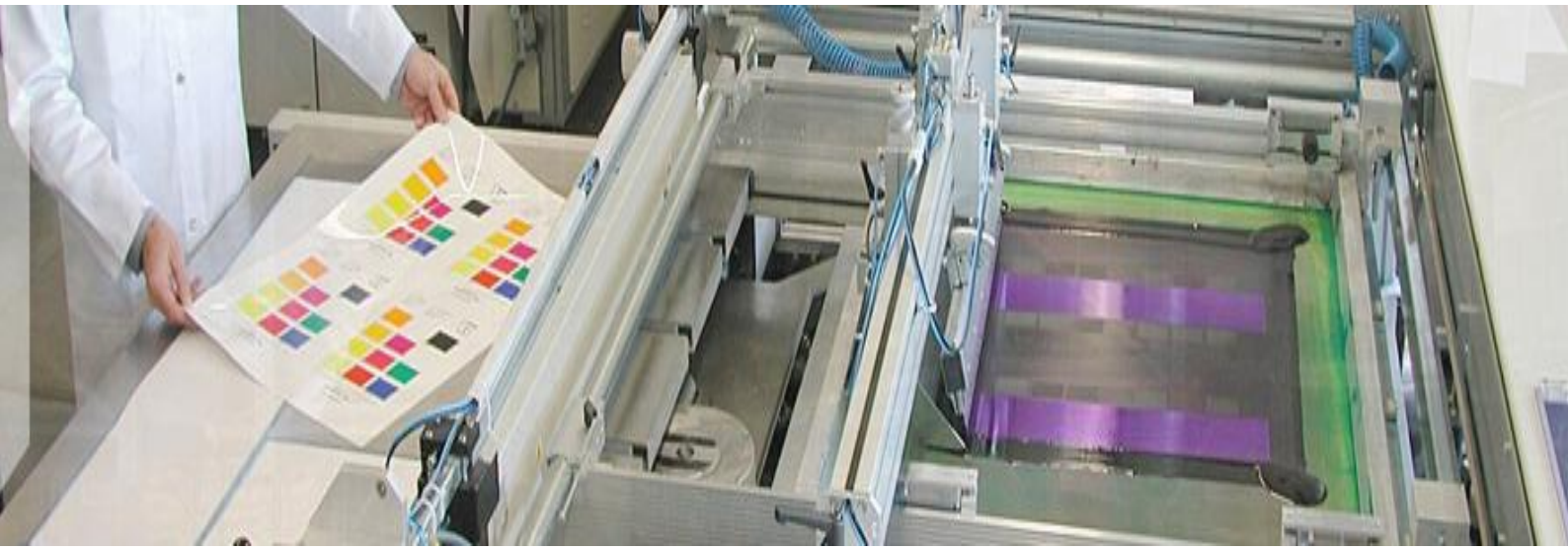
TECHNOLOGIES FOR A SECURE FUTURE

VARALAC
ALKYD RESINS

VaraLac; Alkyd modified resin

Type	Oil [%]	Oil type	Color/ Gardner	Acid value [mgKOH/g]	Viscosity 20°C [mPa.s]	Supply Form [%]	Main uses and characteristics
L 1904	79	Linseed oil	max. 10	max. 15	8.000 –10.000	100	High gloss offset inks. Quick-set-printing inks.
L 1004	80	Linseed oil	max. 10	max. 15	2.500 – 3.500	100	High gloss offset inks. Quick-set-printing inks.
L 1023	73	Soya oil	max. 10	max. 20	47.000 – 55.000	100	Heat-set-printing inks. Quick-set-printing inks.

VaraLac L 1004 & VaraLac L 1904 are linseed oil based alkyd resins with low viscosity. By using VaraLac L 1904 high gloss offset inks with good pigment and drying properties can be manufactured.



VaraSin; Rosin-based hard resins, phenol-modified

Product	Melting point Capillary method [°C]	Acid value [mgKOH/g]	Flow time 20°C [s]	Color Gardner	Main uses and characteristics
VaraSin F 105	90 - 110	15 – 25	20 – 30 (50% in ws 145-195)	max. 10 (50% in ws 145-195)	General purpose type for alkyd-based paints and primers, low viscos resin, giving excellent gloss and rub resistance on cold set inks
VaraSin F 120	110 - 130	10 – 25	80 – 120 (50% in ws 145-195)	max. 10 (50% in ws 145-195)	General purpose type for lakyd-based paints and primers and for cooking with alkyds, fast setting, high gloss resin for sheetfed inks, compatible with alkyds and natural inks
VaraSin F 130	120 - 140	15 – 25	120 – 170 (60% in xylene))	max. 10 (50% in ws 145-195)	Cold out modifying resin for paints with good drying properties and high gloss.

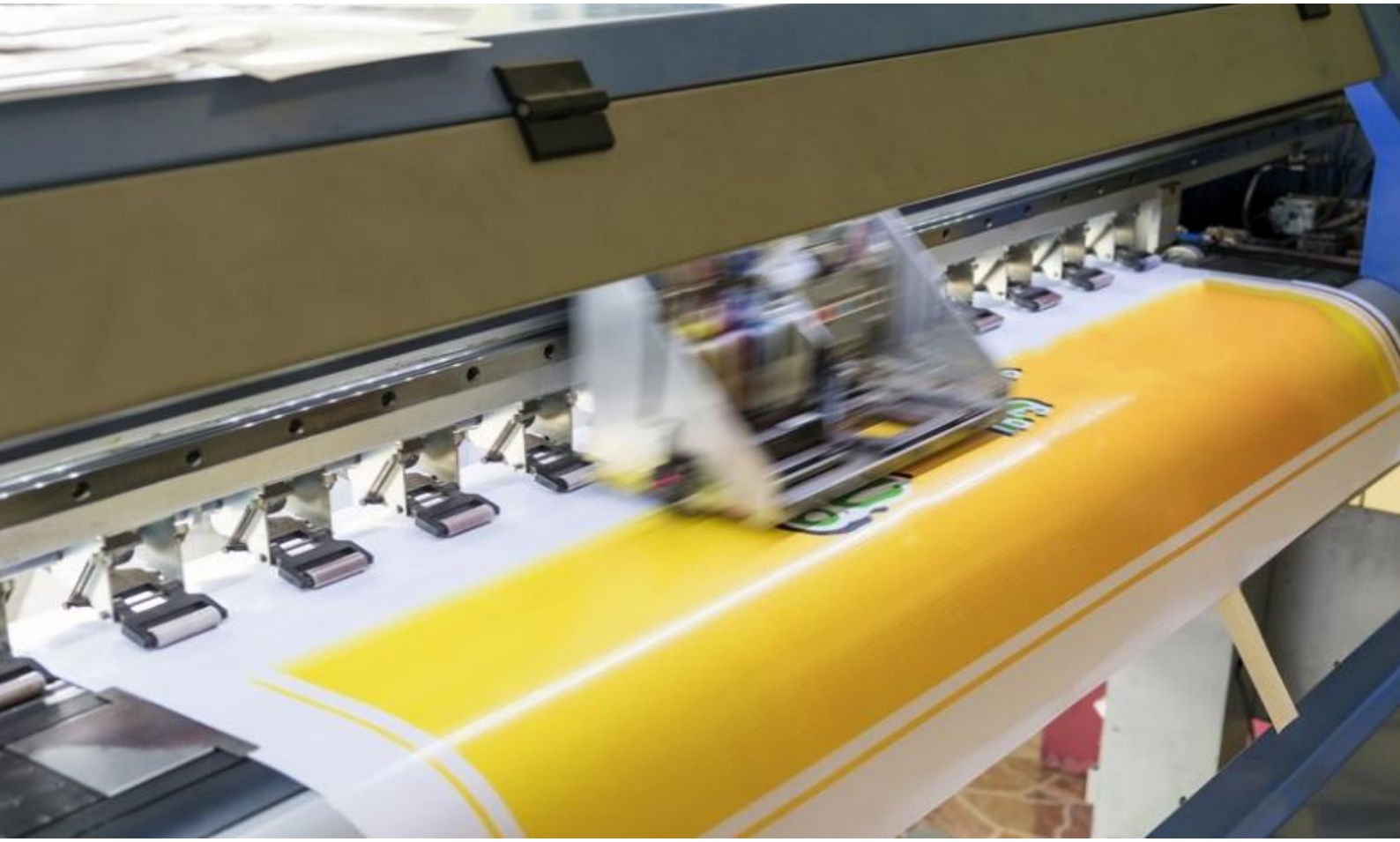
VaraTac; Rosin-based maleic resins and rosin esters

Product	Melting point Capillary method [°C]	Acid value [mgKOH/g]	Flow time 20°C [s]	Color Gardner	Main uses and characteristics
TAC MS 235	125 – 155	180 – 200	10 – 20 (50% in ethanol)	max. 15 (60% in ethanol)	For alcohol and water-based paints and laquers, flexo and gravure inks, overprint varnishes, compatible with acrylic polymers and NC, soluble in water after neutralization, **FDA 175. 105, 175.300**.
TAC MS 265	155 – 190	190 – 220	15 – 25 (50% in ethanol)	max. 8	For alcohol and water-based paints and laquers, flexo and gravure inks, overprint varnishes, compatible with acrylic polymers and NC, soluble in water after neutralization, **FDA 175. 105, 175.300**.

VARARad
UV-CURABLE RESIN INNOVATIONS

VaraRad UV; UV-Curable, solvent- water-based and solvent-free

Product	Supply Form [%]	Viscosity [mPa.s]/23°C	Main uses and characteristics
PUV 4561	55 in BA	2.500 – 4.000	Hydroxyl group containing polyester acrylate, curing with isocyanate and radiation (dual cure), non-adhesive and scratch-resistant, for non-yellowing coatings. OH=4.5
EUV 4405 W	40 in water	50 – 200	An aqueous anionic, UV curing, epoxy-modified polyurethane acrylic emulsion for plastic coatings
UC 2365	100	2.000 – 8.000	UV oil for the coating of wood. UC 2365 is particularly suitable for the production of parquet and maintenance oils. It is characterized by very good penetration.
AUC 2345	80 in TPGDA	20,000 – 30,000	An epoxy acrylate for UV coating systems. 2345 should be stored in light protected containers at a temperature below 30 ° C be stored.
AUC 2345	100	40.000 – 60.000	An epoxy acrylate for UV coating systems. 2345 is characterized by its high gloss, high hardness and good reactivity off. The product can be used in all UV / EB applications, eg. as paints, inks and overprint varnishes.
PUV 2169	100	4.000 – 8.000 (80% in TPGDA)	A100% polyester-acrylate resin for UV-curing coating systems. UV-FLEX 2169 has good adhesion to the following substrates such as wood and PVC. It can also act as a modifying component in printing inks and overprint varnishes be used.
MUR 2509	45 in TPGDA	850 - 900	Urethane-modified polymethyl methacrylate resin dissolved in dipropylene glycol diacrylate (DPD) for 3D printing in the field of Stereolithography. (laser diode with 405 nm wavelength and 120 mW power)
UVM 2051	100	max. 75	Thinner based on maleate / vinyl ether for UV-systems. UVM 2051 is a reactive diluent for radiation-curing systems, which is particularly well suited for the formulation of lacquers for printing on wood and paper.
UMH 6145 UV	100	55.000 – 75.000	An aliphatic urethane hexaacrylate, offers good elasticity, flexibility and fast curing speed. Exhibits good abrasion- and weather resistance. Used in overprint varnishes for wood, paper & board, UV-based plastic coatings and UV-based inks.



VaraLite P 1808 W and VaraLite P 1450 are highly reactive, low viscous polyester, which are partially water thinnable without addition of amines. In combination with suitable amino resins VaraLite P 1808 W serves as a plastification compound in water thinnable, acid curing or stoving finishes for paper, foils etc.

VaraLite P 1450 W is a water thinnable, low viscous, high reactive polyester resin without amine addition. Main applications are acid curing oven cured coatings for paper and wood decoration foils.

VaraLite P 1450 W is similar to VaraLite P 1808 W but higher reactivity, better stability, higher water tolerance and lower viscosity, also suitable for printing inks.

VARALite
WATERBORNE POLYESTER INNOVATIONS

VaraLite; Saturated polyester, water-based

Product	Supply Form [%]	Viscosity [mPa.s]/23°C	Acid Value [mgKOH/g]	OH-Value [mg KOH/g]	Description
P 1808 W	100	15.000-25.000	max. 25	231	Low viscouse, with high reactivity for amine free water-based stoving paints on metal, aluminium foil, paper and plastics, also suitable for printing inks.
P 1450 W	90 in water	500-700	max. 15	280	Similar to 1808 but higher reactivity, better stability, higher water tolerance and lower viscosity, also suitable for printing inks.

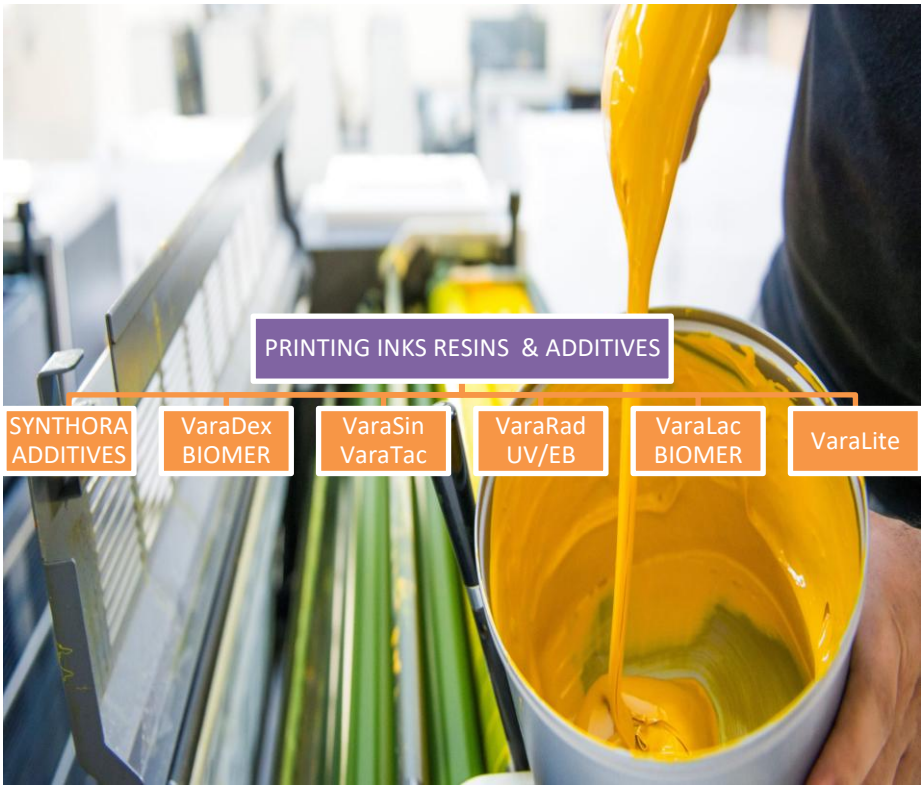
VaraLite P 1808 W can be used e.g. for the production of acid curing lacquers, for decorating foils together with suitable amino resins. Because of the high reactivity of VaraLite P 1808 W it is possible to cure wet films of 25 g/m² (usually roller application) within 20 - 30 s at 140 °C or 40 - 60 s at 130 °C. The cured film has outstanding resistance properties. Another use of VaraLite P 1808 W, also in combination with suitable amino resins, is the production of high gloss, heat curing overprint varnishes and inks.

The resulting products show good wet and dry rub resistance, excellent gloss and good adhesion and fastness towards alkali and solvents. Mixtures of VaraLite P 1808 W and urea resins like Dynomin UM-15 (Dyno Cyanamid) can be cured very rapidly (in approx. 0.5 - 0.9 s) by IR-radiation (wave length 2800 nm).

VARENA CHEMICAL is a global company in the intermediates, coating, adhesives, inks and composite and solid surface resins, thermoset compounds, gel-coats and niche specialties and specialty additives for coatings and inks.

VARENA CHEMICAL is known for its superior quality and impressive range of products and with its excellent distribution network it can provide first-class service to customers whatever their market. Customer Service and Technical Service teams are renowned for their customer focus, offering the best service even after products have left manufacturing.

The group strives to keep customers satisfied, assisting them in producing premium quality products every time they use its products.



Product innovation is important for the group's business and it's the reason for which it constantly works with customers to find solutions to problems.

Introducing new or improved products ensures that VARENA CHEMICAL continue not only to deliver what the market wants and needs, but also when it is wanted and needed.

CHEMICAL Varena T.P.T
PRODUCTS FOR A SECURE FUTURE

VARADEX
PRINTING INK SOLUTIONS

VTPT
INNOVATIVE TECHNOLOGIES FOR RESINS & ADDITIVES
DR. IRANKHAHI CHEMICAL COMPANY