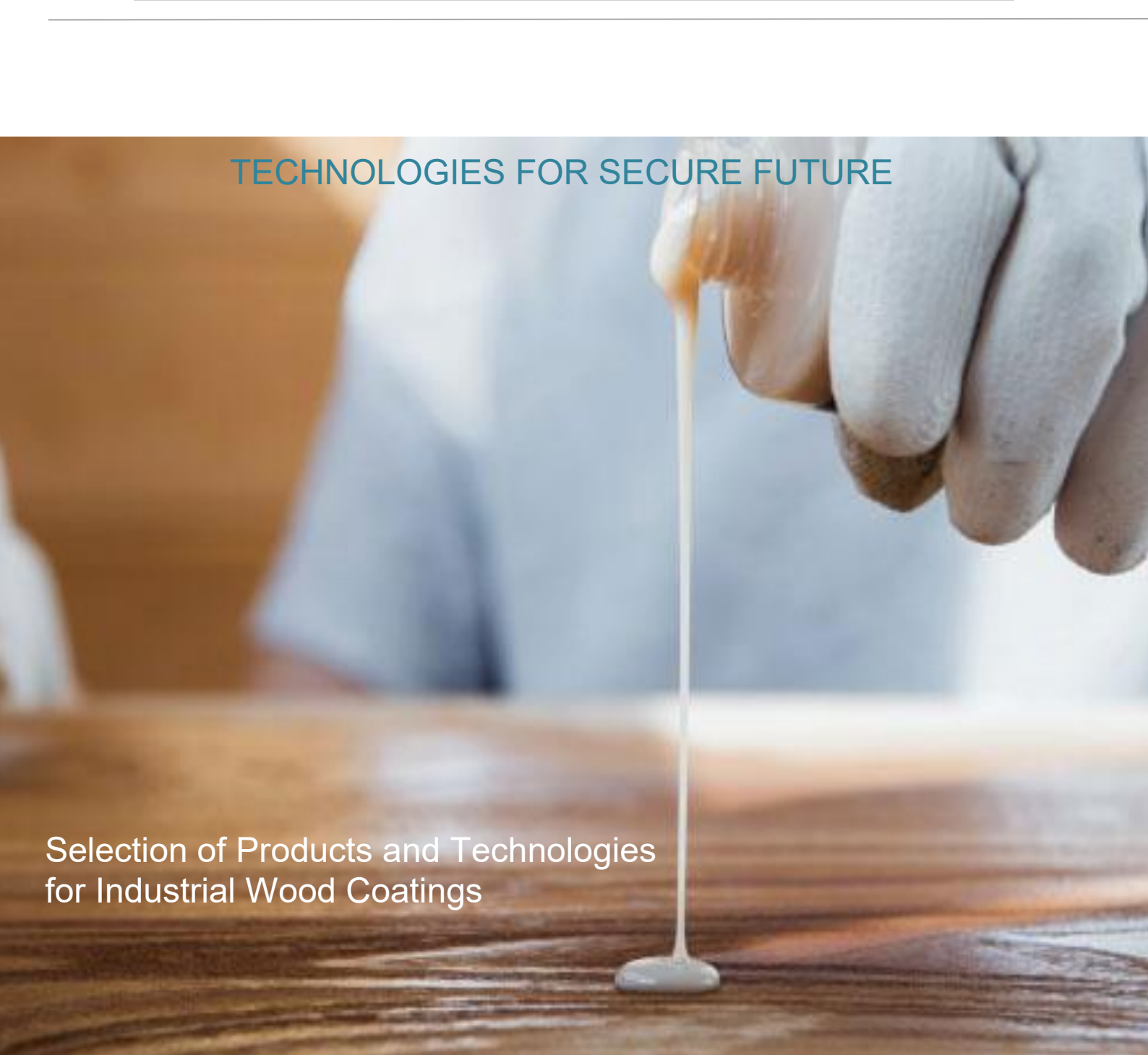


Protecting Wood. Empowering Possibilities.

High-Performance WOOD & JOINERY COATINGS



TECHNOLOGIES FOR SECURE FUTURE

A close-up photograph showing a hand wearing a white nitrile glove holding a small, clear plastic bottle. A thick, white, viscous liquid is being poured from the bottle's opening, forming a long, steady stream that falls onto a dark, textured wooden surface. The background is blurred, showing more of the wooden surface and the person's arm in a light blue shirt.

Selection of Products and Technologies for Industrial Wood Coatings

PRODUCTS WITH PERSPECTIVE

Our solutions cover a wide variety of substrates, from interior and exterior wall paints to trim paints, floor coatings, furniture lacquers, and primers of many varieties. But it doesn't stop there – whatever the requirements, our resins and additives will help you develop innovative, futureproof solutions to meet your customers' every need.

OUR COATINGS TECHNOLOGIES

We have a wide range of resin technologies that when formulated into coatings provide an optimal performance and durability. To meet and surpass environmental regulations we continuously develop sustainable [waterborne](#) and [biobased](#) resins that meet the coating needs of today and tomorrow.



Our solutions and services stand for quality and innovation

Selection of Products and Technologies for Industrial Wood Coatings



Our premium line of WATERBORNE ALKYD COATING RESINS; delivers the desired flow and leveling characteristics of oil-based paint, with the added benefit of an easy soap and water cleanup.

Plus, our industry-changing ZERO-VOC colorant system means that even the darkest tints still have low levels of VOCs.



Our Interior Product Portfolio



PU Acrylic

Acrylic-based polyurethane coatings (PU) are chemically curing solvent-based coatings, in which two raw material groups (hardeners and binders) react with one another. When completely cured, PU acrylic coatings form insoluble, extremely...



PU Alkyd



Nitrocellulose



Polyester



Acid Curing



Waterborne



Oil & Wax



Additional Products



UV Curing

Using the latest innovations, we bring our customers formulations that are better for the environment, but still meet their highest standards for looks and durability. Global innovation and local customization backed up with outstanding customer support and service. It's no small wonder that our finishes protect and beautify more wood products than any other company in the world.



High performance wood coatings

Wood, a naturally renewable material with a porous structure and breathability, rendering it a green construction material that can absorb sound, isolate heat and regulate moisture. Efforts to enhance wood's resistance to combustion while maintaining its porous nature are hindered by the potential impact of physical and chemical treatments on its porous structure, posing a challenge in achieving flame-retardant wood that retains its breathability. Inspired by the multi-layer coating decoration method used on walls of various rooms in frame structure buildings, the study applies multi-scale micro-coating strategy to the multi-scale microstructure of wood.

Safer products with flame-retardant properties

ECO-FRIENDLY

SUPERIOR CLARITY (CURED FILMS)

EXCEPTIONAL PERFORMANCE (THIN FILMS)

Our **PR 890** resin contains **halogen-free flame retardancy** functionalities bound to the polymer backbone and can be used to formulate clear and pigmented coatings with flame retardancy properties. Its **eco-friendly profile** combined with its superior clarity on cured films, makes it an ideal solution compared to classical toxic flame-retardant additives. Its use in fire-retardant coatings will decrease ignitability, flame spread, smoke density, and heat release.



UV LED curing meeting latest in-use requirements, including haptics

LED CURING

HIGH REACTIVITY, THROUGHPUT AND PRODUCTIVITY

HIGH GLOSS, MATTE EFFECT, SOFT TOUCH

Our broad range of UV curable acrylates (UV/EB **VaraRad** or waterborne UV **VaraRad AQUA**) will help you formulate coatings with excellent scratch and abrasion resistance, in clear or pigmented coating, and in combination with outstanding appearance, durability, and little or no VOC emissions. Our resins will enable increased productivity and lower overall costs per cured part.

VaraLac; Alkyd resins, solvent-based, long-oil, air-drying

Type	Oil [%]	Oil type	PA [%]	Color/ Gardner	Acid value [mgKOH/g]	Flow time 20°C [s]	Supply Form [%]	Main uses and characteristics
L 1904	79	Linseed oil	-	max. 10	max. 15	8,000–10.000 mPa.s	100	High solid clear lacquers, wood glazings and high solid primers.
L 1004	80	Linseed oil	-	max. 10	max. 15	30-40 (70% in dearmat. HC 160-200)	100	Very low viscouse alkyd resin for wood impregnation and wood glazings.
P 1151	64	Special fatty acids	22	max. 10	max. 10	130 – 190 (80% in ws 145-195)	100	Low viscous, for high conc. Pigment preparations, very good compatibility properties.
R 1290	90	Linseed oil	-	max. 15	max. 15	500 mPa.s/20°C	100	Extremely low viscous alkyd resin, specially suitable for the manufacture of low VOC and VOC-free parquet, terrace- and maintenance oils and also of wood stains and glazings, castings. It shows specially very good penetration, permanent elasticity and weather resistance.
RS 1174	74	Special fatty acids	-	max. 10	max. 6	max. 750 mPa.s/20°C	100	Combination resin for other alkyd resins, improving penetration, decreasing viscosity, VOC reduction, sole binder for wood care and coating products.
S 1365	65	Vegetable fatty acids	25	max. 10	max. 15	70 – 90 s 50% in W	60	Do-It-Yourself and building protection paints.
AN 1586	67	Castor oil	10	max. 5	10 - 15	1.400 – 2.200 mPa.s/23°C	100	Plasticising resin for cellulose nitrate combination lacquers and other physically drying lacquers and pigment pastes with flexibility, pigment wetting and viscosity stability.

TECHNOLOGIES FOR SECURE FUTURE



POLYURETHANE COATINGS

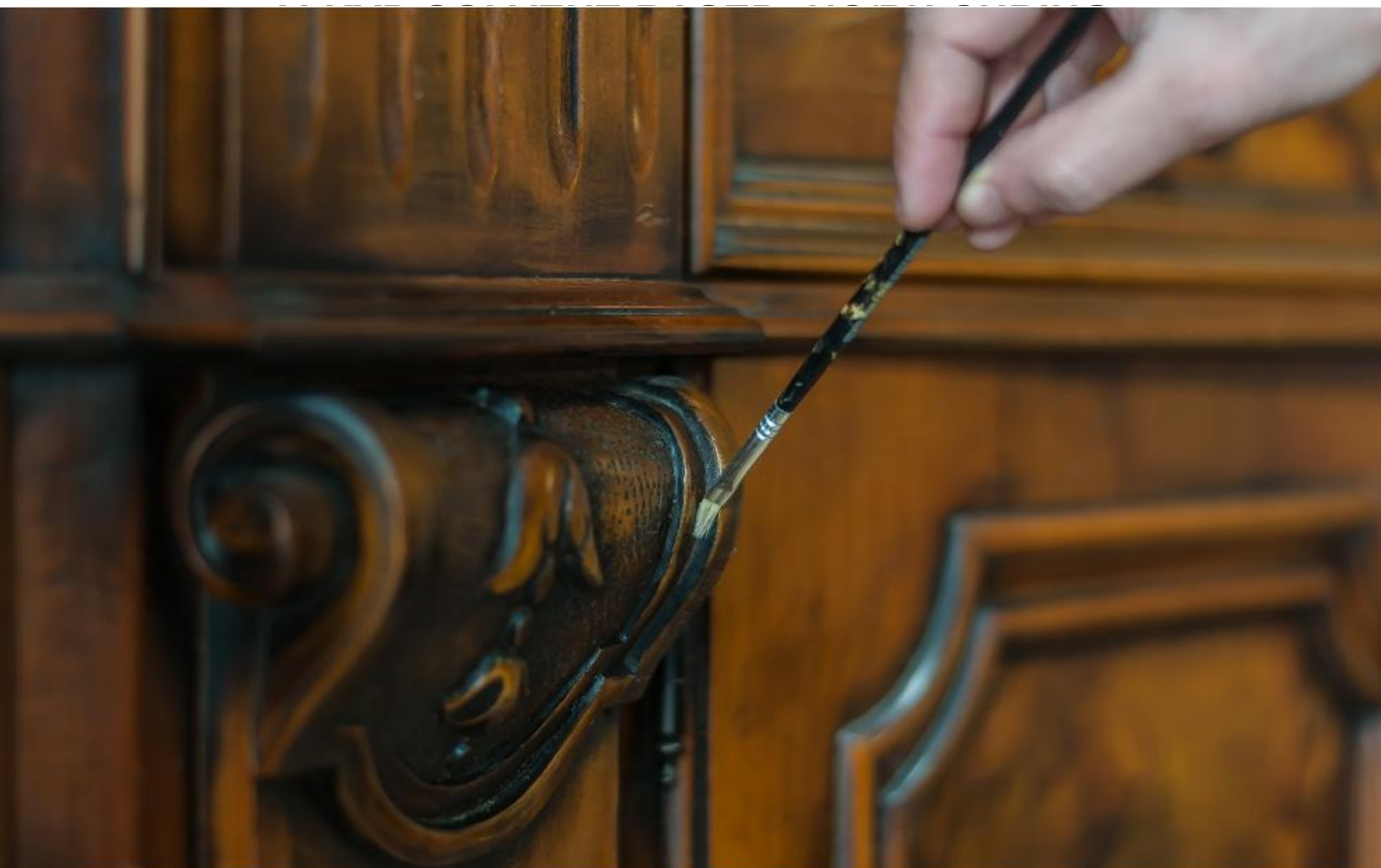


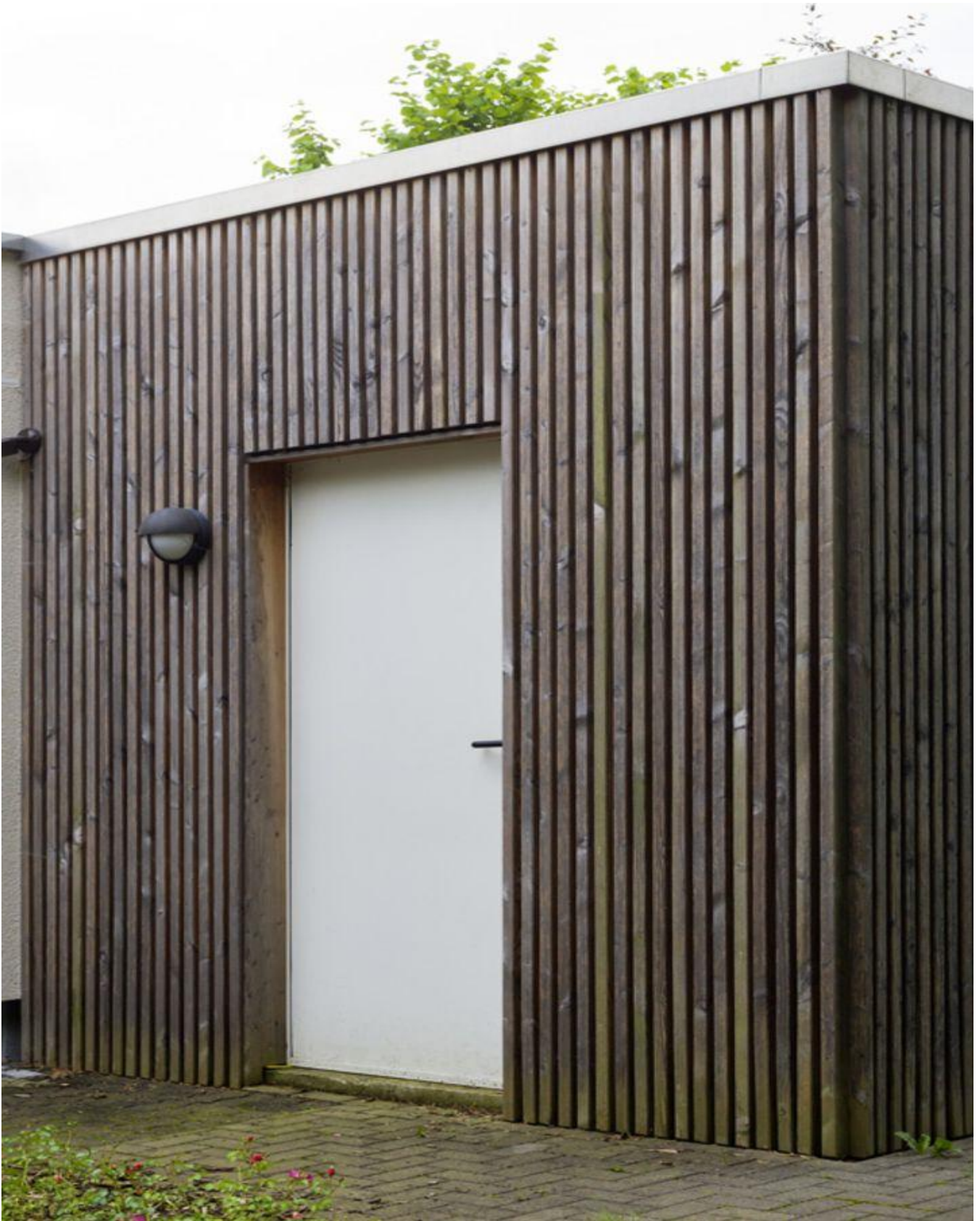
ALKYD POLYURETHANE

A selection of solvent based, alkyd urethanes modified with high weather- and color-stability, high chemical resistance, high hardness and fast drying / curing.

VaraLac PU; Alkyd resins, solvent-based, urethane-modified

Type	Oil [%]	Oil type	PA [%]	Color/ Gardner	Acid value [mgKOH/g]	Flow time 20°C [s]	Supply Form [%]	Main uses and characteristics
B 1865 U	62	Vegetable fatty acids	16	max. 10	max. 10	70 – 100 (50% in ws 145-195)	55 in ws 145-195	Uretahne-modified, for wood varnishes, floor coatings and industrial primers and topcoats.
B 1866 H	62	Vegetable fatty acids	16	max. 10	max. 10	45 – 60 (50% in dearomat. HC 180-220)	60 in dearomat. HC 180-220	Uretahne-modified, for wood varnishes floor coatings and industrial primers and topcoats.
S 5703	57	Soya oil fatty acids	21	max. 5	max. 10	5.000 – 7.000 mPa.s/20°C	55 in ws 145-195	Aliphatic urethane-modified alkyd resin, use as B 1865 U with better yellowing resistance.
S 4004 FD	59	Special fatty acids	18	max. 10	max. 5	30 – 40 (40% in dearomat. HC 160-200)	50 in dearomat. HC 160-200	Use as S 6003 with even faster drying.
SD 6403	64	Special vegetable fatty acids	12	max. 6	max. 10	55 – 80 (45% in dearomat. HC 160-200)	55 in dearomat. HC 160-200	Urethane-modified alkyd resin with good adhesion properties e.g. for renovation coatings on UV parquet sealers.
UR 5204	61	Soya oil	-	max.7	max.4	5.000 – 6.000 mPa.s/23°C	60 in ws 145-195	For scratsch resistance semi gloss paints, abrasion resistance floor paints and wood finish/boat varnishes and ship repair, it offers high viscosity, fast initial drying and good through hardening.
UR 5202	60	Linoleic rich oil	-	max.7	max.5	3.500 – 5.500 mPa,s/23°C	50 in ws	For scratsch resistance semi gloss paints, abrasion resistance floor paints and wood finish/boat varnishes and ship repair, it offers high viscosity, fast initial drying and good through hardening.
UR 8003	80	Soya oil	-	max. 10	max. 1	40.000-50.000 mPa.s	100	Oil-modified polyurethane, particularly suitable for the production of wood preservative impregnations and wood stain colors.
W 2308	66	Soya oil	-	max. 10	max. 3	4.000 – 12.000	60 in ws	For furniture lacquers/flooring, primers for steel and marine paints.

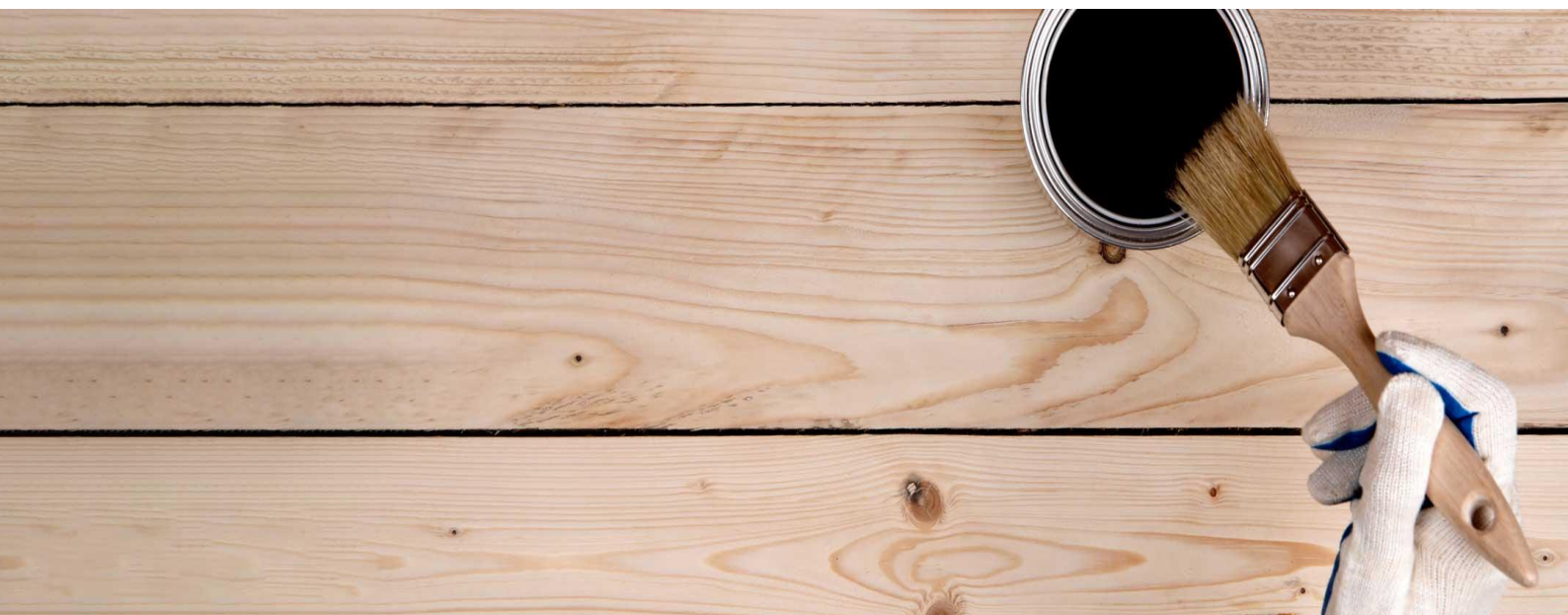




High quality resins for wood coating

VaraLac; Alkyd resins, solvent-based, reactive/NC-combination

Type	Oil [%]	Oil type	PA [%]	Color / Gardner	Acid value [mgKOH/g]	Flow time 20°C [s]	Supply Form [%]	Main uses and characteristics
C 628	28	Saturated fatty acids	47	max. 10	max. 15	40 – 60 (50% in xylene)	70 in xylene	High quality non yellowing stoving enamels, NC- and PU-coatings, colourless and pigmented. Hydroxyl content (on solid) = 2.0-2.4 %.
C 632 M	32	Specially modified fatty acids	37	max. 10	max. 18	40 – 60 (50% in BuAc)	65 in BuAc	NC-lacquers with properties as acid curing systems but without formaldehyde, aromatic free. Hydroxyl-content (on solids) = 2.7-3.3%.
C 640	38	Saturated fatty acids	37	max. 10	max. 15	40 – 60 (50% in xylene)	60 in xylene	NC-lacquers with fast solvent release, good yellowing resistance and recoatability for paper and wood.
SH 380	38	Special fatty acids	34	max. 10	max. 15	90 – 110 (60% in BuAc)	70 in BuAc	High reactive SH lacquers, good elasticity, durability and sufficient pot life, NC-compatible, NCO crosslinkable.
F 251	25	Saturated synthetic fatty acids	29	max. 3	max. 12	6.000 – 9.000 mPa.s/23°C	75 in xylene	Short-oil alkyd resin based on saturated synthetic fatty acids for industrial stoving coatings, two-pack polyurethane coatings, and nitocellulose lacquers. Hydroxyl content (on solid) = 3.3-4.41%.
F 380	38	Saturated fatty acids	37	max. 10	max. 15	20 – 50 s	70 in ethylacetat	For the production of high-quality nitro-combination lacquers with rapid solvent release for wood and paper.
AN 580	26	Castor oil	26	max. 5	7-15	2.000 – 3.000 mPa.s/23°C	60 in xylene	Use for machinery paints, general industrial air drying systems, forced drying/stoving systems, industrial wood coating systems and stoving enamels for drums and steel furniture and automotive primer surfacers with colour retention, adhesion and drying speed. Hydroxyl content (on solid) = 2.7%.
S 513	30	Drying vegetable fatty acids	42	max. 5	7-12	600 – 1.000 mPa.s/23°C (50% in xylene) mPa.s/23°C	70 in xylene	Short-oil alkyd resin for nitrocellulose lacquers and acid curing stoving paints, non-drying proper adhesion, good hardness and non yellowing. Hydroxyl content (on solid) = 1.1 %.
AN 637		Versatic acid	-	max. 6	2-10	2.500 – 4.000 mPa.s/23°C	60 in S150 ND	Short oil alkyd resin based on versatic acid for can coatings and clear overprint varnishes. Offers sterilization resistance. Hydroxyl content (on solid) = 2.8%



THIXOTROPIC COATINGS



THIXOTROPIC RESINS



The advantages of thixotropic binders versus traditional thixotropy additives:

- Thixotropy less dependent on paint processing
- Shorter batch times in paint production (no thickener intermediate production needed)
- Thixotropy controlled within viscosity and gel-strength specifications of resin producer
- No dosage of low density solids needed in paint
- production process

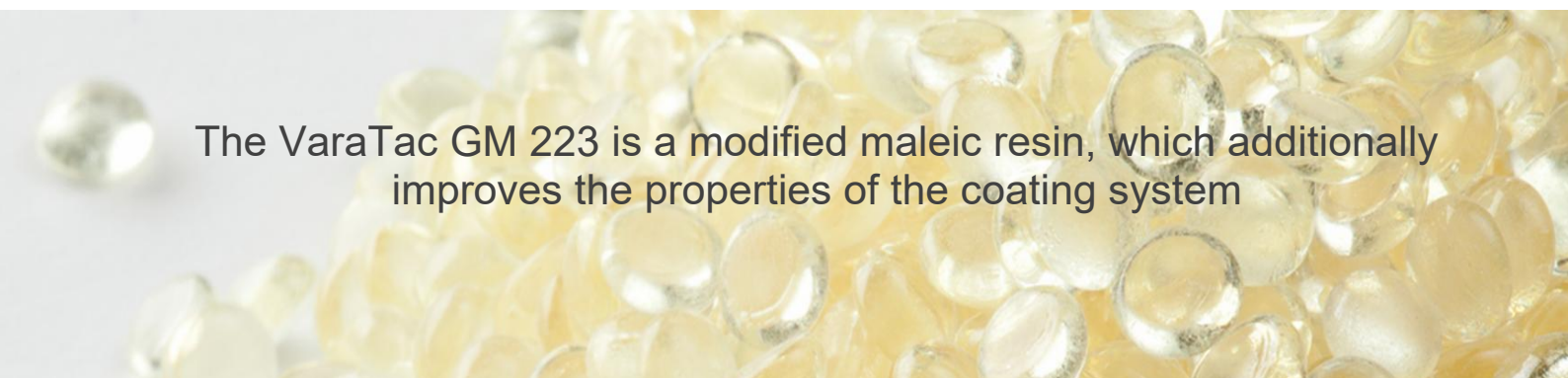
VaraThix; Thixotropic alkyd resins, acrylic resins, solvent- or water based

Type	Oil [%]	Oil type	PA [%]	Color/ Gardner	Acid value [mgKOH/g]	Flow time 20°C [s]	Supply Form [%]	Main uses and characteristics
TA 1420	-	-	-	max. 1	max. 12	Thixotropic soft gel	50 in BuAc	Thixotropic, hydroxyfunctional pure acrylate for two component finishing lacquers. Hydroxyl content = 2.0%
TA 2117	-	-	-	max. 1	max. 15	Thixotropic soft gel	70 in BAC	Thixotropic, hydroxyfunctional acrylic resin for 2-PU-system topcoats and primers. Hydroxyl content (on solid) = 1.6%
TA 2125	-	-	-	max. 1	-	Thixotropic gel	50 in xylene	Thixotropic styrene acrylic for thick layer coatings and textured finishes. OH=2.5%
TA 2126	-	-	-	max. 1	-	Thixotropic gel	60 in xylene	Can be crosslinked with aliphatic polyisocyanates to formulate two component systems for metal, wood and plastics, the aliphatic system shows excellent hardness, good chemical resistance and a good outdoor durability. Hydroxyl content (on solid) = 2.3%
TA 2313	-	-	-	max. 1	-	Thixotropic soft gel	60 in MPA	Thixotropic water-thinnable hydroxyl acrylate for formulating high quality two component air- and force-drying industrial paints. Hydroxyl content (on solid) = 1.3%
TA 3013	-	-	-	max. 1	-	Thixotropic gel	50 In Kw 160-200	Thixotropic thermoplastic 1K-airdrying acrylic resin for different coatings-systems, compatible with acrylic resins.
TL 7904	79	Linseed oil	18	max. 10	max. 15	Thixotropic strong gel	94 in xylene	High solid clear lacquers, wood glazings and high solid primers.
TL 8050	80	Linseed oil fatty acids		max. 10	max. 15	Thixotropic soft gel	100	Thixotropic long oil alkyd resin, mostly used for wood glazings, useable as sole binder as well.
TV 800 U	62	Special fatty acids	18	max. 10	max. 10	Thixotropic gel	50 in xylene	Thixotropic urethane modified long oil alkyd resin, mostly used for wood glazings, with excellent flow and also at thick layers very good through drying.
TL 6357	64	Soya oil	24	max. 6	max. 15	Thixotropic gel	40 in ws 180-210	Thixotropic long-oil alkyd resin, as combination resin for house paints, wood glazings/thick layer thixotropy is not fully degraded by temperature and polar substances.
TL 2887	64	Special fatty acids	-	max. 10	max. 15	Thixotropic gel	70 in HC 180-22	A long oil thixotropic alkyd resin for production of anti-rust primers, high quality decorative and architectural paints as well as especially for wood glaze colors.
TLS 6455	64	Soya oil fatty acids	25	max. 6	max. 15	Thixotropic strong gel	50 in ws 145-195	Strong thixotropic long-oil alkyd for thick layer coatings, wood glazings and clear coatings, temperature stable and resistant against polar solvents.
TLS 6657	63	Special fatty acids	19	max. 10	max. 15	Thixotropic soft gel	60 in HC 180-220	Thixotropic long-oil alkyd, is especially suitable for the manufacture of anti-corrosive primers, decorative and building paints as well as for thick layer wood glazings.
TLS 6658	66	Special fatty acids	20	max. 15	max. 15	Thixotropic soft gel	70 in HC 180-220	Thixotropic longoil alkyd, is especially suitable for the manufacture of anti-corrosive primers, decorative and building paints as well as for thick layer wood glazings.
TLS 727	63	Special mixed fatty acids	23	max. 10	max. 15	Thixotropic gel	52 in HC 180-200	Thixotropic long-oil alkyd for semi gloss house paints, primers, wood stains and anticorrosive paints.



Thixotropic alkyd emulsions for water-thinnable wood PU-Systems

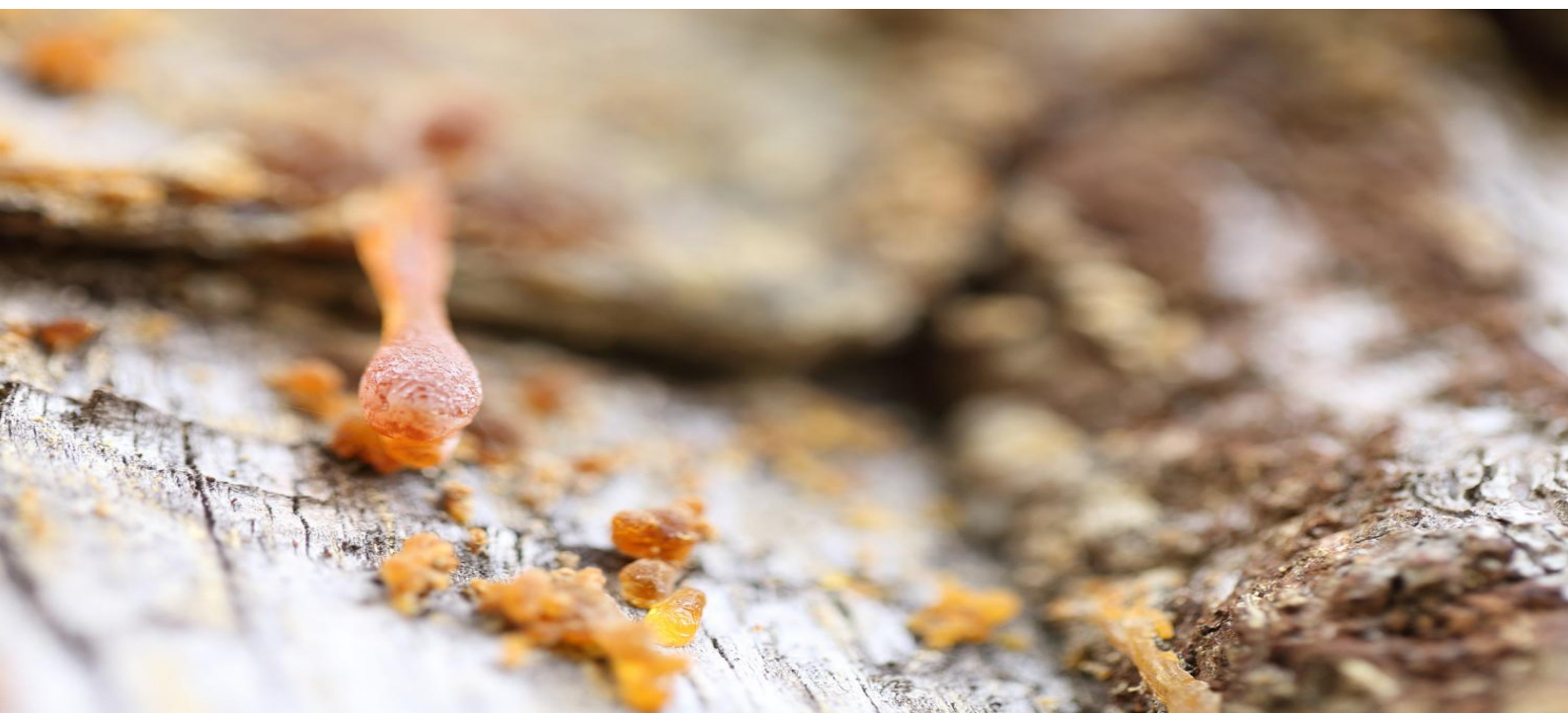




The VaraTac GM 223 is a modified maleic resin, which additionally improves the properties of the coating system

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 GM 201	95 – 120	20 – 25	25 – 50 (50% in ws 145-195)	max. 8 (50% in ws 145-195)	General purpose resin for modification of oil, alkyds and paints based up on them, as a cold cut or to be polymerized with oils and alkyds.
TAC GM 203	100 – 125	20 – 25	25 – 50 (50% in ws 145-195)	max. 8 (50% in ws 145-195)	General purpose resin for modification of oil, alkyds and paints based up on them, as a cold cut or to be polymerized with oils and alkyds.
TACK PM 200	95 – 115	15 – 25	25 – 40 (50% in ws 145-195)	max. 8 (50% in ws 145-195)	Low viscosity penta esterified resin for gloss improvement for house and industrial paints and dispersing media for pigment pastes and preparations.
TAC PM 202	100 – 125	15 – 20	30 – 60 (50% in ws 145-195)	max. 8 (50% in ws 145-195)	Penta estrified general purpose resin for decorative, do-it-yourself and industrial paints, also used for furniture adhesives.
TAC MK 223	90 – 110	40 – 50	80 – 120 (60% in ethanol)	max. 8 (60% in ethanol)	With castor oil plastized, for NC-laquers with very good solvent release and sandability.





This products are gentle on the environment and support the paint manufacturer in maintaining 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 it is time to go one step further and research bio-based alkyd resins for inks and coatings.

WE develop, produce and supply **bio-based** alkyd **emulsions** and **alkyd urethane dispersions**

to the coating market focusing on architectural, metal and wood applications with dedicated solutions.



Acrylic & Alkyd Dispersion based on
Renewable Raw Materials

VaraSol Biomer VG 709 W

VaraSol Biomer VG 709 W is a special modified, air drying, medium-oil alkyd biomer emulsion resin for the manufacture of water-based bio paints.

With 97% the content of renewable raw materials is higher than in conventional alkyd resins.

	Value	Unit	Test Method
Non-volatile content, 1h/125 °C,	approx. 50	%	DIN EN ISO 3251
Viscosity, Rheometer, 20 °C, C 60/2°, 30 s ⁻¹	< 2.000	mPa.s	DIN EN ISO 2555
pH value	8.5 – 10.5	-	DIN ISO 976
Appearance	milky solution		
Delivery form	50 in water	%	-

VaraBiomer LA 4910

VaraBiomer LA 4910 is a low viscous, air drying, long-oil alkyd biomer resin for the manufacture of high solid bio paints, clear coats and wood glazings.

With 85% the content of renewable raw materials is higher than in conventional alkyd resins.

	Value	Unit	Test Method
Non-volatile content, 1h/125 °C,	appr. 100	%	DIN EN ISO 3251
Viscosity, Rheometer, 20 °C, C 35/1°, 250 s ⁻¹	max. 15.000	mPa.s	DIN EN ISO 2555
Acid value, on solids.	max. 15	mg KOH/g	DIN EN ISO 3682
Colour	max. 10	Gardner	DIN ISO 4630
Oil type	special vegetable fatty acids		
Oil content	appr. 75	%	-
Delivery form	appr. 100	%	-



Innovative and
sustainable
solutions

VaraBiomer AC 205

Hydroxy functional aqueous acrylic biomer resin with a high content of renewable raw materials.

VaraBiomer AC 205 is a hydroxyacrylate dispersion in water for the formulation of isocyanate cross-linked 2K top coats characterized by long pot life and high flexibility. The binder is also formulated to be solvent-free.

	Value	Unit	Test Method
Non-volatile content, 1h/125 °C,	45 ± 1	%	DIN EN ISO 3251
Viscosity, Brookfield, 20 °C	max. 2.000	mPa.s	DIN EN ISO 2555
pH-value	7 - 9	-	DIN ISO 976
Hydroxyl content, on solid	appr. 2.5	%	DIN EN ISO 4629
Density, 20 °C	appr. 1	g/cm ³	DIN EN ISO 2811-1
Emulsion system	anionic	-	-
Delivery form	45% in water	%	-

VaraBiomer AC 212

Acrylic dispersion based on renewable raw materials

VaraBiomer AC 212 is an innovation of copolymer produced on basis of renewable raw material (cellulose) for wood and also decorative paints.

	Value	Unit	Test Method
Non-volatile content, 1h/125 °C,	30 ± 1	%	DIN EN ISO 3251
Viscosity, Brookfield, 20 °C	max. 500	mPa.s	DIN EN ISO 2555
pH-value	7 - 8	-	DIN ISO 976
Density, 20 °C	appr. 1.01	g/cm ³	DIN EN ISO 2811-1
MFFT, minimum film forming temperature	1	°C	ISO 2115
Delivery form	30% in water	%	-

VaraBiomer AC 224

VaraBiomer AC 224 is an innovation of copolymer produced on basis of renewable raw material

for wo

	Value	Unit	Test Method
Non-volatile content, 1h/125 °C,	45 ± 1	%	DIN EN ISO 3251
Viscosity, Brookfield, 20 °C	max. 500	mPa.s	DIN EN ISO 2555
pH-value	7.5 – 8.5	-	DIN ISO 976
Density, 20 °C	approx. 1	g/cm ³	DIN EN ISO 2811-1
MFFT, minimum film forming temperature	1	°C	ISO 2115
Delivery form	45% in water	%	-



Renewable raw materials
for
the paint and coatings
industry

VaraPur SI

THE FUTURE RESINS FOR FURNITURE AND PARQUET COATINGS



Properties of silane-functional polyurethane-urea binders compared to classic two-component polyurethane coatings.



Solvent based silane functional polyurethanes for various applications

They allow long processing- and fast drying-times with exceptional resistance properties.

Binder for high quality paints as e. g. acrylates, polyester or alkyd resins crosslink with isocyanates or oxidatively.

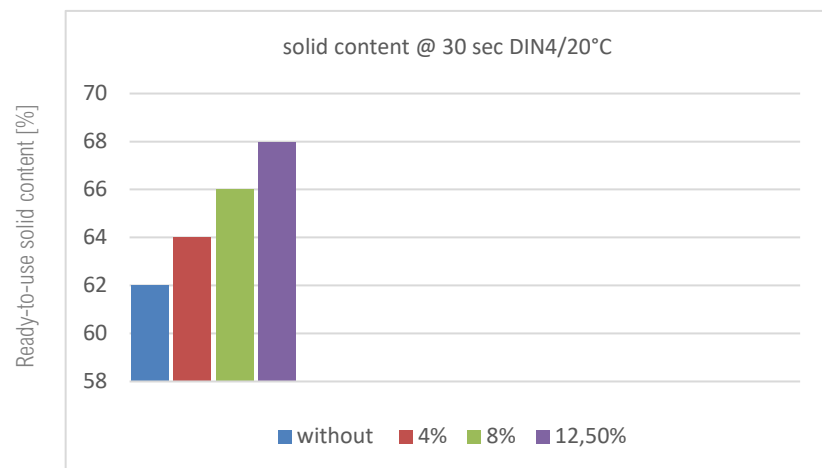
VaraPur SI; Achieving excellent resistances and fast drying

With the VARAPUR SI product family, we offer silane-functional polyurethanes for optimal properties.

VaraPur SI

THE FUTURE RESINS FOR FURNITURE AND PARQUET

The silane-functional polyurethane-urea resins of the VARAPUR Si series have established themselves as binder technology for various coating systems. Starting from the polyol used, which forms the basis of the technology, it is possible to develop binders for both industrial and handicraft applications.



Although classical systems for high quality lacquers as for example 2K polyurethane systems which crosslink with isocyanates and oxidatively drying alkyd resins show generally good properties, there are some disadvantages which have to be accepted when using these systems.

Conventional 2K-PUR systems have a relatively short processing time and - depending on the used polyol and amount of isocyanate - a relatively long drying time. Besides, these 2K systems need a second component - an isocyanate - which is affected by labeling issues and needs specific handling.

In comparison, alkyd resins do not need a crosslinker but metal based siccatives for acceptable drying times. Furthermore, the addition of an anti-skinning agent is necessary to get a good storage stability.

The crosslinking process works with air humidity and is accelerated by a specific alkyl phosphate based catalyst. Another particular feature of this system is that ethanol is released during the crosslinking process and not toxic methanol as in comparable systems. In general, these silane functional polyurethanes provide long processing time in combination with fast drying and outstanding resistance properties. In addition, silane functional systems with alkyds as polyols do not need any metal based siccativ or anti-skinning agent and do not show any yellowing tendency. In addition, silane functional systems with alkyds as polyols do not need any metal based siccativ or anti-skinning agent and do not show any yellowing tendency.

Solvent based silane functional polyurethanes for various applications

Silane functional polyurethanes based on various polyols allow an optimization of the properties of the previous systems. Binder for high quality paints as e. g. acrylates, polyester or alkyd resins crosslink with isocyanates or oxidatively.

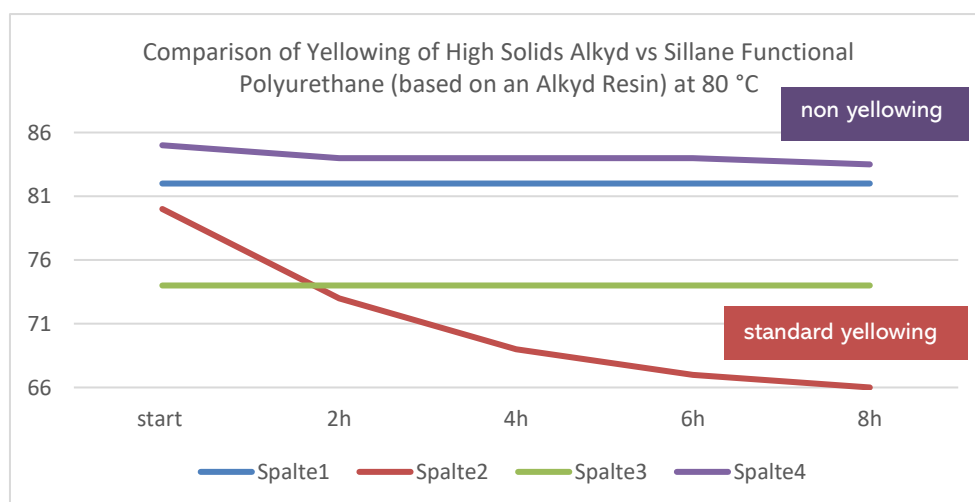


VARAPUR SI

SILANE FUNCTIONAL POLYURETHANE UREA

VaraPur SI; Silane functional, aliphatic polyurethane resin

Product	Solvent	Solid [%]	Viscosity [mPa.s]/20°C	Main uses and characteristics
VaraPur SI 101	D60 / Dowanol	75	max. 10.000	A high solid, moisture-curing, silane-modified, aliphatic polyurethane based on a cotton oil fatty acid-based alkyd resin for the formulation of quick-drying primers, pre-, clear- and topcoats in the field of painter and building paints. It is also suitable for formulation of glazes, fast drying and early water resistance, even in difficult climatic conditions.
VaraPur SI 202	BuAC / n-propanol	75	max. 25.000	A high solid, moisture-curing, silane-modified, aliphatic polyurethane based on an aliphatically branched polyester to the formulation of primers for wood, clear and topcoats, which at room temperature or forced to dry, in any case, lacquers based on SI 202 dry very quickly and reach within a short time a high hardness and very good resistance properties.
VaraPur SI 203	BuAC / n-propanol	75	max. 20.000	High solid, moisture-curing, silane-modified, aliphatic polyurethane based on an aliphatically branched polyester to the formulation of clear and topcoats, which dry at room temperature or forced, also the formulation of stoving enamels is possible. In any case, paint based on SI 203 very fast and achieve very good in no time resistance properties.
VaraPur SI 204	BuAC / n-propanol	75	max. 25.000	A high solid, moisture-curing, silane-modified, aliphatic polyurethane based on an aliphatic branched polyester suitable for the formulation of base coats for wood-, clear- and topcoats, forced drying or at room temperature. In any case, paints based on SI 204 dry very quickly and achieve a high hardness and very good resistance properties within shortest time.
VaraPur SI 206	BuAC / n-propanol	60	max. 15.000	A high molecular, moisture-curing, silane-modified, aliphatic polyurethane, based on an aliphatic branched polyester, suitable for the formulation of clear- and topcoats, at room temperature or forced drying. Due to the higher molecular weight it is characterized by a very good physical drying. The equally fast chemical crosslinking leads to high resistances, which are achieved after short times.
VaraPur SI 249	BuAC / Ethanol	70	max. 5.000	One-component, moisture-curing, silane-modified, aliphatic polyurethane based on a linear polyester, for quick-drying and resistant clear and topcoats. Especially good adhesion is achieved on ceramic substrates and glass.
VaraPur SI 401	BuAC / n-propanol	80	max. 25.000	Moisture-curing, silane-modified, aliphatic polyurethane based on a linear carbonate diol, to the formulation of base, clear and topcoats, which dry at room temperature or forced. Also the formulation of baked enamels is possible. In any case, paint based on SI 401 very fast and achieve very good in no time resistance properties. Varnishes based on SI 401 dry to viscoplastic films with good scratch resistance, good adhesion to various substrates can be achieved, this could be e.g. glass, ceramics, concrete, but also iron and non-ferrous metals.
VaraPur SI 402	KW 180-220 / DPM	75	max. 75.000	Moisture-curing, silane-modified, aliphatic polyurethane based on a linear carbonate diol, for the formulation of primer, clear and topcoats, which dry at room temperature. In any case, dry varnishes based on SI 402 are very fast and reach within a very short time very good resistance properties.
VaraPur SI 501	BuAC / n-propanol	75	max. 10.000	Moisture-curing, silane-modified, aliphatic polyurethane based on a linear polyether polyol, formulation of base, clear and topcoats, which dry at room temperature or forced. In any case, lacquers based on SI 501 dry very quickly and reach within very short time very good resistance properties. Varnishes based on SI 501 dry to very elastic, rubber-like films good scratch resistance, good adhesion to glass, ceramics and concrete.
VaraPur SI 584	BuAC / n-propanol	78	max. 10.000	Silane-modified, aliphatic polyurethane based on linear polyetherpolyol, good adhesion to various substrates can be achieved, this could be e.g. glass, ceramics, concrete, but also iron and non-ferrous metals.



VaraPur SI 304 BIO

Bio-based dual cure binders for high quality solvent-based and solvent-free paints, wood oils and clear coats.

Bio-based Dual Cure binder for high-quality, solvent-based paints, wood oils and clear coats

Alkyd resins are an important product group that can be used in a wide variety of coating systems. By definition, they are based on high proportions of bio-based raw materials - mostly vegetable oils. However, the growing demands pose some challenges for alkyd resins. For example, the solvent content is to be further reduced and cobalt-containing siccatives and oxime-containing anti-skin agents are to be dispensed with.



Further development of **VaraPur SI** technology enables significantly wider use

Product	Solvent	Solid [%]	Viscosity [mPa.s]/20°C	Main uses and characteristics
VaraPur SI 304 BIO	D60 / Dowanol	85	max. 50.000	A BIO high solid, moisture-curing, silane-modified, aliphatic polyurethane binder for the formulation of quick-drying primers, pre-, clear- and topcoats in the field of painter and high-gloss and silk-gloss lacquers, clear lacquers, glazes or parquet oils.

Waterborne Alkyd Wood & Furniture Coatings

Bring the Energy of Color to Every Surface

Designed for exceptional performance on wood and furniture, our waterborne alkyd coatings combine the rich appearance of traditional alkyd finishes with the benefits of modern waterborne technology. The advanced formulation delivers excellent flow and leveling, creating a smooth, uniform film with outstanding adhesion, durability, and color retention. The result is a refined, long-lasting finish that enhances the natural beauty of wood while bringing every color to life.

WATERBORNE ALKYDS

The godfather of the industry

ENVIRONMENTALLY
FRIENDLY



Copolymer emulsions based on **VaraSol** are the preferred binders for wood stains, wood impregnating varnishes and wood care like teak oil. The extreme low viscosity of the base resin exhibits excellent wetting and colour enhancement of the wood fibers. Open pore varnishes systems based on **VaraSol** products feature an outstanding penetration behavior, good stability and water resistance.

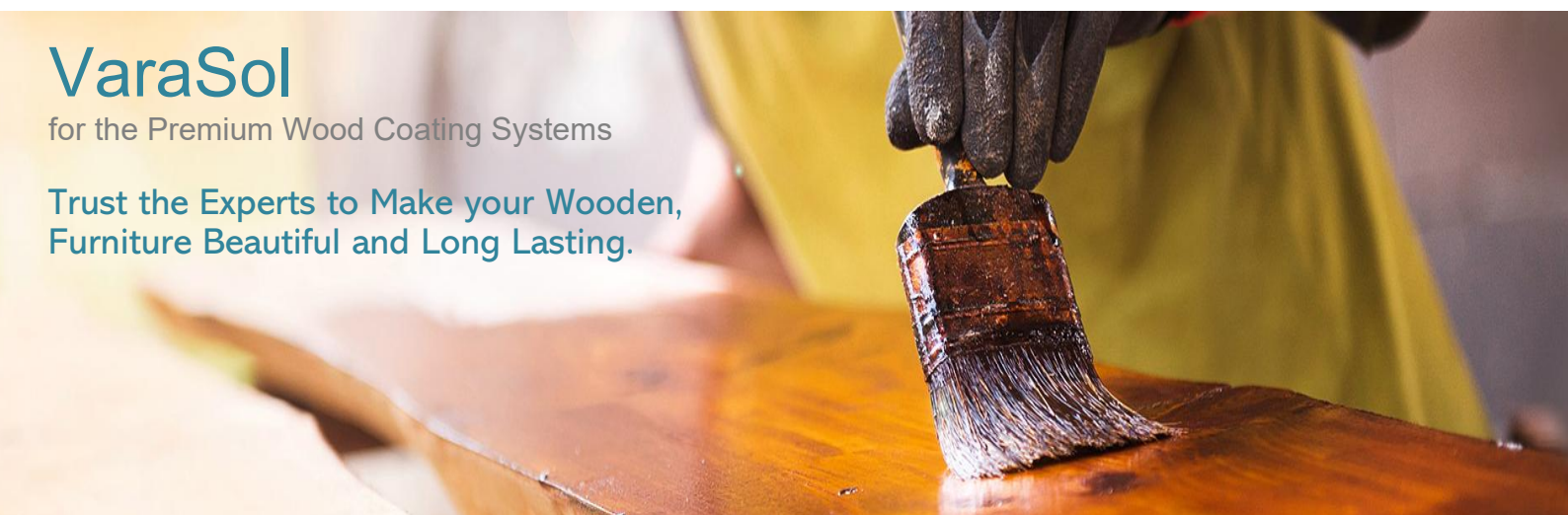
VaraSol; Alkyd emulsion resins, alkyd-urethane modified emulsion, water-thinnable

Type	Oil [%]	Acid value [mgKOH/g]	pH value DIN 53785	Viscosity, [mPa.s]/20°C	Flow time 20°C [s]	Supply Form [%]	Main uses and characteristics
AZ 253	53	max. 38	7.0-8.5	max. 10.000	-	30 in water	Medium-oil alkyd emulsion for fast drying wood paints and lacquers.
AZ 227	27	max. 30	6.8-7.5	max. 10.000	-	40 in water	Short-oil alkyd emulsion for fast curing wood coatings and all types (also drier-free).
AZ 210	40	-	-	max. 3.000	-	46 in water	Solvent-free medium special modified alkyd emulsion for water-thinnable decorative and D.I.Y.- paints with good brushability, flow and filling properties, for high gloss topcoats and wood protection stains.
AZ 331	90	85-115	-	350 – 900	-	45 in water/BG 80:20	Water-dispersible linseed oil polymer, readily reducible with water for in- and outdoor stains and wood preservatives, extremely good penetration and outdoor resistance.
AZ 333	90	90-140	-	1.000 – 2.000	-	45 in water/BG	Water-dispersible linseed oil polymer, readily reducible with water for in- and outdoor stains and wood preservatives, extremely good penetration and outdoor resistance.
AZ 337	90	55-80	-	230	-	59 in water/BG	Medium linseed oil polymer for wood protection systems, excellent penetration and weather resistance on different woods and long term elasticity.
AZ 454	62	16-20	-	600 – 800 / 23°C	-	100	Water soluble long oil alkyd for wood impregnation, temporary paints and impregnation, wetting and watersoluble paints.
AZ 500	65	14-18	-	3.400 – 4.300 / 23°C	-	80 in water	Architectural and decorative undercoats. solvent based and waterborne wood and furniture coatings and wood stains.
AZ 502	73	-	5.0-8.0	50 – 1.000 / 23°C	-	60 in water	Primers and transparent / opaque stains.
AZ 504	53	-	1.8-2.5	4.000 – 10.000 / 23°C	-	55 in water	Interior / exterior primers, transparent / opaque wood stains and exterior and interior wall coatings.
AZ 505	71	16-20	-	500 – 1.000	-	100	Water soluble long oil alkyd for wood, metal coatings.
AZ 554	40	-	5.5-7.5	100 – 600	-	50 in water	Interior / exterior primers and topcoats for wood and metals, primers and topcoats for Joinery application and corrosion resistant primers.
AZ 600	26	-	6.7-8.5	500 – 1.000	-	42 in water	Industrial metal primers, insulating wall paints, interior industrial wood stains and stoving enamels.
AZ 601 U	25	-	6.0-8.0	200 – 450	-	44 in water	PU modified short oil alkyd emulsion for industrial metal primers, insulating wall paints and interior industrial wood stains with speed drying and salt spray resistance properties.
AZ 576	40	-	7.0-9.0	100 – 1.000	-	53 in water	Interior / exterior primers and topcoats for metals, primers and topcoats for Joinery application and corrosion resistant primers.

VaraSol

for the Premium Wood Coating Systems

Trust the Experts to Make your Wooden, Furniture Beautiful and Long Lasting.



VaraSol; Alkyd emulsion resins, alkyd-urethane modified emulsion, water-thinnable

Type	Oil [%]	Acid value [mgKOH/g]	pH value DIN 53785	Viscosity, [mPa.s]/23 °C	Flow time 20°C [s]	Supply Form [%]	Main uses and characteristics
PU 510 W	44	max. 30	7.0-80	50 – 1.500	-	40 in water	Co-solvent free, amine-free PU medium alkyd emulsion for the manufacture of air drying water thinnable paint systems. DIY-varnishes, paraquet varnishes and industrial coatings applications.
PU 580 W	28	-	6.0-9.0	50 – 1.500	-	48 in water	PU-modified alkyd, has been specifically formulated for trim enamel and wall paint applications, where toughness and easy cleanup is needed, multi-substrate adhesion, transparency, film hardness also scratch resistance, water resistance and low yellowing.
AF 565 W	40	-	7.0-9.0	200 – 450	-	53 in water	Medium oil, co-solvent and amin free alkyd emulsion, interior / exterior primers and topcoats for wood and metals, primers and topcoats for Joinery application and corrosion resistant primers, with drying speed, leveling, film hardness, gloss level, yellowing resistance, exterior durability and water resistance.
AZ 450	65	14-17	7.0-90	3.400 – 4.300	-	80 in HC 180-220	Water dilutable long oil alkyd; based on linseed/ soya-bean oil, architectural and decorative undercoats, solvent based and waterborne wood and furniture coatings and wood stains; drying speed, offers low viscosity, very good outdoor durability.
PU 548 W	-	-	7.3-8.5	100 – 500	-	42 in water	An alkyd dispersion modified with aliphatic polyurethane, decorative interior/exterior stains and trim paints for wood and metals and joinery, drying speed, transparency, film hardness, scratch resistance and water resistance.



POLYMER INNOVATIONS

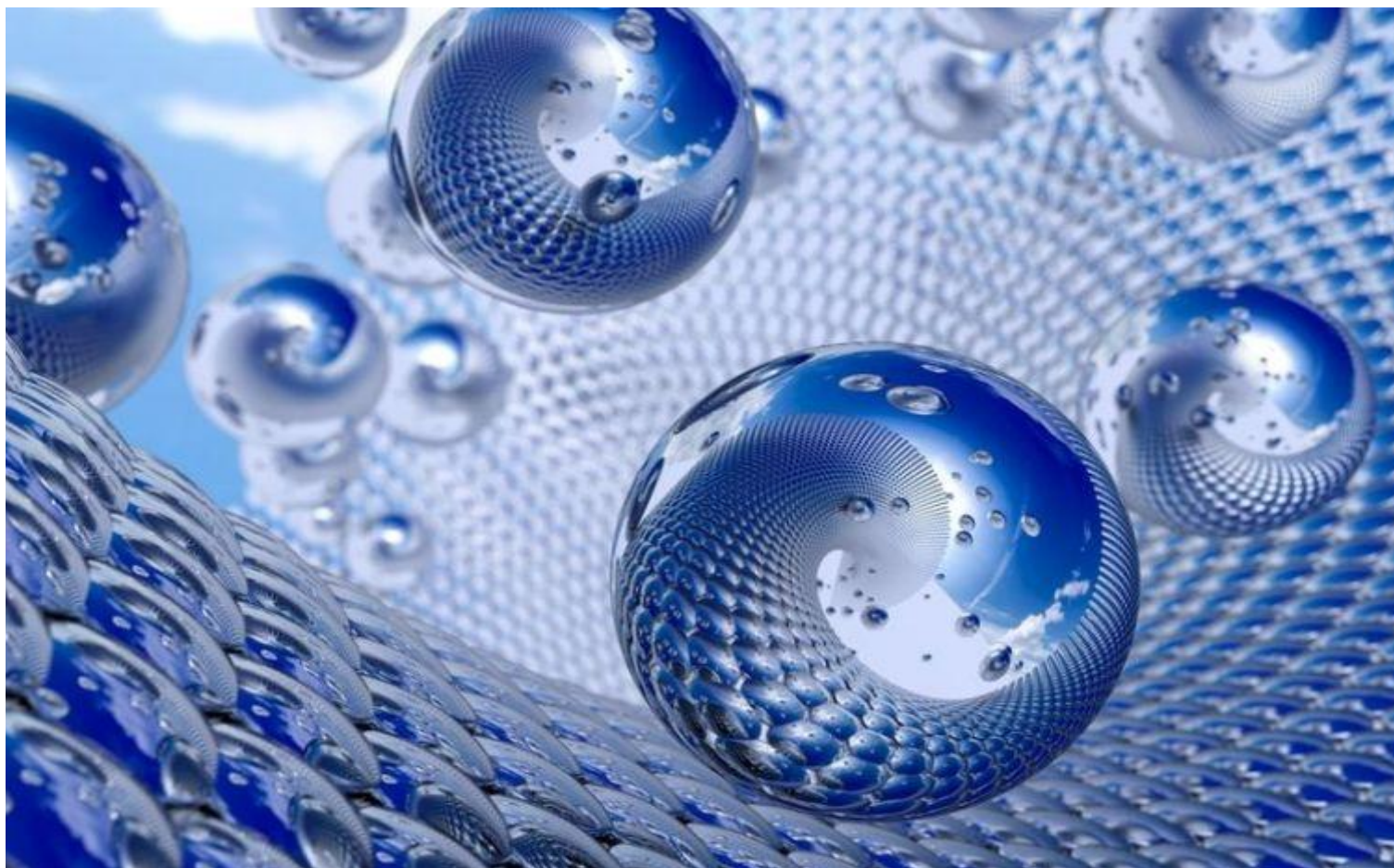
POLYURETHANE DISPERSION



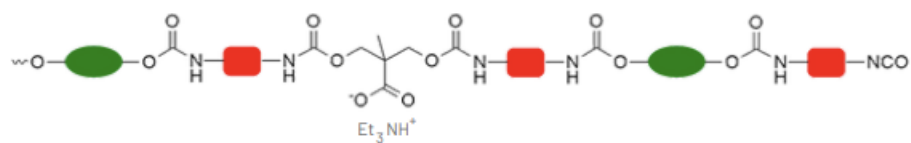
WATERBORNE POLYURETHANE DISPERSION PUD
Robust and environmentally sound solutions for surfaces

For High Performance Wood; Floor Coatings; Plastic and Metal Coatings.

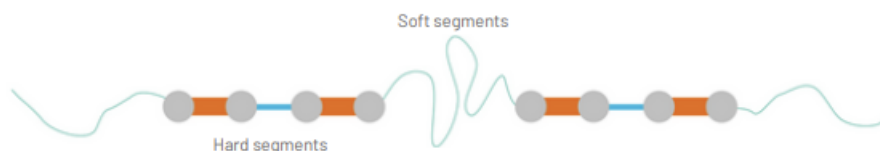




Waterborne resins use water as a solvent to disperse a resin, thus making these resins environmental friendly and low in toxicity and flammability. Traditional waterborne resins were water reducible resins, which are products dissolved at high solids content. More modern products are diluted in water already in form of delivery, many still contain small amounts of solvent to help film building and production process. Polyurethane dispersions provide coating formulators with a wide range of possible applications in high-quality coating systems. The main components of the polyurethane dispersion, polydiol and diisocyanate, can be combined according to a kind of modular system. Tailor-made properties can be produced by numerous variations of individual components in terms of type and structure.



Structure of a polymer chain of diol and diisocyanate



Structure of a polymer chain with hard and soft segments



VaraTan POLYURETHANE DISPERSION

Polyurethane dispersions for high-quality coating applications

Due to the special structural composition of the polymer chain into soft and hard segments, the polymer film generates special properties that no other class of binder exhibits.

The hard segments, consisting of RNCO units, are integrated into the matrix of the soft segments, consisting of polydiol chains, resulting in excellent mechanical property profiles.

On the one hand, polyurethane dispersions can exhibit an extremely high level of hardness without making the polymer film brittle. On the other hand, this class of binders also offers an extremely high level of flexibility without making the film appear too soft or even tacky. Good chemical resistance can be produced by the specific selection of polydiol chains.

These durable, resistant coatings are used especially in high-quality paint applications, such as parquet and furniture coatings, which are exposed to high mechanical stresses due to abrasion and scratching. The varnish layer, protecting for the wood surface, must be extremely tough and elastic to prevent breakage due to cracking.

Polyurethane dispersions can also be made highly flexible, for example for plastic applications, to give the coating film a very high flexural strength. At the same time, the polymer retains a high level of resistance so that the protective function is guaranteed.

VaraTan PUD Polyurethane dispersions for particularly stressed paint coatings

Polyurethane dispersions have been established in various coatings applications for many years and are an indispensable part of modern coatings formulations.

The polymeric structure of polyurethanes permits a large number of variations, which means that a wide variety of property profiles can be tailor-made. Users of these coating systems are particularly impressed by their mechanical properties.

VaraTan PUD Acrylate hybrid systems

A widely used method in the development of coating formulations is the combination of polyurethane and acrylate dispersions. By mixing them, positive properties of both binder classes can be combined in many cases. For example, hardness and blocking resistance can be increased by combining softer acrylates with harder polyurethane dispersions in order to create a more resistant coating film.

VaraTan PUD, polyurethane dispersions, waterbased

Product	Solid [%]	Solvent	Viscosity [mPa.s]/20°C	pH content	Main uses and characteristics
PUD 1000	30	Water	20 – 200	7.5 – 8.5	Polyurethane dispersion, used in wood and parquet coatings, good chemical and abrasion resistance.
PUD R-974	40	Water / NMP	100 – 300	7.5 – 8.5	A hard, low cosolvent containing polyurethane dispersion, used in wood and parquet lacquers, metal and plastic coatings, water resistant floor polishes. Provides hard, good chemical and abrasion resistance, offers good humidity resistance.
PUD 2000	30	Water	900 – 1.500	7.7 – 8.0	Polyurethane dispersion, used in wood and parquet coatings, good chemical and abrasion resistance.
PUD 1065	42	Water / NMP (2-3%)	max. 500	7.5 – 8.5	Polyurethane dispersion, used in wood and parquet coatings, metal coating, good chemical and abrasion resistance.
PUD 2500	30	Water	max. 100	7.0 – 8.5	PUD water-based dispersion for the manufacture of dry-bright emulsions intended for wood, flexible coatings, plastic coating.
PUD 910	30	Water	max. 100	7.5 – 8.5	A self-crosslinking, aliphatic polyester polyurethane dispersion that can be formulated for high-performance coatings for wood and plastic. It has excellent hardness and black heel mark resistance, excellent chemical and plasticizer resistance, high gloss, excellent adhesion to multiple substrates and excellent fingernail mark resistance.
PUD 1228	38	Water	max. 10.000	7.0 – 8.0	The special manufacturing process of PU 1228 allows a high urethanization, which leads to a faster hardness development and drying. The combination of physical drying and oxidative curing makes it possible to achieve high chemical resistance without using siccatives. PU 1228 is recommended for the manufacture of waterborne wood coatings.



VaraTan PUD

Hard polyurethane dispersion for highly stressed systems

TYPES OF WOOD COATINGS
PRODUCTS FOR EXTERIOR USE

VaraPol & VARALite W; Saturated polyester, solvent-based, solvent-free and waterbased

Product	Supply Form [%]	Viscosity [mPa.s]/23°C	Acid Value [mgKOH/g]	OH-Value [mg KOH/g]	Main uses and characteristics
E 1800	Solvent-free	25.000 – 36.000	≤ 3	215	In combination with polyisocyanates, used in flexible two-component polyurethane coatings for wood substrates, parquet and plastics.
E 1805	65 in MPA	17.000 – 23.000	≤ 3	290	E 1805 MPA-65 is mainly used in combination with aliphatic or aromatic polyisocyanates in two-component coatings with excellent weatherstability, gloss retention, good chemicals and abrasion resistance; primarily for high grade industrial coating.
E 1162	Solvent-free	15.000 – 20.000	≤ 3	43	In certain combinations, e.g. with E 1800 the addition of E 1162 increases the toughness and resistance to wear and abrasion of the paint films. Such combinations can be used to coat furniture, floors and parquet.
E 1135	Solvent-free	5.000 – 20.000	≤ 16	43	The main field of application for PE 1135 in combination with Desmodur L or HL - is the furniture sector.
E 1130	75 in xylene	2.000 – 3.000	≤ 16	93	PU- and nitrocellulose-combi wood finishing.
E 1188	75 in BAC	3.500 – 5.500	≤ 12	122	PE 1188 can be combined with nitrocellulose to formulate high-quality wood and metal finishes which can be oversprayed without any risk of lifting.
E 1181	75 in MPA	6.800 – 9.000	≤ 12	158	Polyester polyol. Used as a co-reactant in the formulation of air-drying two-pack coatings for wood such as boats and parquet flooring.
VaraLite E 1450	95	500 – 700	≤ 15	280	A water thinnable, low viscous, high reactive polyester resin without amine addition. For the manufacture of water thinnable, acid curing impregnations and lacquers for wood.



VARAPOL POLYESTER
INNOVATION



VARALite
WATERBORNE POLYESTER INNOVATIONS



LOXAPAL-RESIN W 950 is a medium reactive, unsaturated polyester resin preferably used in coating formulations for wood and wood products. After curing, films are hard, easy to sand, and scratch resistant. Translucent extenders such as barium sulfate, talcum, kaolin, or colloidal silica can be used in the manufacture of primers or sealers.

Product highlights

- Good adhesion
- Low shrinkage
- Good resistance to chemicals
- Low yellowing



LOXAPAL-Resin; Unsaturated polyester resin UPR

PRODUCTS	Characteristics	Nonvolatile Content [%]	Viscosity [mPa.s]/ 23 °C	Gel Time [min]	Peak Exotherm [°C]	Application
W-950	W-950 is a reactive, direct glossy unsaturated polyester resin (wax-free).	75 - 77	1.600 - 2.000	10 - 12	70 - 80	For clear and pigmented, wax-free coatings for wood and furniture.
E-937	E-937 is a very high flexible reactivity unsaturated polyester resin.	64 - 67	800 - 1.100	10 - 20	140 - 160	As a flexibilising resin.

HIGH QUALITY ACRYLIC RESINS



WOOD COATING SOLUTIONS

The full package in high-performance **ACRYLIC** resins



VaraCryl; Acrylic resins, solvent-based, for PU-systems

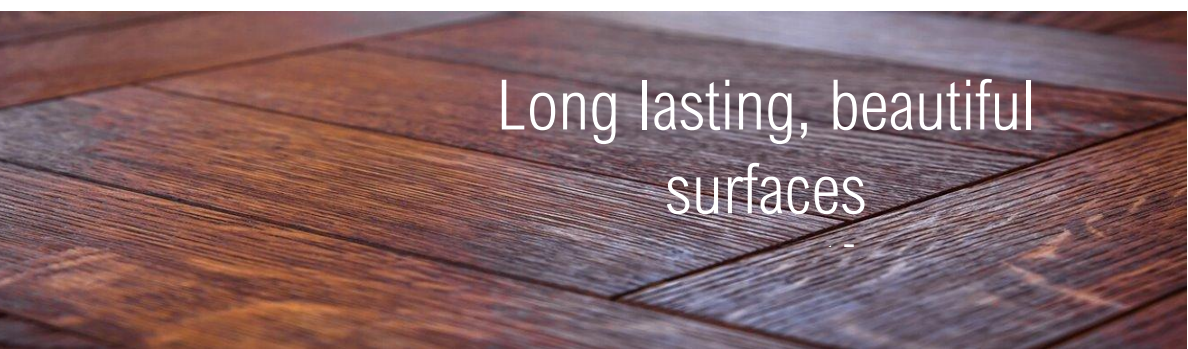
Product	Solvent	Solid [%]	OH-value [%]	Viscosity [mPa.s]/20°C	Main uses and characteristics
A 2218	BAC	50	1.8	5.000 – 7.000	High reactivity and long pot life, for fast drying wood and furniture lacquers, CAB compatible.
A 3220	BAC	50	2.0	2.000 – 3.000	For the highquality wood and furniture lacquers, good initial drying.
A 2221 H	BAC / X	70	1.2	5.000 – 10.000	For air-dried and forced drying two-component paints, when diluting the solution clears up, which also colorless coatings easily can be produced. A 2221 H is particularly suitable for quick drying production of primers, which can be sanded after a very short time. In topcoat systems achieve gloss systems with good gloss retention.
A 2229	BAC	50	1.8	3.000 – 7.000	A 2229 is a polyisocyanate crosslinkable acrylate resin for the production of quick-drying wood and furniture varnishes.
A 2432	X / BAC	60	1.3	5.000 – 7.000	For air two-component polyurethane and forced drying metal, wood and plastic paint. Even at room temperature drying to obtain coatings with the high hardness, chemical resistance and excellent weather resistance.
A 2296	BAC	60	1.6	2.000 – 2.500	As a co-reactant, primarily for Desmodur N, for the production of quick-drying industrial coatings with good properties.
A 2202	MIBK	51	1.5	1.800 – 3.000	For air-drying polyurethane-systems, quick curing, high hardness and high gloss, weather and chemical resistance.
A 2244	BAC	45	1.5	2.000 – 4.500	An acrylic copolymer for the manufacture of high quality 2K-polyurethane wood and furniture coatings.
A 2305	S100 / MPA	60	1.5	200 – 400	Polyisocyanate crosslinkable, high solid, acrylic resin, in combination with aromatic and aliphatic polyisocyanates for quick drying 2 pack-HS polyurethane coatings with high gloss and wetting, wood, especially for furniture paints.
A 2298	BAC	50	1.5	3.000 – 8.000	Industrial wood coatings, clear, pigmentes primers and topcoats.

Acrylic-based polyurethane coatings (PU) are chemically curing solvent-based coatings, in which two raw material groups (hardeners and binders) react with one another. When completely cured, PU acrylic coatings form insoluble, extremely durable PVC-safe coating films that are suitable for all types of wood. Their main feature is that they are highly resistant to chemicals and provide very good surface hardness.



VaraCryl; Acrylic resins, solvent-based, 1-component coating

Product	Solvent	Solid [%]	Acid-Value [mgKOH/g]	Viscosity [mPa.s]/20°C	Tg [°C]	Main uses and characteristics
AC 5668	S100	60	-	500 – 3.000	-	A neutral, physically drying, odorless methacrylic acrylate for quick 1-K-curing paints.
AC 5604	Ethanol	50	15-25	max. 3.000	30	A neutral, physically drying, odorless acrylate for quick 1-K-curing paints, spay and aerosol coating.
AC 5680	S100	50	max. 3	500 – 1.000	83	Physically drying thermoplastic acrylate resin for different coating systems to improve hardness, gloss and adhesion. 5680 is compatible with alkyd resins.
AC 5670	X	55		max. 3.000	17	A neutral, physically drying, odorless acrylate for quick 1-K-curing paints, aerosol coatings.
AC 5659	S100	50	max. 3	1.500 – 3.000	83	5659 is a physically drying thermoplastic acrylate resin for different coating systems to improve hardness, gloss and adhesion. 5659 is compatible with alkyd resins.
AC 5658 H	Isoparaffine KW 170-200	70	max. 5	3.000 – 7.000	-	A neutral, physically drying, odor-resistant acrylic resin, mainly for use in ceiling and wall colors. 2580 is particularly suitable for the production of ceiling and wall paints. A 5658 is a soft acrylic resin. Additional plasticizers are not required. Wall paints based on L 2580 are low odor and isolate water-soluble nicotine, smoke and chimney stains.
AC 5682 H	KW 160-200	70	max. 5	5.000 – 10.000	-	A self-crosslinking thermoplastic acrylate for the modification of low VOC alkyd resin paints. It accelerates the drying and increases the film hardness, in addition, it can optimize the gloss and gloss retention.
AC 5641	HC 170-200	60	max. 5	80 – 120 s	-	Neutral low odour acrylic thermosetting resin, mainly for wall and ceiling paints, very good insulating coat for nicotine, chimney and water spots, for chlorine free formulation, without plasticizer.
AC 5660	X	60	-	10.000 – 15.000	-	As a decorative and quick drying paints. Industrial quality quick drying paints / as acrylic topcoats for textured paints. Road marking paints for pavements / kerb stones / pathways.
AC 5694	X	50	max. 3	2.000 – 4.000	40	A neutral, physically drying, odorless acrylate for quick 1-K-curing paints, spay and aerosol coating.
AC 5656	MPA	60	max. 5	1.500 – 3.500	10	A neutral, physically drying, odorless acrylate for quick 1-K-curing paints, aerosol coatings, plastic and wood coating.
AC 5647	S100	60	max. 5	2.000 – 6.000	-	A neutral, physically drying, odorless acrylate for quick 1-K-curing paints and for the production of ceiling and wall colors. AC 5647 is a soft acrylic resin.
AC 5623	KW 180-220	50	max. 10	80 – 110 s	-	AC 5623 is mainly used for the production of insulating and as a primer, is characterized by outstanding penetration.
AC 5611	Isoparaffin KW 170-200	55	5 – 10	180 – 200 s	9	A 811 is particularly suitable for the production of ceiling and wall paints. AC 5611 is a soft acrylic resin. Additional plasticizers are not required. Wall paints based on AC 5611 are low odor and stand out good workmanship. The paints isolate water-soluble nicotine, smoke and chimney stains. Solvent sensitive substrates such as e.g. Polystyrene is caused by wall paints base of AC 5611 / Isoparaffin not dissolved.



Long lasting, beautiful surfaces

HIGH QUALITY ACRYLIC EMULSIONS



VARAMul
ACRYLIC & ACRYLIC COPOLYMERS EMULSIONS

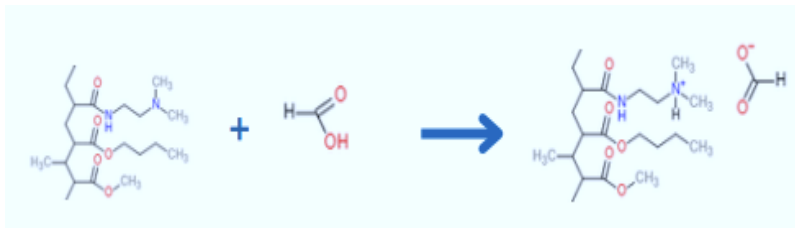
Our **VARAMul** family of acrylics and acrylic copolymer DISPERSIONS includes a wide range of resins, with applications ranging from wood primers to thixotropic paints.

HIGH QUALITY ACRYLIC DISPERSION

The stability of commercially available anionic acrylate copolymers in water is improved by neutralising existing acid groups (e.g. acrylic acid) with alkaline neutralising agents such as ammonia. The addition shifts the pH from the acidic to the basic alkaline range.

The stability of cationic acrylates is also improved, but the charges are reversed - basic monomers such as dimethylaminoethyl acrylate are used instead of acrylic or methacrylic acid. These are then neutralised with an acid such as formic acid. Neutralisation thus shifts the pH from the basic to the acidic alkaline range.

Accordingly, cationic acrylates differ from anionic acrylates in the charge of the polymer chain. The positive charge also leads to the main advantage of this binder group: the excellent insulating properties against wood ingredients and other anionic contaminants.



Areas of application



Paint and architectural coatings



Printing inks



Insulating effect

There are 25,000 different species of wood in the world, hundreds of which are regularly traded. Wood has many characteristics - it 'works' (shows shrinkage/expansion due to water absorption or release); it has different proportions of hardwood and softwood; it must be protected from infestation; and it contains different wood constituents. Some of these wood ingredients are water-soluble and are dissolved by the immigrating water when coated with waterborne coating systems. When the water evaporates during the drying process, it transports the dissolved contents to the paint surface. Because some of these ingredients are coloured, the surface turns yellowish or reddish. This process is called 'bleedthrough'.

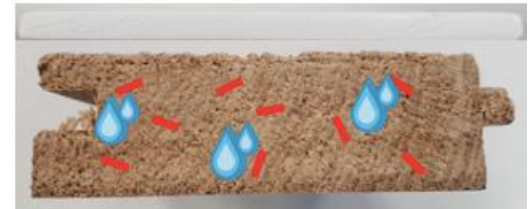
The type and quantity of water-soluble wood ingredients varies greatly. Tropical woods in particular contain very high amounts. In Europe, oak is one of the wood species with a very high content.

The main wood constituents are the tannins, some of which have an acidic character and can thus form a negative charge or partial charge. A cationic binder provides an electrostatic barrier for these anionic molecules. Thus, the colourant molecules do not reach the coating surface and discoloration is prevented.

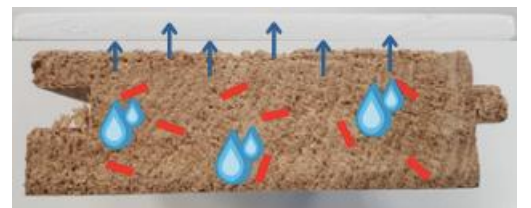
The mechanism of insulation described allows a visible insulating effect to be achieved as early as the application of the first coat, whereas aqueous anionic insulating coatings require at least two coats. The mechanism of action of alkyd resins/emulsions, for example, is good penetration and thus impregnation - the water of the second coating no longer reaches the tannins.



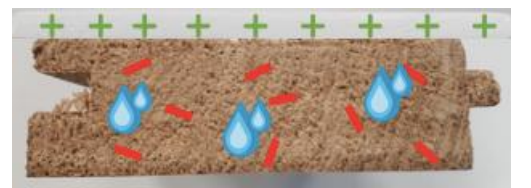
Wood contains water-soluble components



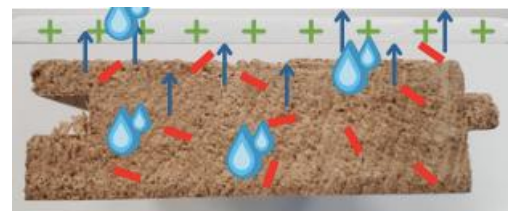
applying a waterborne paint, water migrates into the wood



The evaporating water transports water-soluble ingredients to the surface - this leads to discolorations



The positively charged parts of the cationic layer form a barrier



This barrier retains the mostly negatively charged wood constituents





VARAMul AE; Acrylic resins, water-based dispersions, solutions

Product	Monomer	Supply Form [%]	pH value	MFFT [C°]	Viscosity [mPa.s]/20°C	Main uses and characteristics
AE 1116	Pure acrylic emulsion	55 in water	7.0-8.0	0	max. 500	Self-crosslinking pure acrylic emulsion with high solid content for formulating block-resistant, high gloss emulsion paints with very good leveling properties, low VOC value in pigmented topcoats, solvent-free formulations are possible for glazings and colourless systems.
AE 1146	Pure acrylic emulsion	55 in water	7.0-8.0	13	200 – 800	Self-crosslinking pure acrylic emulsion for the formulation of blocking resistant, high gloss brushable paints with a low VOC-content.
AE 1112 H	Cationic pur-acrylic emulsion	40 in water	4.0-6.0	-	5.000 – 8.000	AE 1112 H is ideal as filler binder or as colorless or pigmented sealing primer on woods with a high proportion of soluble wood content AE 1112 H is also particularly suitable for the production of nicotine insulating paints and transparent glazing. Excellent barrier effect. and also pigment compatibility.
AE 1175	Cationic acrylic copolymer dispersion	45 in water	4.0-5.0	15	max. 300	For the production of insulating wall paints, colorless and pigmented primer on woods with penetrating ingredients. Excellent barrier effect and very good water resistance.
AE 1262	Aqueous, finely divided acrylate copolymer dispersion	40 in water	7.5-8.5	4	max. 1.500	AE 1262 is suitable for the formulation of wet-transparent, non-inflammatory and wood stains.
AE 1274	Cationic acrylic dispersion	36 in water	4.0-5.0	9	max. 500	AE 1274 is particularly suitable for the production of colorless and pigmented primers on wood for the isolation of soluble wood ingredients with excellent barrier effect and very good water resistance.
AE 1241	Aqueous pure acrylate dispersion	45 in water	7.0-8.0	13	max. 1.000	For the formulation of aqueous wood and furniture lacquers with good resistance against household chemicals.
AE 1286	Pure acrylic dispersion	45 in water	7.0-8.5	<1	max. 500	AE 1286 is a core-shell dispersion that is used to formulate glazes with good early water and block resistance, primers on wood.
AE 1257	Acrylic copolymer dispersion	45 in water	8.0-9.0	57	max. 500	Self-crosslinking acrylic for aqueous wood and furniture coatings, the coating film is harder than ACE 1410 with better durability.

VARAMul AE; Acrylic resins, water-based dispersions, solutions

Product	Monomer	Supply Form [%]	pH value	MFFT [C°]	Viscosity [mPa.s]/ 20°C	Main uses and characteristics
AE 1120	Styrene acrylic emulsion	49 in water	8.2-9.0	15	200-800	Corrosion inhibiting primers on different metals (e.g. iron, aluminium), wood with weather resistance.
AE 1135	Styrene acrylic emulsion	42 in water	7.5-8.5	39	max. 100	Topcoats on metal, wood, plastics (PS, ABS), also for temporary anti-corrosive primers on metal, can be combined with water-thinnable alkyd resins.
AE 1137	Styrene acrylic emulsion	42 in water	7.5-8.5	28	max. 200	Allround emulsion for topcoats on plastic, metal, wood and for corrosion inhibiting primers with very good adhesion on steel and low water absorption.
AE 1177	Core-shell-dispersion	45 in water	7.0-8.0	5	max. 500	Core-shell-dispersion for the production of solvent-free decorative paints and glazings.
AE 1110	Pure acrylic	45 in water	8.0-9.0	39	max. 500	Self-crosslinking acrylic polymer for the formulation of aqueous furniture lacquers with good resistance against household chemicals.
AE 1145	Pure acrylic emulsion	45 in water	7.0-8.0	0	max. 500	Good blocking stability, in combination with PU-dispersion wood, parquet lacquers and topcoats for wood can be formulated.
AE 1155	Cationic acrylic copolymer	45 in water	5.5-6.5	< 1	max. 5000	Specially suitable for the production of nicotine insulating wall paints and pigmented insulating primers for wood substrates.

VARAHydrol AH; Acrylic resins, water-based, containing hydroxyl; for PU-systems

Product	Solvent	Solid [%]	pH value	OH-Value [%]	Viscosity [mPa.s]/ 20°C	Main uses and characteristics
AH 529 U	Water / Butylglycol / EEP	45	7.0-9.0	2.5	<15.000	AH 529 U is a water-emulsified hydroxyl acrylate for the preparation of isocyanate-curing 2K furniture lacquers.
AH 504 U	Water / Butylglycol / EEP	45	7.0-9.0	4.1	<6.000	A water-emulsified hydroxyl acrylate for the preparation of isocyanate-curing 2K furniture lacquers.
AH 518 U	W/BG/BA	47	7.0-9.0	1.8	max. 25.000	A water-emulsified hydroxyl acrylate for the preparation of 2K-PU furniture and wood lacquers and topcoats.
AH 541 U	W/BG/S100	45	7.0-9.0	4.1	max. 25.000	A hydroxy-functional, aqueous acrylate resin for the production of high-quality, aqueous wood and furniture varnishes, topcoats, very good resistance to solvents, greases, household cleaners and various chemicals.



FireProtect

VaraProtect PR 890 W

Fire retardants that are halogen-free
BUT FULL OF FIRE-STOPPING POWER

Waterbased acrylic copolymer, specialty developed as all-in-one adhesion promoter, corrosion inhibitor and reactive halogen free flame retardant for metal, wood, glass, minerals and composites.

VARAProtect PR
VARAProtect SIL
ACRYLIC EMULSIONS COPOLYMER

Safer products with
flame-retardant properties



Our **FireProtect PR** resin contains **halogen-free flame retardancy** functionalities bound to the polymer backbone and can be used to formulate clear and pigmented coatings with flame retardancy properties. Its **eco-friendly profile** combined with its superior clarity on cured films, makes it an ideal solution compared to classical toxic flame-retardant additives. Its use in fire-retardant coatings will decrease ignitability, flame spread, smoke density, and heat release. Download **our flyer** for more information!



VARA PROTECT
FIRE STOP

FireProtect PR 890

Water based acrylic copolymer, specialty developed as all-in-one adhesion promoter, corrosion inhibitor and reactive halogen free flame retardant.

APPLICATION:

General Industry:

- metal, wood, glass, minerals and composites

PRINCIPAL PROPERTIES:

excellent adhesion
excellent weather stability, corrosion resistance
excellent flame retardant
excellent flexibility

Property	Range	Unit	TM
Color, APHA	0 - 100	.	DIN ISO 4630
Viscosity / 20 °C Brookfield	< 300	mPa.s	DIN EN ISO 2555
Solid content	38 ± 1	%	DIN EN ISO 3251
pH value	6.5 – 7.		
Desnsity, 20 °C	Approx. 1,09	g/cm³	DIN EN ISO 2811

DELIVERY FORM: 39 % in water

FireProtect SIL 600

FireProtect SIL FR 600 is a special modified water-based alkali silicate

FR SIL 600 is halogen-, boron- phosphorus- and odor-free.

FireProtect SIL FR 600 can be used to develop transparent fire protection coatings for wood. Due to the high pH-value of FireProtect SIL 600, it is recommended to use a primer such as styrene acrylic emulsion to protect the wood from discoloring. To protect FireProtect SIL 600 from carbonation by carbon dioxide and from moisture it is recommended to apply a top coat such as a clear coat based on FireProtect Si 600.

Property	Range	Unit	TM
Appearance	turbid, clorless		
Viscosity / 23 °C Brookfield	< 700	mPa.s	DIN EN ISO 2555
Solid content	41 ± 1	%	DIN EN ISO 3251
pH value	11.0 – 13.0		
Desnsity, 20 °C	Approx. 1,41	g/cm³	DIN EN ISO 2811

DELIVERY FORM: 41 % in water

APPLICATION QUANTITY: ~ 500 g/m² wet (FK content 50%): dry layer thickness: 300 µm.

APPLICATION METHODS: Brush, roller, spray (can be diluted with approx. 10% water if required).

DRYING: 24 h at room temperature.

FireProtect SIL 700

FireProtect SIL FR 700 is a special modified water-based alkali silicate

SIL FR 700 is halogen-, boron- phosphorus- and odor-free.

FireProtect SIL FR 700 can be used to develop transparent fire protection coatings for wood. Due to the high pH-value of FireProtect SIL 700, it is recommended to use a primer such as styrene acrylic emulsion to protect the wood from discoloring. To protect FireProtect SIL 700 from carbonation by carbon dioxide and from moisture it is recommended to apply a top coat such as a clear coat based on FireProtect Si 700.

Property	Range	Unit	TM
Appearance	turbid, colorless		
Viscosity / 23 °C Brookfield	< 500	mPa.s	DIN EN ISO 2555
Solid content	41 ± 1	%	DIN EN ISO 3251
pH value	11.0 – 13.0		
Density, 20 °C	Approx. 1,41	g/cm³	DIN EN ISO 2811

DELIVERY FORM: 41 % in water

APPLICATION QUANTITY: ~ 500 g/m² wet (FK content 50%): dry layer thickness: 300 µm.

APPLICATION METHODS: Brush, roller, spray (can be diluted with approx. 10% water if required).

DRYING: 24 h at room temperature.

FireProtect SIL 800

FireProtect SIL FR 800 is a special modified water-based alkali silicate

SIL FR 800 is halogen-, boron- phosphorus- and odor-free.

FireProtect SIL FR 800 can be used to develop transparent fire protection coatings for wood. Due to the high pH-value of FireProtect SIL 800, it is recommended to use a primer such as styrene acrylic emulsion to protect the wood from discoloring. To protect FireProtect SIL FR 800 from carbonation by carbon dioxide and from moisture it is recommended to apply a top coat such as a clear coat based on FireProtect Si 800.

Property	Range	Unit	TM
Appearance	turbid, colorless		
Viscosity / 23 °C Brookfield	< 1.000	mPa.s	DIN EN ISO 2555
Solid content	41 ± 1	%	DIN EN ISO 3251
pH value	11.0 – 13.0		
Density, 20 °C	Approx. 1,42	g/cm³	DIN EN ISO 2811

DELIVERY FORM: 48 % in water

APPLICATION QUANTITY: ~ 500 g/m² wet (FK content 50%): dry layer thickness: 300 µm.

POLYESTER-ACRYLATE & POLYESTER URETHANE-ACRYLATE & ALKYD

Energy Curable Coating Resins

Our UV and energy hardening technology are highly innovative resins in based on our conviction. In conjunction with other coating systems, **Dual-Cure** products are developed which can be classed as extremely hightech products.

In addition to their instantaneous drying times and zero VOC content, **water-borne our UV** resins are delivering outstanding performance across a range of markets – from boosting adhesion in labels and foils for food packaging to increasing the efficiency and safety of paper and board printing, to providing a viable alternative to traditional urethanes in the growing flex flooring sector.

Easy-to-Matt

Soft-Feel Capable

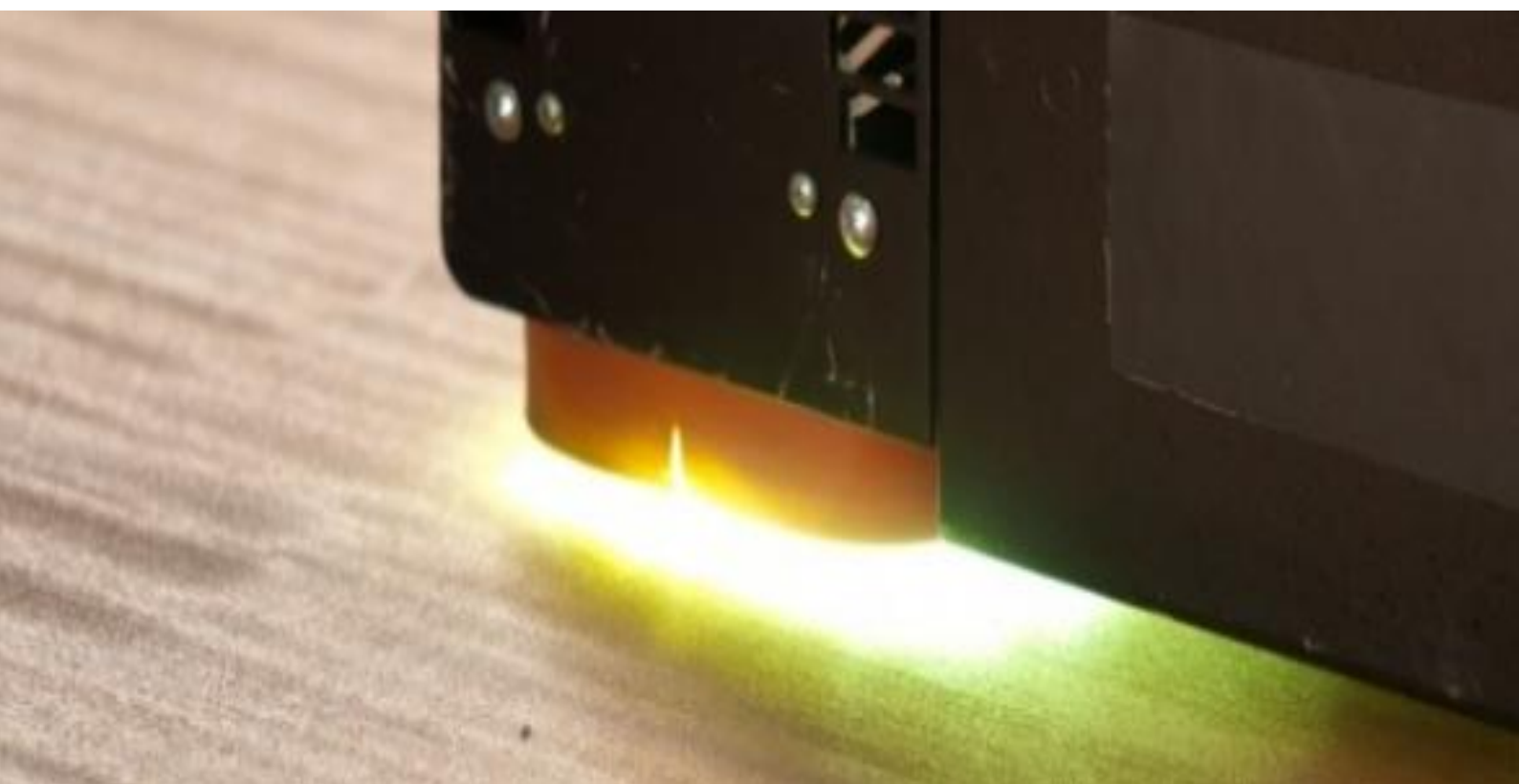
Superior Performance



Our UV curing resins are used in a variety of applications in the scratch resistant WOOD COATING. They have become very popular resin systems due to their high productivity, ease of application, and low(er) impact on the environment. They are often the best choice when fast drying and curing is needed. They are extensively used in inks for UV flexo, screen, and lithographic printing, in over print varnishes as well as in products for potting and encapsulation of sensitive electronic elements.

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

Product	Supply Form [%]	Viscosity [mPa.s]/23°C	Main uses and characteristics
UV 4561 AP	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
UV 4500 AP	100	40.000 – 60.000	Polyester acrylic resin for the formulation of UV and electron beam curing varnishes, lacquers, and paints. It is a nearly colourless resin with good reactivity. It forms elastic, scratch and chemical-resistant films with good adhesion properties even on plastic surface.
UV 4000 EA	100	4.000 – 6.000	Epoxy acrylate resin, high reactivity, hard, scratch resistant films, chemical resistant.
UV 4300 EA	100	12.000 – 18.000	Epoxy acrylate resin, high reactivity, hard, flexible, scratch resistant films, chemical-resistant, corrosion resistant.
UV 4800 EA	100	12.000 – 25.000	Low viscous, low odour epoxy acrylate for the production of UV/Electron beam curing varnishes and lacquers with high hardness, very high reactivity, good pigment wetting, forms hard scratch resistant, durable films, chemical resistant.
UV 5060 W	60 in water	500 – 1.500	An aqueous anionic, UV curing, epoxy-modified polyurethane acrylic emulsion. pH= 6.0
UV 295 UL	57 in HDDA/BAC	1.000 – 2.000	Urethanized, long oil alkyd resin in HDDA,/BuAc, cured with the help of photoinitiators (Omnirad TPO-L) by means of LED (395 nm).
UV 299 UL	53 in HDDA	2.000 – 5.000	Urethanized, long oil alkyd resin in HDDA, cured with the help of photoinitiators (Omnirad TPO-L) by means of LED (395 nm).
UV 1912 AL	100	max. 70.000	An acrylic modified short oil alkyd, UV curing, for metal, wood, plastic coatings.
UV 1905 AS	80 in HDDA	max. 70.000	An acrylic modified short oil alkyd, UV curing, for metal, wood, plastic coatings.
UV 2360	100	2.000 – 8.000	UV oil for the coating of wood. 2360 is particularly suitable for the production of parquet and maintenance oils. It is characterized by very good penetration.
UV 2308 EA	80 in TPGDA	20,000 – 30,000	An epoxy acrylate for UV coating systems. 2308 should be stored in light protected containers at a temperature below 30 ° C be stored.
UV 2300 EA	100	40.000 – 60.000	An epoxy acrylate for UV coating systems. 2300 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.
UV 2160 AP	100	4.000 – 8.000 (80% in TPGDA)	A100% polyester-acrylate resin for UV-curing coating systems. 2160 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.
UV 2032 P	70 in NPG(PO)2DA	approx. 40.000	UV and isocyanate crosslinking, aliphatic polyester resin. Modification component to improve flexibility, adhesion and flow, increasing the surface hardness and chemical resistance.

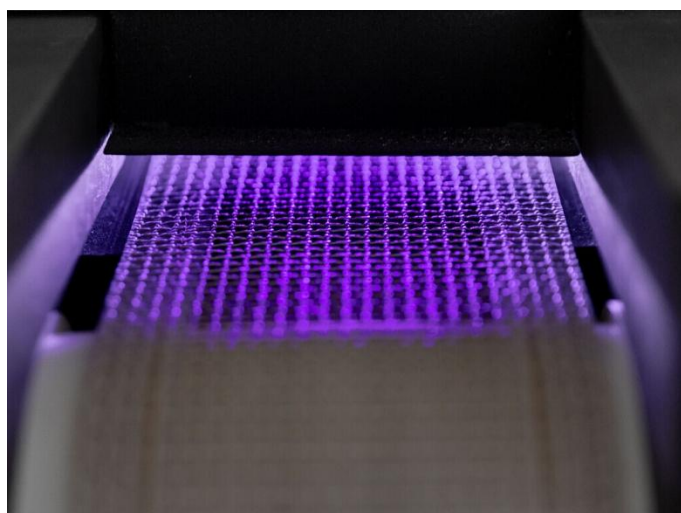


VARARad UV; Urethan modified polymethylmeth-acrylate for high quality UV-curable

Product	Solvent	Supply Form [%]	Viscosity [mPa.s]/23°C	Main uses and characteristics
UV 1800 UM	TPGDA	70	max. 10.000	A urethane-modified polymethyl methacrylate resin having reactive cycloaliphatic side chains for the production of radiation-curable coating materials.
UV 1200 SI	tert.-butylmethacrylate (TBUMA)	76	450 – 550	A high solid, moisture-curing, silane-modified, aliphatic polyurethane based on an aliphatic branched polyester suitable for the formulation of base coats for wood-, clear- and topcoats, forced drying or at room temperature.
UV 2100 UM	1,6-hexanediol-diacrylate (HDDA)	41	max. 500	Urethane-modified polymethyl methacrylate resin for the production of UV-radiation-curable coating materials.
UV 2200 UM	MMA	36	max. 50	Urethane-modified Polymethyl methacrylate resin with reactive, cycloaliphatic side chains for the production of radically curable putties.
UV 1400 R	Solvent-free	100	max. 75	Thinner based on maleate / vinyl ether for UV-systems. U 1400 is a reactive diluent for radiation-curing systems, which is particularly well suited for the formulation of lacquers for printing on wood and paper.
UV 6145 UR	Solvent-free	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.

UV technologies: Sustainability meets increased efficiency

Ultraviolet (UV) and electron beam (EB) energy-cured coatings delivery excellent characteristics.



Ultraviolet (UV) and electron beam (EB) energy-cured coatings have excellent appearance, durability, and little or no VOC emissions, while enabling increased productivity and lower overall costs per cured part.

UV resin/rad cure technology for industrial and plastic coatings as well as packaging coatings and inks applications, driving market growth and end-user acceptance of this unique technology.

Acid Curing

Acid curing coatings (SH), also known as cold-curing coatings, mainly consist of a combination of alkyd and amino resins that are dissolved in organic solvents. Good surface quality, high chemical resistance, fast drying and a long pot life (sometimes up to 5 days) mean that these coatings are mainly used in the furniture industry. New formaldehyde-free versions of these coatings have led to these coating systems becoming popular among broader customer circles too.



VaraMin UF; Urea formaldehyd resin

Product	Supply Form [%]	Viscosity [mPa.s]/23°C	Main uses and characteristics
UF 132	66 - 70 in IB	2.500 – 6.000	Iso- butylated medium/high reactivity urea formaldehyde resin with very good compatibility with epoxy resins and good stability, low level of free formaldehyde, in iso-butanol, non-plasticized resins for stoving and acid curing paints and coatings with low formaldehyde suitable for electrostatic spray applications, excellent for wood floorings and acid curing wood coatings, general purpose, amino-epoxy systems
UF 110	59 in B/X	2.100 – 2.800	Iso- butylated urea formaldehyde resin in isobutanol and xylene, non plasticized resins for stoving and acid curing paints. medium/high reactivity urea formaldehyde resin with very good compatibility with epoxy resins and good stability, low level of free formaldehyde
UF 162	62 in B/X	700 – 1.800	Iso- butylated medium/high reactivity urea formaldehyde resin with very good compatibility with epoxy resins and good stability, low level of free formaldehyde, non plasticized resins for stoving and acid curing paints, general industrial, stoving primers and enamels, industrial wood coatings and coil coatings (backing coats).
UF 160	60 in B/X	1.000 – 1.300	Iso- butylated urea formaldehyde resin in n-butanol and xylene, non plasticized resins for stoving and acid curing paints. medium/high reactivity urea formaldehyde resin with very good compatibility with epoxy resins and good stability, low level of free formaldehyde.
UFR 100	70 in IB/BAC	1.500 – 3.500	Recommended for the formulation of matt and glossy acid curing paints for wood and metal. A typical application of acid curing varnish, based on UFR 100 UFR 600 is on wood floor coatings.



TECHNOLOGIES FOR SECURE FUTURE

High-Performance ADDITIVES FOR WOOD & JOINERY COATINGS



WATER-BASED & SOLVENT-BASED COATING ADDITIVES

SCRATCH-RESISTANT, DURABLE, AND NATURALLY BEAUTIFUL

A little makes a big splash!



SYNTHORA FoamStop AQUA; Anti-foaming agents for aqueous formulations

Product	Chemical characteristic	Active substance [%]	Use level (on total formulation)
AQUA 223	Silica containing PDMS	100	0.1 – 1.0
AQUA 241	Silica containing PDMS solution	30	0.3 – 1.0

SYNTHORA WetCore; Substrate wetting agents

Product	Chemical characteristic	Active substance [%]	Use level [%] (on total formulation)	Highlighted application / Effect
WetCore 341	Polyethermod. PDMS trisiloxane	50	0.2 – 1.5	For all kinds of aqueous air-drying industrial, automotive, wood and architectural coatings and 2-pack PUR systems; no influence on surface slip, no foam stabilization.
WetCore 344	PDMS copolymer	100	0.1 – 1.0	For all kinds of aqueous air-drying industrial, automotive, wood and architectural coatings and 2-pack PUR systems; no influence on surface slip, no foam stabilization; better against craters than Add 3410.
WetCore 328	Maleic resin	100	0.2 – 1.5	A wetting agent for wood impregnation and solvent as well water-dilutable premix applications.
WetCore 354	Maleic resin	100	0.2 – 2.0	A wetting agent for wood impregnation and solvent as well water-dilutable premix applications.

SYNTHORA SlipSil; Silicone surface additives

Product	Chemical characteristic	Active substance [%]	Use level [%] (on total formulation)	Highlighted application / Effect
SlipSil 555	High molecular PDMS	78	0.3 – 1.0	For 2 K PUR systems; improves scratch resistance of water-thinnable lacquers and printing inks as well as satin gloss to glossy systems; significantly reduces blocking.

SYNTHORA WetDisperse; Wetting and dispersing agents

Product	Chemical characteristic	Active substance [%]	Main uses and characteristics
8110S	Modified polymer	100	Easy-to-use, universal dispersion for decorative and industrial aqueous coatings; first choice for medium oil alkyds when gloss matters.
8400W	Modified block copolymer	50	Universal, outstanding cost-performance ratio for aqueous systems.

SYNTHORA CureAdd UV; Special additive for UV-curable coating

Product	Properties	Non-volatiles [%]	Colour / Gardner	Viscosity [mPa.s]/23°C	Appearance / Use
CureAdd 2084	Increase surface hardness	min. 95	max. 2	max. 700	Modified solvent-free acrylic resin for UV-curable paints and coatings.
CureAdd 2251	2251 improves adhesion especially on metals and on glass.	80	max. 2	30.000 – 60.000	Special modified epoxy ester. The optimum addition amount is about 1% calculated on the binder.
CureAdd 2328	Surface slip & mar resistance, for non-aqueous formulations.	100	max. 2	-	Hydroxyl content silicon additive for 2 K-PUR, UV-curing lacquers and printing inks as well as other systems.
CureAdd 2400	A silicone based special paint additive.	100	max. 2	270 – 640	For water thinnable air drying and stoving coatings and UV-lacquers and printing inks. Add 1400 is effective at very low concentrations for improving flow out, levelling and gloss, deairing and degassing, reducing cratering and orange peel, improving mar resistance and slip.
CureAdd 2010	Non-silicone flow levelling and wetting additive.	mind. 98	max. 2	High viscos liquid	Used in coatings and inks. Promotes flow, levelling and substrate wetting.
CureAdd 2450	Based on polydimethyl siloxane	100	max. 2	60 – 90	Additive for the reduction of surface tension in water dilutable and radiation curing paint systems. Improves substrate wetting of liquid paint systems even on difficult surfaces.





Varena^{CH}_{EMICAL}^{T.P.T}
PRODUCTS FOR A SECURE FUTURE

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

www.varena-chem.com
info@varena-chem.com