



# DECORATIVE FLOORING & CONSTRUCTION

Take advantage of a full spectrum of solvent-borne and waterborne resins for the decorative paints that people use inside and outside their homes and offices.



DECORATIVE & CONSTRUCTION



**B as in Binders.** Their mission: to form a cohesive whole. As soon as our binders get to work, there is no escape in the truest sense of the word for the other substances involved in your paints, coatings or adhesives. Binders are therefore one of the most important building blocks for your end products.

Our binders not only cover a wide variety of applications areas, but they also offer great potential for more sustainable chemistry. We are already producing many binders on the basis of renewable raw materials. Indeed, we continually work to keep moving in this direction.

# DECORATIVE

A comprehensive range of high performance and durable solutions for decorative and wood paints and coatings.

## OUR COATINGS TECHNOLOGIES

At VARANOX 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 [bio-based](#) resins that meet the coating needs of today and tomorrow.



# BINDER FOR DIY AND DECORATIVE PAINTS

## Solvent-based binders

### VARALAC S 3374

This air drying, extremely low viscous alkyd resin is especially suitable for the use as combination- or sole binder in low VOC coatings. Due to the very good compatibility with short-, medium- and long oil alkyd resins it is suitable for the improvement of the processing - and levelling properties of paints on this basis.

Type	Oil [%]	Oil type	PA [%]	Color/ Gardner	Acid value [mgKOH/g]	Viscosity 20°C [mPa.s]	Delivery Form [%]
S 3374	74	Special fatty acids	-	max. 10	max. 6	max. 750	100

### VARALAC L 5530 AC

For high quality DIY and decorative paints: The acrylated, long oil alkyd resin VARALAC L 5530 AC shows a good outdoor- and yellowing resistance at unlimited oxidative drying. Due to its low viscosity it is suitable as sole or combination binder in high solid DIY and decorative paints.

Type	Oil [%]	Oil type	PA [%]	Color/ Gardner	Acid value [mgKOH/g]	Viscosity 20°C [mPa.s]	Delivery Form [%]
L 5530 AC	60	Special vegetable fatty acids	-	max. 5	max. 10	65 – 105 (70% in dearomat. HC 160-200)	85 in dearomat. HC 160-200

### VARALAC SD 5500

Systems based on VARALAC SD 5500 show fast drying and through drying, high initial hardness and good sandability. The long oil alkyd resin is used in high quality undercoats, base coats and in silk and high gloss decorative paints. It is also suitable as combination partner in wood glazings.

Type	Oil [%]	Oil type	PA [%]	Color/ Gardner	Acid value [mgKOH/g]	Viscosity 20°C [mPa.s]	Delivery Form [%]
SD 5500	70	Special vegetable fatty acids	-	max. 10	max. 15	4.000–12.000	85 in dearomat. HC 160-200

### VARALAC LR 5551

A low viscous, long oil alkyd resin for high quality decorative paints. Paints based on VARALAC LR 5551 show a good hardness development and outdoor durability. Because of a good compatibility with for example middle oil alkyd resins, it could be a perfect combination binder to reduce VOC.

Type	Oil [%]	Oil type	PA [%]	Color/ Gardner	Acid value [mgKOH/g]	Viscosity 20°C [mPa.s]	Delivery Form [%]
LR 5551	66	Vegetable fatty acids	21	max. 10	max. 15	5000 – 12.000	90 in dearomat. HC 160-200

### VARALAC LR 5548

When it comes to fast drying and good hardness development: VARALAC LR 5548 is a long oil alkyd resin with middle viscosity properties. It is used in decorative paints, which are compliant with the VOC legislation.

Type	Oil [%]	Oil type	PA [%]	Color/ Gardner	Acid value [mgKOH/g]	Viscosity 20°C [mPa.s]	Delivery Form [%]
LR 5548	68	Vegetable fatty acids	21	max. 10	max. 15	2.500 – 6.500	75 in dearomat. HC 160-200

### VARATHIX TL 1770

VARATHIX TL 1770 is a thixotropic long oil alkyd resin that can be used either as a sole binder or as an additional binder. Main application fields are high solid, solvent based, air drying primers, gloss paints, silk gloss paints and glazings for decorative paints.

Type	Oil [%]	Oil type	PA [%]	Color/ Gardner	Acid value [mgKOH/g]	Viscosity 20°C [mPa.s]	Delivery Form [%]
TL 1770	61	Special fatty acids	21	max. 15	max. 15	Thixotropic gel	70 in HC 180-220



### VARALAC TL 5558

Simple incorporation due to soft structure: This high solid, long oil, thixotropic alkyd resin shows very good effectiveness even at low non volatile contents or when small quantities with usually long oil low VOC alkyd resins are added. VARALAC TL 5558 is especially used for the manufacture of anticorrosive primers, decorative and building paints as well as wood glazings.

Type	Oil [%]	Oil type	PA [%]	Color/ Gardner	Acid value [mgKOH/g]	Viscosity 20°C [mPa.s]	Delivery Form [%]
TL 5558	66	Special fatty acids	20	max. 15	max. 15	Thixotropic soft gel	70 in HC 180-220

### VARALAC LV 5541 U

Due to urethanising this long oil alkyd resin ensures fast drying and good hardening. Solvent reduced impregnations, glazings, wood paints and wood care oils can be formulated because of the low viscosity. Systems based on VARALAC LV 5541 U show good permanently elasticity and outdoor durability.

Type	Oil [%]	Oil type	PA [%]	Color/ Gardner	Acid value [mgKOH/g]	Viscosity 20°C [mPa.s]	Delivery Form [%]
LV 5541 U	81	Linseed oil	-	max.10	max. 3	10.000-15.000	approx. 100

### VARALAC LV 5704

This very low viscosity alkyd resin is the first choice for extreme weather conditions. VARALAC LV 5704 is particularly suitable for the manufacturing of high solid glazings, clear lacquers and high solid anticorrosion primers. It distinguishes through particularly excellent permanent elasticity and extremely good weather resistance.

Type	Oil [%]	Oil type	PA [%]	Color/ Gardner	Acid value [mgKOH/g]	Viscosity 20°C [mPa.s]	Delivery Form [%]
LV 5704	79	Linseed oil	-	max. 10	max. 15	8,000–10.000	100



## VARALAC LV 5529

VARALAC LV 5529 is an extremely low viscous alkyd resin especially suitable for the manufacturing of low VOC an VOC-free parquet-, terrace- and maintenance oils and also of wood stains and glazings. It especially shows very good penetration, permanent elasticity and weather resistance. Another field of application is the application as sole- or combination-binder in low VOC or VOC-free wood glazings and especially in maintenance oils.

Type	Oil [%]	Oil type	PA [%]	Color/ Gardner	Acid value [mgKOH/g]	Viscosity 20°C [mPa.s]	Delivery Form [%]
LV 5529	90	Linseed oil	-	max. 15	max. 15	500	100



## WALL AND CONSTRUCTION SOLUTION

We are manufacturer of modern binders and additives for extreme demands

## WATER- DILUTABLE ALKYD BINDERS

### VARADIL AZ 4550 U

A versatile usable PU-alkyd emulsion for the production of corrosion protection systems and high gloss topcoats. VARADIL AZ 4550 U convinces with fast through drying (also with cobaltfree dryers), early water resistance and excellent weather resistance. Top coats with high gloss, excellent hardness and very good water resistance can be formulated. Furthermore a good outdoor resistance should be mentioned. Paints based on VARADIL AZ 4550 U show good gloss stability after storage.

Type	Oil [%]	Acid value [mgKOH/g]	pH value DIN 53785	Viscosity, [mPa.s]/20°C	Delivery Form [%]
AZ 4550 U	44	max. 30	7.0-8.0	50 – 1.500	40 in water

### VARADIL AZ 4530 U

You need special coatings to make stairs, furniture or parquet look as new for many years. The PU-alkyd emulsion VARADIL AZ 4530 U is especially suitable for usage in hard wood vanishes and allows seven layers at one day. VARADIL AZ 4530 U is mainly used for the production of water dilutable fast drying paint systems for wood and also for metal.

Type	Oil [%]	Acid value [mgKOH/g]	pH value DIN 53785	Viscosity, [mPa.s]/20°C	Delivery Form [%]
AZ 4530 U	53	max. 38	7.0-8.5	max. 10.000	30 in water

### VARADIL AZ 4541 U

Challenges even the most adverse weather conditions: This PU- alkyd emulsion for high gloss architectural paints convinces with excellent outdoor resistance. VARADIL AZ 4541 U is used for the manufacturing of water thinnable decorative and D.I.Y. paints, which especially show a good brushability, excellent levelling and good filling properties. It is especially recommended for high gloss top coats. The formulation of wood protection stains is also possible.

Type	Oil [%]	Acid value [mgKOH/g]	pH value DIN 53785	Viscosity, [mPa.s]/20°C	Delivery Form [%]
AZ 4541 U	40	max. 30	5.5 – 7.5	max. 3.000	46 in water



## VARADIL AZ 4521 AC

For cobalt-free decorative paints without unpleasant odours. The acrylic modified alkyd emulsions VARADIL AZ 4521 AC and AZ 4531 AC are almost odourless due to low aldehyde-formation and are less yellowing.

Type	Oil [%]	Acid value [mgKOH/g]	pH value DIN 53785	Viscosity, [mPa.s]/20°C	Delivery Form [%]
AZ 4521 AC	26	27 - 34	6.5 – 8.5	max. 1.000	40 in water/ propylenglycol/ Dowanol PnB

## VARADIL AZ 4580 U

Is a PU-alkyd emulsion, especially suitable for the production of water dilutable air-drying wall and decorative paints (also radiator paints) with very good yellowing resistance. Paints based on AZ 4580 U have excellent gloss, low odour and low VOC.

Type	Oil [%]	Acid value [mgKOH/g]	pH value DIN 53785	Viscosity, [mPa.s]/20°C	Delivery Form [%]
AZ 4580 U	39	15-25	7.0-8.0	max. 10.000	42 in water

## VARADIL AZ 4547 AF

This long oil modified, amine- and co-solvent free alkyd emulsion is ideally suitable for the manufacturing of wood care products (e.g. teak and bangkirai) and wood protecting stains.

Type	Oil [%]	Acid value [mgKOH/g]	pH value DIN 53785	Viscosity, [mPa.s]/20°C	Delivery Form [%]
AZ 4547 AF	74	-	max. 7	max. 1.500	60 in water

## VARADIL AZ 4531 AC

VARADIL AZ 4531 AC; acrylic modified alkyd emulsion resin is a unique resin for the manufacture of water thinnable clear wood impregnations, pigmented and transparent stains and wood care oils. It shows extremely good penetration into the wood, excellent durability, easy application, no nailhead rusting, good chalk binding and long term elasticity.

Type	Oil [%]	Acid value [mgKOH/g]	pH value DIN 53785	Viscosity, [mPa.s]/20°C	Delivery Form [%]
AZ 4531 AC	90	85-115	7.5 – 8.5	350 – 900	45 in water/BG 80:20

## WATER-BASED DISPERSIONS, ACRYLIC BINDERS

### VARAMUL ACE 3271 W

Is a special cationic acrylic solution for wood insulating primer; it covers very well water soluble stains. ACE 3271 W is ideal as filler binder or as colorless or pigmented sealing primer on woods with a high proportion of soluble wood content ACE 3271 W is also particularly suitable for the production of nicotine insulating paints and transparent glazing. Excellent barrier effect. and also pigment compatibility.

Product	Monomer	Delivery Form [%]	pH value DIN 53785	MFT [°C]	Viscosity [mPa.s]/20°C
ACE 3271 W	Cationic pur acrylic emulsion	40 in water	4.0 – 6.0	15	5.000 – 8.000

### VARAMUL ACE 3246 W and AE 3243 W

With its good blocking and outdoor resistance these high solid acrylic emulsions are perfect for formulating high gloss emulsion paints. 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 top coats, solvent-free formulations are possible for glazings and colourless systems.

Product	Monomer	Delivery Form [%]	pH value DIN 53785	MFT [°C]	Viscosity [mPa.s]/20°C
ACE 3246 W	Pure acrylic emulsion	55 in water	7.0 – 8.0	0	max. 500

Product	Monomer	Delivery Form [%]	pH value DIN 53785	MFT [°C]	Viscosity [mPa.s]/20°C
ACE 3243 W	Pure acrylic emulsion	55 in water	7.0 – 8.0	13	200 - 800

## VARAMUL ACE 3277 W

Is a Core-Shell-Dispersion for the production of solvent-free decorative paints and glazings.

Product	Monomer	Delivery Form [%]	pH value DIN 53785	MFT [°C]	Viscosity [mPa.s]/20°C
ACE 3277 W	Core-Shell-Dispersion	45 in water	7.0 – 8.0	5	max. 500

## VARAMUL ACE 3274 W

Is a cationic acrylic copolymer dispersion which is used for the production of pigmented sealing primers and topcoats for wood and nicotine isolating paints with high water resistance. For the production of insulating wall paints, colorless and pigmented primer on woods with penetrating ingredients. Excellent barrier effect and very good water resistance.

Product	Monomer	Delivery Form [%]	pH value DIN 53785	MFT [°C]	Viscosity [mPa.s]/20°C
ACE 3274 W	Cationic acrylic copolymer dispersion	45 in water	4.5 – 5.0	15	max. 300





## VARALAC; SOLVENT-BORNE ALKYD RESINS

Product	Delivery Form [%]	Viscosity [mPa.s/23°C]	Oil length [%]	Oil Type	Description
<b>UR 5202</b>	50 in water	3500 - 5500	60	Linoleic rich oils	Polyurethane modified long oil alkyd for abrasion resistance floor paints and wood finish.
<b>UR 5314</b>	60 in water	2200 - 3000	57	Linseed / Soya	Polyurethane modified long oil alkyd for as a sole binder in clear floor varnishes.
<b>UR 2210</b>	55 in water	3000 - 4500	56	Soya bean oil	Decorative enamels
<b>AF 288</b>	40 in water	25000 - 35000	48	Linoleic fatty acids	Thix-Alykd, used in wall paints, flat enamels and undercoats.
<b>AN 685</b>	100	1400 - 2400		Castor oil	Physically drying lacquers. Pigment pastes.
<b>AH 1263</b>	100	2000 - 3500	72	Mixed fatty acids	Decorative high solid paints and stains for intrior and exterior use.
<b>AH 1265</b>	100	2000 - 3000	70	Mixed fatty acids	Decorative high solid paints and stains for intrior and exterior use.
<b>AL 3000</b>	70 in water	1800 - 4800	65	Soya bean oil	Interior and exterior decorative enamels. DIY decorative paints.
<b>AL 1600</b>	70 in water	2600 - 4000	67	Special fatty acids	Suitable for the production of high quality decorative and building paints, which stand out for their very good properties as brushability, flow, film build and high gloss.





## VARADIL; WATER-BORNE ALKYD RESINS

Product	Delivery Form [%]	Viscosity [mPa.s/23°C]	Oil length [%]	Oil Type	Description
<b>AZ 4543</b>	100	600 - 800	62	Linseed oil	Water soluble long oil alkyd for wood impregnation, temporary paints and impregnation, wetting and water soluble paints.
<b>AZ 5400</b>	80 in water	3400 - 4300	65	Linseed / Soya bean oil	Architectural and decorative undercoats. solvent based and waterborne wood and furniture coatings and wood stains.
<b>AZ 4502</b>	60 in water	50 - 1000	73	Linseed oil	Primers and transparent / opaque stains.
<b>AZ 4504</b>	55 in water	4000 - 10000	53	linseed/soya-bean oil / acrylic copolymer dispersion	Interior / exterior primers, transparent / opaque wood stains and exterior and interior wall coatings.
<b>AZ 4505</b>	100	500 – 1500	71	Drying mix oil	Water soluble long oil alkyd for wood, metal coatings.
<b>AZ 4554</b>	50 in water	100 - 600	40	Soya bean fatty acid	Interior / exterior primers and topcoats for wood and metals, primers and topcoats for Joinery application and corrosion resistant primers.
<b>AZ 5600</b>	42 in water	500 - 1000	26	Linoleic rich	Industrial metal primers, insulating wall paints, interior industrial wood stains and stoving enamels.
<b>AZ 5601 U</b>	44 in water	200 - 450	25	Linolic oil / fatty acids	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.
<b>AZ 4576</b>	53 in water	100 - 1000	40	Soya bean oil	Interior / exterior primers and topcoats for metals, primers and topcoats for Joinery application and corrosion resistant primers.
<b>AZ 5100 U</b>	40 in water	50 - 1500	44	Special fatty acids	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.



## VARACRYL; THERMOPLASTIC ACRYLIC RESINS

Product	Delivery Form [%]	Viscosity [mPa.s/23°C]	Acid Value on solid [mg KOH/g]	Description
A 260	60 in X	10000 - 15000	≤ 15	As a decorative and quick drying paints. High-grade masonry paints.
A 240	60 in T	10000 - 15000	≤ 12	As a decorative and quick drying paints.
A 220	55 in X	5000 - 7000	≤ 12	As a decorative and quick drying paints. Scratch resistance protective coats and polycarbonate glazing.

## VARARAD; RADIATION CURING RESINS

Product	Delivery Form [%]	Viscosity [mPa.s/23°C]	OH/ Solid [%]	Description
UV 4561	55 in BA	2500 - 4000	4.5	Hydroxyl group containing polyester acrylate, curing with isocyanate and radiation (dual cure), non-adhesive and scratch-resistant, for non-yellowing coatings.
UV 4500	100	40000 - 60000	-	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	100	4000 - 6000	-	Epoxy acrylate resin, high reactivity, hard, scratch resistant films, chemical resistant.
UV 4300	100	12000 - 18000	-	Epoxy acrylate resin, high reactivity, hard, flexible, scratch resistant films, chemical-resistant, corrosion resistant.
UV 4800	100	12000 - 25000	-	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 4405	40 in water	50 - 200	-	An aqueous anionic, UV curing, epoxy-modified polyurethane acrylic emulsion.



## VARAMUL ACE; WATER-BORNE ACRYLIC RESINS

Product	Delivery Form [%]	Viscosity [mPa.s/23°C]	pH	MFT [°C]	Description
ACE 3246	55 in water	500	7,0 - 8,0	0	Self crosslinking acrylic copolymer emulsion for high solid, high gloss emulsion paints.
ACE 3248	55 in water	1000	7,0 - 8,0	14	Self crosslinking aqueous pure acrylic copolymer emulsion for high solid, high gloss emulsion paints and DIY lacquers.
ACE 3250	50 in water	2200	8,0 - 9,0	14	Self crosslinking pure acrylic emulsion for the production of emulsion paints interior and exterior.
ACE 3255	49 in water	500	7,5 – 8,0	5	Styrene acrylic copolymer emulsion for the production of outstanding corrosion, water and humidity resistance paints.
ACE 3271	45 in water	500	7,5 - 8,5	5	Self crosslinking pure acrylic emulsion for the production of emulsion paints interior and exterior.
ACE 3274	45 in water	400	4,0 - 5,0	16	Aqueous cationic acrylate copolymer dispersion for the production of nicotine insulating wall paints, colourless and pigmented primers on wood with penetrating contents.
ACE 3277	45 in water	500	8 - 9	40	Acrylic emulsion for the formulation of aqueous wood and furniture lacquers.
ACE 3280	49 in water	300	7,0 – 8,0	17	Methacrylic copolymer emulsion for he production of wall paints,flagstone- and building adhesives.



## VARAPOL; LIQUID POLYESTER RESINS; PU-SYSTEMS

Product	Delivery Form [%]	Viscosity [mPa.s/23°C]	Acid Value [mg KOH/g]	Tg [°C]	OH/Solid [%]	Description
PE 800	solvent free	25000 - 36000	< 3	-42	6,5	As sole binder with aromatic isocyanates it is used for anti-corrosive primers with excellent adhesion and in combination with VARAPOL FS 300 for flooring coatings.
PE 805	65 in MPA	17000 - 23000	< 3	+48	8,8	Excellent weather stability, lightfastness, gloss retention, good chemicals and abrasion resistance
PE 870	solvent free	1800 - 2600	< 3	-21	4,3	Suitable for flexible topcoat/co-binders to make coatings systems more flexible.
FS 300	solvent free	2500 - 4500	< 3	-	4,7	Concrete and asphalt floors, steel surfaces in combination with isocyanates.
FS 350	solvent free	350 - 500	< 2	-	5,2	Concrete and asphalt floors, steel surfaces in combination with VARAPOL FS 300 and isocyanates.
PE 162	solvent free	15000 - 20000	< 3	35	1,3	PU-COATING for furniture, floors and parquet.



Art Pictures / shutterstock.com





**N-AMINE - EPOXY HARDENERS  
FLOORING & CONSTRUCTION**

# N-AMIN polymer hardeners\*

The REACH Regulation (VO (EG) No. 1907/2006) differentiates between substances that must be registered and polymers, which are excepted from registration according to Article 2.9. The polymer hardeners\* in our N-AMIN product line are based on polymer polyamine adducts that are not subject to registration under REACH.

## N-AMIN for innovative solutions

The objective of the epoxy resin hardeners from the N-AMIN family is to offer the high performance profile of standard-products that have been used to date for applications for floors and coatings.

Product	Viscosity [mPa.s/25°C]	Amine Value [mg KOH/g]	H-Equivalent [g/Val.]	Gel time [min]	Solid [%]	Density [g/cm <sup>3</sup> ]
<b>N-AMIN 535</b>	500 - 650	250 - 350	115	36	100	1,02 ± 0,02
<b>N-AMIN 546</b>	140 - 240	275 - 375	93	39	100	1,02 ± 0,02
<b>N-AMIN 570</b>	530 – 630	250 - 350	100	18	100	1,02 ± 0,02

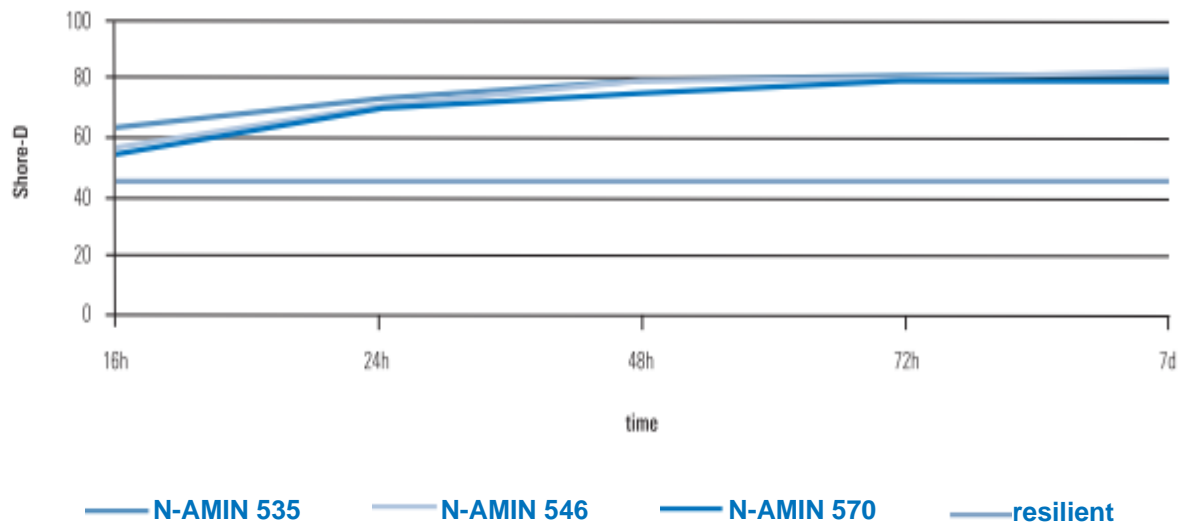
**N-AMIN 535** is a cycloaliphatic polymer hardener\* with medium viscosity and sufficient working time. This product demonstrates good hardening properties, chemical resistance and good surface qualities. This hardener is suitable for the production of primers, roller coatings and self-levelling top coatings.

**N-AMIN 546** is a cycloaliphatic polymer hardener\* with low viscosity and sufficient working time. This product demonstrates good hardening properties, chemical resistance and good surface qualities. Successful formulations of primers, mortars, roller coatings and self-levelling top coatings may be made with this product.

**N-AMIN 570** is a cycloaliphatic polymer hardener\* with a shorter working time. This product demonstrates rapid hardening, chemical resistance and good surface qualities. This hardener is suitable for the production of primers and self-levelling top coatings and can be used for coatings that come into contact with potable water.

\* Contains polymer content and registered monomers according to REACH





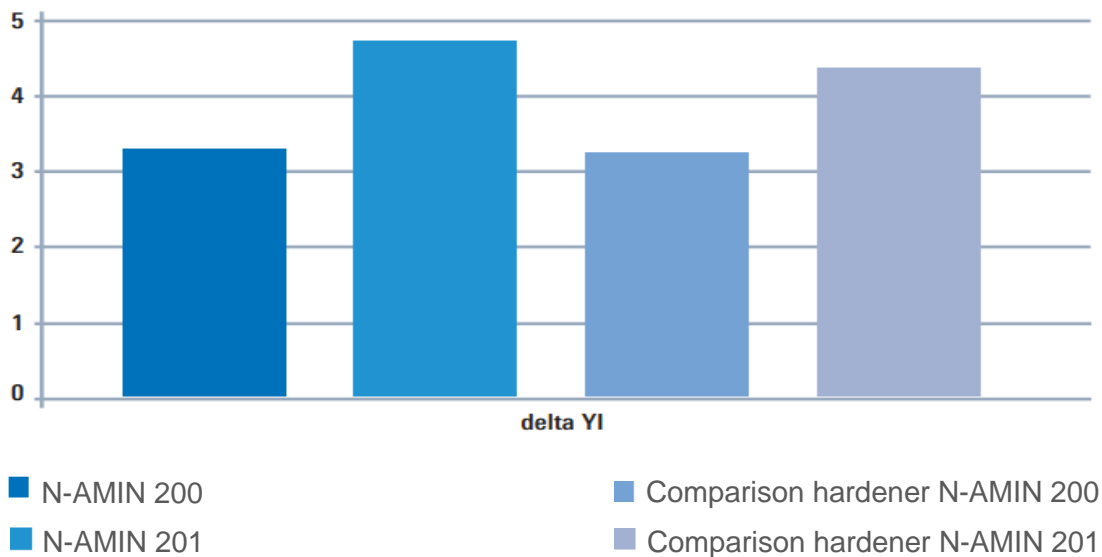
# N-AMIN - more highly UV-resistant polymer hardeners\*

Product	Viscosity [mPa.s/25°C]	Amine Value [mg KOH/g]	H-Equivalent [g/Val.]	Gel time [min]	Solid [%]	Density [g/cm <sup>3</sup> ]
<b>N-AMIN 200</b>	590 - 790	290 - 390	89	40	100	1,02 ± 0,02
<b>N-AMIN 201</b>	480 - 680	275 - 375	85	50	100	1,02 ± 0,02

**N-AMIN 200** is a modified cycloaliphatic polymer hardener\* with a low yellowing tendency. This hardener can be used for coatings systems that are intended to yield visually attractive surfaces.

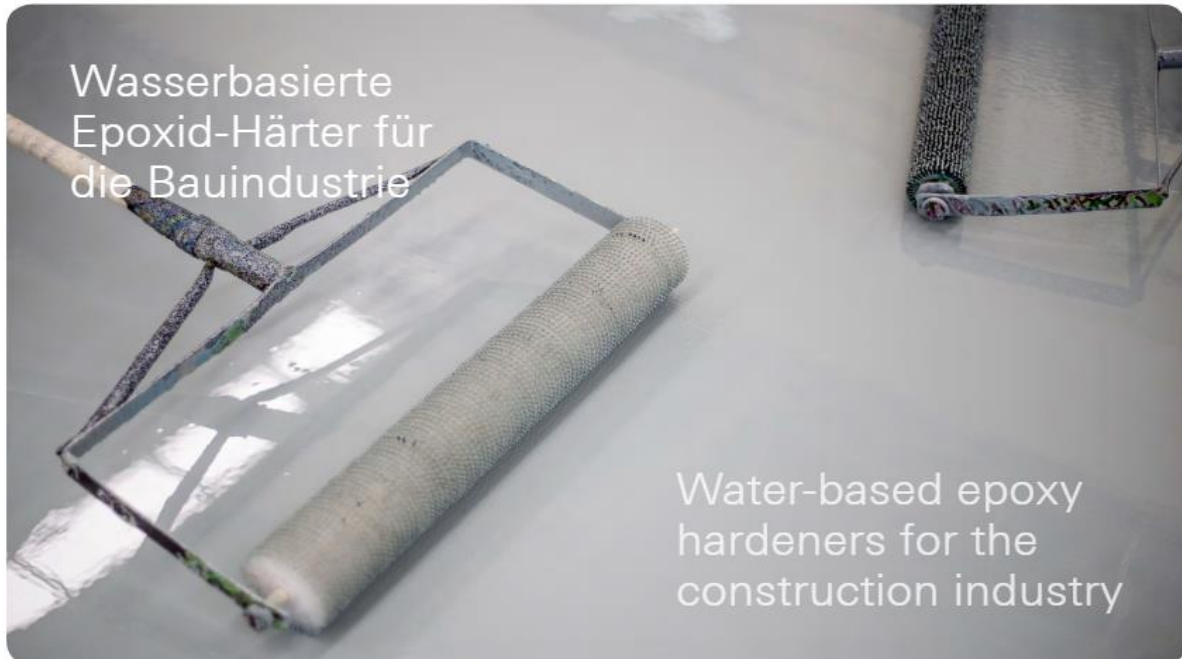
**N-AMIN 201** is a modified cycloaliphatic polymer hardener\* with good colour stability. The application area of this hardener includes roller coatings, self-levelling top coatings and mortar systems.

## Comparison of UV-stable epoxy hardeners



Q-SUN XE-1 XENON TEST CHAMBER (100 hours 340 nm)

## TECHNOLOGIES FOR A SECURE FUTURE



Water-based products have also come to play an ever increasing role in construction chemistry. VARENA CHEMICAL has succeeded in developing a water-based epoxy resin hardener that is suitable for use in primers, EP mortars and EP floor coating systems.

The polymer epoxy resin hardener **N-AMIN H 228 W** is **VOC-free** and 80% dissolvable in water. It is particularly noteworthy for its compatibility with liquid resins and solid resin dispersions. **N-AMIN H 228 W** has emulsifying properties while also featuring excellent and swift hardening in comparison with market standards, even in the case of very high coating thicknesses. The product achieves very good surface properties and a high Shore D hardness value.

Furthermore, **N-AMIN H 228 W** is notable for its low shrinkage qualities and good UV stability. This polymer epoxy resin hardener is suitable for moist substrates and can thus also be used in coatings with high water vapour permeability (prevention of osmotic blistering). The gel time can be adjusted by means of a selection of resin components. An extended gel time of approx. 38 minutes has been determined in combination with H epoxy.

Our research and development department is always intent on taking all market requirements into account in the process of developing new products. To this end, VARENA stays in constant close contact with its customers from the industry

\*Contains hydrocarbon resins.

# N-AMIN - water-based polymer hardeners\*

Product	Viscosity [mPa.s/25°C]	Amine Value [mg KOH/g]	H-Equivalent [g/Val.]	Gel time [min]	Solid [%]	Density [g/cm <sup>3</sup> ]
N-AMIN 228	< 1000	300 - 400	86	16	100	1,02 ± 0,02

**N-AMIN 228** is a water-based polymer hardener\* with excellent hardening properties. This product demonstrates good UV stability and good hardening characteristics for high coating thicknesses. When used with fluid epoxy resins, this hardener is notable for yielding particularly good surfaces.



# Replacement of Mannich bases by innovative epoxy hardener!

## Phenol-free rapid hardener\* as co-hardener in high solids

The challenge was to develop a rapid hardener which would offer hardening characteristics corresponding to those of traditional Mannich bases, at the same time as avoiding the problematic R62 labelling.

### N-AMIN 388 H

- Low yellowing tendency
- Good surface properties
- Good early water resistance
- Low viscosity
- No R62 labelling

Product	Viscosity [mPa.s/25°C]	Amine Value [mg KOH/g]	H-Equivalent [g/Val.]	Gel time [min]	Solid [%]	Density [g/cm <sup>3</sup> ]
N-AMIN 388	< 250	388	75	10	100	1,02 ± 0,02

**N-AMIN 388 H** significantly extends the application range for rapid hardeners. For example, it is now possible to accelerate hardener systems for more visually demanding applications. The disadvantages of Mannich bases, such as severe yellowing or higher viscosity, have been overcome to the greatest possible extent. To facilitate the exchange of Mannich bases, the H-active equivalent weight has been set to 75 g/eq.

\*Contains hydrocarbon resins.



# Innovative epoxy hardener!

**Phenol-free and benzyl alcohol-free, as low emission standard flooring hardener.**

**N-AMIN H 510** is low emission standard flooring hardener with excellent general properties.

**N-AMIN H 510** is modified stabilized cycloaliphatic polyamine hardener, free from alkyl phenols and benzyl alcohol.

Colour,[Gardner]	< 2
Amin Value [mg KOH/g]	320 ± 20
Density at 23 °C [g/cm³]	1,00 ± 0,01
Viscosity at 25 °C [mPa.s]	525 ± 100
Active-H-Equiv. Weight [g/val]	approx. 93
Pot-life** [min.]	approx. 27 ± 4
Pendel-hardness [s]	180
Shore D	94
Delivery Form [%]	100

\* with EP-Resin, EEW: 187

## APPLICATION:

N-AMIN H 510 used as universal curing agent for benzyl alcohol free, nonylphenol free, light color casting, solvent-free laminating and coating resin systems as well as for adhesives and highly filled coating materials, mortars and primers, solvent free epoxy flooring systems.

## N-AMIN H 509

**N-AMIN H 509** is a modified stabilized polyamine adduct hardener of reduced reactivity, free from benzyl alcohol.

Colour, [Gardner]	< 2
Efflux Time, 23°C [s]	39 ± 3
Density, 20 °C [g/cm <sup>3</sup> ]	0,98 ± 0,02
Viscosity at 23 °C [mPa.s]	180 ± 50
Active-H-Equiv. Weight [g{val}]	approx. 90
Flexural Strength [MPa]	ca. 73
Elongation at Break [%]	12
E-Moduls (Flexural) [MPa]	2190
min. Curing Temp. [°C]	15
Pot-life [min.]	approx. 80
Rec. Amount Hardener [g]	50
Shore D 1. 7 dr.t.	80
Tensile Strength [MPa]	48

\* with EP-Resin, EEW: 187

### APPLICATION:

N-AMIN H 509 is preferably used in combination with suitable epoxy resin formulations for solvent-free systems. Main fields of application are primers and coatings. The lower reactivity enables usage in environments with higher temperature levels.

## N-AMIN H 515

**N-AMIN H 515** is emission-free "full reactive" modified polyamine adduct hardener, free from alkyl phenols and benzyl alcohol, with excellent water-spotting resistance and excellent general properties.

Colour,[Gardner]	< 2
Amin Value [mg KOH/g]	395 ± 30
Density at 23 °C [g/cm³]	1,02 ± 0,01
Viscosity at 25 °C [mPa.s]	565 ± 50
Active-H-Equiv. Weight [g/val]	approx. 82
Pot-life** [min.]	approx. 21 ± 4
Pendel-hardness [s]	180
Shore D	83
Delivery Form [%]	100

\* with EP-Resin, EEW: 187

### APPLICATION:

N-AMIN H 515 used as emission-free "full reactive" hardener with excellent general properties, with excellent water spotting resistance, good through-cure and good yellowing resistance.

## N-AMIN H 560

**N-AMIN H 560** is a liquid, solvent free, special polyamine hardener containing benzyl alcohol.

Colour index (as delivered) [Gardener]	< 2
Amin value [mg/KOH]	550 ± 50
Viscosity at 20 °C [mPa.s]	10 ± 5
H-equivalent [g/val]	50
Pot life* / RT 25°C [min.]	approx. 15

\* with standard A/F-epoxy resins, EEW:183 e.g. Epotec YD 522

### APPLICATION:

N-AMIN H 560 is mainly used in the stone-working industry for strengthening porous and fissured natural stone slabs, concrete and concrete ashlar and improving their surface qualities. In combination with spun glass fabrics it is also used for strengthening brittle natural stone slabs. The hardened product shows a minimal tendency to yellow if exposed to ultraviolet light or to warmth.



# N-AMIN HR 541

**N-AMIN HR 541** is a liquid, solvent free, special polyamine hardener for contact with drinking water.

Colour index (as delivered) [Gardener]	< 2
Amin value [mg/KOH]	500 ± 50
Viscosity at 20 °C [mPa.s]	160 ± 50
H-equivalent [g/val]	60
Pot life* / RT 25°C [min.]	approx. 15

\* with standard A/F-epoxy resins, EEW:183 e.g. Epotec YD 522

## APPLICATION:

N-AMIN HR 541 is mainly used as hardener component in combination with epoxy resin for corrosion protection, approved for contact with drinking water.





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