LIQUID COATING RESINS

PRODUCT GUIDE • Waterborne and Solventborne Resins • Americas

Allnex

All About Resins

www.allnex.com

FACTS & FIGURES

With manufacturing, R&D and technical facilities located throughout Europe, North America, Asia Pacific and Latin America, Allnex offers global and reliable supply of resins and additives combined with local, responsive customer support.

About us

- Global company with nearly $1.5 billion in sales
- Resin portfolio comprised of more than 80% solvent-free and water-based products
- Broad Technology portfolio: liquid coating resins, energy curable resins, powder coating resins, crosslinkers, and additives
- Approximately 2000 employees
- More than 2500 customers
- 16 manufacturing facilities
- 13 research and technology centers
- 2 joint ventures
- A myriad of solutions for key coating segments: automotive, industrial, packaging coating and inks, protective, industrial plastics and specialty architectural

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About Allnex

World-Class Portfolio

Allnex's comprehensive range of liquid coating resins complements our other advanced products-additives, monomers, crosslinkers, energy curing systems and powder coating resins- used worldwide to formulate high-performance coating systems.

Additives

Allnex provides a wide selection of flow and leveling agents, pigment wetting and dispersing additives, catalysts and driers for liquid coatings, energy curable coatings and powder coating applications. Product lines include:

- ADDITOL® full range of additives for coatings
- CYCAT® acid catalysts used in crosslinked coatings
- MODAFLOW® Acrylic flow and leveling additives

Monomers

Allnex provides specialty monomers for the use in synthesis of polymers, providing added value with very unique properties.

- DIPEB™ (Meta) diisopropenylbenzene
- TMI® (Meta) unsaturated aliphatic isocyanate
- METHYL CARBAMATE
- TMXDI® (Meta) aliphatic isocyanate

Crosslinkers

Our crosslinkers are used around the world for improving the durability and resistance properties of high solids solventborne and waterborne coatings

- CYMEL® melamine, urea and benzoguanamine amino crosslinkers
- CYMEL® NF series- Formaldehyde Free crosslinkers

Energy Curing Technologies

Allnex is a pioneer in energy curable technologies. These products are used in a wide range of graphic arts, packaging, and industrial applications on wood, plastic and metal substrates.

- EBECRYL® Urethane acrylate, polyester acrylate, epoxy acrylate and diluent resins for UV coatings
- UCECOAT® Waterborne UV Resins
- EBECYRL® LEO Resins - Low extractable and low odor resins for food and pharmaceutical packaging

Powder Coating Resins

As a global supplier of powder coating resins, additives and hardeners, Allnex has a full range of technologies to meet today's needs and beyond:

- CRYLCOAT® polyester, polyester/epoxy hybrid, TGIC, amide, urethane, GMA and glycouril systems
- UVECOAT® UV curable powder resins
- SYNTHACRYL® Acrylic resins for matte finishes
- BECKOPOX® Specialty crosslinker
- ADDITOL® Additives

Nomenclature and Trade Names

Trade Names	Nomenclature	Description
BECKOPOX™ / BECKOCURE™	VEH	Solventborne and waterborne hardeners for epoxy resins
	EH	Solventborne and waterborne hardeners for epoxy resins
	VEP	Solventborne and waterborne epoxy resins
	EP	Solventborne and waterborne epoxy resins
	VEM	Solventborne and waterborne modified epoxy resins
	EM	Solventborne and waterborne modified epoxy resins
DAOTAN™	TW, VTW	Waterborne polyurethane dispersions (physically drying/self-crosslinking/ carboxyl and hydroxyl functional)
DUROFTAL™	VPI	Solventborne hydroxylated polyesters for isocyanate crosslinking
	VPE	Solventborne hydroxylated polyesters for amino resin crosslinking
DUROXYN™	VEF	Solventborne and waterborne epoxy ester resins
MACRYNAL®	SM, VSM	Solventborne and waterborne acrylic polyols for isocyanate crosslinking
RESAMIN®	HF	Solventborne plasticizing resin
RESYDROL®	AF, VAF	Solventborne and waterborne fatty acid modified alkyd resins
	AL, VAL	Solventborne and waterborne linseed oil modified alkyd resins
	AX, VAX	Waterborne modified epoxy alkyd resins
	AY, VAY	Waterborne modified acrylic alkyd resins
	AZ, VAZ	Waterborne modified urethane alkyd resins
	VAN	Waterborne oil-free polyester resins
VIACRYL®	SC, VSC	Waterborne physically drying/self-crosslinking and baking acrylic resins
UCECRYL®		Waterborne acrylic resins, physically drying

Key Words and Abbreviations

Key Word	Abbreviations
ABS	Acrylonitrile butadiene styrene
Ac	Acetate
Aro 100	Aromatic 100
Aro 150	Aromatic 150
AV	Acid value
BA	Butyl acrylate
BAC	Butyl acetate
BDG	Dibutoxyethanol
BG	Butoxy ethanol or Butyl glycol
BP	Butoxy propanol
CED	Cathodic electrodeposition
cP	Centipoise
DACA	Diacetone alcohol
DBGE	Diethylene glycol butyl ether
DIY	Do-It-Yourself
DMEA	Dimethylethanol amine
DTM	Direct to metal
EDG	Ethylene diglycol
EEP	Ethyl ethoxypropionate
EEW	Epoxide equivalent weight
EG	Ethylene glycol
EP	Propoxyethanol
EPAc	Ethoxy propyl acetate
EtAc	Ethyl acetate
FOD	Form of delivery
HEW	Amine hydrogen equivalent weight
IP	Isopropanol
Iso H	Isopar H
Isobut	Isobutanol
MB	Methoxy butanol
MeAc	Methyl acetate

Key Word	Abbreviations
MFFT	Minimum film formation temperature
MMA	Methyl methacrylate
MP	Methoxy propanol
MPP	Methoxy propoxy propanol
n-But	n-Butanol
NEP	n-Ethylpyrrolidone
NH_3	Ammonia
NMP	n-Methyl-pyrrolidone
OH#	Hydroxyl number
PA	Polyamide
PC	Polycarbonate
PMA	Propylene glycol methyl ether acetate
PMMA	Polymethyl methacrylate
PP flamed	Polypropylene flame-treated
PS	Polystyrene
PVC	Polyvinyl chloride
SCA	Sag control agent
T	Toluene
TEA	Triethylamine
Tg	Glass transition temperature in °C
VOC	Volatile organic compounds expressed in g/L or Lbs./Gal.
WA	Water
WPG	Weight per gallon
X	Xylene

BECKOPOX™ and BECKOCURE™ Amine Hardeners for Epoxy Resins and Dispersions

Product	Non-volatile%	Solvent	Viscosity at 23°C mPa.s	HEW on FOD	Key features
Beckocure					
EH 2260w/41WA	41	Water	25 - 2000	1000	Easy Cure System- low viscosity hardener, very fast drying, high sag resistance. Combine with EP 2384 or EP 387 for easy handling and application with fast return to service for metal applications.
Beckopox					
EH 651/70X	70	Xylene	550 - 1700	170	Polyamidoamine hardener with long potlife, good flexibility, adhesion and chemical resistance. For both metallic and mineral substrates.
EH 613w/80WA	80	Water	23000 - 31000	145	Aliphatic polyamine adduct, fast drying, highly reactive hardener. Good anti-corrosion performance and high chemical resistance. Can be used alone or in combination with other hardeners to modify drying and pot life properties. For both metallic and mineral substrates.
EH 623w/80WA	80	Water	12000 - 21000	200	Aliphatic polyamine adduct with medium reactivity with a good balance of drying time and long pot life. Workhorse hardener for mineral substrates.
EH 659w/50WA	50	Water	17000 - 21000	215	Extremely low reactive aliphatic polyamine adduct with slow drying and very long pot life. Can be used alone or in combination with other hardeners to modify drying and pot life properties. For both metallic and mineral substrates.
VEH 2106w/80WA	80	Water	14000 - 21000	142	Aliphatic polyamine adduct, visual end of pot life viscosity to a gel. Used as a combination partner with other hardeners to allow potlife indication. For both metallic and mineral substrates.
VEH 2188w/55WA	55	Water/EP	6000 - 14000	380	Hydrophobic aliphatic polyamine adduct, free of volatile amines, low reactivity and long pot life. Allows for excellent corrosion performance without the need for active pigments.
VEH 2849w/80WA	80	Water	18000 - 25000	134	Aliphatic polyamine adduct, fast drying, highly reactive hardener. Used for anticorrosion primers with excellent water and corrosion resistance. Good for thick film applications and zinc rich primers.

Epoxy-Amine Systems

$$EEW = \frac{MW}{\#\text{ of Epoxy groups}}$$

$$HEW = \frac{MW}{\#\text{ of Amine groups}}$$

Relationships used to calculate stoichiometric ratios between epoxy functional resins and amine functional resins.

Question:
Calculate 1 to 0.9 Epoxy-Amine ratio for Epoxy-Amine system using 100g BECKOPOX EP 384w dispersion and BECKOPOX EH 623w hardener.

Answer:

$$\frac{100g\ EP\ 384w}{980} = 0.1020\ equivalents$$

0.1020 x (0.9) equivalents x 200 = 18.3g EH 623w Hardener

General Trends	Excess Amine	Excess Epoxy
Potlife	Increases	Decreases
Flexibility	Increases	Decreases
Hardness	Decreases	Increases
Solvent Resistance	Increases	Decreases
Acid Resistance	Decreases	Increases
Adhesion	Increases	Decreases
Water Resistance	Decreases	Increases
Corrosion Resistance	Decreases	Increases

Resin	Type	Solids	EEW	HEW
BECKOPOX EP 384w	Epoxy dispersion	53%	980 g/equiv (on FOD)	
BECKOPOX EH 623w	Amine hardener	80%		200 g/equiv (on FOD)

Note: As used in the tables and figures herein, all references to PRODUCT NAME are understood to be the products described in the text.

BECKOPOX™ Resins and Waterborne Epoxy Dispersions

Product	Non-volatile %	Solvent	Viscosity at 23°C mPa.s	EEW on FOD	Key features
1K Epoxy Resins					
EM2120w/45WA	45	Water	25 - 1000	None	Cationic epoxy-amine adduct dispersion for metallic coatings, excellent corrosion resistance, fast hardness development.
2K Epoxy Resins					
EP 122w	100	None	700 - 900	190 - 200	Emulsifiable, non-crystalizing Bis-A/Bis-F liquid epoxy resin with reactive diluent for low viscosity. Used for concrete coatings, joint compounds, tile adhesives and hydraulic epoxy mortars.
EP 147w	100	None	9000 - 13000	188 - 200	Water emulsifiable Bis-A/Bis-F, non-crystallizing, liquid epoxy. High abrasion resistance, good chemical resistance and corrosion protection. Combine with solid epoxy dispersions to improve penetration into concrete and chemical resistance. Used for coatings on metallic and mineral substrates as well as for adhesives and water-washable joint compounds for tile.
EP 384w/53WAMP	53	Water/MP	400 - 750	920 - 1040	Shear stable type 1 epoxy dispersion, fast drying, good hardness, for both metal and concrete applications.
EP 386w/52WA	52	Water/EP	300 - 1500	900 - 1100	Flexiblized type 1 epoxy dispersion with good shear stability. Excellent corrosion resistance. Best product to use when flexibility and adhesion to difficult substrates are required. Designed for metallic substrates. Can also be used on concrete in combination with liquid epoxy resin.
EP 387w/52WA	55	Water/MP	300 - 1500	900 - 1100	Part of the Easy Cure system. Flexibilized epoxy dispersion with excellent corrosion resistance. Developed to optimize formulation cost and performance. Designed for metallic substrates. Can also be used on concrete in combination with liquid epoxy resin.
EP 2350w/60WA	60	Water/MP	1000 - 9000	520 - 640	Liquid/solid hybrid epoxy dispersion with increased chemical resistance, longer open time and good penetration into concrete/mineral substrates.
EP 2384w/57WA	57	Water	300 - 1300	650 - 850	Solvent free, shear stable type 1 epoxy dispersion. Fast drying and hardness development. For both mineral and metallic substrates.
EP 2392w/70MP	70	MP	1000 - 5000	650 - 780	Flexibilized type 1 water-emulsifiable epoxy dispersion. Designed for zinc-rich anti-corrosion primers.
Solventborne 2K Epoxy Resins					
EM 460/60IBX	60	IB/Xylene	800 - 1400	-	Modified epoxy resin. Excellent adhesion to steel and nonferrous metals, high corrosion protection and good recoatability. Used in conjunction with polyvinylbutyral for 1K and 2K wash primers and weldable shop primers.
EP 075	100	None	40 - 70	320 - 360	Low odor, difunctional flexiblizing reactive diluent for 2K solventborne or 100% solids epoxy coatings.
EP 116	100	None	7800 - 11000	175 - 185	Solvent-free liquid non-crystallizing epoxy resin with high reactivity and good chemical and abrasion resistance. Used in solvent free coatings, adhesive and trowelling compounds, composites, casting compounds and laminates for electronics.
EP 117	100	None	800 - 1200	175 - 185	Solvent-free liquid non-crystallizing epoxy resin containing reactive diluent for low viscosity. Highly loaded systems exhibit excellent tensile strength. Used in mortars for concrete repair, industrial flooring and adhesives for tiles.
EP 128	100	None	900 - 1300	190 - 200	Bis-A liquid epoxy containing reactive diluent for low viscosity. Cured systems show low shrinkage and excellent resistance to chemicals, solvents and moisture. Used in abrasion resistance flooring compounds, castings, impregnations and composites.
EP 140	100	None	11000 - 15500	180 - 190	Standard liquid Bis-A epoxy, imparts adhesion, increased chemical resistance. Cured systems show low shrinkage. Used in abrasion resistance flooring compounds, castings, impregnations and composites.
EP 151	100	None	25000 - 38000	400 - 500	Flexibilized Bis-A liquid epoxy resin. Used as a plasticizing resin for improve the flexibility of epoxy resin systems. Suitable for castings needing permanent elasticity as well as castings subjected to severe vibration stresses.
EP 301/75X	75	Xylene	7800 - 13000	600 - 700	Type 1 solid epoxy resin for anticorrosion primers, zinc rich paints and high durability coatings. Used in combination with polyamines for ambient curing. Can also be used to improve adhesion and chemical resistance properties of saturated polyesters or thermoset acrylics in bake systems.

DAOTAN™ Waterborne Polyurethane Dispersions

Product	Type	Non-volatile %	Solvent	Viscosity at 23°C mPa.s	pH at 10%	Neutralization	% Elongation	OH number on solids	Key features
TW 1225/40WANEP	Aliphatic Polyester	40	NEP	100 - 800	6.7 - 7.7	DMEA		47	Hydroxy functional polyurethane dispersion with shear stability and pigment compatibility. Good flexibility when cured with isocyanates as well as melamine resins. Very good adhesion to polyamide, polycarbonate, ABS, as well as pretreated PP/EPDM.
TW 1227/40WA	Aliphatic Polyester	40	NEP	50 - 850	7.2 - 7.6	DMEA	210	50	Low solvent content. Good shear stability and pigment compatibility. Good flexibility when cured with isocyanates as well as melamine resins. Very good adhesion to polyamide, rigid PVC, ABS and pretreated PP/EPDM.
TW 1235/36WANEP	Aliphatic Polyester	36	NEP	10 - 400	7.0 - 8.5	TEA			Shear stable. It can be cured at room temperature providing clear, flexible coating films. Very good adhesion to polycarbonate, ABS, PUR-RIM and pretreated PP/EPDM.
TW 1237/32WANEP	Aliphatic Polyester	32	NEP	5 - 60	7.0 - 8.0	TEA			Shear stable with good pigment compatibility. Cures at room temperature, giving clear, crack free films with good flexibility and adhesion to polycarbonate, ABS, PUR-RIM and untreated PP/EPDM.
TW 1252/42WA	Aliphatic Fatty acid	42	NEP	500 - 1500	7.0 - 9.5	NH_3			Fatty acid modified with very fast set and through drying. Very high gloss for decorative top coats. Good water and weather resistance.
TW 2229/40WANEP	Aromatic Polyester	40	NEP	300 - 1500	7.0 - 7.7	DMEA		43	Shear stable with good pigment compatibility giving highly flexible films when cured with isocyanates as well as melamine resins. Good adhesion to rigid PVC, polyamide, ABS, as well as untreated PP/EPDM.
TW 5661/37WA	Aliphatic Polyester/acrylic	37	NEP	50 - 200	7.2 - 8.7	TEA			Hard and flexible self-crosslinking acrylic modified polyurethane dispersion developed for interior and exterior wood paint, furniture and parquet laquers. Good blocking resistance, excellent chemical and abrasion resistance.
TW 6425/40WA	Aliphatic/aromatic Polyester	40	Solvent-free	100 - 1100	7.2 - 8.2	DMEA		55	Shear stable. Good flexibility when cured with isocyanates as well as melamine resins, with good adhesion to polyamide, polycarbonate, ABS and pretreated PP/EPDM.
TW 6440/43WA	Aliphatic/aromatic Oil based PUD	43	DPGDME	30 - 1000	7.0 - 8.0	NH_3			Self-crosslinking, oil based polyurethane dispersion with rapid cure resulting in clear, ambering, uniform films. Shear stable and good pigment and silicone oil compatibility, with good abrasion and chemical resistance. Developed for interior wood coatings for furnture and flooring.
TW 6450/30WA	Aliphatic Polycarbonate	30	DPGDME/MP	max. 50	7.3 - 9.0	DMEA			High molecular weight, forms a clear crack-free film at ambient temperatures. Excellent elasticity and mechanical properties as well as very good adhesion to different plastic substrates like ABS, PC, PA, PVC, PC/PBT. Used for plastic primers and auto OEM basecoats with outstanding stone-chip resistance.
TW 6464/36WA	Aliphatic Polyester/acrylic	36	Solvent-free	15 - 250	7.4 - 8.4	DMEA	140	36	Shear stable, solvent-free, self-crosslinking acrylated polyurethane dispersion providing quick drying and good wetting properties. Cured films are transparent with good chemical and abrasion resistance, with good adhesion to ABS, PC, treated PP and PVC. Can be used for plastic primer and basecoat. In addition, this resin exhibits extraordinary bright metallic effects.
TW 6473/37WA	Aliphatic Polyester/acrylic	37	Solvent-free	50 - 800	7.5 - 8.5	DMEA			Self-crosslinking acrylic modified polyurethane dispersion. Shear stable with good pigment compatibility. Good adhesion to PC, PMMA, ABS. Used preferably for anti-fogging coatings.
TW 6490/35WA	Aliphatic Polyester	35	Solvent-free	50 - 100	9.0 - 9.5	TEA	400		Very good adhesion to plastic substrates like ABS, PVC, PC, PMMA. Films exhibit high elasticity and toughness, excellent mechanical properties (especially stone chip resistance), low yellowing at high temperature. Recommended for primer and basecoat applications.
TW 6491/33WA	Aliphatic Polyether	33	Solvent-free	5 - 100	9.1 - 10.6	TEA	525		Quick drying, very high elasticity and elongation. Good for soft and flexible substrates. Good ink receptivity. Extremely good hydrolytic stability. Slight ambering at high temperatures.
TW 6492/36WA	Aliphatic Polyester	36	Solvent-free	10- 120	8.5 - 10.5	TEA	260		Very good adhesion to plastic substrates like PA, PVC, PMMA, high elasticity and toughness, excellent mechanical properties, especially stone chip resistance.
TW 6493/35WA	Aliphatic Polyester	35	Solvent-free	50 - 100	9.5 - 10.0	TEA	30		High film hardness, high elasticity and toughness, quick physical drying.
TW 7000/40WA	Aliphatic Polycarbonate	40	Solvent-free	100 - 1000	7.2 - 9.1	DMEA		170	Very high hardness along with flexibility. Very good adhesion to plastics substrates commonly used in automotive applications (ABS, PC, PP [flam.], PVC, PPSU). Extremely high water and chemical resistance including sunscreen and bug spray.
VTW 1250/40WA	Aromatic Fatty acid	40	NMP	800 - 3200	6.9 - 8.0	NH_3			Fatty acid modified with rapid dry and through drying. High corrosion protection. Good compatibility with acrylic dispersions. Recommended for fast drying anticorrosion primers.
VTW 1262/35WA	Aliphatic Polycarbonate/acrylic	35	Solvent-free	5 - 50	7.5 - 8.4	DMEA	245	32	Shear stable with good pigment wetting. Good flexibility. Designed for ambient and force dry industrial coating systems and automotive basecoats.
VTW 1265/36WA	Aliphatic Polyester	36	Solvent-free	10 - 90	7.0 - 8.0	DMEA			Self-crosslinking and forms clear crack-free films without additional coalescing aids. High clarity suitable for wood coatings for furniture and flooring. Good compatibility with acrylic resins used to accelerate drying speed.
VTW 6460/35WA	Aliphatic Polyester/acrylic	35	Solvent-free	20 - 400	7.0 - 8.5	DMEA	300		Forms clear, defect free films at ambient conditions without the addition of paint additives. Shear stable, good pigment wetting and compatible with inert pigments. Recommended for ambient and force dry industrial coatings, especially automotive basecoats.
VTW 6462/36WA	Aliphatic Polyester/acrylic	36	Solvent-free	15 - 250	7.4 - 8.4	DMEA	140		Self-crosslinking, good shear stability, pigment wetting, abrasion resistance and resistance to household detergents. Good adhesion to ABS, PA, rigid and flexible PVC and PMMA. Especially suited for primers and basecoats.
VTW 6463/36WA	Aliphatic Polyester/acrylic	36	Solvent-free	15 - 250	7.4 - 8.4	DMEA			Shear stable with good wetting properties, quick curing to give clear crack-free films. Good abrasion resistance and resistance to household chemicals. Good adhesion to ABS, PA, rigid and flexible PVC and PMMA. Especially suited for primers and basecoats.

DUROFTAL™ Solventborne Hydroxylated Polyesters

Product	Non-volatile %	Solvent	Viscosity at 23°C mPa.s	AV on solids	OH number on solids	FDA 175.300	Key features
PE 6160/50MPAC	50	MPAC	500 - 1500	max. 8	30	Yes	Excellent flexibility, deep drawing and good retort resistance. Good compatibility with phenolic resins. Excellent resistance against a variety of acids, alkalines, organic solvents and food. Exterior and interior white and clear can coating. Suitable for BADGE & BPA free can coating system.
PE 6163/66SNABG	66	Aro 150/180/BG	5000 - 8000	max. 6	150		Designed for coil coating systems with a balanced ratio between flexibility, crosslinking density and hardness. Good pigment wetting capabilities and good weathering resistance.
PE 6607/60BGMP	60	BG/MP	500 - 2000	25 - 35	345	Yes	Higher reactivity, water dilutable after neutralization with amines. Combination with suitable phenolic resins for BADGE & BPA free can coating systems.
VPE 6104/60MPAC	60	MPAC	4000 - 8000	max. 5	90	Yes	Good flexibility, hardness and retort resistance. Good compatibility with phenolic resins for use in BADGE & BPA free can coating systems. Especially suited for cold-resistant tube coatings, sterilizable exterior can coatings and aerosol tin paints and sealers.
VPE 6117	100		6000 - 12000	max. 10	120 - 140		Provides flexibility and impact resistance used in combination with polyesters.
PI 2801/78BAC	78	BAC	8000 - 13000	22	220 - 240		High hardness, high gloss, excellent chemical resistance, superior weathering stability. For high solid, high quality 2K clear and pigmented top coat for automotive refinish and industrial application.
VPI 2803/78BAC	78	BAC	7000 - 19000	22	165 - 195		High hardness, high gloss, excellent chemical resistance, superior weathering stability. For high quality 2K clear and pigmented top coat for automotive refinish and industrial application. Lower isocyanate demand than PI 2801.
PE 912/60SNA	60	Aro 150	1000 - 1800	≤ 10			Very good mechanical properties and adhesion to metal. Used in combination with melamine crosslinkers for bake systems, automotive basecoats and topcoats.

RESAMIN® Carbamate Resin

HF 480	> 95	N/A	3500 - 13500				Carbamic resin based on butylurethane and formaldehyde. Plasticizing component and compatibility promoter for thermoplastic backbone coating resins (e. g. nitrocellulose, PVC copolymers, cyclized rubber, PVB), alkyd/amino bake enamels and acrylic/isocyanate combinations.

VIALKYD® Solventborne Alkyd Resins

AN 950/70X	70	Xylene	2300 - 3100	< 12	100	Yes	Outdoor durable, nonyellowing one coat stamping and deepdrawing coil-coating systems for aluminum, sheet steel and tin sheet as well as for automotive primer surfacers and metallic base coats. Suitable for both bake systems with melamine crosslinkers and in 2K systems crosslinked with isocyanate.

DUROXYN™ Waterborne and Solventborne Epoxy Ester Resins

Product	Non-volatile %	Solvent	Viscosity at 23°C mPa.s	pH at 10% solids	Key features
Waterborne Epoxy Ester					
VAX 6127w/42WA	42	Water/MB	200 - 3000	8.5 - 10.0	Acrylic modified epoxy ester emulsion. Fast oxidative drying, excellent corrosion resistance, good pigment wetting, high water stability, good re-coatability. Sole binder for air and forced drying anticorrosive primers and gloss industrial coatings.
VEF 2406w/45WA	45	Water	25 - 1000	4.0 - 6.0	Cationic epoxy ester emulsion. Fast drying, high film hardness. Excellent stain blocking on wood.
EF 2107w/45WA	45	Water/MP	25 - 1000	4.0 - 6.0	Cationic epoxy ester emulsion. Fast drying, more flexible than VEF 2406. Excellent stain blocking on wood.
SEF 968w	100	None	700 - 1600		Non-drying epoxy resin ester, water emulsifiable. Used as a binder for fiber sizings (glass and carbon fiber).
VEF 4380w/35WA	35	Water/BG	4000 - 10000	8.0 - 9.5	Quick oxidative drying, excellent corrosion resistance, high water stability, good adhesion to metal and good recoatability. Used as a sole binder in anticorrosive primers, monocoats and topcoats.
Solventborne Epoxy Ester					
EF 900/60X	60	Xylene	3000 - 4500		Superior adhesion. Good hardness, impact resistance and flexibility. High pigment loading, capable of high gloss. Excellent resistance to temperature, water and alkali. Used in anticorrosive paint systems and primers, zinc rich primer surfacers.
EF 935/60X	60	Xylene	350 - 510		Very rapid air drying. Excellent hardness, flexibility and adhesion. Excellent resistance to alkali, excellent color retention at elevated temperatures. Recommended for industrial bake enamels as well as air dry anticorrosive primers.

MACRYNAL® Hydroxylated Solventborne Dispersions for Isocyanate Crosslinking

Product	Non-volatile %	Solvent	Viscosity at 23°C mPa.s	Color scale	OH number on solids	Key features
SM 500/60X	60	Xylene	2000 - 3800	70 max.	80 - 100	High gloss, good mechanical properties and good adhesion to metals and plastic substrates. In combination with polyisocyanates for air drying as well as forced drying primers and topcoats in industrial applications.
SM 507/53XBAC	53	Xylene/butyl acetate	5500 - 7500	70 max.	60	Fast drying two-pack lacquers for industrial applications as well as wood and furniture coatings. Superior adhesion to aluminum and plastic parts (ABS and PC).
SM 510n/60LG	60	Xylene/butyl acetate/Solvesso 100	2400 - 3600	25 max.	140 - 155	At ambient temperature drying or forced drying two pack systems with high gloss, excellent mechanical properties, superior outdoor durability and chemical resistance, in particular for automotive refinish topcoats and clearcoats.
SM 513/60LG	60	Xylene/butyl acetate/Solvesso 100	2400 - 4000	50 max.	110 - 130	Excellent mechanical properties and chemical resistance for fast drying two pack systems, in particular for primer surfacers in automotive refinish and for general industrial applications.
SM 515/70BAC	70	Butyl acetate	3600 - 6000	80 max.	140 - 160	Air drying and forced drying two pack systems with high gloss, excellent mechanical properties and excellent chemical resistance. Best in class for automotive refinish.
SM 516/70BAC	70	Butyl acetate	7000 - 11000	70 max.	140 - 160	Air drying and forced drying two pack medium high solids systems with high gloss, excellent mechanical properties, excellent chemical resistance and good outdoor durability for automotive refinish topcoats and clearcoats.
SM 540/60X	60	Xylene	1400 - 2400	200 max.	40 - 50	High gloss, excellent mechanical properties and superior adhesion to metals and non-iron metals (aluminium, zinc). Low NCO demand. Recommended for industrial metal primers and topcoats.
SM 548/50X	50	Xylene	600 - 1200	70 max.	60 - 70	Fast drying two-pack systems with high hardness for industrial topcoats. Low NCO demand.
SM 565/70BAC	70	Butyl acetate	2000 - 4200	100 max.	135 - 155	For air drying and forced drying high-solids two pack coatings with high gloss, outstanding mechanical properties, excellent chemical resistance and outdoor stability.
SM 2703/80BACX	80	Butyl acetate/xylene	7000 - 9000	100 max.	65 - 80	For air drying as well as forced drying high-solids two pack topcoats for industrial applications. The principle application area is industrial topcoats providing a low content of volatile organic compounds (VOC) and high pigment loading.
SM 2704/75BACX	75	Butyl acetate/xylene	5000 - 7000	100 max.	55 - 75	Low NCO demand, fast drying, high hardness and good pigment wetting. Recommended for air-drying and forced drying high-solids two pack primers and topcoats for industrial applications.
SM 2711/70BAC	70	Butyl acetate	1500 - 2500	100 max.	80 - 100	For air drying as well as forced drying high-solids two pack primers and topcoats for industrial applications. Fast drying with high hardness.
SM 2727/70X	70	Xylene	1500 - 3000	100 max.	80 - 100	For air drying as well as forced drying industrial applications. Fast drying systems with high hardness, robustness and good UV resistance.
SM 1009/50BAC	50	Butyl acetate	4000 - 6500	80 max.	45 - 65	Primarily suggested for air drying or forced drying two-pack systems for automotive interior.
SM 2855/70BAC	70	Butyl acetate	3500 - 5500	100max.	200	Fast drying, excellent chemical and solvent resistance. Especially suited for coatings on airplanes or military vehicles.
SM 2810/75BAC	75	Butyl acetate	4500 - 6000	100 max.	130 - 150	Excellent pigment wetting,chemical resistance, mechanical properties and outdoor stability. The principal application areas are car refinish, ACE (agricultural, construction and earthmoving equipment) as well as high quality industrial coatings. Excellent pigment wetting, low VOC.
SM 2892/65XBAC	65	Xylene/butyl acetate	2500 - 3500	100 max.	100 - 120	High quality, flexible two-pack clearcoats and pigmented topcoats. The cured films provide a good balance of flexibility and hardness, additionally, such films show superior weathering stability.
VSM 1004/75LGV2	75	MPAC/EEP/Methyl Acetate	8000 - 15000	20 max.	118 - 128	Air drying and force air drying two pack systems intended primarily for use in automotive refinish coatings. Low NCO demand. Clear coats having 2.1 lbs/gal VOC are possible with exempt solvents. Fast drying, good chemical resistance, excellent flow and weathering.
VSM 1509/60LG	60	Butyl acetate/Solvesso 100	5000 - 7000	100 max.	90 - 110	Very fast drying, good balance of elasticity and hardness. High outdoor durability. For auto refinish systems.
VSM 2155/60EPAC	60	Ethoxypropyl acetate	3900 - 4800	80 max.	180 - 200	Excellent chemical resistance and pigment wetting. Especially suited for coatings on airplanes or military vehicles.
SM 2806/75BAC	75	Butyl acetate	4000 - 7000	200 max.	125 - 145	For air drying and forced drying high-solids two pack coatings with high gloss, outstanding mechanical properties, excellent chemical resistance and outdoor stability.
VSM 2570/70BAC	70	Butyl acetate	2200 - 3800	80 max.	70 - 90	High solids content, good drying speed, adhesion to metals, gloss and outdoor durability.
VSM 2702/58XSNA	58	Butyl acetate/Solvesso 100	1000 - 2400	80 max.	45 - 55	Excellent adhesion to both ferrous and non-ferrous metals. Low NCO demand.
VSM 2705/70LG	70	Butyl acetate/Solvesso 100	3000 - 6800	80 max.	105 - 125	For high quality, easy to apply high solids, 2-pack industrial coatings. High gloss, good mechanical properties, good chemical resistance. Better hardness, gloss, leveling and solvent resistance than VSM 2570.
VSM 2706/60X	60	Xylene	1500 - 3500	200 max.	75 - 95	Fast drying two-pack coatings for the industrial lacquer sector. Low NCO demand, better outdoor durability than SM 500.
VSM 2800/70BAC	70	Butyl acetate	2000 - 5000	100 max.	135 - 155	High reacitivity, high gloss, high DOI, good leveling, very high solids, 2-pack clearcoats and pigmented topcoats for automotive refinish and industrial lacquers.
VSM 2805/80BAC	80	Butyl acetate	4000 - 8500	200 max.	135 - 150	For high quality ultra high solids 2-pack industrial coatings with high gloss, very good mechanical properties, very good chemical resistance and ease of application.

MACRYNAL® Hydroxylated Waterborne Dispersions for Isocyanate Crosslinking

Product	Non-volatile %	Solvent	Viscosity at 23°C mPa.s	pH at 10% solids	Neutralization	AV on solid resin	OH number on solids	Key features
VSM 2521w/42WAB	42	Water	200 - 1200	7.6 - 8.0	DMEA	16 - 23	135	High quality clear coats and top coats for wood and metal substrates with excellent resistance to chemicals, high hardness, high abrasion resistance and excellent drying properties.
VSM 6285w/43WABDG	43	Water/ butyldiglycol	400 - 2000	8.0 - 9.5	DMEA	36 max.	110	For high quality 2-pack-topcoats with excellent application properties, good drying and very good gloss.
VSM 6299w/42WA	42	Water	800 - 4000	7.0 - 8.5	DMEA	20 - 30	135	In combination with water emulsifiable polyisocyanates for high quality 2-pack topcoats with excellent hardness development at room temperature drying and very good gloss. Great balance of drytime and flow/leveling.
SM 6810w/42WA	42	Water	200 - 3000	8.2 - 9.0	DMEA	16 - 23	135	In combination with water emulsifiable polyisocyanates for high quality 2-pack topcoats with excellent applicability and appearance. Excellent popping resistance, longer open time than VSM 6299w.
SM 6817w/44WA	44	Water	300 - 3000	7.0 - 8.5	DMEA	25 - 31	100	Low NCO demand. Use in combination with water emulsifiable polyisocyanates for fast drying 2-pack topcoats with excellent applicability and appearance.
SM 6825w/41WA	41	Water	500 - 3000	7.6 - 8.6	DMEA	40	140	For high quality 2-pack clearcoats and topcoats providing very good chemical resistance and excellent drying properties.
SM 6826w/43WA	43	Water	120 - 1200	7.0 - 8.0	DMEA	N/A	145	Very high dry film thickness (>150 µm) without defects. Fast surface drying, shear stable with high pigment loading possible. Highly suitable for the formulation of top quality 2-pack polyurethane coatings, in particular primer surfacers/fillers as well as matte topcoats and clear coats, when used in combination with water emulsifiable polyisocyanates.

N/A = Not Applicable.

NCO-2k
Curing with polyisocyanates:
Based on 100 % conversion of reactive groups the following equation can be used to calculate the quantity of polyisocyanate needed for crosslinking 100 parts of a polyol, e.g. Macrynal, (on solids):

$$\text{polyisocyanate (f.o.d.)} = \frac{42 \times 100 \times \text{OH\% (solid resin)}}{17 \times \text{NCO\% (f.o.d.)}}$$

42 = molecular weight of the NCO-group
17 = molecular weight of the OH-group

Isocyanate Stoichiometry Calculation
NCO equivalent weight = 4200 / % NCO
NCO Equivalence = (resin weight x solids content) / NCO equivalent weight
OH equivalent weight = 56100 / OH number
OH Equivalence = (resin weight x solids content) / OH equivalent weight

Answer:
10g of a polyisocyanate with 23% NCO value
- NCO Equivalent weight = 4200/23 = 183
- NCO Equivalence = (10 x 100%)/183 = 0.0546

10g of a polyisocyanate with 18.2% NCO value
- NCO Equivalent weight = 4200/18.2 = 231
- NCO Equivalence = (10 x 100%)/231 = 0.0433

Question:
Calculate the NCO: OH ratio to crosslink 75g of **MACRYNAL VSM 6299w** resin with a blend of 10g of a polyisocyanate with 23% NCO value and 10g of a polyisocyanate with 18.2% NCO value.

75g **MACRYNAL VSM 6299w**
- OH Equivalent weight = 56100/135 = 416
- OH Equivalence = (75 x 42%)/416 = 0.0757

NCO : OH Ratio
Ratio = total NCO equivalence/total OH equivalence = (0.0546 + 0.0433)/0.0757 = 1.29

RESYDROL® Waterborne Alkyd Dispersions

Product	Type of modification	Non-volatile %	Solvent	Viscosity at 23°C mPa.s	pH at 10% solids	Neutralization	Oil length	Key features
Air Drying								
AY 241w/40WA	Acrylic	40	Water/BG	1000 - 6000	8.0 - 9.5	NH_3	24%	Extremely rapid initial drying. Excellent through-hardening, high film hardness. Very good water resistance. Recommended as a sole binder for primers or a partner for other Resydrol resins to improve drying behavior.
AY 430w/42WA	Acrylic	42	Water/BG	6000 - 11000	7.5 - 9.0	NH_3	44%	Very rapid drying, good brushability, high gloss and good weather resistance. For decorative paints on wood and metal.
AY 586w/42WA	Acrylic	42	Water	400 - 2500	7.3 - 8.3	NH_3	58%	Sole binder for waterborne decorative paints, exterior wood stains and industrial finishes. Low particle size that shows good wood penetration, provides good durability.
AY 6150w/45WA	Acrylic	45	Water/BP	300 - 2000	8.0 - 9.2	NH_3	35%	Designed for the production of air drying, waterborne 1 pack topcoats, multi-purpose primers and monolayers. Quick drying, good hardness development, high gloss and corrosion protection, good adhesion on various substrates and very good recoatability at any time.
AY 6705w/44WA	Acrylic	44	Water	100 - 1000	7.5 - 9.5	NH_3	35%	Exhibits very good durability and fast dry when used as a vertical or horizontal stain. Can be used alone or in combination with other w/b resins for decorative paints, exterior wood stains and industrial finishes.
AZ 6185w/40WA	Acrylic/urethane	40	Water	200 - 1200	8.0 - 9.2	NH_3	32%	Very quick drying, high hardness, increased scratch resistance with early water resistance and good gloss for interior applications. Shear stable and shows good compatibility with multiple binder chemistries.
AZ 6190w/43WA	Acrylic/urethane	43	Water	3000-8000	7.5 - 9.0	NH_3	40%	Broad compatibility, for combinations with long oil alkyd emulsions, for interior and exterior applications for woodstains, (trim) paints and primers.
AZ 6191w/42WA	Acrylic/urethane	42	Water	400 - 2400	8.0 - 9.2	TEA	44%	Excellent drying and hardness development. Shear stable, high gloss, great flow and leveling, high color retention for indoor and outdoor applications.
AZ 6710w/41WA	Acrylic/urethane	41	Water	500 - 1000	7.5 - 9.5	NH_3	29%	Sole binder for (trim) paints, primers and wood-stains. Good penetration, good open time drying balance, good weathering resistance.
VAF 6111w/60WA	Fatty acid	60	Water	200 - 800	5.5 - 9.0	Partially neutralized	40%	A high solid, low yellowing, blending resin to improve open time, provides adhesion to chalky substrates and can help achieve higher gloss while being free of amine and ammonia. Not shear stable.
AZ 436w/45A	Acrylic/urethane	45	Water/BG	4000 - 12000	8.5 - 9.5	NH_3/DMEA	43%	Very rapid initial and through-drying. High film hardness. Excellent water and corrosion resistance. Recommended as sole binder for anticorrosion primers.
VAX 6050w/40WA	Epoxy/acrylic	40	Water/BG	2000 - 6500	8.2 - 9.2	DMEA	32%	Quick physically set-drying and curing, High corrosion resistance and excellent adhesion after water immersion. Good pigment wetting and shear stability. Recommended as sole binder for anticorrosion primers.
VAX 6267w/40WA	Epoxy	40	Water	45 - 200	8.0 - 9.0	TEA/ DMEA	7%	Extremely fast physical initial and good oxidative through drying. High water and corrosion resistance. Excellent adhesion to steel, aluminum and galvanized steel as well as to clay and terracotta tiles. Suitable for both anticorrosion primers on metal and for tile roofing primers.
VAY 6096w/39WA	Acrylic	39	Water/BG	2000 - 8000	7.0 - 9.0	NH_3	32%	Very quick drying, high film hardness, good gloss in decorative top coats. High water resistance and outdoor durability. Recommended as sole binder in fast drying industrial coating systems.
VAY 6278w/45WA	Acrylic	45	Water	70 - 500	7.8 - 8.6	NH_3	15%	Quick drying, low yellowing. Use as a sole binder for decorative primers and topcoats or as a blending resin to improve drying properties.
Water Reducible								
AX 237w/70BG	Epoxy	70	BG	8000 - 14000	N/A		23%	Sole binder for air drying corrosion protection coatings. In combination with suitable melamine resins also for stoving systems and with polymer emulsions for air drying coatings for wood and plastic.
VAL 5547w	No	98	None	800 - 1500	5.5 - 7.5	Not neutralized	62%	Water dilutable without the need for neutralization agents. Very high penetration into the wood and is compatible with alkyd dispersions. Great for wiping stains.

RESYDROL® Waterborne Alkyd Dispersions

Product	Type of modification	Non-volatile %	Solvent	Viscosity at 23°C mPa.s	pH at 10% solids	Neutralization	Key features
Baking							
AF 502w/35WA	Fatty acid	35	Water	200 - 3000	7.5 - 8.8	DMEA	Excellent pigment wetting, excellent application properties for high bodied bake systems in one coat and decorative finishes.
AM 224w/40WA	Fatty acid	40	Water/MPP	100 - 700	7.5 - 9.0	DMEA	Very good pigment wetting. Excellent application properties. For bake primers, one coat and decorative industrial finishes.
AZ 6608w/43WA	Urethane	43	Water/NMP/MP	100 - 1500	7.5 - 8.5	DMEA	Extraordinary good stone chip resistance, excellent thermal yellowing stability (up to 200 °C), good gloss. Recommended for flexible bake enamels and as a modifier resin to improve stone chip resistance of waterborne basecoats and primer surfacers.
AX 906w/35WA	Epoxy	35	Water/MP	3000 - 10000	7.0 - 9.0	DMEA	Outstanding anticorrosive properties, excellent pigment wetting, high reactivity, very good storage stability. Good balance of hardness and flexibility. For waterborne corrosion-resistant dipping and spray primers and high-grade finishes for industrial applications.
AN 6181w/50WALG	Sulfopolyester	50	Water/solvent blend	30 - 300	3.0 - 5.0	Not neutralized	Extremely low bake temperature (from approx. 100 °C onwards). Very good adhesion to steel and copper. Very good adhesion to fiber re-inforced Polyamide, SMC or Polycarbonate. Extremely low thermo-yellowing. Very high film hardness and scratch resistance in conjunction with good flexibility. Very quick physical drying.
VAN 6113w/42WALG	Polyester	42	Water/BG/MP	500 - 3000	3.0 - 5.0	NH_3	Gives clear crack-free and mar resistant films at elevated temperature. Good water, alcohol, oil and grease resistance as well as a good adhesion to polystyrene and ABS. Recommened for coating HiFi cabinets.
AY 5537w/35WA	Acrylic/Polyester	35	Water/MPP/NEP	500 - 4000	7.5 - 9.2	DMEA	Good weathering resistance. Bake enamels stand out because of their high film hardness balanced with extraordinary good flexibility, as well as excellent water and solvent resistance. The adhesion to substrates like iron, aluminum, brass, copper and to galvanized surfaces is very good. Excellent paint stability.
VAZ 6600w/36WA	Acrylic/Polyester	36	Water/MPP	100 - 800	7.0 - 8.0	DMEA	Very high film hardness in conjunction with high film elasticity, very good gloss, excellent chemical resistance, excellent adhesion to steel or CED primers, very good stone chip resistance.
Water Reducible (Bake)							
AX 246w/70BG	Epoxy	70	BG	12000 - 20000		DMEA	Excellent pigment wetting. Outstanding anticorrosive properties. High reactivity, very good storage stability. Used for waterborne corrosion-resistant dipping and spray primers for low bake temperatures. High-grade waterborne finishes for industrial applications.
AX 247w/70BGMP	Epoxy	70	BG/MP	9000 - 17000		Not neutralized	Excellent pigment wetting. Outstanding anticorrosive properties. High reactivity, very good storage stability. Used for waterborne corrosion-resistant dipping and spray primers for low stoving temperatures. High-grade waterborne single-coat finishes for industrial applications.
AN 6481w/70BPP	Polyester	70	n-Butanol/BP	1000 - 2000		Not neutralized	Co-binder in combination with melamine resins and/or polyurethane dispersions for formulation of water dilutable industrial paints, e. g. base coats.
AN 6617w/65MPP	Polyester	65	MPP	3000 - 8000	7.0 - 8.0	DMEA	Crosslinked with either Melamines or Isocyanates provides highly elastic coatings, especially recommended for Soft-Feel-coatings.
VAF 5540w/70MP	Fatty acid	70	MP	300 - 550		Not neutralized	Good pigment wetting, Excellent mechanical properties, Very good storage stability. Additional resin for water dilutable primer surfacers to improve levelling.
VAX 5227w/55LG	Epoxy	55	Solvent mixture	90 - 500	7.0 - 9.0	DMEA	Very good corrosion resistance. For the formulation of automotive primer surfacers. Improved reactivity, pigment wetting and corrosion protection as well as high build film thickness.

UCECRYL® Waterborne Acrylic Resins, Physically Drying

Product	Non-volatile %	Solvent	Viscosity at 25°C mPa.s	pH at 10% solids	Neutralization	MFFT in °C	Key features
B 746	50	Water	500 - 1700	7.5 - 9.5	NH_3	2	Low MFFT styrene acrylic emulsion copolymer recommended for use in high PVC coatings for concrete tiles. Suitable for fresh concrete. Excellent durability. May be used as co-binder to improve flexibility and durability.
B 983	48	Water	350 - 950	7.5 - 9.5	NH_3	17	Medium MFFT straight acrylic emulsion copolymer with very low water uptake and good efflorescence resistance. For clear and pigmented coatings with excellent water resistance.
B 1009	48	Water	200 - 800	7.5 - 9.5	NH_3	41	High MFFT straight acrylic emulsion copolymer. Recommended for Hydrophobic paints for fiber-cement sheets.
B 1181	48	Water	300 - 900	7.0 - 8.0	NH_3	2	Low MFFT straight acrylic emulsion copolymer. APEO free. Suitable for fresh concrete, very low water uptake with very good efflorescence resistance. For use in clear coats with excellent water resistance.
B 1190	49	Water	150 - 750	8.0 - 8.5	NaOH	3	Low MFFT straight acrylic emulsion copolymer with high durability. Ammonia free. Recommended in paints for concrete tiles with good weathering resistance.
B 1470	49	Water	100 - 600	8.0 - 8.5	NaOH	20	APEO and ammonia free. Medium MFFT straight acrylic emulsion copolymer, recommended for use in paints for concrete tiles with very good weathering resistance.
B 3009	47.5	Water	≤ 200	7.5 - 8.5	NaOH	47	APEO and ammonia free. High MFFT straight acrylic emulsion copolymer, recommended for use in paints for fiber cement sheets with good weathering resistance and a good water repellency.
B 3010	48	Water	120 - 520	8.5 - 10.0	NH_3	19	APEO free. Medium MFFT straight acrylic emulsion copolymer. Provides excellent durability, low water uptake and efflorescence resistance on fiber cement, concrete and clay tiles (when used with a primer).
B 3016	43	Water	≤ 500	8.0 - 9.0	NH_3	18	APEO free. Medium MFFT straight acrylic emulsion copolymer. Topcoat for metal roof tiles with a very good resistance to water whitening and a low water absorption.
B 3022	44.5	Water	50 - 1250	8.0 - 9.5	NH_3	12	APEO free. Medium MFFT straight acrylic emulsion copolymer with good resistance to water whitening. For formulating low VOC (<50g/l), semi-transparent vertical stains on multiple wood species with good durability, wet adhesion, low water uptake and efficient thickener response.
B 3025	50	Water	≤ 200	8.0 - 9.0	NH_3	55	APEO free. High MFFT styrene acrylic emulsion copolymer, recommended for use in concrete floor coatings and renovation paints for metal siding.
BMR 47	55	Water	100 - 400	8.0 - 9.0	NH_3	2	APEO free. Low MFFT straight acrylic emulsion copolymer, recommended for use in high solids primers with low water uptake and excellent adhesion to metal for metal basecoats.

Cathodic Electrodeposition Resins

Product	Non-volatile %	Solvent	Viscosity at 23°C mPa.s	Key features
Acrylic CED				
VIACRYL VSC 6250w/65MP	65	Methoxy propanol	18000 - 35000	External crosslinking acrylate binder for pigmented primer or clear paint for the production of transparent protective coatings on ferrous and non-ferrous metals. Suggested for decorative and general industrial applications.
VIACRYL VSC 6292w/38WA	38	Water	50-500	Self-crosslinking, thermoset acrylate binder for the production of white or bright cathodic electrodeposition coatings. Recommended for protective coatings on metal.
Epoxy CED				
RESYDROL EZ 6635w/35WA	35	Water	20 - 1000	Self-crosslinking, thermoset CED binder for industrial applications. Film thickness can be adjusted between 20 and 45 µm.
RESYDROL EZ 6638w/35WA	35	Water	20 - 1000	Self-crosslinking, thermoset CED binder for industrial applications. Film thickness can be adjusted at 20 µm.
RESYDROL EM 6642w/55BG	55	Butyl glycol	4000 - 10000	Grinding resin for stable, highly pigmented pastes used in 2K CED paints.

VIACRYL® Solventborne Acrylic Resins, Physically Drying/Self-Crosslinking and Amino Resins Crosslinking

Product	Non-volatile %	Solvent	Viscosity at 23°C mPa.s	OH number on solids	Tg/°C	Key features
Thermoset acrylic						
SC 303/65XB	50	Xylene/n-butanol	700 - 1300	80	18	Good adhesion, gloss, hardness, flexibility, corrosion resistance and UV resistance. Recommended for automotive finishes, in particular for metallic basecoats (wet-on-wet process).
SC 341/60SNABAC	48	Aro 150/Butyl acetate	500 - 1200	86	15	Superior gloss, high surface hardness, good gasoline resistance, excellent levelling and weather resistance. Recommended for pigmented automobile finishes as well as for clear coats over metallic basecoats (with appropriate light stabilizers).
SC 2960/75SNA	75	SNA	4000 - 7000	150	-14	Excellent scratch resistance and etch resistance. Suggested for automotive clear coats (OEM) sprayed wet on wet over solventborne or waterborne basecoats.
SC 370/75SNA	75	SNA	4200 - 7000	120	8	Good pigment wetting and good compatibility with a variety of binder resins. Excellent body, levelling and gloss. Recommended for automotive finishes or general industrial purposes. Can also be used as a resin base for pigment pastes.
Thermoplastic acrylic						
SC 160/60T	60	Toluene	8000 - 15000		21	Excellent adhesion, flexibility and non-yellowing properties after aging. Developed for high quality road marking paints. Suitable for use in hot climates.
SC 200/40XB	40	Xylene/n-butanol	300 - 500		66	Fast dry and high hardness. Recommended for specialty coatings for glass, precious metals and plastics.

VIACRYL® Waterborne Acrylic Resins, Physically Drying/Self-Crosslinking and Amino Resins Crosslinking

Product	Non-volatile %	Solvent	Viscosity at 23°C mPa.s	pH at 10% solids	OH number on solids	MFFT in °C	Key features
SC 6827w/47WA	46	Water	< 150	3.5 - 5.0	75	10	Formaldehyde-free and self-crosslinking epoxy modified. Good adhesion to metal and nonmetal substrates. Excellent chemical resistance against alkalines and detergents. Very good thermal stability. For monocoat, primer and topcoat application.
SC 6823w/46WA	46	Water	50 - 300	7.0 - 8.5		70	Rapid drying, high hardness, excellent chemical and water resistance. Specially developed for adhesion on various plastic substrates including PS and HIPS. Used in metallic effect monocoats for teletronics.
VSC 6254w/40WA	40	Water	70 - 200	8.0 - 9.0	60	45	Mainly suitable in combinations with alkyd emulsions and hydroxy functional copolymer dispersions in order to improve the physical drying properties.
VSC 6265w/40WA	40	Water	200 - 1300	8.0 - 9.0		26	Excellent compatibility with alkyd resin emulsions. High shear stability. Extremely quick set and through drying. High yellowing and weather resistance. Recommended for quick drying anticorrosion primers and topcoats. Due to its good sandability, this grade is also suitable for wood primers.
VSC 6273w/44WA	44	Water	200 - 2400	8.0 - 9.1	85	13	High gloss, good outdoor durability and low yellowing. For use in combination with HMMM type amino crosslinkers such as CYMEL® 303 for bake enamel systems.
VSC 6276w/44WA	44	Water	200 - 2400	8.0 - 9.1	85	13	For use with reactive melamine resins such as CYMEL® 325 or CYMEL® 327 to give low yellowing industrial coating systems with good gloss.
VSC 6279w/45WA	45	Water	280 - 1600	7.7 - 8.5		25	APEO free. Excellent compatibility with alkyd resin emulsions. High shear stability. Fast drying. Excellent non yellowing properties and outdoor durability. Recommended for rapid drying anticorrosion primers and decorative finishes.
VSC 6286w/45WA	45	Water	30 - 600	6.5 - 7.8		11	Self-crosslinking. APEO free. Good sandability and excellent weathering and chemical resistances. Sole binder for non yellowing decorative paints, woodstains and industrial applications. Also suitable for wood furniture lacquers and floor sealers.
VSC 6295w/45WA	45	Water	25 - 120	6.5 - 7.8		30	Self-crosslinking. Fast drying and high hardness. Excellent sandability, chemcial resistance and abrasion resistance. To be used as sole binder for waterborne wood coatings.
VSC 6800w/47WA	47	Water	300 - 2000	8.0 - 9.0	100	11	For use in combination with reactive amino crosslinkers such as CYMEL® 327 for high gloss, non yellowing industrial bake systems.
SC 6807w/43WA	43	Water	400 - 2500	8.0 - 9.0	75	12	For use in combination with reactive amino crosslinkers such as CYMEL® 327 for high gloss, non yellowing industrial bake systems with excellent levelling properties.

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AFRICA
ASIA
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Allnex Global Operational Headquarters
Square Marie Curie 11
1070 Anderlecht – Brussels
BELGIUM

Allnex Americas Region Headquarters
9005 Westside Parkway
Alpharetta, GA 30009
USA

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www.allnex.com

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