EUROPE, MIDDLE EAST & AFRICA

Epoxy Curing Agents

Diluents | Accelerators | Adhesion Promoters | Specialty Resins | Additives

Amicure® Ancamide® Ancamine® Ancarez®

Anquamine® Curezol® Dicyanex®

Epilink® Epodil® Imicure® Nourybond®

EVONIK
Leading Beyond Chemistry

ABOUT US
EVONIK IS ONE OF THE WORLD LEADERS IN SPECIALTY CHEMICALS.

Evonik's Crosslinkers Business Line offers a broad range of products and competences for coatings and adhesives, as well as for high-performance elastomers and composites. Besides products based on isophorone chemistry, the portfolio contains a full range of high quality epoxy curing agents and modifiers for a wide range of applications, including marine and protective coatings, civil engineering, adhesives and composites.

CONTENT

FOOTNOTES

1 Used with standard, undiluted liquid Bisphenol-A-epoxy, EEW 182-192.

2 phr: parts curing agent by weight per 100 parts by weight of epoxy resin.

3 Gel time or pot life in 150g mass at 25°C for room temperature cures.

4 Beck-Koller thin film set timer (75 micron wet film) at 25°C phase III.

5 Heat distortion temperature (HDT) to ASTM D648.

a) System cured at ambient temperature for 7 days.

b) System cured 2 hours at 100°C.

6 AHEW = Equivalent Weight per active H.

PRODUCT CATEGORIES
OVERVIEW

Category	*Brand names*	*Chemical nature*	*Recommended application fields*
Ambient Cure Amine Curing Agents	Ancamide®	Modified polyamides; aliphatic amido amines	All major epoxy applications including solvent-borne and solvent-free systems
	Ancamine®	Modified polyamines	
Waterborne Amine Curing Agents	Anquamine®, Epilink®	Modified amines and polyamines	Protective and industrial concrete coatings Self-leveling and mortar floors and grouts Steel coatings Anti-corrosive primers
Amine Curing Agents for Heat-Cure	Ancamide®	Polyamides and amidoamines	Structural composites and adhesives
	Ancamine®	Aliphatic amines	
	VESTALITE® S	Modified Cycloaliphatic Amine	Epoxy SMC Components
Catalysts and Accelerators	Ancamine®, Anchor®, Amicure®, Curezol®, Imicure®	Modified aliphatic amines and catalysts such as dicyandiamide	Structural composites and adhesives
Specialty Resins, Diluents and Modifiers	Ancarez®, Epodil®	Mono- and difunctional glycidyl ethers	All major epoxy applications
Adhesion Promoters for PVC Plastisols	Nourybond®	Modified polyamides	Adhesion promoting additives for PVC plastisols

GENERAL PERFORMANCE
COMPARISON SUMMARY

WORKING EXAMPLES USED FOR ABOVE SIMPLISTIC COMPARISON:

Polyamide: Ancamide® 3030
Amidoamine: Ancamide® 506
Cycloaliphatic-A: Ancamine® 2759
Waterborne-S: Anquamine® 721
Waterborne-D: Anquamine® 100
Aliphatic-MB: Ancamine® 2432

KEY

A: Adduct-type
S: Solution
MB: Mannich-base type
D: Dispersion

Colour and Colour Stability	*Viscosity*	*Pot Life*	*Low Temperature Cure*	*Surface Film Appearance*	*Film Flexibility*	*Adhesion*	*Chemical Resistance*	
							Acids	*Solvents*
Excellent	***Low***	***Long***	***Good***	***Gloss***	***Excellent***	***Excellent***	***Excellent***	***Very good***
Waterborne - D	Waterborne - D	Waterborne - D	Aliphatic-MB	Waterborne - D	Polyamide	Waterborne - S	Cycloaliphatic-A	Aliphatic-MB
Cycloaliphatic-A	Cycloaliphatic-A	Amidoamine		Waterborne - S	Waterborne - D	Polyamide		
Waterborne - S					Amidoamine	Waterborne - D		
	Amidoamine	Polyamide	Waterborne - D	Cycloaliphatic-A		Amidoamine	Aliphatic-MB	Cycloaliphatic-A
		Waterborne - S	Waterborne - S		Waterborne - S			
Aliphatic-MB		Cycloaliphatic-A	Cycloaliphatic-A	Aliphatic-MB				Waterborne - D
					Cycloaliphatic-A	Aliphatic-MB	Waterborne - D	Waterborne - S
	Aliphatic-MB			Polyamide				
Amidoamine	Waterborne - S		Polyamide			Cycloaliphatic-A		Polyamide
	Polyamide	Aliphatic-MB		Amidoamine			Waterborne - S	
Polyamide			Amidoamine		Aliphatic-MB		Amidoamine	Amidoamine
							Polyamide	
Moderate	***High***	***Short***	***Poor***	***Grease***	***Fair***	***Moderate***	***Fair***	***Fair***

AMBIENT CURE AMINE CURING AGENTS

* With bisphenol-A/F diglycidylether blend, Epodil® 748 reactive diluent diluted, EEW 190-200, viscosity ca. 1,000 mPa.s

** Measured at 75 °C

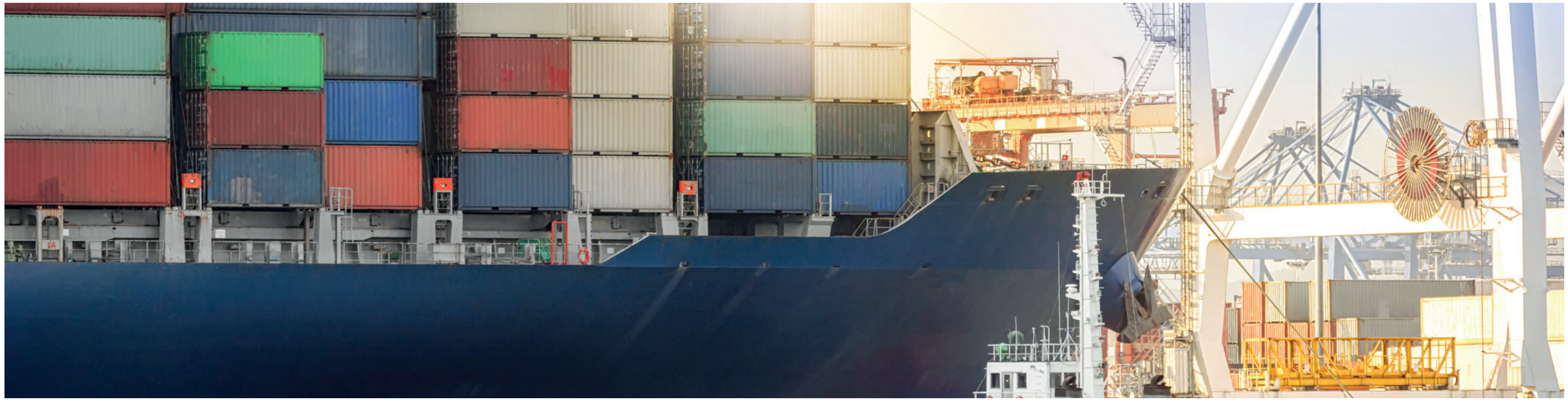
*** With bisphenol-A diglycidyl ether epoxy resin solution, EEW 500

Curing Agent	*Generic Type*	*Max Colour (Gardner)*	*Viscosity (mPa.s@25°C)*	*Solids (%)*	*Amine Value (mgKOH/g)*	*Specific Gravity (@25°C)*	*AHEW [6]*	*Loading [1, 2] (PHR)*	*Gel Time [3] (min@25°C)*	*Thin Film Set [4] Time (h)*	*Tg or HDT [5] (°C)*	*Benefits*	*Civil Engineering*	*Metal Coatings*	*Adhesives*
Ancamide® 260A	Polyamide	10	35-45 Pa.s	100	330-360	0.96	110	60	200	10	-	• Industry standard • Medium viscosity polyamide		X	X
Ancamide® 500	Aliphatic Amidoamine	11	200-450	100	420-480	0.95	90	50	180	12	45	• Low viscosity, long pot life curing agent that allow latitude with regards to mixing ratios • It is ideal for bonding old to new concrete, crack injection, electrical encapsulation and for use in general adhesives		X	
Ancamide® 503	Aliphatic Amidoamine	10	300-500	100	490-520	0.95	95	50	70	9	48	• Low viscosity, with moderately fast cure • Ideal for bonding old to new concrete, crack injection, electrical encapsulation and for use in general adhesives	X		
Ancamide® 506	Aliphatic Amidoamine	13	200 – 500	100	410 – 440	0.93	110	55	385	23	45	• Very long pot life and good through cure with low exotherm • In high-solids coatings, often mixed with cyclo-aliphatic curing agents		X	
Ancamide® 700B75	Polyamide Adduct	≤8	4000 – 8000	75	240	0.96	170	90	200 – 250	-	-	• Good adhesion and cure under adverse conditions of high humidity and low temperature • No induction time required. Product at 75% in butanol		X	
Ancamide® 910	Polyamide	6	6000	-	118	0.99	230	110 – 125	120	8	-	• Outstanding flexible/peel strength, excellent thermal shock resistance and good electrical properties • Lower viscosity than conventional polyamides		X	X
Ancamide® 2050	Polyamide Adduct	12	2000 – 5000	100	210 – 230	1.02	150	70 – 100	140	7 (70PHR)	-	• With liquid epoxy resin, it achieves high gloss, flexibility, hardness, and reverse impact resistance comparable to traditional solvent-cut polyamide/solid epoxy resin systems • No induction required • Non Critical Loading (70-100phr)		X	
Ancamide® 2353	Modified Polyamide	9	2800 – 3500	100	300 – 360	1.01	114	60	65	5	-	• Good low temperature cure • The best chemical resistance from our range of polyamides	X	X	
Ancamide® 2386	Modified Amidoamine	10	170 – 520	100	245 – 385	1.00	93	49	135	8	51	• Low bloom tendency, high gloss and good low temperature cure compared to other amidoamines • Commonly used in crack injection, primers and anti-corrosive primers	X	X	
Ancamide® 2426	Modified Amidoamine	8	500 – 750	100	360 – 400	0.96	93	49	285	13	46	• A plasticizer-free curing agent • Long pot life with excellent blush resistance • Excellent hardness development and good resistance to aqueous reagents • Good color stability		X	
Ancamide® 2443	Modified Amidoamine	9	30 – 100	100	510 – 560	0.97	86	45	250	11	56	• A very low-viscosity, plasticizer-free amidoamine with long pot life and good blush resistance • Develops good adhesion to concrete and poorly prepared substrates • Also ideal for use as a viscosity reducer or pot life extender for other systems		X	
Ancamide® 2445	Modified Polyamide	7	4500 – 6500	100	180 – 220	1.03	133	70 – 100	90	5	-	• With excellent flexibility, impact resistance and low temperature cure profile, ideal for use in high solids industrial maintenance and marine coatings • Also suitable for use in adhesives, putties, sealants and flexible cable jointing		X	

Curing Agent	*Generic Type*	*Max Colour (Gardner)*	*Viscosity (mPa.s@25°C)*	*Solids (%)*	*Amine Value (mgKOH/g)*	*Specific Gravity (@25°C)*	*AHEW*	*Loading (PHR)*	*Gel Time (min@25°C)*	*Thin Film Set Time (h)*	*Tg or HDT (°C)*	*Benefits*	*Civil Engineering*	*Metal Coatings*	*Adhesives*
Ancamide® 2573	Modified Polyamide	8	1200 – 2200	100	275 – 290	1.01	115	60	80	6	-	• This low viscosity curing agent exhibits fast cure at low temperatures and offers good adhesion onto damp concrete • Ideal as a surface tolerant primer and for use in industrial/ marine coatings	X	X	
Ancamide® 2634	Reactive Polyamide Solution	7	1700	80	335	0.96	90	50	>180	7	-	• Modified polyamide for cost effective protective coatings and interior pipeline solvent based systems • This grade offers good cure speed, high corrosion/ chemical and cathodic disbondment		X	
Ancamide® 2652	Modified Polyamide	8	2000	80	132	0.99	250	90 – 130	Depends on solvent blend	Depends on solvent blend	-	• Provides long overcoatability with epoxy and polyurethanes • Maintaining the performance properties from a polyamide		X	
Ancamide® 2769	Modified Polyamide	10	100 – 160	100	400 – 440	0.97	150	65 – 80	120	9	-	• Low viscosity • Plasticiser-free curative that delivers polyamide performance	X	X	
Ancamide® 3030	Polyamide	10	300 – 600**	100	370 – 410	0.96	95	50	80 – 140	10	-	• Industry standard • Well-balanced property profile • Low viscosity, moderate pot life and good adhesion		X	X
Ancamide® 3130	Polyamide	10	750 – 950**	100	300 – 340	0.97	95	50	>250	-	-	• Long pot life version of Ancamide® 3030 • Medium viscosity		X	X
Ancamide® 3200	Modified Po-lyamide Adduct	10	1000 – 2000	100	250 – 290	1.01	115	60	75 – 80	-	-	• Excellent adhesion to damp substrates, good corrosion protection, rapid property development	X	X	
Ancamide® 3419	Aliphatic Amidoamine	10	50 – 160	100	180 – 300	0.94	140	75	500 – 550	-	-	• Low viscosity amidoamine offering long pot life and high temperature performance. Raw materials are included on the KTW positive list		X	X
Ancamide® 3444	Modified Po-lyamide Adduct	10	500 – 1500	100	280 – 330	1.03	115	60	40 – 50	-	-	• Excellent adhesion to damp substrates, good corrosion protection, rapid property development	X	X	
Ancamide® 3622	Polyamide Adduct	10	4000 – 12000	70	140 – 175	0.96	340	50***	500 – 1000	-	-	• Recommended for use in marine and industrial maintenance coatings, the product requires no induction time and cure is unaffected by humidity up to 70%		X	
Ancamine® 2759	Modified Cycloaliphatic Polyamine Adduct	2	250 – 400	100	290 – 320	1.04	95	50	20 – 25	4	-	• Balance of fast cure speed, high resistance to carbamation and waterspotting • Also offering high chemical resistance	X		
Ancamine® 2760	Modified Cycloaliphatic Polyamine Adduct	2	300 – 600	100	235 – 275	1.02	115	60	50 – 60	7	-	• Ambient temperature curing agent providing an excellent balance of properties in terms of handling, cure speed and UV durability	X	X	
Ancamine® 3456	Modified Polyamine	6	500 – 1500	100	160 – 190	0.97	250	125 – 135	35	8	-	• Flexible curative for use in adhesives, coatings and floorings • Free from benzyl alcohol, alkyl phenols and bisphenol A	X	X	
Ancamine® 1618	Modified Cycloaliphatic Amine Adduct	2	300 – 600	100	260 – 285	1.03	115	60	40	7	46	• Good color and color stability • Produces high-gloss, non-blushing films with good chemical resistance	X	X	
Ancamine® 1769	Modified Adduct	4	600 – 900	100	975	1.01	48	25	24	4	53 – 99	• Designed for use in potting, adhesives, gel-coats, small and heavily filled castings • Offering low vapour pressure, low shrinkage and reduced skin irritation	X		X
Ancamine® 2165	Modified Aliphatic Amine	2	20	100	690 – 720	1.04	50	25	50	8	-	• An ultra-low-viscosity modified aliphatic amine designed for use with diluted liquid epoxy resins in crack injection, concrete impregnation, and patch repair mortars	X		

Curing Agent	*Generic Type*	*Max Colour (Gardner)*	*Viscosity (mPa.s@25°C)*	*Solids (%)*	*Amine Value (mgKOH/g)*	*Specific Gravity (@25°C)*	*AHEW*	*Loading (PHR)*	*Gel Time (min@25°C)*	*Thin Film Set Time (h)*	*Tg or HDT (°C)*	*Benefits*	*Civil Engineering*	*Metal Coatings*	*Adhesives*
Ancamine® 2280	Modified Polycycloa-liphatic Amine	13	360 – 700	100	230 – 260	1.08	110	58	50	7	50	• Offers high chemical resistance similar to some aromatic systems • Ideal for industrial chemical resistant flooring and secondary containment	X	X	
Ancamine® 2410	Isolated Adduct	3	20500	100	444 – 480	1.17	85.5	45	-	-	-	• An isolated adduct with low odour and low free amine content, for use in FDA compliant coatings, tank linings and other chemical resistant systems; offers both fast dry speeds and good chemical resistance • Due to its high viscosity this curing agent is commonly used as a co-curative or in its solvented form		X	
Ancamine® 2422	Modified Amine	3	2000 – 2500	100	665 – 690	1.12	49	26	-	-	-	• A high functional phenol free aliphatic amine imparting good working time with multi-functional / novolac epoxy resins • Provide high chemical resistance against most aggressive reagents making it ideal for tank linings and secondary containment • This product requires plasticisation or heat cure to achieve full properties		X	
Ancamine® 2432	Modified Aliphatic Amine	4	200 – 400	100	350 – 380	1.10	88	46	27	2	55	• Outstanding resistance to a wide range of chemicals • A fast-curing amine with good working life • Rapid development of properties at low temperature • Phenol-free and low viscosity	X	X	
Ancamine® 2519	Modified Cycloaliphatic Amine Adduct	2	100 – 300	100	300 – 330	1.01	95	50	23	4	45	• A low viscosity curing agent which exhibits good carbam-ation resistance at temperatures down to 10˚C • It can be used to formulate high solids coatings, self leve-ling and screed floors with good all round performance	X	X	
Ancamine® 2609W	Mannich Base	5	300 – 600	100	360 – 420	1.01	75	40	15	2	-	• Low viscosity Mannich base curing agent that is moisture tolerant • Suitable for potable water and food contact coatings	X	X	
Ancamine® 2672	Modified Polycycloa-liphatic Amine	5	100 – 300	100	280 – 340	1.06	95	50	30	5	48	• Provides good low temperature reactivity, low viscosity and high acid resistance, making it the ideal choice for chemically resistant primers, mortar floors and tank linings	X	X	
Ancamine® 2686	Modified Polycycloa-liphatic Amine	12	100 – 400	100	300 – 350	1.02	95	50	30-35	4	45	• Ideally used in cost-effective primers and grouts • The product delivers high mechanical build, rapid cure and is suitable for lower temperature use	X		
Ancamine® 2692	Modified Polycycloa-liphatic Amine	4	100 – 400	100	300 – 350	1.02	95	50	35	4	50	• Balance of high mechanical build, rapid cure and lower temperature use • Positioned for primer and non-colour sensitive coatings	X		
Ancamine® 2712M	Modified Polyamine	7	350 – 650	100	500 – 560	1.00	95	50 *	30 – 35*	7 *	-	• Balance of fast cure speed, high resistance to carbamation and waterspotting, while also offering high mechanical and low emissions properties • Can be used for anti-corrosion primers	X	X	
Ancamine® 2719	Mannich Base	14	300 – 500	100	340 – 380	1.03	75	40	20	3	-	• Nonyl- and p-tert-butyl phenol free aliphatic polyamine Mannich base curing agent • Suitable for potable water and food contact coatings	X	X	
Ancamine® 2726	Modified Cy-cloaliphatic Po-lyamine Adduct	2	300 – 600	100	240 – 290	1.03	115	50 – 60	40 – 50	8	-	• The product offers an excellent balance of properties for use in protective primers and coating onto metal and con-crete substrates		X	
Ancamine® 2728	Modified Aliphatic Po-lyamine Adduct	7	1000 – 2500	59 – 61	250 – 290	1.02	233	80 – 120	95	5	-	• Fast cure under adverse conditions of high humidity and low temperature		X	

Curing Agent	*Generic Type*	*Max Colour (Gardner)*	*Viscosity (mPa.s@25°C)*	*Solids (%)*	*Amine Value (mgKOH/g)*	*Specific Gravity (@25°C)*	*AHEW*	*Loading (PHR)*	*Gel Time (min@25°C)*	*Thin Film Set Time (h)*	*Tg or HDT (°C)*	*Benefits*	*Civil Engineering*	*Metal Coatings*	*Adhesives*
Ancamine® 2739	Modified Polyamine	3	350-650	100	525-575	1.00	95	45 – 50 *	70 – 90 * @ 23°C	9 *	-	• Free of alkyl-substituted phenols, facilitating in low volatile organic component coating and flooring formulations and allows the use in emission compliant systems • Fast cure and development of properties at ambient and low temperature • High resistance to carbamation and water-spotting	X	X	
Ancamine® 2802	Modified Polyamine Adduct	3	450 – 650	100	410 – 475	1.02	87	45 – 50	35 – 40	10	-	• Ambient temperature curing agent with excellent UV durability and can be used in low emission coatings	X		
Ancamine® 2806	Modified Cycloaliphatic Polyamine Adduct	2	30 – 100	100	310 – 340	1.00	76	40	100 – 120	12	-	• Ambient temperature curative to enhance pot life of cycloaliphatic amine or for use in warmer climate conditions	X		
Ancamine® 2878	Modified Polyamine	5	1000 – 2000	100	235 – 275	1.09	130	65 – 70	12	2	-	• Free of alkyl-substituted phenols and provides rapid and excellent property development when cured at both ambient and at low temperature conditions (5 °C)	X	X	
Ancamine® 2914 UF	Modified Polyamine	5	300 – 2000	100	485 – 525	1.08	95	50	8 (20 g)	-	50 – 65	• Very fast curing agent for electronics, structural and general purpose adhesives • Alternative to Mercaptan curing agent, reduced yellowing • Low viscosity, zero VOC and phenol-free			X
Ancamine® K54	Tertiary Amine	6	120 – 250	100	610 – 635	0.98	-	1 – 5	-	-	-	• Industry standard accelerator for Marine, Protective Coating and Flooring markets • Provides effective acceleration of cure at ambient and low temperature with use level of 1-5 PHR	X	X	X
EDA Adduct 870-XB-50	Epoxy EDA isolated Adduct Solution in Butanol/ Xylene	5	1500 – 4000	50	76 – 104	0.99	370	80 – 100	-	-	-	• Isolated amine adduct with very low odour, free-amine content, and irritation potential • Non-yellowing, bloom-free films. Improved cure under adverse conditions without induction. Good water resistance		X	



WATERBORNE AMINE CURING AGENTS

* Loading (PHR) for Anquamine® 419 has been calculated when used in combination with a solid epoxy resin dispersion such as Ancarez® AR-555.

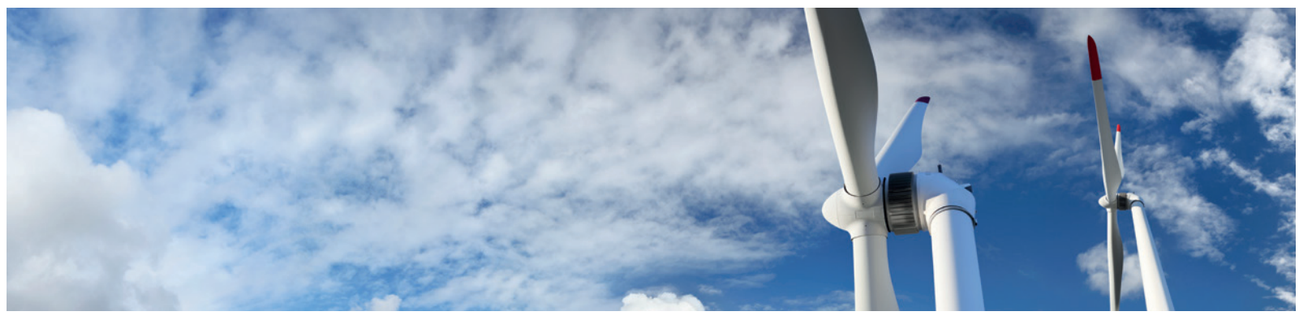
Curing Agent	*Generic Type*	*Max Colour (Gardner)*	*Viscosity (Pa.s@25°C)*	*Solids (%)*	*Amine Value (mgKOH/g)*	*Specific Gravity (@25°C)*	*AHEW [4]*	*Loading [1,2] (PHR)*	*Pot Life [3] (Hour)*	*Benefits*	*Civil Engineering*	*Metal Coatings*
Anquamine® 100	Aqueous Dispersion of Modified Amine Adduct	Dispersion	0.2	53 – 57	100	1.05	350	180	6	• Provides 6 – 8 hours pot life with liquid epoxy resins • Addresses the typically short pot life of 1 – 2 hours from current two component, water-based systems • Extremely low viscosity, low color, and good retention of color upon UV exposure	X	
Anquamine® 287	Aqueous Solution of Modified Amine Adduct	12	0.4 – 1	49 – 51	155 – 175	1.08	240	125	1	• Mannich base adduct specifically developed for concrete primer applications and cement-based systems • Primers exhibit fast drying time, quick return to service, zero-VOC • The product easily mixes with water and resin, can be brushed, rolled or spray applied	X	
Anquamine® 401	Aqueous Solution of Modified Amine Adduct	12	25 – 40	69 – 71	240 – 260	1.09	166	60 – 90	1 – 1.5	• A high solids, rapid curing hardener that can be used with both liquid epoxy resin and solid epoxy resin dispersions for concrete/metal coatings and primers • Anquamine® 401 can also be used for ECC (epoxy cement concrete)	X	X
Anquamine® 419	Aqueous Solution of Modified Amine Adduct	7	8 – 12	59 – 61	150 – 190	1.08	284	20 – 32*	4 – 6	• Designed for use with solid epoxy resin dispersions to give fast dry times, and excellent corrosion and humidity resistance • Exhibits good gloss and good gloss retention • Excellent adhesion to steel makes it an ideal product for metal primers		X
Anquamine® 721	Aqueous Solution of Modified Amine Adduct	5	25 – 45	48 – 52	150 – 190	1.08	300	140 – 180	2 – 3	• Specifically developed for cost effective concrete floor coatings at up to 300 micron applied film thickness • It easily emulsifies standard liquid epoxy resins, offers excellent adhesion to damp conrete and has universal pigment acceptance	X	
Anquamine® 728	Aqueous Solution of Modified Amine Adduct	5	5 – 15	53 – 57	160 – 220	1.07	250	125 – 130 34*	1 – 2	• Rapid dry speed at ambient and low temperatures • Excellent adhesion to damp concrete and resistance to carbamation • Excellent aesthetics as determined by UV durability, gloss and pigment acceptance over pot life	X	
Anquamine® 735	Aqueous Solution of Modified Amine Adduct	4	20	53 – 57	175	1.08	200	100	1	• Designed for cost-effective high film build concrete coatings • Particularly self-levelling systems of 1 – 3 mm film thickness	X	
Epilink® 360	Aqueous Solution of Modified Polyamide	16	30 – 50	49 – 51	150 – 190	1.05	240	100 – 150	1	• Cost-effective primers with moderate cure speed and excellent adhesion • May be used with co-solvent for additional viscosity dilution	X	
Epilink® 701	Aqueous Emulsion of Modified Polyamine Adduct	Emulsion	5 – 10	53 – 57	130 – 165	1.08	300	140 – 170	2 – 4	• Fast film drying and cure with liquid epoxy • Excellent anti-corrosive and flash rust resistance • Low temperature cure down to 5°C • Water vapour permeability	X	X

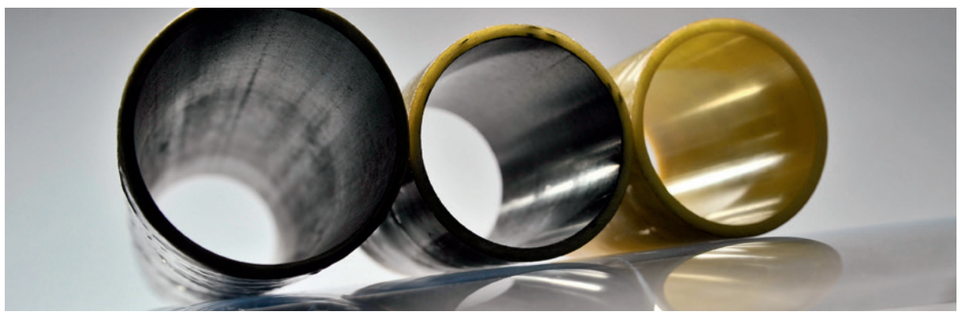
AMINE CURING AGENTS FOR HEAT-CURE

* Measured at 75 °C

Curing Agent	*Chemical nature*	*Appearance*	*Max Colour (Gardner)*	*Viscosity (mPa.s@25°C)*	*Amine Value (mgKOH/g)*	*Specific Gravity (@25°C)*	*AHEW*	*Use Level (PHR)*	*Gel Time (minutes)*	*Tg or HDT(°C)*	*Benefits*	*Composites*	*Adhesives*
Ancamide® 261A	Polyamide	Liquid	7	30.000 – 50.000	320 – 350	0.96	120	65	75	-	• Suitable for coatings and adhesives applications • Offers high adhesion and good colour stability		X
Ancamide® 2781	Polyamide	Liquid	12	80 – 120	230 – 270	0.92	104	55	400 – 500	50 – 60	• Low viscosity hardener • Offers a longer working time than traditional amidoamines • Recommended for use in CIPP, electronics and industrial electrical applications	X	
Ancamide® 2798	Polyamide	Liquid	10	100 – 200	300 – 350	0.93	86	46	130 – 150	55 – 65	• Offers low viscosity and enhanced reactivity along with moderate pot life and low exotherm • Suitable for casting, wet lay-up laminating, and filament winding • Raw materials are listed on positive list for coatings in drinking water (KTW)	X	
Ancamide® 3030	Polyamide	Liquid	10	300 – 600*	370 – 410	0.96	95	50	80 – 140	-	• General purpose polyamide for liquid epoxy resins • Offers low viscosity, moderate pot life and good adhesion		X
Ancamide® 3130	Polyamide	Liquid	10	750 – 950*	300 – 340	0.97	95	50	>250	-	• Long pot life version of Ancamide® 3030 • Medium viscosity • Improved temperature resistance		X
Ancamide® 500	Aliphatic Amidoamine	Liquid	11	200 – 450	420 – 480	0.95	90	50	180	45	• Offers lower viscosity compared to polyamides • Exhibits long pot life and non-critical loading	X	X
Ancamide® 506	Aliphatic Amidoamine	Liquid	13	200 – 500	410 – 440	0.93	110	55	385	45	• Offers longest pot life and lowest viscosity of amidoamines • Very low exotherm; -non-critical loading • Suitable for casting and wet lay-up laminating	X	X
Ancamide® 910	Polyamide	Liquid	6	6000	118	0.99	230	110 – 125	120	25	• Offers outstanding flexibility, peel strength and thermal shock resistance • Exhibits lower viscosity than standard polyamides • Suitable for general purpose applications, especially two-component adhesives		X
Ancamine® 1769	Modified Amine	Liquid	4	600 – 900	975	1.01	48	25	24	99	• Modified polyamine derived from triethylenetetramine • Minimized skin irritation potential due to hydroxylation • Excellent chemical resistance • Good mechanical properties	X	X
Ancamine® 1922A	Polyetheramine	Liquid	1	10	507	1.0	55	29	57	48	• Offers very low viscosity • Gives excellent toughness and thermal shock resistance • Suitable for structural adhesives and composite binders		X

Curing Agent	*Chemical nature*	*Appearance*	*Max Colour (Gardner)*	*Viscosity (mPa.s@25°C)*	*Amine Value (mgKOH/g)*	*Specific Gravity (@25°C)*	*AHEW*	*Use Level (PHR)*	*Gel Time (minutes)*	*Tg or HDT(°C)*	*Benefits*	*Composites*	*Adhesives*
Ancamine® R 215	Modified Cycloaliphatic Amine	Liquid	1	14	655 – 665	0.92	42.5	23.5	190	150	• Solution for composite reinforced bars for construction applications • Low viscosity and high reactivity for high speed processing • Outstanding alkali and chemical resistance and excellent mechanical performance	X	
Ancamine® 2167	Polycycloaliphatic Amine	Liquid	3	210	520	0.98	53	28	210	161	• Offers good impact resistance, fracture toughness and excellent thermal and chemical resistance • Suitable industrial composite applications	X	
Ancamine® 2264	Polycycloaliphatic Amine	Liquid	9	2600	520	1.00	54	29	195	162	• Ideal alternative to aromatic diamines • Offers low viscosity and long pot life at moderate temperatures • Excellent mechanical properties and high heat resistance • Suitable for filament winding, laminating, casting and tooling	X	
Ancamine® 2422	Aliphatic Amine	Liquid	5	1500 – 2500	660 – 675	1.12	49	26	-	-	• High functionality designed for use in two package epoxy formulations • Excellent chemical resistance and pot life	X	
Ancamine® 2919	Modified Amine	Liquid	2	15	500 – 550	0.94	42	24	520	100	• Low viscosity for excellent impregnation • Good processing by long pot life • Recommended for manufacture of pressure vessels	X	X
Ancamine® 2927	Alipahtic Amine	Liquid	12	100 – 220	230 – 270	1.02	26	15	46h	65	• Leads to low viscosity and good balance of long latency and reactivity • Recommended for use in cured-in-place-pipe and composites applications	X	
Ancamine® 3456	Modified Polyamine	Liquid	6	500 – 1500	160 – 190	0.97	250	125 – 135	35	-	• Offers excellent flexibility • Suitable for fast curing		X
VESTALITE® S 101	Modified Cycloaliphatic Amine	Liquid	3	20	670 – 710	0.91	49.6	26.1	340	120	• Low initial viscosity during compounding for excellent fiber wetting and high mechanical properties • Offers high storage stability in B stage at 23°C and curing in 4 min at 150 °C • Designed for epoxy SMC applications	X	
VESTALITE® S 102	Modified Cycloaliphatic Amine	Liquid	3	10	690 – 730	0.91	46.2	25.4	360	120	• Low initial viscosity during compounding for excellent fiber wetting and high mechanical properties • Offers high storage stability in B stage at 23°C and curing in 3 min at 150 °C • Designed for epoxy SMC applications	X	

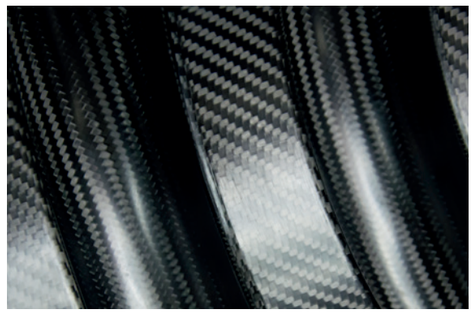




DICYANDIAMIDE, CATALYSTS & ACCELERATORS

* 30 min at 180°C
** 30 min at 150°C
*** 4h at 140°C

Curing Agent	*Generic Type*	*Appearance*	*Melting Point (°C)*	*Amine Value (mgKOH/g)*	*Use Level (sole)*	*DSC Activation Temperat. (sole) (°C)*	*Tg or HDT (sole) (°C)*	*Latency (months @40°C)*	*Benefits*	*Composites*	*Adhesives*
Amicure® CG1200G	Dicyandiamide	White Powder	207 –211	-	4 – 15	165	121 *	>6	• Particle size of 90% <30 microns with 1.5% flow aid • Recommended application fields: powder coatings, pre-pregs, adhesives and laminates	X	X
Amicure® CG 1400F	Dicyandiamide	White Powder	207 – 211	-	4 – 15	165	121*	>6	• Particle size of 90% <10 microns with 3.5% flow aid • Finest particle size available for maximum reactivity	X	X
Amicure® DBU-E	Catalyst	Light Yellow Liquid	-	-	1 – 5	95	-	>24 (20°C)	• Diazabicycloundecene • Highly effiecient accelerator suitable for phenolic novolacs, epoxy anhydride systems and other epoxies	X	
Amicure® UR2T	Urea	White Powder	182 – 190	-	0.5 – 3.0	141	-	>24 (20°C)	• 1,1'-(4 methyl-m-phenylene) bis (3,3-dimethyl) urea • Substitute for chlorophenyl ureas • Combines excellent latency at ambient temperature with rapid heat cure • Accelerator for dicyandiamide cured epoxy resins	X	X
Ancamine® 2014AS	Modified Aliphatic Amine	White Powder	96	180 – 190	25 – 30	75	110**	>3	• Sole curing agent or accelerator for latent amine curing agents (use level 2 – 7) • Moderate reactivity and high shelf life • Excellent adhesion to metals and plastics	X	X
Ancamine® 2014FG	Modified Aliphatic Amine	White Powder	96	180 – 190	25 – 30	75	110**	1	• Higher reactivity than Ancamine® 2014AS- Effective accelerator at moderate cure tmeperature (80 – 100°C) • Improved adhesion strength	X	X
Ancamine® 2337S	Modified Aliphatic Amine	Light Yellow Powder	63 – 78	260	45	70	70	> 6 (20°C)	• Excellent low temperature reactivity above 70°C • Rapid development of green strength • Suitable for 1k adhesives and hot-melt prepregs	X	X
Ancamine® 2441	Modified Aliphatic Amine	White Powder	124 – 135	210 – 250	20	100	114	>3	• Sole curing agent or accelerator for latent curing agents • Improved adhesion strength • High Tg		
Ancamine® 2442	Modified Aliphatic Amine	White Powder	100 – 110	95 – 135	20	93	112	>3	• Sole curing agent or accelerator for latent curing agents • Improved adhesion strength • High Tg		
Ancamine® K54	Catalyst	Amber Liquid	-	610 – 635	1 – 15	-	-	>24 (20°C)	• 2,4,6-Tri (dimethylaminomethyl) phenol • Act as epoxy homopolymeriztion catalysts • Suitable for epoxy resins cured with a wide variety of hardener types • Application in adhesives and high performance composites	X	X



Curing Agent	*Generic Type*	*Appearance*	*Melting Point (°C)*	*Amine Value (mgKOH/g)*	*Use Level (sole)*	*DSC Activation Temperat. (sole) (°C)*	*Tg or HDT (sole) (°C)*	*Latency (months @40°C)*	*Benefits*	*Composites*	*Adhesives*
Anchor® 1040	Modified Amine Complex of BF3	Orange-red Liquid, viscosity 20 Pa.s	-	-	7 – 12	100	130 ***	6 –10 weeks	• Chemically modified amine complex of boron trifluoride • Good solubility in liquid epoxy resins • Long pot life	X	
Anchor® 1115	Modified Amine Complex of BF3	Dark Liquid, viscosity 1.7 Pa.s	-	-	5 – 10	75	140 ***	6 –10 weeks	• Chemically modified amine complex of boron trifluoride • Lower activation temperature • Long pot life	X	
Catalyst 1786B	Catalyst	Amber Liquid	-	-	1 – 4	-	-	-	• P-toluenesulphonate salt of 2-amino-2-methyl-1-propanol • 50wt% solution in butanol • Recommended application fields: white goods, OEM, drum and pail coatings	X	X
Curezol® 2MZ Azine 10µm	Micronised Solid Imidazole	Pale Yellow Powder	248 – 258	-	6 – 8	145	156 **	45 days	• Very long latency • High heat distortion temperature • Suitable as sole curing agents or to accelerate Dicy / anhydride formulations	X	X
Imicure® EMI-24	Liquid Imidazole	Pale Yellow Liquid	-	-	1 – 4	95	156 **	9 hours	• High reactivity • Medium viscosity • Suitable as sole curing agents or to accelerate Dicy / anhydrides	X	X

SPECIALTY RESINS, DILUENTS AND MODIFIERS

* Theoretical, as supplied. When EEW 1300 is assumed, the best overall results are obtained in the range of 0.8:1 to 1.2:1 (epoxy:amine) stoichiometry.

Curing Agent	*Generic Type*	*Max Colour (Gardner)*	*Viscosity (Pa.s@25°C)*	*Solids (%)*	*Specific Gravity (@25°C)*	*Epoxy Equivalent Weight (EEW)*	*Free ECH Content (PPM)*	*Hydrolizable Chlorine (%)*	*Moisture Content (%)*	*Benefits*	*Civil Engineering*	*Metal Coatings*	*Composites*
Ancarez® AR-555	Water-based Solid Epoxy Resin Dispersion	Dispersion	150 – 300	55	1.09	550 *	-	-	-	• Zero-VOC, novel, low-viscosity, solid epoxy resin dispersion (supplied at 55% solids) • May be used with products such as our Anquamine® 419, Anquamine® 401 and Anquamine® 100 for rapid cure water based systems • It is ideal for concrete primers/coatings, industrial maintenance primers/top coats	X	X	
Epodil® 748	Alkyl (C12–C14) Glycidyl Ether	1	5 – 20	100	0.89	275 – 300	10 max	0.1 max	0.1 max	• General-purpose diluent • Low toxicity and low vapor pressure • Slows reactivity • Good viscosity reduction • Improves flexibility and adhesion to nonpolar surfaces	X	X	X
Epodil® 750	1-4 Butanediol Digylycidyl Ether	1	15 – 20	100	1.11	120 – 130	10 max	0.1 max	0.1 max	• Widely used in the civil engineering and composite sectors • Its combination of dilution profile and low vapour pressure make it the preferred choice	X	X	X
Epodil® LV5	Hydrocarbon Resin	<2	50	100	1.02	-	-	<5ppm	0,01%	• A chemically-inert, low-viscosity, liquid hydrocarbon resin • Acts as a surface tension reducer, as a pigment wetting aid, and as an adhesion promoter	X	X	

ADHESION PROMOTERS FOR PVC PLASTISOLS

Adhesion Promoter	*Generic Type*	*Appearance*	*Colour (Gardner)*	*Amine Value (mgKOH/g)*	*Viscosity (Pa.s@25°C)*	*Use Level (PHR)*	*Typical Cure Schedule*	*Benefits*
Nourybond® 272	Modified Polyamide	Liquid	10	185 – 200	15 – 35	1 – 4	30 min@130°C	• General purpose adhesion promoter • Provides adhesion to a wide variety of automotive electrodeposition primers • Suitable for underbody coatings and non-visible seam sealers
Nourybond® 276	Modified Polyamide	Liquid	10	110 – 130	8 – 28	1 – 2	30 min@120°C	• Allows low temperature cure (120°C) • Offers excellent rheological properties, high strength and superior colour stability • Suitable for anti-chip primers, visible seam sealers and low bake PVC plastisols • First choice for (ultra) low density plastisols
Nourybond® 301	Modified Polyamide	Liquid	12	380 – 400	1 – 1.5@75°C	0.5 – 2	30 min@130°C	• Free of plasticizer (100% solid) • Improves coatability of PVC plastisol
Nourybond® 316	Modified Polyamide	Liquid	14	260 – 310	1 – 2 @ 75°C	0.5 – 2	30 min@130°C	• Highly effective adhesion promoter with low usage level • Suitable for underbody coating and sealer, non visible seam sealers and anti-chip primers • Non-phthalate plasticizer
Nourybond® 350	Modified Polyamide	Liquid	10	130 – 170	0.5 – 2 @ 75°C	1 – 3	30 min@130°C	• Offer good sag resistance • Good rheological properties allow for broad applications • Suitable for underbody coating and sealer and non visible seam sealer • Non-phthalate plasticizer
Nourybond® 356	Polyamidoamide	Liquid	12	185 – 200	1 – 4.5	0.5 – 2	30 min@130°C	• Offer good sag resistance • Low viscosity • Suitable for underbody coating and sealer and non visible seam sealer • Non-phthalate plasticizer
Nourybond® 368	Modified Polyamide	Liquid	12	225 – 245	2 – 8	0.5 – 2	30 min@130°C	• Good rheological properties allow for broad application field • Non-phthalate plasticizer

DEFINITIONS & CALCULATIONS

Amine Value The measurement by means of acid/base titration of the amine nitrogen content in a curing agent. Amine value is expressed in units of mg of KOH equivalent to the basic nitrogen content in a 1g sample (mg KOH/g).

Pot Life The 'working time' that mixed resin and curing agent exhibits.

Carbamation The surface defect of a coating that can occur when curing at too high a humidity or too low a temperature. It is the reaction of carbon dioxide in the air with amine.

EEW Epoxide Equivalent Weight.

AHEW Amine Hydrogen Equivalent Weight.

Part A Epoxy resin component. Part B Curing Agent component.

PHR Parts per Hundred of Resin (100g)

Calculating the quantity of curing agent required to cure 100g of epoxy resin (PHR):

$$\frac{\text{Amine Hydrogen Equivalent Weight (AHEW)}}{\text{Epoxy Equivalent Weight (EEW)}} \times 100 = \text{PHR}$$

Calculating the Amine Hydrogen Equivalent Weight for a blend of curing agents:

$$\frac{\text{Total Weight of Curing Agent (g)}}{\left(\frac{\text{Weight (g) of Curing Agent1}}{\text{AHEW1}}\right) + \left(\frac{\text{Weight (g) of Curing Agent2}}{\text{AHEW2}}\right)} = \text{AHEW 1+2 (curing agent blend)}$$

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