

CYTEC

Surface Specialties



Two
Component
Epoxy Amine
Systems

About Us

Cytec Surface Specialties manufactures and markets a broad range of technically innovative products for applications in key coating markets such as industrial, wood and paper, graphics, adhesives and opto-electronics.

A leader in environmentally-friendly coating technologies, we are a total solution provider – offering an extensive range of high-performance products, supported to a high level of technical expertise.

Product Range

Cytec Surface Specialties offers a comprehensive product range, including many cutting-edge technologies that have earned leading positions in their target markets. These are divided into three main groups:

- Liquid Coating Resins and Additives
- Radcure and Powder Resins
- Adhesives, Bonding and Formulations

Cytec Surface Specialties leads in

- UV/EB curable systems
- Powder coating resins
- Waterborne alkyds
- Waterborne epoxies
- Waterborne resin systems in primer surfacer, base and clear coats for auto OEMs

Global Presence

Headquartered in Brussels (Belgium), Cytec Surface Specialties operates ISO-certified manufacturing facilities and distribution centers worldwide.

Our ten technology centers – located in Europe, Asia and North America – offer customers ready access to world-class technical support and applications research.

We have sales offices in more than 30 countries across the globe, to provide responsive service – focused on helping customers identify and capture their emerging opportunities in the marketplace.

Cytec Industries Inc.

Cytec Industries is a specialty chemicals and materials technology company with sales of about \$3 billion. Its growth strategies are based on developing technologically advanced customer solutions for global markets including: aerospace, coatings, mining, plastics and water treatment.



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4 Epoxy resins, water-reducible

BECKOPOX	Form of delivery % solid resin solvent	Epoxy-equivalent weight DIN 53188 g/mol		Dynamic viscosity, DIN EN ISO 3219			Properties and use
		f.o.d.	solid resin	mPa.s, 23 °C	shear rates ⁻¹	at % solid resin	
<i>EP 122 w</i>	100	–	190–200	700–900	500	f.o.d.	Water-emulsifiable, reactive diluted A/F-liquid resin, non-crystallizing. Primers/coatings on mineral substrates, adhesives and water washable jointing-compounds for tiles, hydraulic epoxy mortars (ECC).
<i>EP 147 w</i>	100	–	188–200	9000–13000	100 cylinder	f.o.d.	Water-emulsifiable A/F-liquid resin, non-crystallizing, contains co-reacting emulsifiers. For primers/coatings on mineral and metallic substrates, adhesives and water washable jointing-compounds for tiles. Higher chemical resistance and hardness than <i>BECKOPOX EP 122 w</i> . Partner for epoxy-solid resin dispersions.
<i>EP 384 w</i>	53 WAMP	920–1040	490–550	400–750	100 cylinder	f.o.d.	Solid resin (type 1) dispersion, also in combination with liquid resins for water-reducible, fast drying coatings for mineral and metallic substrates.
<i>EP 385 w</i>	56 WA	850–930	480–520	450–1100	100 cylinder	f.o.d.	Internally flexibilized solid resin (type 1) dispersion, e.g. for water-reducible fast drying anti-corrosion primers and coatings for plastics. Addition of <i>BECKOPOX EP 147 w</i> increases hardness and chemical resistance.
<i>VEP 2381 w</i> <i>VEP 2382 w</i>	55 WA	850–960	470–530	7000–12000	10	f.o.d.	Solid resin (type 1) dispersions, highly viscous form of delivery. Well suited for thick layer applications and single coats due to its shear thinning properties.
<i>VEP 2390 w</i>	75 MP	620–690	464–520	3000–6000	25	f.o.d.	Internally flexibilized solid resin (type 1) diluted in organic solvents, water-emulsifiable. For coatings for metallic substrates. Well suited for processing of water-sensitive pigments like zinc dust.

Abbreviations for solvents

IB	= Isobutanol
MP	= Methoxypropanol
WA	= Water
X	= Xylene
→	= Form of delivery (f.o.d) reduced with
f.o.d.	= Form of delivery

BECKOPOX	Form of delivery % solid resin solvent	H-equivalent weight g/mol		pot life at 23 °C	Classification	Dynamic viscosity, DIN EN ISO 3219			Properties and use
		f.o.d.	solid matter			mPa.s, 23 °C	shear rate s ⁻¹	concentration	
EH 613w	80 WA	145	116	ca. 1,5 h ¹	C	23000–31000	100	f.o.d.	Aliphatic polyamine adduct for water-reducible coatings, preferred on metallic substrates, e.g. with BECKOPOX EP 385w for anticorrosion primers.
EH 623w	80 WA	200	160	2–3 h ²	Xi, N	12000–21000	25	f.o.d.	Aliphatic polyamine adduct for water-reducible coatings on mineral and metallic substrates, as well as for hydraulic epoxy mortars (ECC).
EH 659w	50 WA	210–220	105–110	4–5 h ²	Xi	17000–27000	25	f.o.d.	Polyamidoamine for water-reducible coatings, on mineral and metallic substrates.
VEH 2106w	80 WA	142	114	ca. 1,5 h ¹	C	14000–25000	10	f.o.d.	Aliphatic polyamine adduct for water-reducible coatings on metallic or mineral substrates. Visible end of pot life with BECKOPOX EP 385w or liquid epoxy resins.
VEH 2177w	80 WA	175	140	2–2,5 h ¹	C	7000–12000	100	f.o.d.	Aliphatic polyamine adduct for water-reducible coatings on mineral and metallic substrates. Better temperature and shear stability during the dispersing of pigments than BECKOPOX EH 623w .
VEH 2188w	55 WA	380	215	1,5–2 h ³	Xi	6000–14000	10	f.o.d.	Hydrophobic aliphatic polyamine adduct for waterborne metal coatings, e.g. with BECKOPOX EP 384w or VEP 2381w for anticorrosive primers or single coats.
VEH 2849w	80 WA	134	107	ca. 1,5 h ¹	C	18000–25000	25	f.o.d.	Aliphatic polyamine adduct for water-reducible coatings preferred on metallic substrates, e.g. with BECKOPOX EP 385w for anticorrosion primers. Better temperature and shear stability during the dispersing of pigments than BECKOPOX EH 613w .

1 = with **BECKOPOX EP 385w/56WA**, 20–23 °C

2 = with **BECKOPOX EP 122w**, 20–23 °C

3 = with **BECKOPOX EP 384w/53WAMP**, 20–23 °C

6 Epoxy resins solid and solutions

BECKOPOX	Form of delivery % solid resin solvent	Epoxy-equivalent weight DIN 53188 g/mol		Dynamic viscosity, DIN EN ISO 3219				Properties and use
		f.o.d.	solid resin	mPa.s, 23 °C	mPa.s, 25 °C	shear rate s ⁻¹	at % solid resin	
EP 301	75 X	600–700	450–525	7800–13000	–	100	f.o.d.	Solid resin (type 1) for solvent-borne coatings and anticorrosion primers, additional binder for stoving paints, e.g. based on saturated polyesters or acrylates to achieve better chemical resistance and adhesion. Average hydroxyl number: ca. 120
EP 304	100	–	875–1000	650–1000	600–900	500	→ BDG 40	Solid resin (type 4) for powder coatings, stoving paints and primers with high chemical resistance. Average hydroxyl number: ca. 190
EP 307	100	–	1400–1900	1400–2500	–	100	→ BDG 40	Solid resin (type 7), especially for stoving applications in can coatings (with phenolic or melamine resins). With polyisocyanates for cold curing two-component coatings, e.g. for solvent-resistant coatings. Average hydroxyl number: ca. 200
EP 309	100	–	2400–3500	3400–12000	3000–10000	100	→ BDG 40	Solid resin (type 9), especially for stoving applications like high-deformable can coatings (with phenolic or melamine resins). With polyisocyanates for cold curing two-component coatings, e.g. for solvent-resistant coatings. Average hydroxyl number: ca. 225



BECKOPOX	Form of delivery % solid resin	Epoxy-equivalent weight DIN 53188 g/mol		Dynamic viscosity, DIN EN ISO 3219				Properties and use
		f.o.d.	solid resin	mPa.s, 23 °C	mPa.s, 25 °C	shear rate s ⁻¹	at % solid resin	
EP 116	100	–	175–185	7800–11000	6000–8000	100	f.o.d.	A/F-liquid resin, non-crystallizing. For highly chemical-resistant coatings, trowelling compounds, adhesives, casting and laminating compounds.
EP 117	100	–	175–185	800–1200	700–1000	500	f.o.d.	Reactive diluted A/F-liquid resins, non-crystallizing. For chemical-resistant coatings, concrete injections, trowelling compounds, adhesives, casting and laminating compounds.
EP 128	100	–	190–200	900–1300	700–1000	500	f.o.d.	Reactive diluted A-liquid resin. For chemical-resistant coatings, concrete injections, trowelling, casting, and laminating compounds, hydraulic epoxy mortars (ECC).
EP 140	100	–	180–190	11000–15500	–	25	f.o.d.	A-liquid resin for highly chemical-resistant coatings, adhesives, trowelling, casting and laminating compounds.
EP 151	100	–	400–500	25000–38000	20000–30000	25 cylinder	f.o.d.	Internally plasticized A-liquid resin. Compounding resin for unmodified epoxy resins in coatings, adhesives and casting compounds.
VEP 2085	100	–	300–360 ¹	2000–4500	–	25	f.o.d.	Urethane modified, flexibilized A-liquid resin with remarkable higher values in tear-tests compared to BECKOPOX VEP 2865 . For self-leveling, crack-bridging coatings and applications where low temperature elasticity is required. Further applications: casting moulds, impact resistant tools.
VEP 2865	100	–	230–300	1400–2100	1200–1800	100	f.o.d.	Flexibilized A-liquid resin, extremely low viscous for self-leveling, crack-bridging coatings, flexible even at temperatures far below freezing point. Further applications: adhesives, impact-resistant tools and casting moulds. Preferred hardener: BECKOPOX EH 610 .

1 = technical determination

Reactive diluents for epoxy resins

BECKOPOX	Form of delivery % solid resin	Epoxy-equivalent weight DIN 53188 g/mol	Dynamic viscosity, DIN EN ISO 3219			Properties and use
		f.o.d.	mPa.s, 23 °C	shear rate s ⁻¹	at % solid resin	
EP 075	100	320–360	40–70	500	f.o.d.	Flexibilizing reactive diluent with neutral odour, for unmodified epoxy resins. (polypropylene glycol diglycidyl ether).
EP 080	100	185–195	< 7	500 cylinder	f.o.d.	Reactive diluent, relatively low vapour pressure. Strong viscosity-reducing effect, for unmodified epoxy resins (2-ethyl hexyl glycidyl ether).

8 Epoxy hardeners, polyamines

BECKOPOX	Form of delivery % solid matter	H-equivalent weight g/mol		Start of gelation 23 °C	Classification	Dynamic viscosity, DIN EN ISO 3219			Properties and use
		f.o.d.	solid matter			mPa.s, 23 °C	shear rate s ⁻¹	concentration	
<i>EH 610</i>	100	–	95	5–10 min ¹	C	230–360	500	f.o.d.	Aliphatic polyamine, preferred use in sealing compounds and adhesives with <i>BECKOPOX VEP 2865</i> for crack-bridging coatings.
<i>EH 611</i>	100	–	190	5–10 min ¹	C, N	4700–10000	100	f.o.d.	Aliphatic polyamine, flexibilized. Preferred use in sealing compounds and adhesives.

1 = with *BECKOPOX EP 140*, 100g-batch, 20–23 °C



BECKOPOX	Form of delivery % solid matter solvent	H-equivalent weight g/mol		Start of gelation 23 °C	Classification	Dynamic viscosity, DIN EN ISO 3219			Properties and use
		f.o.d.	solid matter			mPa.s, 23 °C	shear rate s ⁻¹	concentration	
EH 606	100	–	100	6–7 h ¹	C	3000–4400	100	f.o.d.	Aliphatic polyamine adduct, systems with very long processing time, plasticizing effect, partner for highly reactive hardeners, very low reaction temperature.
EH 625	100	–	73	20–25 min ¹	C	900–1400	500	f.o.d.	Aliphatic polyamine adduct, free of phenol and phenolic derivatives, curing at temperatures as low as 5 °C, good chemical resistance. Coatings, adhesives, laminates.
EH 631	55 XIB	345	190	ca. 5 h ²	Xn	3600–6000	100	f.o.d.	Aliphatic polyamine adduct, with BECKOPOX EP 301 for solvent-borne chemical-resistant coatings.
EH 633	100	–	113	30–40 min ¹	Xn	4700–6000	100	f.o.d.	Cycloaliphatic polyamine adduct for relatively yellowing-resistant, chemical-resistant coatings. Preferred for airless (hot) application in thick layers.
EH 637	100	–	100	45–60 min ¹	C	90–120	500	f.o.d.	Cycloaliphatic polyamine adduct for relatively yellowing-resistant coatings, casting compounds and laminates.

1 = with **BECKOPOX EP 140**, 100 g-batch, 20–23 °C

2 = with **BECKOPOX EP 301/75 X**, 100 g-batch, 20–23 °C



BECKOPOX	Form of delivery % solid matter	H-equivalent weight g/mol		Start of gelation 23 °C	Classification	Dynamic viscosity, DIN EN ISO 3219			Properties and use
		f.o.d.	solid matter			mPa.s, 23 °C	shear rate s ⁻¹	concentration	
EH 614	100	–	54	10–20 min ¹	T	3000–5500	100	f.o.d.	Mannich base (aliphatic polyamine), curing at temperatures as low as 5 °C. Coatings of high resistance against inorganic acids and organic solvents.
EH 621	100	–	61	15–25 min ¹	T	1700–2300	100	f.o.d.	Mannich base (aliphatic polyamine), curing at temperatures as low as 5 °C. Hydrophilic adjusted, especially suited for damp substrates. Coatings, adhesives, concrete injections.
EH 624	100	–	80	20–25 min ¹	C	2300–3800	100	f.o.d.	Mannich base (aliphatic polyamine), free-phenol-content < 5 %, curing temperatures as low as 5 °C, good chemical resistance. Coatings, adhesives, laminates. Accelerator for low reactive hardeners.
EH 628	100	–	75	ca. 25 min ¹	C, N	480–720	100	f.o.d.	Mannich base (aliphatic polyamine), contains alkyl phenol. Chemical-resistant coatings on mineral and metallic substrates, epoxy mortars and trowelling compounds.
EH 629	100	–	70	15–20 min ¹	T	2500–4400	100	f.o.d.	Mannich base (aliphatic polyamine), curing at temperatures as low as 5 °C, highly chemical-resistant. Coatings, adhesives, laminates, accelerator for low reactive hardeners.
VEH 2626	100	–	73	ca. 15 min ²	C	1100–1700	500	f.o.d.	Mannich base (aliphatic polyamine), free of phenol and alkylphenols, curing at temperatures as low as 0 °C. Coatings with good chemical resistance. (No pale shades possible).

1 = with BECKOPOX EP 140, 100 g-batch, 20–23 °C

2 = with BECKOPOX EP 116, 100 g-batch, 20–23 °C



BECKOPOX	Form of delivery % solid matter solvent	H-equivalent weight g/mol		Start of gelation 23 °C	Classification	Dynamic viscosity, DIN EN ISO 3219			Properties and use
		f.o.d.	solid matter			mPa.s, 23 °C	shear rate s ⁻¹	concentration	
EH 651	70 X	255	178	ca. 8 h ¹	Xn	550–1700	500	f.o.d.	Polyamidoamine, in combination with BECKOPOX EP 301 for solvent-borne primers and topcoats with long processing time.
EH 654	100	–	100	2–3 h ²	Xi	17000–25000	25	f.o.d.	Polyamidoamine, in combination with liquid epoxy resins for adhesives, trowelling and casting compounds.
EH 655	100	–	100	1–2 h ²	Xi	1700–3000	100	f.o.d.	Polyamidoamine, low-viscous. In combination with liquid epoxy resins for adhesives, trowelling and casting compounds, cable-sealing compounds.
EH 661	100	–	39	60–80 min ²	C	230–360	500	f.o.d.	Polyamidoamine, modified. For highly filled epoxy mortar or epoxy concrete, adhesives, water washable jointing compounds.
VEH 2662	100	–	51	80–120 min ²	C, N	1000–1700	25	f.o.d.	Polyamidoamine, modified. For highly filled epoxy mortar or epoxy concrete, adhesives and waterwashable jointing compounds.
EH 663	100	–	49	ca. 90 min ³	C, N	900–1400	500	f.o.d.	Polyamidoamine, modified. Properties like BECKOPOX EH 661 , but develops less intensiv odour during application.

1 = with **BECKOPOX EP 301/75 X**, 100 g-batch, 20–23 °C
 2 = with **BECKOPOX EP 140**, 100 g-batch, 20–23 °C
 3 = with **BECKOPOX EP 122 w**, 20–23 °C



Survey of the quantities of hardeners required per 100 g *BECKOPOX* epoxy resin

Resins Hardeners	EP 075	EP 080	EP 116	EP 117	EP 122w	EP 128	EP 140	EP 147w	EP 151
	(340)	(190)	(180)	(180)	(195)	(195)	(185)	(194)	(450)
<i>EH 606</i> (100)	29,4	52,6	55,6	55,6	51,3	51,3	54,1	51,5	22,2
<i>EH 610</i> (95)	27,9	14,7	52,8	52,8	48,7	48,7	51,4	49,0	21,1
<i>EH 611</i> (190)	55,9	29,4	105,6	105,6	97,4	97,4	102,7	97,9	42,2
<i>EH 613w</i> (145)	42,6	22,4	80,6	80,6	74,4	74,4	78,4	74,7	32,2
<i>EH 614</i> (54)	15,9	8,4	30,0	30,0	27,7	27,7	29,2	27,8	12,0
<i>EH 621</i> (61)	17,9	9,4	33,9	33,9	31,3	31,3	33,0	31,4	13,6
<i>EH 623w</i> (200)	58,8	31,0	111,1	111,1	102,6	102,6	108,1	103,1	44,4
<i>EH 624</i> (80)	23,5	12,4	44,4	44,4	41,0	41,0	43,2	41,2	17,8
<i>EH 625</i> (73)	21,5	11,3	40,6	40,6	37,4	37,4	39,5	37,6	16,2
<i>EH 628</i> (75)	22,1	11,6	41,7	41,7	38,5	38,5	40,5	38,7	16,7
<i>EH 629</i> (70)	20,6	10,8	38,9	38,9	35,9	35,9	37,8	36,1	15,6
<i>EH 631</i> (345)	101,5	53,4	191,7	191,7	176,9	176,9	186,5	177,8	76,7
<i>EH 633</i> (113)	33,2	17,5	62,8	62,8	57,9	57,9	61,1	58,2	25,1
<i>EH 637</i> (100)	29,4	15,5	55,6	55,6	51,3	51,3	54,1	51,5	22,2
<i>EH 651</i> (255)	75,0	39,5	141,7	141,7	130,8	130,8	137,8	131,4	56,7
<i>EH 654</i> (100)	29,4	15,5	55,6	55,6	51,3	51,3	54,1	51,5	22,2
<i>EH 655</i> (100)	29,4	15,5	55,6	55,6	51,3	51,3	54,1	51,5	22,2
<i>EH 659w</i> (215)	63,2	33,3	119,4	119,4	110,3	110,3	116,2	110,8	47,8
<i>EH 661</i> (39)	11,5	6,0	21,7	21,7	20,0	20,0	21,1	20,1	8,7
<i>EH 663</i> (49)	14,4	7,6	27,2	27,2	25,1	25,1	26,5	25,3	10,9
<i>VEH 2106w</i> (142)	41,8	22,0	78,9	78,9	72,8	72,8	76,8	73,2	31,6
<i>VEH 2177w</i> (175)	51,5	27,1	97,2	97,2	89,7	89,7	94,6	90,2	38,9
<i>VEH 2188w</i> (380)	111,8	58,8	211,1	211,1	194,9	194,9	205,4	195,9	84,4
<i>VEH 2626</i> (73)	21,5	11,3	40,6	40,6	37,4	37,4	39,5	37,6	16,2
<i>VEH 2662</i> (51)	15,0	7,9	28,3	28,3	26,2	26,2	27,6	26,3	11,3
<i>VEH 2849w</i> (134)	39,4	20,7	74,4	74,4	68,7	68,7	72,4	69,1	29,8

() = Mean Epoxy Equivalent – resin (Form of delivery, f.o.d.)

() = H-equivalent weight – hardener (Form of delivery, f.o.d.)

100 x H-equivalent weight (f.o.d.)

————— = g hardener (f.o.d.) for 100g resin (f.o.d.)

Mean Epoxy Equivalent (f.o.d.)

EP 301 (650)	EP 304 (937)	EP 307 (1650)	EP 309 (2950)	EP 384 w (980)	EP 385 w (890)	VEP 238 w (905)	VEP 2382 w (905)	VEP 2390 w (655)	VEP 2085 (330)	VEP 2865 (265)
15,4	10,7	6,1	3,4	10,2	11,2	11,0	11,0	15,3	30,3	37,7
14,6	10,1	5,8	3,2	9,7	10,7	10,5	10,5	14,5	28,8	35,8
29,2	20,3	11,5	6,4	19,4	21,3	21,0	21,0	29,0	57,6	71,7
22,3	15,5	8,8	4,9	14,8	16,3	16,0	16,0	22,1	43,9	54,7
8,3	5,8	3,3	1,8	5,5	6,1	6,0	6,0	8,2	16,4	20,4
9,4	6,5	3,7	2,1	6,2	6,9	6,7	6,7	9,3	18,5	23,0
30,8	21,3	12,1	6,8	20,4	22,5	22,1	22,1	30,5	60,6	75,5
12,3	8,5	4,8	2,7	8,2	9,0	8,8	8,8	12,2	24,2	30,2
11,2	7,8	4,4	2,5	7,4	8,2	8,1	8,1	11,1	22,1	27,5
11,5	8,0	4,5	2,5	7,7	8,4	8,3	8,3	11,5	22,7	28,3
10,8	7,5	4,2	2,4	7,1	7,9	7,7	7,7	10,7	21,2	26,4
53,1	36,8	20,9	11,7	35,2	38,8	38,1	38,1	52,7	104,5	130,2
17,4	12,1	6,8	3,8	11,5	12,7	12,5	12,5	17,3	34,2	42,6
15,4	10,7	6,1	3,4	10,2	11,2	11,0	11,0	15,3	30,3	37,7
39,2	27,2	15,5	8,6	26,0	28,7	28,2	28,2	38,9	77,3	96,2
15,4	10,7	6,1	3,4	10,2	11,2	11,0	11,0	15,3	30,3	37,7
15,4	10,7	6,1	3,4	10,2	11,2	11,0	11,0	15,3	30,3	37,7
33,1	22,9	13,0	7,3	21,9	24,2	23,8	23,8	32,8	65,2	81,1
6,0	4,2	2,4	1,3	4,0	4,4	4,3	4,3	6,0	11,8	14,7
7,5	5,2	3,0	1,7	5,0	5,5	5,4	5,4	7,5	14,8	18,5
21,8	15,2	8,6	4,8	14,5	16,0	15,7	15,7	21,7	43,0	53,6
26,9	18,7	10,6	5,9	17,9	19,7	19,3	19,3	26,7	53,0	66,0
58,5	40,6	23,0	12,9	38,8	42,7	42,0	42,0	58,0	115,2	143,4
11,2	7,8	4,4	2,5	7,4	8,2	8,1	8,1	11,1	22,1	27,5
7,8	5,4	3,1	1,7	5,2	5,7	5,6	5,6	7,8	15,5	19,2
20,6	14,3	8,1	4,5	13,7	15,1	14,8	14,8	20,5	40,6	50,6

Epoxy resins

General properties

BECKOPOX	liquid	solid	solvent-free	solvent-containing (w = water)	aqueous emulsion	non-modified	reactive diluent	reactive diluted epoxy resin	plasticizing	water emulsifiable	non crystallizing	crosslinking with isocyanates
EP 075	●		●			●	●		●			
EP 080	●		●			●	●					
EP 116	●		●			●					●	
EP 117	●		●					●			●	
EP 122 w	●		●					●		●	●	
EP 128	●		●					●				
EP 140	●		●			●						
EP 147 w	●		●							●	●	
EP 151	●		●						●			
EP 301		●		●		●						●
EP 304		●	●			●						●
EP 307		●	●			●						●
EP 309		●	●			●						●
EP 384 w				w	●	●				●		
EP 385 w				w	●				●	●		
VEP 2085	●		●						●			
VEP 2381 w				w	●					●		
VEP 2382 w				w	●					●		
VEP 2390 w				●					●	●		
VEP 2865	●		●						●		●	

BECKOPOX	solvent-free coatings	solvent-containing coatings	water-dilutable coatings	corrosion protection/steel structures	priming/impregnating/intercoat bonding	concrete paints	flooring compounds	trowelling compounds	epoxy resins mortars	hydraulic EP mortars (ECC)	concrete injections	tile adhesives/grouting compounds	adhesives	casting-resin compounds	laminating-resin compounds	stoving paints	can and coil coating	powder coatings/esterifications
EP 075	●	●	●	●	●	●		●	●		●		●	●				
EP 080	●			●		●			●		●		●	●				
EP 116	●		●	●	●	●	●	●	●				●	●	●			
EP 117	●			●	●	●	●	●	●		●		●	●	●			
EP 122 w	●		●	●	●	●	●	●	●	●		●						
EP 128	●		●	●	●	●	●	●	●	●	●	●	●	●	●			
EP 140	●			●	●	●	●	●	●				●	●	●			
EP 147 w	●		●	●	●	●	●	●	●	●		●						
EP 151	●			●	●	●		●	●				●	●	●			
EP 301		●		●	●	●							●			●		
EP 304		●		●									●			●	●	●
EP 307		●		●												●	●	
EP 309		●		●												●	●	
EP 384 w			●	●	●	●												
EP 385 w			●	●	●	●												
VEP 2085	●				●	●	●	●				●	●	●	●			
VEP 2381 w			●	●	●	●												
VEP 2382 w			●	●	●	●												
VEP 2390 w			●	●	●													
VEP 2865	●				●	●	●	●				●	●	●	●			

Epoxy hardeners

General properties

BECKOPOX	solvent-free	solvent-containing (w=water)	short pot life (RT)	medium pot life (RT)	long pot life (RT)	low-temperature curing down to 5 °C	curing under water	water emulsifiable	non-tacky surface in high rel. humidity	plasticizing	good adhesion to metal	good adhesion to moist concrete	relatively good resistance to yellowing	chemical resistance to inorganic acids	chemical resistance to organic acids	chemical resistance to alkaline solutions	chemical resistance to solvents
Polyamines																	
<i>EH 606</i>	●				●				●	●	●		●			●	
<i>EH 610</i>	●		●			●					●		●			●	
<i>EH 611</i>	●		●			●				●	●		●			●	
<i>EH 613 w</i>		w	●					●	●		●	●	●			●	
<i>EH 614</i>	●			●		●					●			●		●	●
<i>EH 621</i>	●			●		●	●		●		●	●		●	●	●	●
<i>EH 623 w</i>		w		●				●	●		●	●	●			●	
<i>EH 624</i>	●			●		●	●		●		●			●	●	●	●
<i>EH 625</i>	●			●		●			●		●		●	●	●	●	●
<i>EH 628</i>	●			●		●			●		●			●	●	●	●
<i>EH 629</i>	●			●		●	●		●		●			●	●	●	●
<i>EH 631</i>		●			●						●		●			●	
<i>EH 633</i>	●			●					●		●		●	●	●	●	●
<i>EH 637</i>	●			●					●		●		●	●	●	●	
<i>VEH 2106 w</i>		w	●					●	●		●	●	●			●	
<i>VEH 2177 w</i>		w		●				●	●		●	●	●			●	
<i>VEH 2188 w</i>		w		●				●	●	●	●	●	●			●	
<i>VEH 2626</i>	●		●			●			●		●			●	●	●	
<i>VEH 2849 w</i>		w	●					●	●		●	●	●			●	
Polyamidoamines																	
<i>EH 651</i>	●	●			●				●	●	●					●	
<i>EH 654</i>	●			●						●	●					●	
<i>EH 655</i>	●			●						●	●					●	
<i>EH 659 w</i>		w			●			●	●	●	●	●				●	
<i>EH 661</i>	●			●				●		●	●	●		●		●	
<i>VEH 2662</i>	●			●				●		●	●	●		●		●	
<i>EH 663</i>	●			●				●		●	●	●		●		●	

BECKOPOX	highly chem.-resistant solv.-based paints	highly chem.-resistant solv.-free coatings	solv.-cont. primers and paints (w=water)	priming/impregnation/intercoat bonding	concrete paints	flooring compounds	epoxy-tar combinations	trowelling compounds	epoxy resin mortars	hydraulic epoxy mortars (ECC)	concrete injections	tile adhesives/grouting compounds	adhesives	casting-resin compounds	laminating-resin compounds
Polyamines															
EH 606								●						●	●
EH 610							●	●					●	●	●
EH 611							●	●					●	●	●
EH 613 w			w	●											
EH 614		●		●	●	●	●	●	●				●	●	●
EH 621		●		●	●	●	●	●	●		●		●		
EH 623 w			w	●	●					●					
EH 624		●		●	●	●	●	●	●		●		●	●	●
EH 625		●		●	●	●	●	●	●		●		●	●	●
EH 628		●		●	●	●	●	●	●		●		●	●	●
EH 629		●		●	●	●	●	●	●		●		●	●	●
EH 631	●		●	●	●		●						●		
EH 633		●			●	●	●						●		
EH 637					●	●	●	●	●					●	●
VEH 2106 w			w	●	●										
VEH 2177 w			w	●	●					●					
VEH 2188 w			w	●											
VEH 2626		●		●	●		●	●	●		●		●	●	●
VEH 2849 w			w	●											
Polyamidoamines															
EH 651			●	●	●		●						●		
EH 654					●			●	●				●	●	
EH 655						●		●	●				●	●	●
EH 659 w			w	●	●										
EH 661								●	●		●	●	●	●	
VEH 2662								●	●		●	●	●	●	
EH 663								●	●		●	●	●	●	

Technical properties

achieved by using various hardeners

Properties of *BECKOPOX EP 140* in cured state

Test method Curing at ambient temperature ¹	Test standard	Unit	<i>EH 610</i>
Tensile strength	DIN 53455	N/mm ²	70
Elongation at break	DIN 53455	%	2–3
Impact strength	DIN 53453	kJ/m ²	18
Flexural strength	DIN 53452	N/mm ²	100
Modulus of elasticity calculated from the flexure test	DIN 53457	N/mm ²	3700
Ball indentation hardness, 30 s	DIN 53456	N/mm ²	210
Dimensional stability under heat according to Martens	DIN 53458	°C	60
Surface resistance at 1000 volt	DIN 53482	Ω	10 ¹³
Volume resistivity	DIN 53482	Ω.cm	10 ¹⁵
Dielectric constant at 10 ⁶ Hz	DIN 53483	–	3,39
Dielectric loss factor at 10 ⁶ Hz	DIN 53483	–	0,039
Dielectric strength	DIN 53481	kV/mm	24
Tracking resistance	DIN 53480	-KC	600

Test method Curing at elevated temperature	Test standard	Unit	4,4'-Diaminodi-phenylsulfone DDS
Tensile strength	DIN 53455	N/mm ²	45
Elongation at break	DIN 53455	%	2–3
Impact strength	DIN 53453	kJ/m ²	20
Flexural strength	DIN 53452	N/mm ²	110
Modulus of elasticity, calculated from the flexure test	DIN 53457	N/mm ²	3700
Ball indentation hardness, 30 s	DIN 53456	N/mm ²	170
Dimensional stability under heat according to Martens	DIN 53458	°C	170
Surface resistance at 1000 volt	DIN 53482	Ω	10 ¹²
Volume resistivity	DIN 53482	Ω.cm	10 ¹⁵
Dielectric constant at 10 ⁶ Hz	DIN 53483	–	3,90
Dielectric loss factor at 10 ⁶ Hz	DIN 53483	–	0,060
Dielectric strength	DIN 53481	kV/mm	25
Tracking resistance	DIN 53480	-KC	600

1 = To ensure complete, reproducible curing for testing, the test specimens were post-cured for a further 2 hours at 100 °C with access of air after having been cured at room temperature.

2 = Hexachloroendomethylenetetrahydrophthalic anhydride

<i>EH 611</i>	<i>EH 614</i>	<i>EH 629</i>	<i>EH 654</i>	<i>EH 655</i>	Triethylene-tetramine
20	90	60	60	55	90
ca. 80	2–3	2–3	4–5	4–5	2–3
>40	15	18	30	25	20
–	140	140	90	120	140
–	3100	3300	2700	2500	3700
–	190	200	120	150	210
–	76	78	50	50	86
10 ¹³	10 ¹³	10 ¹³	10 ¹³	10 ¹³	10 ¹³
10 ¹⁵	10 ¹⁵	10 ¹⁵	10 ¹⁵	10 ¹⁵	10 ¹⁵
3,33	3,25	3,60	3,00	3,23	3,65
0,033	0,035	0,037	0,018	0,023	0,044
24	22	22	20	20	19
600	600	600	600	600	600

Hexahydro-phthalic-anhydride DMP 30	Methyl-hexahydro-phthalic-anhydride	Methylnadic-anhydride	Dodecenylnsuccinic-anhydride	HET-Acid ²	Bortrifluoride-hardener Anchor 1171
80	60	90	45	35	70
2–3	2–3	2–3	10–12	–	2–3
15	20	11	22	11	20
140	110	130	80	110	120
3800	3400	4000	–	3800	3100
190	170	210	–	200	160
110	100	140	60	140	92
10 ¹³	10 ¹³	10 ¹⁴	10 ¹⁴	10 ¹⁴	10 ¹³
10 ¹⁵	10 ¹⁵	10 ¹⁵	10 ¹⁵	10 ¹⁵	10 ¹⁵
3,25	3,41	3,45	2,80	2,90	3,76
0,016	0,030	0,021	0,015	0,019	0,043
25	25	25	20	20	25
600	600	600	600	600	600

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