EPIKURE™ Epoxy Curing Agents

At Momentive Specialty Chemicals Inc., no customer's problem is too big or too small for us to help solve. Say you need a resin system with a lower temperature cure? Just say how low. A resin system that cures underwater? No problem. Superior chemical resistance? Easy.

We can help solve these difficult problems because we offer one of the most complete lines of curing agents (and resins) available—and one of the broadest lines of resin systems for coatings. As an innovative leader in the chemical industry, we're committed to constantly improving and strengthening our unparalleled line of systems and solutions.

Our more than 60 years' experience and technical knowledge enables us to help you select from among our many resin systems to satisfy your specific formulation requirements. Our extensive product line also includes several high performance specialty curatives to meet your more difficult use requirements.

We have, for example, amine hardeners that are designed for low temperature cure, blush free film, surface tolerant tank linings, underwater cure, and MDA replacements. These products find application in end-uses such as marine, industrial maintenance, pipe linings, automotive refinishes, civil engineering, secondary containment, and numerous other coatings applications.

We're continuously working to satisfy the various performance needs of our customers. The curing agent technologies offered by Momentive Specialty Chemicals Inc. also enable our customers to tailor the performance of their formulations to meet the challenging demands of their customers, while satisfying regulatory requirements. And, as always, all of our products are backed with extensive technical expertise, customer service and support.

EPIKURE Curing Agent Advantages

EPIKURE™ Curing Agents provide advantages such as:

- Ease of handling and convenient mix ratios
- Improved cure system strength, flexibility and toughness
- Improved peel and impact strength
- Improved cured system chemical, solvent and water resistance
- Ability to alter the reactivity of the system
- Blush and sweat-out free films

At A Glance (continued)

The Formulator's Choice

As you can see, there are many curative choices available in the EPIKURE Curing Agent product line to achieve your desired performance. Each of these curing agents provides unique benefits for epoxy resin system formulators. Specific properties of our curing agents, and comments about each product's performance, can be found in the following tables. For additional information about any or all of these products, visit our website at **www.momentive.com/epoxy**

Solvent Coding System				
Letter Code	**Solvent Name**	**Abbr**	**Non HAPS**	**VOC Exempt**
A	Acetone		Yes	Yes
B	Methyl Ethyl Ketone	MEK	Yes	
C	Methyl Isobutyl Ketone	MIBK		
D	Diacetone Alcohol	DAA	Yes	
E	Isopropyl Alcohol	IPA	Yes	
F	n-Butyl Alcohol (Converting to Code “N”)	NBA	Yes	
G	n-Butyl Acetate	NBAC	Yes	
H	Propylene Glycol Monomethyl Ether	PGMME / PM	Yes	
I	iso-Butyl Alcohol		Yes	
J	Ethyl 3-Ethoxy Propionate	EEP		
K	t-Butyl Acetate	TBAC	Yes	Yes
L	Propylene Glycol Mono n-Butyl Ether	PGMnBE / PnB	Yes	
M	Ethylene Glycol Monobutyl Ether	EGMBE / EB	Yes	
N	n-Butyl Alcohol	NBA	Yes	
O	Methyl n-Amyl Ketone	MNAK	Yes	
P	n-Propyl Alcohol	NPA	Yes	
Q	Propylene Glycol Monomethyl Ether Acetate	PGMMEA / PMA	Yes	
R	Dimethyl Formamide	DMF		
S	Cyclohexanone		Yes	
T	Toluene			
U	Aromatic 100	A 100	< 5% HAPS	
V	Dipropylene Glycol Monomethyl Ether	DPGME	Yes	
W	Water		Yes	Yes
X	Xylene			
Y	Ethylene Glycol Monopropyl Ether	EGMPE / EP		

Table 1: Typical Properties of EPIKURE™ 8000 Series (Waterbornes)							
Product	**Chemical Type**	**Viscosity @ 25°C (P)**	**Color[1] (max)**	**Density (lb/gal)**	**Eq. Wt[2]**	**AMV[3]**	**Comments**
EPIKURE 6870-W-53	Amine Adduct Dispersion	10–110	—	9.2	220–240	235–265	NewGen™ water dispersion of a modified polyamide adduct supplied at 53% solids in water. Used in low VOC, non-HAPs coatings applications, primarily designed for corrosion protection.
EPIKURE 8290-Y-60	Water Reducible Amine Adduct	46–99	9	8.8	163	360–420	A water-reducible, high molecular weight amine adduct supplied at 60% solids in 2-Propoxyethanol. Designed for use in two-package, waterborne coatings systems exhibiting excellent chemical and corrosion resistance, as well as long-term water and humidity resistance over a variety of substrates.
EPIKURE 8535-W-50	Water Reducible Amine Adduct	63–148	12	8.8	102	373–453	Supplied at 50% solids in water designed for solvent-free, two-package epoxy coatings for light industrial maintenance and masonry coatings.
EPIKURE 8536-MY-60	Water Reducible Amine Adduct	23–47	12	8.3	324	110–130	Supplied at 60% solids a blend of co-solvents for low VOC, two-package, water-reducible epoxy coatings exhibiting good corrosion and chemical resistance for applications in industrial maintenance, industrial finishes, and masonry coatings.
EPIKURE 8537-WY-60	Water Reducible Amine Adduct	23–63	9	9.0	174	310–360	Supplied at 60% solids in water, 2-Propoxyethanol and Glacial Acetic Acid for low VOC, two-package, waterborne coatings systems exhibiting excellent chemical resistance for applications trade sale coatings, industrial maintenance and industrial finishes.
EPIKURE 8540-MU-60	Water Reducible Amine Adduct	23–46	12	8.2	324	110–130	Supplied in high flash point, low odor solvent system for use in waterborne coating applications.

1 Gardner Color Scale

2 Amount in grams required to react with one equivalent of epoxide, based on solids

3 Amine value reported in milligrams of KOH equivalent to basic nitrogen content of a one-gram sample, determined by acid-base titration

Table 2: Typical Properties of EPIKURE™ 3000 Series (Amidoamines)									
Product	**Chemical Type**	**Gel Time[1] @ 25°C (min)**	**Viscosity @ 25°C (cP)**	**Color[2] (max)**	**Density (lb/gal)**	**Eq. Wt[3]**	**PHR[4]**	**AMV[5]**	**Comments**
EPIKURE 3010	Polyamido amine	180	200–500	9	8.0	95	50	375–425	Applications include maintenance coatings, adhesives, tooling and potting. It has moderate pot life and good resin compatibility.
EPIKURE 3015	Polyamido amine	49	500–900	8	8.0	95	50	420–450	Applications include electrical encapsulants, adhesives and grouts.
EPIKURE 3030	Polyamido amine	125	300–600	9	7.9	95	50	400–425	Longer pot life version of EPIKURE 3015.
EPIKURE 3046	Polyamido amine	270	120–280	13	7.8	90	47	413–441	Long pot life, general purpose curing agent.
EPIKURE 3055	Polyamido amine	240[6]	150–300	13	7.9	90	48	449–473	Long pot life, general purpose curing agent. Applications include adhesives, FRP, electrical encapsulants, grouts, floor topping and repair compositions.
EPIKURE 3061	Polyamido amine	465	220–430	13	7.8	115	61	313–330	Very low reactivity curing agent for general purpose use, potting and mass casting applications.
EPIKURE 3072	Amidoamine Adduct	40	500–900	12	8.1	65	35	517–569	Applications include floor toppings, grouts and adhesives for bonding old concrete to freshly poured concrete. Provides superior adhesion to damp concrete.
EPIKURE 3075	Polyamido amine	80	250–500	9	8.0	95	50	450–470	Slightly longer pot life version of EPIKURE 3015.
EPIKURE 3090	Amidoamine Adduct	120	3,000–6,000	10	8.2	190	100	230–260	Low temperature cure on damp or underwater substrates. Used in coatings, mortars, grouts and adhesives. Blush resistant.

1 100 gram mass with EPON™ Resin 828

2 Gardner Color Scale

3 Equivalent Weight Amount in grams required to react with one equivalent of epoxide

4 Parts by weight of curing agent per 100 parts of epoxy (EEW 190)

5 Amine Value, milligrams of KOH equivalent to basic nitrogen content of a one-gram sample, determined by acid-base titration

6 One-pound mass with EPON Resin 828

Table 3: Typical Properties of EPIKURE™ 3100 Series (Polyamides)									
Product	**Chemical Type**	**Gel Time[1] @ 25°C (min)**	**Viscosity @ 25°C (P)**	**Color[2] (max)**	**Density (lb/gal)**	**Eq. Wt[3]**	**PHR[4]**	**AMV[5]**	**Comments**
EPIKURE 3100-ET-60	Polyamide Solution	1,080	10–18	9	7.6	525	100[7]	51–57	Reactive, high molecular weight polyamide solution (solvent: IPA / Toluene) for maintenance and marine coatings.
EPIKURE 3115	Polyamide	330	500–750[6]	9	8.1	156	82	230–246	High viscosity, long pot life. Provides toughness, flexibility and water resistance with a non-critical combining ratio.
EPIKURE 3115-E-73	Polyamide Solution	>720	23–36	9	7.6	156	54[7]	170–185	Long pot life polyamide solution (solvent: IPA). Provides toughness, flexibility and water resistance with a non-critical combining ratio.
EPIKURE 3115-X-70	Polyamide Solution	>720	9–23	9	7.8	156	54[7]	161–173	Long pot life polyamide solution (solvent: Xylene). Provides toughness, flexibility and water resistance with a non-critical combining ratio.
EPIKURE 3125	Polyamide	97	80–120[6]	9	8.1	127	54	330–360	Provides non-critical combining ratios, toughness, flexibility and water resistance for applications such as adhesives.
EPIKURE 3140	Polyamide	120	30–40[6]	9	8.1	95	50	360–390	Used for adhesives and extending pot life of highly reactive amines.
EPIKURE 3155	Modified Polyamide	82	30–60	9	8.2	133	70	200–220	For high solids/high build coatings in maintenance and marine. Also used in mastics and adhesives.
EPIKURE 3164	Polyamide	49	70–110	12	8.2	256	136	230–250	Provides exceptionally high elongation and toughness in epoxy systems. Flexibility retention over time.
EPIKURE 3175	Modified Polyamide	45	13–27	9	8.1	103	55	300–380	For high solids coatings. Offers rapid cure response, excellent chemical and solvent resistance.
EPIKURE 3180-F-75	Polyamide Adduct Solution	>720	45–90	10	8.0	163	64[7]	237–258	Polyamide adduct (solvent: n-BuOH) developed to be used with EPIKURE Curing Agent 3060 to meet U.S. Naval specification Mil-P-24441A (SH).
EPIKURE 3192	Polyamide	60	90 max	8	7.8	133	71	324–357	Thixotropic curing agent used for high build, non-sagging vertical applications, corrosion-resistant primers and topcoats for maintenance coatings.

1 100 gram mass with EPON™ Resin 828

2 Gardner Color Scale

3 Equivalent Weight Amount in grams required to react with one equivalent of epoxide

4 Parts by weight of curing agent per 100 parts of epoxy (EEW 190)

5 Amine Value, milligrams of KOH equivalent to basic nitrogen content of a one-gram sample, determined by acid-base titration

6 Measured @ 40°C

7 Parts by weight of curing agent per 100 parts of epoxy (EEW 525), based on solids

Table 4: Typical Properties of EPIKURE™ 3200 Series (Aliphatic Amines)									
Product	**Chemical Type**	**Gel Time[1] @ 25°C (min)**	**Viscosity @ 25°C (cP)**	**Color[2] (max)**	**Density (lb/gal)**	**Eq. Wt[3]**	**PHR[4]**	**AMV[5]**	**Comments**
EPIKURE 3200	Aliphatic Amine	19	20	200	8.2	43	22.7	1,275–1,325	Aminoethylpiperazine.
EPIKURE 3202	Aliphatic Amine	21	100 max	9[6]	8.2	37	19.5	1,225–1,525	Alternative to EPIKURE Curing Agents 3223 and 3234. Used in adhesives, grouts and tooling.
EPIKURE 3223	Aliphatic Amine	25	10	30	7.9	20.7	10.9	1,580–1,850	Diethylenetriamine.
EPIKURE 3230	Polyether amine	10 hrs	9	30	7.9	60	32	454–488	Low viscosity difunctional polyetheramine imparting good flexibility and impact resistance often used in composites.
EPIKURE 3233	Polyether amine	8 hrs	70	50	8.2	81	43	343–370	Low viscosity trifunctional polyetheramine. Good flexibility and impact resistance. Used in many applications.
EPIKURE 3234	Aliphatic Amine	30	25	50	8.2	24.5	12.9	1,410–1,460	Triethylenetetramine.
EPIKURE 3245	Aliphatic Amine	35	100	2[6]	8.3	27.2	14.3	1,290–1,375	Tetraethylenepentamine.

1 100 gram mass with EPON™ Resin 828

2 Platinum-Cobalt Color Scale

3 Equivalent Weight Amount in grams required to react with one equivalent of epoxide

4 Parts by weight of curing agent per 100 parts of epoxy (EEW 190)

5 Amine Value, milligrams of KOH equivalent to basic nitrogen content of a one-gram sample, determined by acid-base titration

6 Gardner Color Scale

Table 5: Typical Properties of EPIKURE™ 3200 Series (Modified Aliphatic Amines)									
Product	**Chemical Type**	**Gel Time[1] @ 25°C (min)**	**Viscosity @ 25°C (cP)**	**Color[1] (max)**	**Density (lb/Gal)**	**Eq. Wt[3]**	**PHR[4]**	**AMV[5]**	**Comments**
EPIKURE 3213	Amine Adduct Solution	300–1,080	435–630	4	8.2	200	50[8]	4.4–5.4 wt %	Convenient combining ratio with liquid epoxy and often used with higher molecular weight epoxies for chemical resistance.
EPIKURE 3251	Mannich Base Amine	14	400–700	5	8.3	76	40	350–390	Designed for low temperature, high humidity applications.
EPIKURE 3270	Modified Aliphatic Amine	6	4,000–7,000	2	8.1	142	75	313–337	High reactivity curing agent providing blush–free films. Applications include adhesives and a reactivity modifier for flooring and other structural applications.
EPIKURE 3271	Modified Aliphatic Amine	13	100–200	6	8.5	34	18	950–1,050	High reactivity applications include rapid setting adhesives, cable splicing compounds, tooling gel coats and low temperature cure applications.
EPIKURE 3273	Modified Aliphatic Amine	8[6]	1,200–2,000	6	8.1	90	48	420–480	High reactivity curing agent designed for adhesive applications, including traffic striping.
EPIKURE 3274	Modified Aliphatic Amine	135	40–60	1	7.9	72	40	305–325	Low color. Provides blush and sweat–out free films. Applications include glaze and high build coatings, FRP, decoupage, encapsulation and casting compounds.
EPIKURE 3277	Modified Aliphatic Amine	47	275	5	8.0	92	48	280–313	Provides blush and sweat-out free films for flooring and high build coatings. Accommodates application on damp surfaces. Can be modified for underwater cure capability.
EPIKURE 3282	Aliphatic Amine Adduct	15	2,900–4,900	6	8.9	38	20	761–809	High reactivity. Applications include tooling, gel coats, FRP and adhesives.
EPIKURE 3290	Aliphatic Amine Adduct	25	350–450	4	8.5	48	25	990–1,020	Useful for FRP, molding and flooring. Provides 98°C heat deflection temperature with EPON 828 and a heat cure.
EPIKURE 3292-FX-60	Aliphatic Amine Adduct	360[7]	2,300–3,600	7	8.5	140	74	390–420	Low temperature cure in n-Butanol / Xylene.
EPIKURE 3295	Aliphatic Amine Adduct	26	125–205	3	8.3	45	24	881–961	Applications include electrical, tooling and FRP applications.

1 100 gram mass with EPON™ Resin 828

2 Gardner Color Scale

3 Equivalent Weight Amount in grams required to react with one equivalent of epoxide

4 Parts by weight of curing agent per 100 parts of epoxy (EEW 190)

5 Amine Value, milligrams of KOH equivalent to basic nitrogen content of a one-gram sample, determined by acid-base titration

6 Additional gel times – 2.5 min with EPON 8111 & 11 min with EPON 8121

7 Dry to touch

8 Recommended concentration parts by weight of curing agent per 100 parts of epoxy (EEW 525), based on solids

Table 6: Typical Properties of EPIKURE™ 3300 Series (Cycloaliphatic Amines)									
Product	**Chemical Type**	**Gel Time[1] @ 25°C (min)**	**Viscosity @ 25°C (cP)**	**Color[2] (max)**	**Density (lb/gal)**	**Eq. Wt[3]**	**PHR[4]**	**AMV[5]**	**Comments**
EPIKURE 3300	Cyclo-aliphatic Amine	128	12–19	250[7]	7.7	42.6	22.7	630–670	IPDA (Isophorone Diamine) for use in ambient and heat cured epoxy systems. Provides high thermal and chemical resistance.
EPIKURE 3370	Cyclo-aliphatic Amine	25	85–145	1	8.3	72	38	384–407	Applications include industrial and chemical-resistant floor toppings, light colored casting and tank lining applications.
EPIKURE 3378	Cyclo-aliphatic Amine	23[6]	2,200–2,800	3	8.6	114	60	245–265	Fast set under low temperature and/or high humidity conditions. Useful for coatings and flooring applications.
EPIKURE 3380	Modified Cyclo-aliphatic Amine Adduct	50	200–400	1	8.5	114	60	260–280	Moderate reactivity with good working time. Applications include industrial and chemical-resistant flooring, glaze and sealer coatings, general purpose casting and encapsulating compounds.
EPIKURE 3381	Modified Cyclo-aliphatic Amine Adduct	35	50–100	1	8.3	95	50	290–360	Moderate reactivity with very low viscosity, low PHR. Applications include industrial and chemical-resistant floor coatings, general purpose casting and encapsulating compounds.
EPIKURE 3382	Modified Cyclo-aliphatic Amine Adduct	23	1,000–1,500	5	8.4	118	62	239–250	Provides very good blush, sweat-out and water-spot resistance, even when cured under high humidity. Applications include industrial and chemical-resistant floor coatings.
EPIKURE 3383	Modified Cyclo-aliphatic Amine Adduct	34	250–500	3	8.5	114	60	255–285	Superior film formation characteristics with good wetting. Designed for chemical-resistant flooring and glaze coats.
EPIKURE 3387	Modified Cyclo-aliphatic Amine Adduct	17	225–325	3	8.7	92	49	290–320	Fast reactivity low viscosity curing agent. Designed for value based flooring, casting and encapsulation applications.
EPIKURE 3388	Modified Cyclo-aliphatic Amine Adduct	47	375–475	1	8.6	113	60	260–285	Low color and viscosity curing agent with good chemical and amine blush resistance. Applications include chemically resistant tank and secondary containment linings, grouts, floorings and maintenance coatings.

1 100 gram mass with EPON™ Resin 828

2 Gardner Color Scale

3 Equivalent Weight Amount in grams required to react with one equivalent of epoxide

4 Parts by weight of curing agent per 100 parts of epoxy (EEW 190)

5 Amine Value, milligrams of KOH equivalent to basic nitrogen content of a one-gram sample, determined by acid-base titration

6 One-pound sample

7 APHA Color Scale

Table 7: Typical Properties of EPIKURE™ Accelerator									
Product	**Chemical Type**	**Gel Time[1] @ 25°C (min)**	**Viscosity @ 25°C (cP)**	**Color[2]**	**Density (lb/gal)**	**Eq. Wt[3]**	**PHR[4]**	**AMV[5]**	**Comments**
EPIKURE 3253	Tertiary Amine	38	180–380	6	8.1	N/A	10	575–625	Accelerator for amine cured epoxy systems and for epoxy and urethane polymerizations.

1 25 gram mass with EPON™ 828

2 Gardner Color Scale

3 Equivalent Weight Amount in grams required to react with one equivalent of epoxide

4 Parts by weight of curing agent per 100 parts of epoxy (EEW 190)

5 Amine Value, milligrams of KOH equivalent to basic nitrogen content of a one-gram sample, determined by acid-base titration

Table 8: Typical Properties of EPIKURE™ P-Series (Imidazole Adducts, Accelerated Dicyandiamides, and Linear Phenolics)								
Product	**Chemical Type**	**Melt Viscosity @ 150°C (cP)**	**Melt Point (°C)**	**Color[4] (Pt-Co) (max)**	**Density[1] (g/ml)**	**Eq. Wt[2]**	**Alkalinity[3] meq/g**	**Comments**
EPIKURE P-100	Imidazole Adduct	1,000–3,000	85–105	—	1.15	N/A	3.7–3.9	Epoxy imidazole adduct for curing powder coatings.
EPIKURE P-101	Imidazole Adduct	1,000–3,000	—	—	1.16	N/A	3.5–3.8	Finely powdered epoxy-imidazole adduct with a flow agent.
EPIKURE P-104	DICY Imidazole Adduct	N/A	—	—	1.26	N/A	1.7–2.1	Finely powdered, catalyzed dicyandiamide. Short gel time. Generally used in functional powder coatings.
EPIKURE P-108	DICY Imidazole Adduct	N/A	—	—	1.38	N/A	0.6–0.8	Finely powdered, catalyzed dicyandiamide. Longer gel time than P-104. Generally used in decorative powder coatings.
EPIKURE P-202	Phenolic	300–700	75–85[4]	100	1.18	240–270	0.23–0.26	Imidazole catalyzed, linear phenolic curing agent. Generally used in decorative powder coatings.

1 Powder Coating Institute Test Method #4

2 Equivalent Weight Amount in grams required to react with one equivalent of epoxide

3 Determination of Amine Nitrogen Content and Amine Number

4 40% by weight solution in MEK; Platinum – Cobalt Color Scale

Table 9: Typical Properties of EPIKURE™ 9000 Series and Composites								
Product	**Chemical Type**	**Gel Time @ 25°C[1] (hours)**	**Viscosity @ 25°C (cP)**	**Color[6] (max)**	**Density (lb/gal)**	**Eq. Wt[7]**	**PHR[2]**	**Comments**
EPIKURE 9270	Polyamine	2.3[4]	500–1,000	8	8.1	103	50[5]	For use in CIPP (Cured In Place Pipe) systems with EPON™ 9215. Offers good wetting characteristics and maintains optimal physical properties.
EPIKURE 9553	Polyamine	0.5	<10	<1	7.2	29	15	Aliphatic amine, low viscosity, room temperature curing agent. Provides increased toughness characteristics.
EPIKURE W	Non–MDA Aromatic Amine	1.5[3]	100–350	7	8.5	42–48	24[5]	Non-MDA aromatic amine, provides low viscosity and very long working times, with high performance properties after an elevated temperature cure.

1 100 gram mass

2 Parts by weight of curing agent per 100 parts of epoxy (EEW 190)

3 3 gram mass @ 121°C

4 Pot life of 1 gallon mass with EPON 9215

5 Parts by weight of curing agent per 100 parts of EPON 9215

6 Gardner Color Scale

7 Equivalent Weight Amount in grams required to react with one equivalent of epoxide

Momentive: The Science Behind What Lies Ahead

At Momentive, our global team is focused on delivering value by helping our customers make their products and processes better. We do this by bringing our deep technical expertise, market experience and technology portfolio to bear on their specific challenges. We are the science behind thousands of innovations that enhance both our customers' business results…and everyday life.

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Please refer to the literature code MSC-153 when contacting us.

Safety, Storage and Handling

Please refer to the Material Safety Data Sheet (MSDS) for the most current Safety and Handling information.

Exposure to these materials should be minimized and avoided, if feasible, through the observance of proper precautions, use of appropriate engineering controls and proper personal protective clothing and equipment, and adherence to proper handling procedures. **None of these materials should be used, stored or transported until the handling precautions and recommendations as stated in the MSDS for these and all other products being used are understood by all persons who will work with them.** Questions and requests for information on Momentive Specialty Chemicals Inc. ("Momentive") products should be directed to your Momentive sales representative, or the nearest Momentive sales office. Information and MSDSs about non-Momentive products should be obtained from the respective manufacturer.

Packaging

Available in bulk and drum quantities.

Contact Information

For product prices, availability or order placement, call our toll-free customer service number at +1 866 443 9466.

For literature and technical assistance, visit our website at www.resins.com/epoxy

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