

EPI-CURE™ Curing Agent 3282

Introduction EPI-CURE™ Curing Agent 3282, a very reactive modified aliphatic amine adduct, has been developed for applications where relatively short cure periods at room temperature are required.

- Suggested Uses**
- Tooling gel coats
 - Laminating compounds
 - Adhesives

Typical Properties	Viscosity at 25 °C, cP	2,900-4,900
	Pounds/gallon	8.92
	Color, Gardner	<6
	Amine value	761-809
	Equivalent weight, approx.	38
	Flash point, Setaflash, °F	>200

General Information Compositions based on EPON™ Resin 828 and EPI-CURE Curing Agent 3282 cure readily at room temperature. The pot life of such compositions is highly dependent on the volume of the mixture, temperature, amount and type of filler loading, and, to a lesser extent, the presence of a reactive diluent. An indication of the reactivity of several unfilled systems under varying conditions is presented in Table 1.

EPI-CURE Curing Agent 3282 is normally used at a weight ratio of 20 parts per 100 parts of liquid epoxy resin. Thin sections, where exothermic heat is readily dissipated, require 4 to 8 hours for the composition to cure to handling strength. The composition reaches full cure after 4 to 7 days. Thin sections may be cured rapidly at moderately elevated temperatures, but thick sections should be allowed to exotherm before heat is applied. The maximum thickness recommended for an unfilled composition is approximately 1/2 inch. Maximum high temperature properties are obtained with a post cure of about 2 hours at 93 to 121 °C.

*Formerly EPI-CURE Curing Agent 87.

Table 1/Reactivity of compositions containing EPI-CURE™ Curing Agent 3282

Composition (parts by weight):	A	B	C
EPON™ Resin 828	100	–	80
EPON Resin 815	–	100	–
HELOXY™ Modifier 61	–	–	20
EPI-CURE™ Curing Agent 3282	20	20	20

Casting Conditions:

Weight	Thickness	Temperature	A			B			C		
			Gel Time, mins.	Maximum Exotherm °F	Maximum Exotherm °C	Gel Time, mins.	Maximum Exotherm °F	Maximum Exotherm °C	Gel Time, mins.	Maximum Exotherm °F	Maximum Exotherm °C
100 grams	2 inches	25 °C	15	400	204	16	385	196	17	375	191
50 grams	1 inch	25 °C	16	350	177	18	315	157	24	300	149
25 grams	1 inch	25 °C	19	320	160	22	270	132	31	225	107
10 grams	3/16 inch	25 °C	90	93	34	120	77*	25*	150	77*	25*

* No exothermic temperature rise.

Performance Properties

A comparison of the properties of three formulations cured with EPI-CURE Curing Agent 3282 is presented in Table 2. With the exception of heat deflection temperature, the properties of post-cured formulations are only slightly better than those cured at room temperature. The major effect of the reactive diluent in the low viscosity systems is on the elevated temperature physical properties of the cured formulations.

Storage

EPI-CURE Curing Agent 3282 should be stored in tightly sealed, completely filled containers of metal, glass, or polyolefin plastic at normal room temperatures. The curing agent may darken during long-term storage, the extent of color formation depending on storage temperature and exposure to air.

Table 2/ Properties of epoxy systems cured with EPI-CURE™ Curing Agent 3282

Composition (parts by weight)	A	B	C	D	E	F
EPON™ Resin 828	100	100	–	–	80	80
EPON Resin 815	–	–	100	100	–	–
HELOXY™ Modifier 61	–	–	–	–	20	20
EPI-CURE™ Curing Agent 3282	20	20	20	20	20	20
Blend properties at 25 °C						
Viscosity, cP	10,000	10,000	800	800	450	450
Pot life, 1/4-pound, minutes	15	15	16	16	17	17
Cured state properties¹						
Heat deflection temperature, °C	99	60	73	50	50	46
Tensile strength, psi	11,000	10,000	10,500	9,500	9,500	9,000
Tensile elongation at break, %	3.8	0.8	6.8	3.8	10.0	6.0
Flexural strength, psi	19,900	18,500	19,400	18,000	15,700	15,300
Initial flexural modulus, 10 ⁶ psi	0.55	0.58	0.52	0.55	0.49	0.51
Compressive yield strength, psi	16,100	14,500	14,500	13,500	13,250	12,500
Izod impact, ft. • lb./in. notch	0.46	0.36	0.44	0.34	0.41	0.32
Hardness, Shore D	90	89	89	87	88	86
Water absorption ²	0.10	0.10	0.15	0.15	0.20	0.19
Weight loss ³	0.10	0.18	0.72	0.68	1.57	1.68
Electrical properties						
Dielectric constant ⁴	4.19	–	4.20	–	4.20	–
Dissipation factor ⁴	0.026	–	0.024	–	0.023	–
Volume resistivity, ohm•cm						
at 25 °C	2.8 (10 ¹⁶)	–	1.5 (10 ¹⁶)	–	6.1 (10 ¹⁵)	–
at 66 °C	1.0 (10 ¹⁵)	–	4.2 (10 ¹³)	–	2.2 (10 ¹¹)	–
at 93 °C	8.0 (10 ¹²)	–	1.8 (10 ¹¹)	–	6.1 (10 ⁹)	–
at 130 °C	6.0 (10 ¹⁰)	–	<10 ⁹	–	<10 ⁹	–

¹Determined on 1/8-inch thick test specimens at 25 °C. Systems A,C and E were cured for 16 hours at 25 °C followed by a post cure of 2 hours at 100 °C. Systems B,D and F were cured for 3 weeks at 25 °C.

²Percent weight gain after 24 hours immersion at 25 °C.

³Percent weight loss after 24 hours at 150 °C.

⁴Determined at 10⁶ Hertz.

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