HEXION

Technical Data Sheet

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EPIKURE™ Curing Agent 3370

Product Description

EPIKURE™ Curing Agent 3370 is a low viscosity, modified cycloaliphatic amine capable of effecting thorough cures in epoxy resin systems at normal room temperature.

Application Areas/Suggested Uses

- Light color castings
- Chemical resistant glaze, sealer and gel coatings
- Industrial floor toppings
- Tank linings

Benefits

- Good overnight cure development
- Moderate resistance to blush or "sweat-out"
- High degree of chemical resistance
- Light color

Sales Specification

Property	Units	Value	Test Method/Standard
Amine value	mg/g	384.0-407.0	ASTM D2896
Viscosity at 25°C	cP	85-145	ASTM D2196
Color	Gardner	1	ASTM D1544

Typical Properties

Property	Units	Value	Test Method/Standard
Equivalent weight, approx.		72	
Density	lbs/gal	8.33	ASTM D1475
Flash point, Setaflash	°F	>200	

General Information

EPIKURE Curing Agent 3370 is an effective curing agent for many epoxy resins including both reactive diluent-modified and conventional bisphenol A types. Table 1 lists the cured state and handling properties for a typical system cured with EPIKURE 3370. The effects of the lower epoxide functionality of the diluent-containing EPON* Resin 813, EPON 8132, and EPON 8101 are reflected by significant increases in extensibility (flexibility), and decreases in strength modulus and solvent resistance.

The resistance of a EPON 828/EPIKURE 3370 system to long term exposure to a variety of chemicals at room temperature is illustrated in Table 2. These data confirm a significant improvement in overall chemical resistance compared to systems cured with typical aliphatic amine-based curing agents.

EPIKURE 3370 can be combined with most aliphatic and cycloaliphatic curing agents to modify handling characteristics or cured state performance. Blending with EPIKURE 3271 or EPIKURE 3274 has been found to be particularly effective in altering the reactivity. Ultimate performance characteristics of such combinations depend on the level of modification and the performance profile of the aliphatic amine curing agent selected.

In many applications, the excellent cured state properties of epoxy systems cured with EPIKURE Curing Agent 3370 allow for modification with non-reactive diluents to lower the system cost. Laboratory studies have shown that in most cases, properties are not critically affected by modifier concentrations of up to 20 parts by weight per hundred parts of resin (phr). The effects on handling and cured state properties of an EPON 828/EPIKURE 3370 system when modified with 20 phr of various commercially available nonreactive diluents are shown in Table 3.

EPIKURE Curing Agent 3370 is hygroscopic. Depending on the surface-to-mass relationship, partially-filled, uncapped containers of this curing agent can absorb as much as ten weight percent of atmospheric moisture during an overnight storage period. Absorbed moisture readily complexes with this curing agent and results in the formation of a "skin" or sludge agglomeration on the surface. Once sludge formation occurs, the curing agent can only be reclaimed by removal of the solid by filtration or by blending it with fresh curing agent and heating to temperatures not to exceed 250 °F until the solid material reliquifies. Therefore, EPIKURE Curing Agent 3370 based systems must be stored in containers with tightly fitted lids to minimize exposure to the atmosphere prior to use.

Performance Properties

Table 1 / **Properties of epoxy resin systems cured with EPIKURE Curing Agent 3370**

Composition	**Units**	**A**	**B**	**C**	**D**	**E**	**F**
EPON™ Resin 828	pbw	100	–	–	–	80	80
EPON Resin 813	pbw	–	100	–	–	–	–
EPON Resin 8132	pbw	–	–	100	–	–	–
EPON Resin 8101	pbw	–	–	–	100	–	–
HELOXY™ Modifier 48	pbw	–	–	–	–	20	–

HELOXY Modifier 505	pbw	–	–	–	–	–	20
EPIKURE Curing Agent 3370	pbw	38	38	36	38	40	33
Handling Properties @ 25°C							
Viscosity, System	cP	2,000	475	475	460	1,300	1,375
Gel Time, 100 gram mass	min	25	29	41	30	28	35
Peak Exotherm, 100 gram mass	°C	201	190	177	–	197	160
Cured State Properties [1]							
Heat Deflection Temperature	°C	56	48	47	54	53	49
Tensile Strength	psi	10,700	8,200	5,200	8,100	10,300	7,000
Tensile Elongation at break	%	2.5	13.0	50.0	29.0	2.7	23.0
Tensile Modulus	ksi	560	430	260	310	530	350
Flexural Strength	psi	16,200	12,800	7,500	10,400	–	–
Flexural Modulus	ksi	560	400	230	300	–	–
Flexural deflection	in.	0.18	>0.60	>0.60	>0.60	–	–
Compressive Strength, Ultimate	psi	19,200	15,100	19,000	27,000	–	–
Compressive Strength, Yield	psi	17,300	14,000	7,800	10,700	–	–
Izod impact, notch	ft.•lb./in.	0.42	0.39	0.64	0.54	0.51	0.67
Hardness	Shore D	90	88	84	87	90	50
Glass Bow Shrinkage Test	inch/inch	fail	pass	–	–	–	–
Chemical Resistance[2]							
Water, distilled	%	0.13	0.20	0.29	0.22	0.17	0.21
5% Acetic Acid	%	0.21	0.29	0.44	0.29	0.41	0.29
Xylene	%	0.05	1.85	7.45	–	0.03	1.18

[1]All systems were cured for 7 days at 25 °C.

[2]Values reported as percent weight gain after immersion for 24 hours.

Table 2/**Chemical resistance**[1] **of EPON Resin 828 cured with EPIKURE Curing Agent 3370**

	1 Day	1 Week	1 Month	3 Months
Water	0.12	0.32	0.65	1.22
5% Detergent	0.10	0.31	0.63	1.18

5% Acetic acid	0.18	0.49	1.03	1.90
20% Acetic acid	1.62	4.54	8.862	Destroyed
50% Acetic acid	6.87	Destroyed	–	–
99.7% Acetic acid	5.69	Destroyed	–	–
10% Sulfuric acid	0.30	0.74	1.43	2.45
25% Sulfuric acid	0.25	0.67	1.33	2.46
70% Sulfuric acid	0.24	0.44	0.88	1.85
98% Sulfuric acid	Destroyed	–	–	–
5% Nitric acid	0.23	0.59	1.13	2.03
20% Nitric acid	0.46	1.17	2.20	3.84
10% Hydrochloric acid	0.19	0.47	0.91	1.70
10% Sodium hydroxide	0.09	0.26	0.51	0.94
50% Sodium hydroxide	0.00	0.00	-0.06	-0.08
5% Citric acid	0.13	0.34	0.68	1.25
5% Lactic Acid	0.13	0.38	0.72	1.33
Methyl ethyl ketone	Destroyed	–	–	–
Xylene	0.04	0.06	0.09	0.18
Toluene	0.04	0.09	0.19	0.59
Ethanol	0.79	3.06	6.87[3]	Destroyed
Methanol	4.31	Destroyed	–	–
Isopropanol	-0.01	-0.01	0.03	0.21
Gasoline	0.03	0.04	0.06	0.11
Antifreeze	0.00	-0.02	-0.05	-0.05
Brake fluid	0.13	0.49	1.58	4.37
Transmission fluid	0.05	0.08	0.10	0.15[2]
Skydrol (500B4)	0.01	-0.01	-0.01	0.03
Bleach	0.10	0.23	0.46	0.92
3% Hydrogen peroxide	0.12	0.36	0.76	1.51
50% Sugar solution	0.10	0.28	0.56	1.05

[1]Reported as percent weight change of immersed 1" x 3" x 1/8" samples at 25 °C.

[2]Moderate swelling and slight softening.

[3]Moderate swelling and softening.

Table 3/ **The effect of modifier addition on the properties of EPON Resin 828 /EPIKURE Curing Agent 3370 systems**

Composition	**Units**	**A**	**B**	**C**	**D**	**E**

EPON Resin 828	pbw	100	100	100	100	100
Nonylphenol	pbw	–	–	–	–	20
Benzyl alcohol	pbw	–	20	–	–	–
Dibutyl phthalate	pbw	–	–	20	–	–
Piccoclastic A-5[1]	pbw	–	–	–	20	–
EPIKURE Curing Agent 3370	pbw	42	42	42	42	42
Handling Properties @ 25°C						
Viscosity, System	cP	165	90	90	310	1,000
Gel Time, 100 gram mass	min	24	24	45	44	18
Cured State Properties [2]						
Heat Deflection Temperature	°C	54	28	47	52	50
Tensile Strength	psi	10,500	2,850	5,700	10,250	9,050
Tensile Elongation at break	%	2.4	44.0	28.5	3.4	5.7
Tensile Modulus	ksi	550	130	290	510	450
Izod impact, notch	ft.•lb./in.	0.47	1.23	0.46	0.4	0.45
Hardness	Shore D	90	80	86	89	89
Chemical Resistance[3]						
Water, distilled	%	0.18	0.39	0.39	0.12	0.09
5% Acetic Acid	%	0.27	0.72	0.72	0.20	0.30
Xylene	%	0.06	0.47	0.47	0.53	1.32

[1]Supplied by Hercules, Inc.

[2]All systems were cured for 7 days at 25 °C.

[3]Percent weight gain after immersion for 24 hours at 25 °C.

Safety, Storage & Handling

Please refer to the MSDS for the most current Safety and Handling information.

Please refer to the Hexion web site for Shelf Life and recommended Storage 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 Material Safety Data Sheet (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 Hexion Inc. ("Hexion") products should be directed to your Hexion sales representative, or the nearest Hexion sales office. Information and MSDSs on non-Hexion products should be obtained from the respective manufacturer.

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