

Technical Data Sheet

EPIKURE™ Curing Agent 3055

Product Description

EPIKURE™ Curing Agent 3055 is an aliphatic amidoamine. Due to its versatility and convenient working characteristics, it should be considered for room temperature curing applications for epoxy resins and in many applications where elevated temperature curing cycles can be used. When EPIKURE 3055 is used as the sole crosslinker, the combining ratio with an epoxy resin can be varied to obtain a wide range of properties. It may also be used in conjunction with other curing agents to vary properties or curing rates.

Application Areas/Suggested Uses

- Adhesives
- Laminating binders
- Electrical encapsulants
- Grouts
- Floor topping and repair compositions

Benefits

- Low viscosity
- Complete compatibility with conventional epoxy resins
- Extended pot life
- Wide range of combining ratios

Sales Specifications

Property	Value	Unit	Test Method
Amine Value	449 - 473	g/eq	ASTMD2896
Color	<13	Gardner	ASTMD1544
Viscosity at 25°C	150 - 300	cP	ASTMD2196

Typical Properties

Property	Value	Unit	Test Method
Equivalent Weight	90		
Pounds/Gallon @ 25°C	7.87	lbs/gal	ASTMD1475

Performance Properties

Table 1 / Properties of Systems Cured with EPIKURE™ Curing Agent 3055

	Method	Units	A	B	C	D ¹	E	F	G	H
EPON™ Resin 828		pbw	100	100	100	100	100	90	80	100

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	Method	Units	A	B	C	D ¹	E	F	G	H
HELOXY™ Modifier 61		pbw	---	---	---	---	---	10	20	---
EPIKURE Curing Agent 3055		pbw	40	50	60	82	100	50	50	50
			---	---	---	---	---	---	---	---
Handling Properties @ 25°C			---	---	---	---	---	---	---	---
Initial viscosity		cP	2,500	1,900	1,700	1,300	1,000	550	225	1,900
Gel Time, 100 gram mass		minutes	---	240	---	---	---	---	---	---

Cured State Properties ²										
HDT	ASTM D648	°C	70	67	61	42	14	55	37	62
Tensile strength	ASTM D638	psi	8,600	8,300	7,600	5,250	1,850	7,600	4,950	8,000
Tensile elongation at break		%	6.0	6.4	6.9	16.0	7.9	6.0	8.0	4.7
Izod impact, notched	ASTM D256	ft.·lb./in.	0.46	0.55	0.84	1.02	2.08	0.60	0.75	0.52
Hardness	Shore D		85	83	81	77	55	75	60	---
Water absorption ³		%	0.19	0.21	0.29	0.54	1.10	0.30	0.42	---
Weight loss ⁴			0.53	0.64	0.72	0.81	1.73	0.95	1.29	0.60

Electrical Properties

Dielectric constant ⁵	ASTM D150		3.57	3.57	3.58	3.62	3.71	3.80	3.88	3.34
Dissipation factor ⁵			0.020	0.021	0.032	0.037	0.041	0.025	0.032	0.017
Volume resistivity										
at 25 °C		ohm·cm	1.0(10 ¹⁶)	9.0(10 ¹⁶)	1.0(10 ¹⁴)	8.2(10 ¹³)	1.1(10 ¹³)	7.0(10 ¹⁴)	1.0(10 ¹³)	4.3(10 ¹⁵)
at 66 °C		ohm·cm	4.0(10 ¹³)	3.7(10 ¹³)	8.2(10 ¹⁰)	7.5(10 ⁹)	<10 ⁹	2.3(10 ¹¹)	5.3(10 ⁹)	7.8(10 ¹³)

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	Method	Units	A	B	C	D ¹	E	F	G	H
at 93 °C		ohm•cm	2.3(10 ¹¹)	1.3(10 ¹¹)	<10 ⁹	<10 ⁹	<10 ⁹	1.9(10 ⁹)	<10 ⁹	8.1(10 ¹¹)

¹ Equal volume ratio.

² Determined on 1/8" thick test specimens at 25 °C. Systems A, B, C, D, E, and F were cured for 16 hours at 25 °C followed by 2 hours at 100 °C. Systems G and H were cured for 2 weeks at 25 °C.

³ Percent weight gained after 24 hours immersion in water at 25 °C.

⁴ Percent weight loss after 24 hours at 150 °C.

⁵ Determined at 106 Hertz.

General Information

EPIKURE Curing Agent 3055 is usually recommended for use with EPON™ Resin 828 at a ratio of 50 parts per 100 parts of resin, but it can be used within a range of 40 to 100 parts per 100 parts of resin, depending on the desired properties of the cured product. Increasing the amount of EPIKURE 3055 improves toughness and flexibility at the expense of tensile strength, moisture resistance and electrical properties particularly at elevated temperatures. Several representative formulations are described in Table 1. For applications requiring very low viscosity, a part or all of the EPON 828 can be replaced with a reactive diluent such as HELOXY™ Modifier 61. As shown in Table 1, such substitution is accompanied by some change in the properties of the cured resin.

As with all room temperature curing epoxy resin systems, the gel time and exothermic temperature rise for an epoxy resin composition containing EPIKURE Curing Agent 3055 depend on the size of the batch, the amount and type of filler loading, the ratio of resin to curing agent and the mixing temperature. Cure time at room temperature depends to a large extent on the exothermic temperature rise. In thin sections where exothermic heat is readily dissipated, an overnight cure is required for the composition to reach handling strength and full cure is reached within several days.

Developed primarily to cure epoxy resins at room temperature, EPIKURE Curing Agent 3055 can also be used at elevated temperatures. Since elevated temperatures greatly reduce the cure time, the cure schedule should be carefully watched. A comparison of the physical properties of samples cured at room temperature as well as at 100 °C is listed in Columns B and H in Table 1. Except for heat deflection temperature, differences in properties are small, indicating that even though cure may not be complete at room temperature, it is satisfactory for many applications.

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.

EPIKURE Curing Agent 3055 should be stored in tightly sealed containers, in a dry location at normal room temperature. Care should be taken to avoid storage environments resulting in moisture contamination. Exposure to moisture will cause an increase in viscosity and reactivity, the degree of increase depending on the amount of moisture which has been absorbed.

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.

Packaging

Available in bulk and drum quantities.

Contact Information

For product prices, availability, or order placement, please contact customer service:

www.hexion.com/Contacts/

For literature and technical assistance, visit our website at www.hexion.com

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