



HYSOL®
Electronic Formulated Liquid

Formerly Dexter

High Operating Temperature Long Pot Life Casting Systems

RE2039 & HD0243 – Unfilled

EE4183 & HD0243 – Filled

EE1068 & HD0243 – Filled

1.0 Description

Hysol® casting resin RE2039 and hardener HD0243 is used where excellent chemical resistance, high heat distortion temperature and good electrical properties under high humidity conditions are required. Hysol® filled compound EE4183 and hardener HD0243 are used where improved thermal properties and lower shrinkage values are desired. These products are recommended for servo stators, high temperature resistors, transformers and high temperature cast shapes. EE1068 using hardener HD0243 has been formulated to meet the needs for flame-out, easily handled casting systems. The cured system is nonburning or self-extinguishing according to ASTM VMD 635 and meet the U.L. requirements for 94V-0.

1.1 Colored versions exhibit identical properties to the systems in above paragraph:

Unfilled: Amber – RE2039 (R9-2039*), Black – EE4210 (C9-4210*)

Filled: Tan – EE4183 (C9-4183*), Red – EE4190 (C9-4190*)

Green – EE4198 (C9-4198*), Blue – EE4207 (C9-4207*), Black – EE4215 (C9-4215*)

2.0 TYPICAL UNCURED PROPERTIES

	RE2039	EE4183	EE1068	HD0243	TEST METHOD
Color, maximum	Gardner 4				ASTM D 1544
Color		Tan	Black	Dark Red	Visual
Filler content, %	0	47-51	32-42	0	ASTM D 2584
Density @ 25°C (77°F), gm/cc	1.15-1.17	1.5-1.65	1.61-1.71	1.0-1.05	ASTM D 1475
Viscosity @ 25°C Brookfield RVF					ASTM D 2393
Spindle 5, Speed 10 cps	11-14,000		20-40,000		
Spindle 6, Speed 4 cps		60-100,000			
Spindle 2, Speed 20 cps				450-650	
Shelf Life @ 25°C (77°F), months					
min. from date of shipment	12	6	6	12	

3.0 TYPICAL CURED PROPERTIES – Values are not intended for use in preparation of specifications. All measurements taken at 25°C (77°F) unless otherwise noted. Contact your HYSOL® representative for information regarding specification values.

3.1 Cured Physical Characteristics

	RE2039 /HD0243	EE4183 /HD0243	EE1068 /HD0243	TEST METHOD
Color	Amber	Tan	Black	Visual
Coefficient of linear thermal expansion* in/in/°C, (25° to 90°C), nominal	65 x 10 ⁻⁶	54 x 10 ⁻⁶	50 x 10 ⁻⁶	ASTM D 3386
Glass Transition (T _g), °C, nominal	140	132	98	ASTM D 3386
Compressive strength, psi	20-25,000	20-25,000	17-22,000	ASTM D 695
Linear Shrinkage, %	0.70	1.38	1.06	ASTM D 2566
Filler Content, %	0	40-45	32-37	ASTM D 2584
Flammability			Pass V-0	UL 94
Hardness, Shore D	80-85	80-85	85-90	ASTM D 2240
Tensile strength, psi	8-10,000	8-10,000	6-8,000	ASTM D 638
Thermal conductivity cal x cm/sec cm ² x °C	4-5 x 10 ⁻⁴	11-12 x 10 ⁻⁴	9-10 x 10 ⁻⁴	ASTM D 1674
Flexural strength, psi	15-20,000	15-20,000	15-20,000	ASTM D 790
Moisture absorption (24 hr immersion), %	0.11	0.13	0.03	ASTM D 750
Guide to operating class IEEE °C (°F)	155-180	155-180	155-180	

3.2 Cured Electrical Properties

	RE2039 /HD0243	EE4183 /HD0243	EE1068 /HD0243	TEST METHOD
Dielectric strength volts/mil	1,650	1,400	1,200	ASTM D 149
Arc resistance, seconds	110	155	125	ASTM D 495

	RE2039/HD0243					
	25°C		85°C		130°C	
	K	D	K	D	K	D
100 Hz	4.3	.005	4.4	.002	4.4	.003
1 kHz	4.3	.009	4.4	.003	4.4	.003
10 kHz	4.2	.022	4.4	.004	4.4	.003
100 kHz	4.0	.033	4.3	.009	4.4	.002
Vol. Res.	1 x 10 ¹⁷		4 x 10 ¹⁴		1 x 10 ¹⁴	
Surf. Res.	8 x 10 ¹⁶		4 x 10 ¹⁵		1 x 10 ¹⁴	

EE4183/HD0243

	25°C		85°C		130°C	
	K	D	K	D	K	D
	100 Hz	4.4	.007	4.6	.010	4.7
1 kHz	4.4	.008	4.5	.007	4.6	.010
10 kHz	4.3	.017	4.5	.005	4.5	.006
100 kHz	4.1	.025	4.4	.006	4.5	.004
Vol. Res.	2 x 10 ¹⁶		1 x 10 ¹⁵		1 x 10 ¹⁴	
Surf. Res.	1 x 10 ¹⁷		7 x 10 ¹⁴		4 x 10 ¹²	

EE1068/HD0243

	25°C		85°C		130°C	
	K	D	K	D	K	D
	100 Hz	4.4	.010	4.7	.020	5.6
1 kHz	4.4	.009	4.6	.014	5.4	.050
10 kHz	4.3	.014	4.5	.011	5.1	.032
100 kHz	4.2	.019	4.4	.010	4.9	.020
Vol. Res.	2 x 10 ¹⁶		3 x 10 ¹⁴		1 x 10 ¹²	
Surf. Res.	2 x 10 ¹⁷		7 x 10 ¹⁴		4 x 10 ¹²	

K = Dielectric constant by ASTM D 150

D = Dissipation factor by ASTM D 150

Vol. Res. = Volume resistivity in ohm-cm by ASTM D 257

Surf. Res. = Surface resistivity in ohms by ASTM D 257

4.0 HANDLING

	RE2039/HD0243	EE4183/HD0243	EE1068/HD0243
Mix ratio, parts by weight*	100/25	100/12.5	100/13
Mix ratio, parts by volume*	100/28	100/19	100/20
Pot life @ 25°C (77°F) (200 gram mass), hours	7-8	7-8	7-8
Viscosity @ 25°C (77°F) Spindle 4, Speed 2, cps	8-12,000	20-30,000	28-33,000
Gel time @ 40°C (104°F) (200 gram mass), hrs.	4-5	4-5	5-6
Gel time @ 100°C (212°F) (200 gram mass), hrs.	55-65	40-50	55-65
Gel time @ 121°C (250°F) (10 gram mass), minutes	20-30	20-25	28-33

*Mix ratio of these materials is fixed by their chemistry. Any attempt to increase or decrease the cure rate by adding more or less hardener will result in degraded materials.

Filled resins may tend to settle during storage. Thorough mixing is required each time they are used.

CURE SCHEDULE

Recommended cure Two hours at 80°C (176°F), plus 2 hrs. @ 150°C (302°F)

Typical cured properties were determined using the recommended cure schedule. Some difference in properties may occur with the alternate or other cure schedules.

06/2000

For additional information in the Americas, please contact one of the following locations:

New York

TEL: 716.372.6300

FAX: 716.372.6864

Canada

TEL: 905.814.6511

FAX: 905.814.5391

Brazil

TEL: 011.55.11.4143.7000

FAX: 011.55.11.4143.7100

For a complete listing of worldwide locations and information on related products, please visit our website www.loctite.com/electronics

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Users should review the Material Safety Data Sheet (MSDS) and product label for the material to determine possible health hazards, appropriate engineering controls and precautions to be observed in using the material. Copies of the MSDS and label are available upon request
