

PRODUCT DESCRIPTION

LOCTITE® PE 3142 Epoxy Resin forms a potting compound resin with high thermal conductivity when mixed with LOCTITE® PE 3165. This mixture forms a resilient, low exotherm, room temperature gel material that develops high T_g after exposure to elevated temperatures.

PROPERTIES OF UNCURED MATERIAL (Resin)

	Typical Value
Chemical Type	Epoxy resin
Appearance	Black
Viscosity, Spindle #7 @ 20 RPM, cP (25°C)	120,000 – 200,000
Specific Gravity	2.40

PROPERTIES OF UNCURED MATERIAL (Hardener)

	Typical Value
Chemical Type	Epoxy hardener
Appearance (mixed)	Clear (black)
Viscosity, Spindle #1 @ 20 RPM, cP (25°C)	55
Specific Gravity	0.96

PROPERTIES OF CURED MATERIAL

	Typical Value
Vol. Mix Ratio, Resin:Hardener	9.7 to 1
Weight Mix Ratio, Resin:Hardener	100-4.1
Mixed Specific Gravity	1.62
Mixed Viscosity, Spindle 6 @ 20 RPM (25°C) cP	18,000
Work Time, 400g (25°C)	80 min
Gel Time, 400g (25°C)	2.5 hours
Regular Cure Schedule (25°C)	24 hr (25°C) & 4 hr (93°C)
Alternate Cure Schedule (66°C)	4 hours (25°C) & 4 hr (93°C)
CTE, below T _g , (mm/mm°C) ASTM E831	26.9 E-06
T _g , °C, ASTM D3418-82	84
CTE, above T _g , (mm/mm°C) ASTM E831	87.7 E-06
Thermal Conductivity, ASTM F-433 Watts/meter°C	1.126
Hardness, Shore D, ASTM D2240	90

Electrical Properties

Dielectric Constant, ASTM D150	
0.1 kHz	5.65
1.0 kHz	5.57
10 kHz	5.46
100 kHz	5.34
Dissipation Factor, ASTM D150	
0.1 kHz	0.01
1.0 kHz	0.01
10 kHz	0.01
100 kHz	0.01
Insulation, ohms, ASTM D257	4.09 E13
Volume Resistivity, Ω.cm, ASTM D257	2.61 E15
Dielectric Strength, V/mil, ASTM D149	335

GENERAL INFORMATION

This product is not recommended for use in pure oxygen and/or oxygen rich systems and should not be selected for use with chlorine or other strong oxidizing materials. For safe handling information on this product, consult the Material Safety Data Sheet, (MSDS).

Storage

Product shall be ideally stored in a cool, dry location in unopened containers at a temperature between 8°C to 28°C (46°F to 82°F) unless otherwise labeled. Optimal storage is at 0°C (32°F) or less. To prevent contamination of unused product, do not return any material to its original container. For further specific shelf life information, contact your local Technical Service Center.

Data Ranges

The data contained herein may be reported as a typical value and/or range. Values are based on actual test data and are verified on a periodic basis.

Properties of Uncured Material

	Specific Gravity	Viscosity, cP (25°C)	Color	Mixed Color
HYSOL 3142 Epoxy Resin	2.40	95,000	Black	
LOCTITE PE 3160 Epoxy Hardener	1.00	180	Clear	Black
LOCTITE PE 3162 Epoxy Hardener	0.99	120	Clear	Black
LOCTITE PE 3163 Epoxy Hardener	0.96	450	Clear	Black
LOCTITE PE 3164 Epoxy Hardener	0.97	105	Clear	Black
LOCTITE PE 3165 Epoxy Hardener	0.96	55	Clear	Black

Curing Properties of the Systems

(All Properties in Conjunction with LOCTITE® PE 3142 Epoxy Resin)

Hardener	Vol. Mix Ratio <i>Resin:Hardener</i>	Weight Mix Ratio <i>Resin:Hardener</i>	Mixed Specific Gravity	Mixed Viscosity, cP (25°C)	Work Time 400g (25°C, 77°F) unless otherwise noted	Gel Time 400g (25°C, 77°F) unless otherwise noted	Regular Cure Schedule (25°C, 77°F)	Alternate Cure Schedule (66°C, 150°F)
LOCTITE PE 3160 Epoxy Hardener	3.8 to 1	100 – 10.7	1.54	7,500	90 – 120 min	3.5 – 4 hours	24 hr	4 hours
LOCTITE PE 3162 Epoxy Hardener	4.5 to 1	100 – 9	1.54	6,000	10-15min/200g	25 – 35 min /200 gm	24 hr	2 hours
LOCTITE PE 3163 Epoxy Hardener	3.6 to 1	100 – 10.9	1.53	7,000	2 hours	> 3 hours	48 hr	4 hours
LOCTITE PE 3164 Epoxy Hardener	2.8 to 1	100 – 14.3	1.50	8,000	25 min	50 min	24 hr	2 hours
LOCTITE PE 3165 Epoxy Hardener	9.7 to 1	100 – 4.1	1.62	18,000	80 min	2.5 hours	24 hr (25°C) & 4 hr (93°C)	4 hours & 4 hr (93°C)

Cured Properties of the System

Hardener	CTE below Tg mm/mm°C	Tg, °C	CTE above Tg mm/mm°C	Thermal Conductivity Watts/Meter °C	Hardness Shore D
LOCTITE PE 3160 Epoxy Hardener	29.2 E-06	26	104 E-06	0.862	90
LOCTITE PE 3162 Epoxy Hardener	28.2 E-06	42	97.2 E-06	0.953	90
LOCTITE PE 3163 Epoxy Hardener	33.5 E-06	30	96.1 E-06	0.873	90
LOCTITE PE 3164 Epoxy Hardener	51.9 E-06	29	106 E-06	0.801	85
LOCTITE PE 3165 Epoxy	26.9 E-06	84	87.7 E-06	1.126	90

Dielectric Constant

Hardener	Frequency			
	0.1 KHz	1.0 KHz	10 KHz	100 KHz
LOCTITE PE 3160 Epoxy Hardener	5.77	5.69	5.62	5.52
LOCTITE PE 3162 Epoxy Hardener	4.87	4.83	4.78	4.72
LOCTITE PE 3163 Epoxy Hardener	5.28	5.20	5.12	5.02
LOCTITE PE 3164 Epoxy Hardener	5.51	5.35	5.21	5.06
LOCTITE PE 3165 Epoxy Hardener	5.65	5.57	5.46	5.34

Dissipation Factor

Hardener	Frequency			
	0.1 KHz	1.0 KHz	10 KHz	100 KHz
LOCTITE PE 3160 Epoxy Hardener	0.00	0.01	0.01	0.01
LOCTITE PE 3162 Epoxy Hardener	0.01	0.01	0.01	0.01
LOCTITE PE 3163 Epoxy Hardener	0.01	0.01	0.01	0.01
LOCTITE PE 3164 Epoxy Hardener	0.02	0.02	0.02	0.02
LOCTITE PE 3165 Epoxy Hardener	0.01	0.01	0.01	0.01

Hardener	Insulation Resistance, ohms	Volume Resistivity, Ω.cm	Dielectric Strength, Volts/mil
LOCTITE PE 3160 Epoxy Hardener	4.61 E13	3.00 E15	360
LOCTITE PE 3162 Epoxy Hardener	5.31 E13	3.47 E15	345
LOCTITE PE 3163 Epoxy Hardener	3.65 E13	2.55 E15	355
LOCTITE PE 3164 Epoxy Hardener	2.75 E12	1.65 E14	345
LOCTITE PE 3165 Epoxy Hardener	4.09 E13	2.61 E15	335

Note

The information provided in this Technical Data Sheet (TDS) including the recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this TDS. The product can have a variety of different applications as well as differing application and working conditions in your environment that are beyond our control. Henkel is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product.

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