Product Description Sheet

LOCTITE® PE 3141 / PE 3165

Known as
Hysol® Product 3141/3165
August 2015

PRODUCT DESCRIPTION

LOCTITE® PE 3141 Epoxy Resin is a resin formulated to offer improved long term performance at higher temperatures when mixed with LOCTITE® PE 3165 Epoxy Hardener. This mixture forms a resilient, low exotherm, room temperature gel material that develops high Tg after exposure to elevated temperatures.

PROPERTIES OF UNCURED MATERIAL (Resin)

	Typical Value
Chemical Type	Epoxy resin
Appearance	Black
Viscosity, Spindle #7 @ 20 RPM, 25°C, cP	80,000
Specific Gravity	1.61

PROPERTIES OF UNCURED MATERIAL (Hardener)

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

PROPERTIES OF CURED MATERIAL

	Typical Value
Vol. Mix Ratio, Resin:Hardener	6.5 to 1
Weight Mix Ratio, Resin:Hardener	100:9
Mixed Specific Gravity	1.40
Mixed Viscosity, Spindle 6 @ 20 rpm 25°C, cP	13,000
Work Time, 200g (25ºC)	35-40 min
Gel Time, 200g (25ºC)	65-75 min
Regular Cure Schedule (25ºC)	24 hr 25ºC + 4 hr 93ºC
CTE below Tg, ASTM E831 (mm/mmºC)	35.0 E-06
Tg, ASTM D3418-82, ºC	104
CTE above Tg, ASTM E831 (mm/mmºC)	115 E-05
Hardness, ASTM D2240, Shore D	85

Electrical Properties

Dielectric Constant, ASTM D150	
0.1 kHz	4.28
1.0 kHz	4.18
10 kHz	4.06
100 kHz	3.92
Dissipation Factor, ASTM D150	
0.1 kHz	0.01
1.0 kHz	0.02
10 kHz	0.02
100 kHz	0.02
Insulation, ASTM D257, ohms	2.15 E13
Volume Resistivity, ASTM D257, Ω.cm	1.37 E15
Dielectric Strength, ASTM D149, V/mil	365

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
LOCTITE PE 3141 Epoxy Resin	1.61	80,000	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	Amber	Black
LOCTITE PE 3164 Epoxy Hardener	0.97	105	Amber	Black
LOCTITE PE 3165 Epoxy Hardener	0.96	55	Clear	Black

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Curing Properties of the Systems
(All Properties in Conjunction with HYSOL 3141 Epoxy Resin)

Hardener	Vol. Mix Ratio *Resin:Hardener*	Weight Mix Ratio *Resin:Hardener*	Mixed Specific Gravity	Mixed Viscosity, cP @ 25°C	Work Time 200g (25°C) unless otherwise noted	Gel Time 200g (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	2.5 to 1	4 : 1	1.44	7,000	90 – 120min/400g	2.5 to 3.5 hr/400 gm	24 hr	4 hours
LOCTITE PE 3162 Epoxy Hardener	3 to 1	100 : 19.8	1.46	5,000	5min	10 - 15 min	24 hr	2 hours
LOCTITE PE 3163 Epoxy Hardener	2 to 1	100: 30	1.40	4,000	30 – 45 min	60 – 80 min	24 hr	2 hours
LOCTITE PE 3164 Epoxy Hardener	2 to 1	100 : 31.5	1.40	6,000	10min/400g	20 – 25 min	24 hr	2 hours
LOCTITE PE 3165 Epoxy Hardener	6.5 to 1	100 : 9	1.40	13,000	35 – 40 min	65 – 75 min	24 hr (25°C) & 4 hr (93°C)	---------

Cured Properties of the System

Hardener	CTE below Tg (mm/mm°C)	Tg, °C	CTE above Tg (mm/mm°C)	Hardness Shore D
LOCTITE PE 3160 Epoxy Hardener	60.7 E-06	43	160 E-06	85
LOCTITE PE 3162 Epoxy Hardener	39.7 E-06	75	135 E-06	90
LOCTITE PE 3163 Epoxy Hardener	52.6 E-06	38	138 E-06	80
LOCTITE PE 3164 Epoxy Hardener	49.2 E-06	31	111 E-06	85
LOCTITE PE 3165 Epoxy Hardener	35.0 E -06	104	115 E-05	85

Dielectric Constant

	Frequency			
Hardener	**0.1 KHz**	**1.0 KHz**	**10 KHz**	**100 KHz**
LOCTITE PE 3160 Epoxy Hardener	4.30	4.22	4.14	4.03
LOCTITE PE 3162 Epoxy Hardener	3.91	3.88	3.84	3.79
LOCTITE PE 3163 Epoxy Hardener	3.58	3.52	3.46	3.39
LOCTITE PE 3164 Epoxy Hardener	4.11	3.97	3.87	3.77
LOCTITE PE 3165 Epoxy Hardener	4.28	4.18	4.06	3.92

Dissipation Factor

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

Hardener	Insulation Resistance, ohms	Volume Resistivity, Ω.cm	Dielectric Strength, Volts/mil
LOCTITE PE 3160 Epoxy Hardener	5.72 E13	4.03 E15	375
LOCTITE PE 3162 Epoxy Hardener	4.09 E13	2.61 E15	335
LOCTITE PE 3163 Epoxy Hardener	1.23 E14	7.41 E15	385
LOCTITE PE 3164 Epoxy Hardener	4.57 E13	2.98 E15	395
LOCTITE PE 3165 Epoxy Hardener	2.15 E13	1.37 E15	365

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Note
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