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Scotchcast™ Electrical Resin 8

Two-Part, Room-Curing, Semiflexible, Unfilled, Epoxy Liquid Resin

Data Sheet

Product Description

3M™ Scotchcast™ Electrical Resin 8 is a low-stress, highly moisture-resistant compound that cures at room temperature. This epoxy resin system offers long pot life, low viscosity, a 1:1 mix ratio (by weight), Class B (130°C) temperature rating, and is commonly used to coat printed circuit boards, pot connectors, and impregnate electrical and electronic components. Because of its low exotherm, resin 8 is also frequently specified for impregnating and encapsulating temperature sensitive units.

- Low exotherm
- High moisture resistance
- Highly resistant to mechanical and thermal shock
- Extended pot life

Handling Properties

Mix Ratio (A:B)	Wt 1:1
	Vol (%) 46:54
Viscosity	A = 12,500 cps
@ 23°C (73°F)	B = 4,000 cps
	Mixed = 7,000 cps
Density	A = 1.160 kg/l (9.7 lbs/gal)
	B = 0.995 kg/l (8.3 lbs/gal)
Flash Point	A = 204°C (400°F)
	B = 201°C (395°F)
Gel Time	30 min. @ 60°C (140°F)
Curing Guide	23°C (75°F) 24-48 hrs
	60°C (140°F) 2 hrs
	95°C (203°F) 1 hr

Test Methods

¹ Fed. Std. No. 406, Method 1021	⁶ MIL-I-16923G
² Fed. Std. No. 406, Method 1011	⁷ Fed. Std. No. 406, Method 4021
³ Fed. Std. No. 406, Method 1031	⁸ Fed. Std. No. 406, Method 4041
⁴ MIL-I-16923E	⁹ Fed. Std. No. 406, Method 4031
⁵ 3M Test Method	

Typical Data/Physical Properties

Property	Value
Color	Clear Amber
Hardness (Shore D)	68
Specific Gravity	1.12
Compressive Strength¹	700 psi
10% Compression	(49 kg/cm ²)
Tensile Strength²	1700 psi
Ultimate	(120 kg/cm ²)
Elongation² (% at break)	75
Flexural Strength³	875 psi
	(62 kg/cm ³)
Thermal Conductivity⁴	4.2 x 10 ⁻⁴
(Cal/sec/cm ² /°C/cm)	
Linear Thermal Expansion⁴	15 x 10 ⁻⁵
(length/unit length/°C)	
Thermal Shock⁴	Pass
Thermal Shock⁶	
10 cycles - 55 to 130°C 1/8" (3.175 mm) Olyphant	Pass
Electric Strength⁹	325 V/mil
Mechanical Shock⁴	7.75
Ball Drop (lbs.)	(3.5 kg)
Moisture Absorption⁴	
% weight increase, 240 hrs. @ 96% R.H.	1.6
Thermal Aging	
% weight loss	
10 days @ 105°C	1.5
1000 hrs. @ 130°C	9.2
1000 hrs. @ 155°C	12.2
Boiling Water Resistance	
7 days	
- % weight gain	3.6
- Hardness Change (Shore D)	60
Hydrolytic Stability⁶	
120 days 71°C (160°F) 95% R.H. (Hardness Loss %)	13
Dielectric Constant⁷	
900 Hz 23°C	4.4
Dissipation Factor⁷	
1000 Hz 23°C	0.09
Volume Resistivity⁸	
23°C (ohm-cm)	10 ¹³

Note: These are typical values and should not be used for specification purposes.

Usage Information

Mixing

Mix the separate parts before removing them from their containers. They may be warmed to 60°C (140°F) to aid mixing. (Gel time is approximately 30 minutes @ 60°C). Thoroughly mix parts A and B in the correct proportions. Mix until the color is absolutely uniform and a homogeneous mixture is obtained.

Deaerating

Air introduced during mixing can be removed by evacuating at 5 to 10 mm of mercury (Hg) absolute pressure. The 3M™ Scotchcast™ Electrical Resin can be warmed to aid air removal. The container side wall should be four times the height of liquid resin to contain the foaming that takes place under vacuum.

Casting and Impregnating

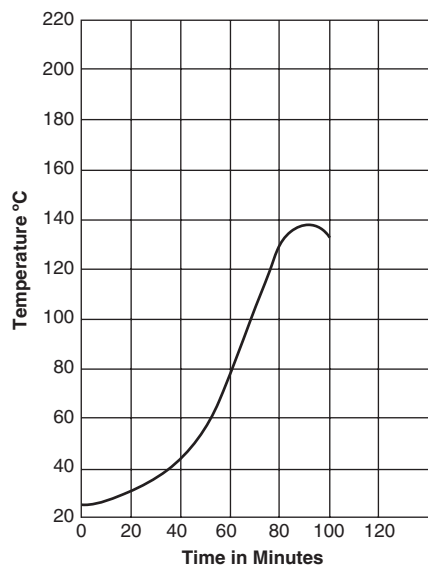
Pour the warm resin into the preheated 100°C (212°F) mold. If no mold is used, dip the preheated part into the resin. Heating the part, resin and mold aids impregnation. For maximum impregnation, evacuate at 5 mm mercury (Hg) absolute pressure, or pour under vacuum and hold for several minutes before releasing.

Curing

Where minimum stress and maximum thermal shock resistance are required, the ambient temperature cure cycle is suggested. (See “Curing Guide” of **Handling Properties** section). If an oven cure is used, time should be added to the cure cycle to allow the resin to reach the curing temperature. Cure using cycles shown under Handling Properties. Where higher temperatures are not objectionable and the size of the casting not excessive, the resin can be quick-cured in one hour at 95°C (203°F).

Storage

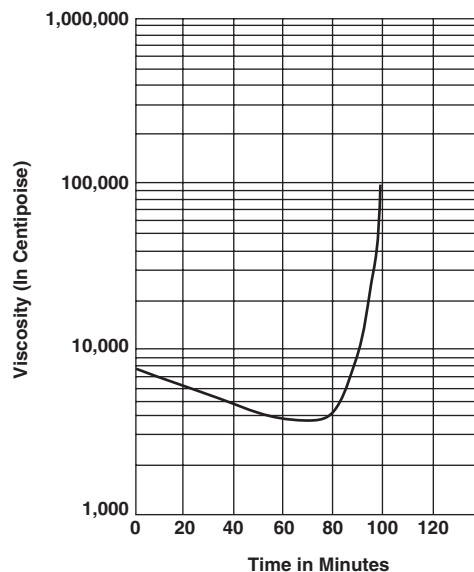
Both parts of this resin system should be stored at temperatures between 20 to 30 degrees Celsius, and 30% to 60% relative humidity. When not in use, containers should be kept tightly closed. Storage at conditions outside those suggested may compromise the performance of the resin.



Exothermic Heat Rise for 1 lb. Sample

Handling and Safety Precautions

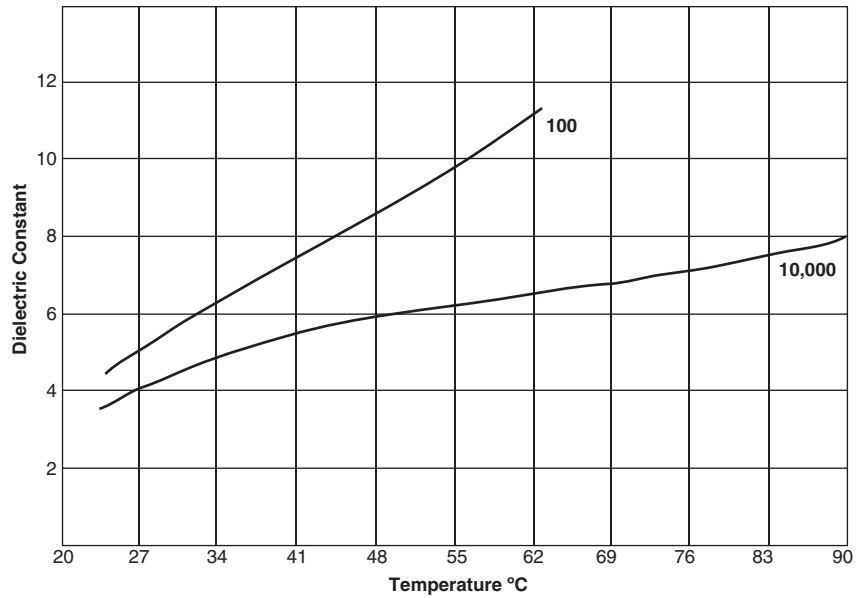
Read all Health Hazard, Precautionary and First Aid statements found in the Material Safety Data Sheet (MSDS) and/or product label of chemicals prior to handling and use.



Brookfield Viscosity vs Time @ 73°F (23°C) 130 gram sample

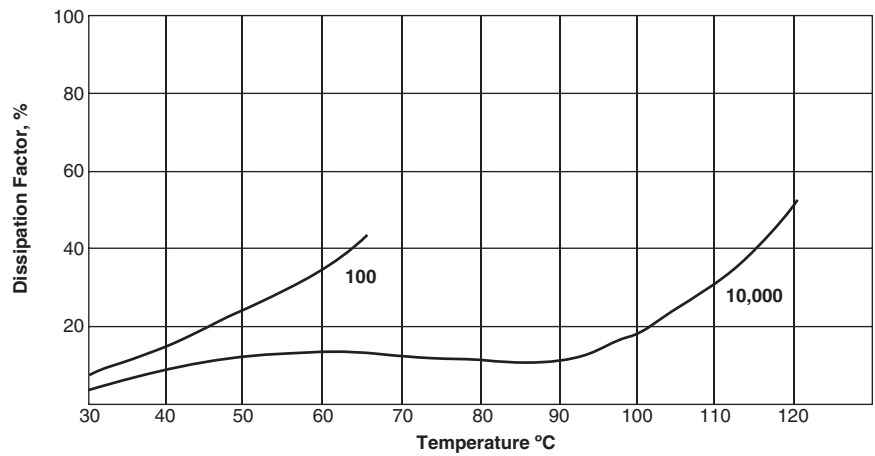
Dielectric Constant

Fed. Std. No. 406, Method 4021
(Test Frequencies in Hertz)



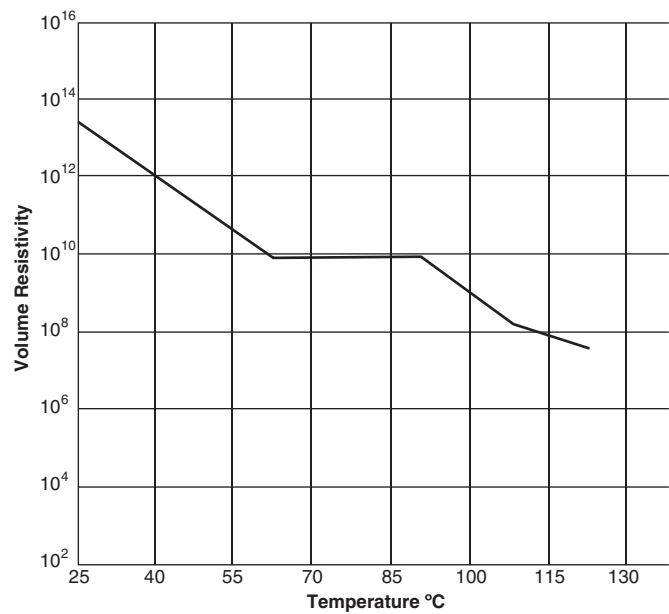
Dissipation Factor %

Fed. Std. No. 406, Method 4021
(Test Frequencies in Hertz)



Volume Resistivity (ohm-cm)

Fed. Std. No. 406, Method 4041



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