Technical data sheet

Product:	8
Manufacturer:	3M DEUTSCHLAND GMBH
Product group:	ELEKTRO
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3M™ SCOTCHCAST™ ELECTRICAL RESIN 8N

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3M™ Scotchcast™ Electrical Resin 8N

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

Data Sheet **September 2016**

Description

3M™ Scotchcast™ Electrical Resin 8N 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, Scotchcast 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 **@ 23°C (73°F)**	A = 12,500 cps B = 4,000 cps Mixed = 7,000 cps
Density	A = 1.16 kg/l (9.71 lbs/gal) B = 0.995 kg/l (8.30 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 (73°F) 24-48 hrs 60°C (140°F) 2 hrs 95°C (203°F) 1 hr

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

Physical Property (*See Test Method Table)	**Typical Value** US units (metric)
Color	Clear Amber
Hardness (Shore D)	68
Specific Gravity	1.12
Compressive Strength*[1] 10% Compression	700 psi (49 kg/cm^2)
Tensile Strength*[2] Ultimate	1700 psi (120 kg/cm^2)
Elongation (% at break)*[2]	75
Flexural Strength*[3]	875 psi (62 kg/cm^2)
Thermal Conductivity*[4] (Cal • cm/cm^2 • sec • °C)	4.2 x 10^{-4}
Linear Thermal Expansion*[4] (length/unit length/°C)	15 x 10^{-5}
Thermal Shock*[4]	Pass
Thermal Shock*[4] 10 cycles - 55 to 130°C 1/8" (3.175 mm) Olyphant	Pass
Electric Strength*[9]	325 V/mil
Mechanical Shock*[4] Ball Drop (lbs)	7.75 (3,5 kg)
Moisture Absorption*[4] % weight increase, 240 hrs. @ 96% R.H.	1.6
Thermal Aging % weight loss 10 days @ 105°C 1000 hrs. @ 130°C 1000 hrs. @ 155°C	 1.5 9.2 12.2
Dielectric Constant*[7] 900 Hz 23°C	4.4
Dissipation Factor*[7] 1000 Hz 23°C	0.09
Volume Resistivity*[8]	10^{13} ohm-cm 23°C
Boiling Water Resistance 7 Days - % weight gain - Hardness Change (Shore D)	 3.6 60
Hydrolytic Stability[6] 120 Days 71°C (160°F) 95% RH Hardness Loss %	13

Test Methods

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

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Usage Information

Mixing

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

De-aerating

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 sidewall should be four times the height of the liquid resin to contain the foaming that takes place under vacuum.

Casting and Impregnating

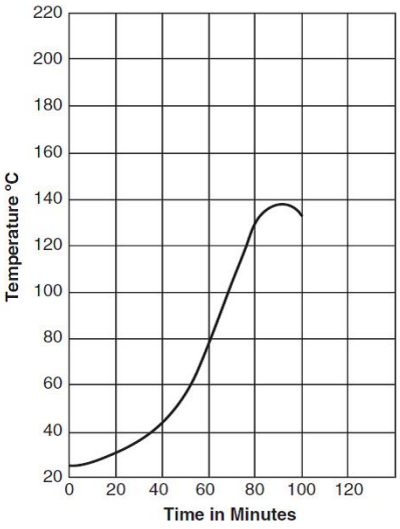
Pour the warm resin into the preheated 100ºC (212ºF) mold. If no mold is used, dip the preheated part into the resin. Heating the part, resin and mold aids impregnation. For maximum impregnation, evacuate at 5 mm mercury (Hg) absolute pressure, or pour under vacuum and hold for several minutes before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

Curing

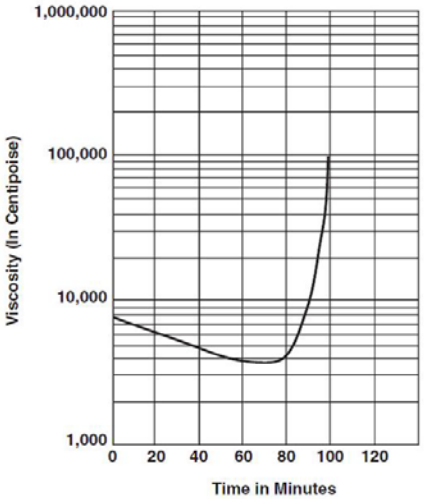
Where minimum stress and maximum thermal shock resistance are required, the ambient temperature cure cycle is recommended. (See “Curing Guide” of **Handling Properties** section). If an oven cure is used, time should be added to the cure cycle to allow the resin to reach the curing temperature. Cure 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 95ºC (203ºF).

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 or use.



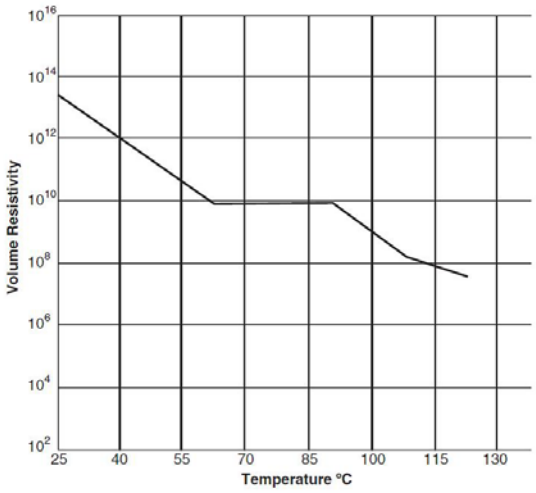
Exothermic Heat Rise for 1 lb. Sample



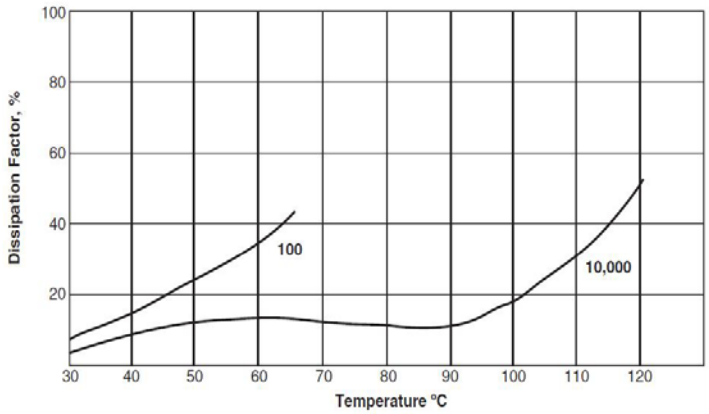
Brookfield Viscosity vs Time @ 73°F (23°C) 130 gram sample

3M™ Scotchcast™ Electrical Resin 8N

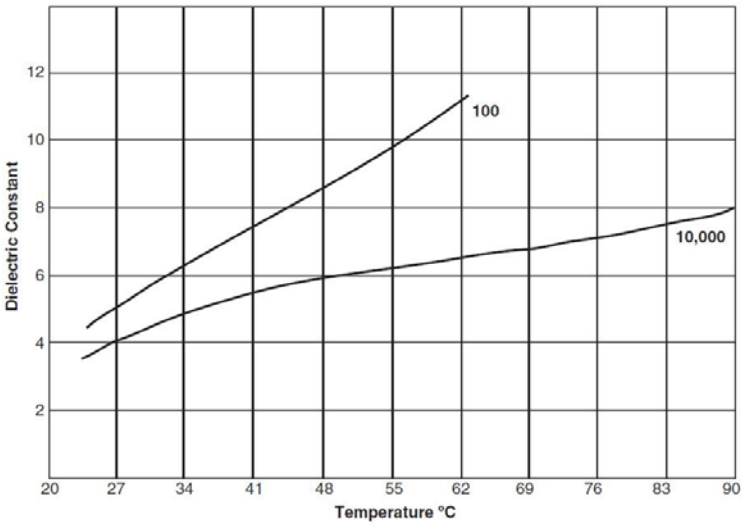
Volume Resistivity (ohm-cm)
Fed. Std. No. 406, Method 4041



Dissipation Factor %
Fed. Std. No 406
(Test Frequencies in Hertz)



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



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Shelf Life & 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. Shelf life is 2 years from date of manufacture when stored in humidity controlled storage.
Availability	Please contact your local distributor; available from 3M.com/electrical [Where to Buy] or call 1-800-676-8381.

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