

3M™ Scotchcast™ Electrical Resin 10N

Two-Part, Room-Curing, Class B, Semiflexible,
Filled, Thixotropic, Epoxy Liquid Resin

Data Sheet

September 2016

Description

3M™ Scotchcast™ Electrical Resin 10N has a thixotropic (heavy paste) consistency that makes it useful for applications requiring a thick coating, a heavy layer, applied by spatula, extrusion, buttering or trowelling, cures with minimum sagging. The cured resin exhibits good physical properties, such as high thermal and mechanical shock strength, strong adhesion, resistance to oil and fuel. It also exerts little stress on sensitive components. Typical applications include filling, patching, caulking, holding, spot repairing, lead anchoring and insulating by buttering end-turns of motor stator coils.

- Temperature rated Class B (130°C)
- General purpose, buttering and holding
- High thermal and mechanical shock resistance
- Resistance to oil and fuel

Handling Properties

Mix Ratio (A-B)	Wt 1:1 Vol (%) 48:52
Viscosity @ 23°C (73°F)	A = Paste B = Paste Mixed = Paste
Density	A = 1.656 kg/l (13.82 lbs/gal) B = 1.548 kg/l (12.92 lbs/gal)
Flash Point	A = 232°C (450°F) B = 238°C (460°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	Brown
Specific Gravity (Cured)	1.55
Compressive Strength*¹ 10% Compression	3400 psi (239 kg/cm ²)
Tensile Strength*² Ultimate	1500 psi (105 kg/cm ²)
Elongation (% at break)*²	15
Flexural Strength*³ (1/2" x 1/2" Sample)	1000 psi (70 kg/cm ²)
Electric Strength*⁸ (volts/mil) (1/8" [3.175 mm Sample])	350 V/mil (13.8 kv/mm)
Hardness (Shore D)	70
Thermal Conductivity*⁴ (Cal • cm/cm ² • sec • °C)	8.2 x 10 ⁻⁴
Coefficient of Linear Thermal Expansion*⁶ (23° C to 113°C) (length/unit length/°C)	8.6 x 10 ⁻⁵
Thermal Shock*⁴	Pass
Thermal Shock*⁵ 10 cycles - 55 to 130°C 1/4" (6.350mm) Olyphant Inserts	Pass
Mechanical Shock*⁴ Ball Drop (lbs)	7.75 (3,5 kg)
Moisture Absorption*⁴ % weight increase, 240 hrs. @ 96% R.H.	.44
Thermal Aging % weight loss 1000 hrs. @ 130°C Hardness Change, Shore D	2.0 15
Dielectric Constant*⁶ 900 Hz 23°C	5.3
Dissipation Factor*⁶ 1000 Hz 23°C	0.10
Volume Resistivity*⁷ (ohm-cm 23°C)	1 x 10 ¹²
Boiling Water Resistance 7 Days - % weight gain - Hardness Change (Shore D)	2.2 -6

Test Method

¹Fed. Std. No. 406, Method 1021

²Fed. Std. No. 406, Method 1011

³Fed. Std. No. 406, Method 1031

⁴MIL-I-16923E

⁵3M Test Method

⁶ Fed. Std. No. 406, Method 4021

⁷ Fed. Std. No. 406, Method 4041

⁸ Fed. Std. No. 406, Method 4031

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Usage Information

Mixing

Mix the separate parts before removing them from their containers. Warming to 60°C (140°F) facilitates this process. (Gel time is approximately 30 minutes @ 60°C). Thoroughly mix parts A and B in the correct proportions. Note: Mechanical means are preferable. Small quantities can be easily mixed on a flat plate to ensure thorough blending.) Mix until the color is uniform or a homogeneous mixture is achieved.

De-aerating

Scotchcast Resin 10 is so thick that evacuating entrapped air is not suggested.

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.

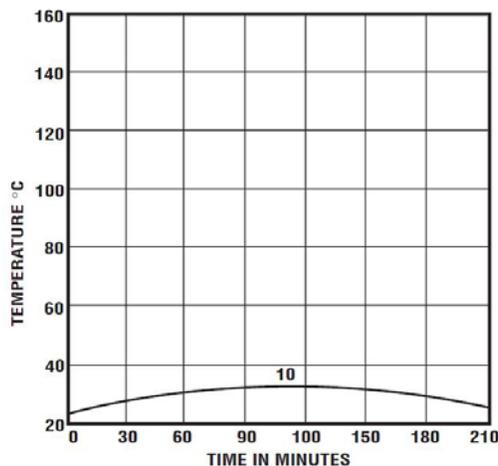
Curing

Where minimum stress and maximum thermal shock resistance are required, the ambient temperature cure cycle is recommended. 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).

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.

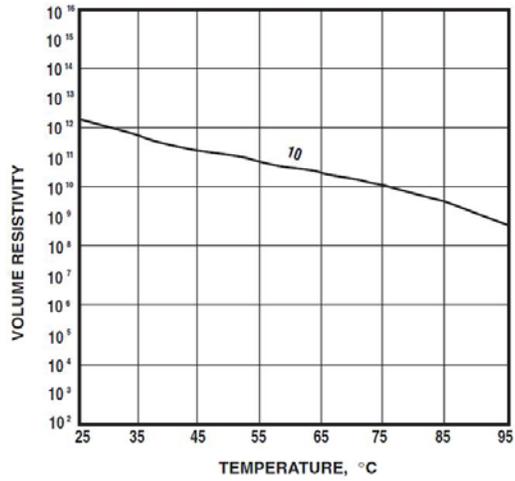
EXOTHERMIC HEAT RISE
(1 LB. SAMPLE)



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Volume Resistivity (ohm-cm)

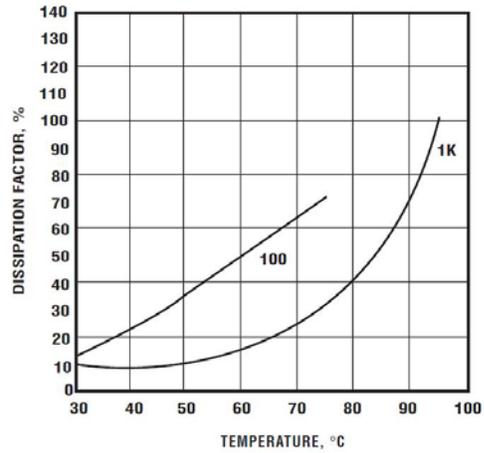
Fed. Std. No. 406, Method 4041



Dissipation Factor %

Fed. Std. No 406

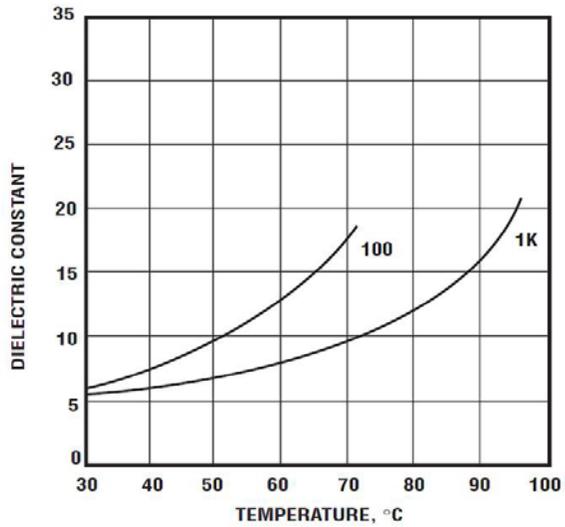
(Test Frequencies in Hertz)



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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