

3M

Scotchcast™

Electrical Resin 210

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

Data Sheet

Product Description

3M™ Scotchcast™ 4 Electrical Resin 210 is a 100% solid, room-curing, epoxy resin system. It is suggested for insulating and sealing motor-winding end turns and slot sections. Part A and Part B are easily mixed in a 2-to-1 ration by weight. At room temperature the resin has a pot life of 1 to 1 ½ hours (dependent on mass) and cures in 24-48 hours. 3M Scotchcast 210 can be applied by spatula or by extrusion. It is useful for a variety of electrical sealing, caulking, filling and patching applications.

- Temperature rated Class B (130°C)
- Low heat rise during cure; extended pot life
- Good mechanical and thermal shock resistance
- Good retention of electrical properties and flexibility after severe heat aging
- Excellent adhesion to most metals and plastics.

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 (75°F) 24-18 hrs 60°C (140°F) 2 hrs 95°C (203°F) 1 hr

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
⁶Fed. Std. No. 406, Method 4021
⁷Fed. Std. No. 406, Method 4041
⁸Fed. Std. No. 406, Method 4031

Typical Properties	
*All values shown are typical. They are based on several determinations and are not intended for specification purposes. Product specifications will be provided upon request.	
Property	Value
Color	Brown
Specific Gravity	1.55
Hardness (Shore D)	70
Compressive Strength ¹ 10% Compression	3400 psi (239 kb/cm ²)
Tensile Strength ² (Ultimate)	1500 psi (105 kg/cm ²)
Elongation ³ (% @ break)	15%
Flexural Strength ²	1000 psi (70 kb/cm ²)
pThermal Conductivity ⁴ (cal – cm/cm ² – sec. °C)	8.2x10 ⁻⁴
Linear Thermal Expansion ⁴ (length/unit length/ °C)	8.6x 10 ⁻⁵
Thermal Shock ⁵ (10 cycles - 55 °C to 130 °C)	
¼" Olyphant Insert	Pass
Thermal Shock ⁴	Pass
Moisture Absorption ⁴ % Weight Gain (240 hrs @ 96% R.H.)	.44%
Boiling Water % Weight Gain 7 days	2.2%
Hardness (Shore D) after aging	64
Mechanical Shock, Ball Drop ⁴	7.75 lbs.
Thermal Aging @ 130 °C % Weight Loss 10 days % Weight Loss 100 Hrs.	1.05% 2.0%
Hardness (Shore D) after aging	85
Dielectric Constant ⁶ 23 °C, 1000Hz	5.3
Dissipation Factor ⁶ 23 °C, 1000Hz	10
Volume Resistivity ⁷ (ohm-cm @23 °C)	10 ¹² ohm-cm
Electric Strength ⁸ .125" sample thickness	350 V/ml

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. (Note: Mechanical means are preferable for mixing 3M™ Scotchcast™ Electrical Resin 210. Small quantities of this resin can be easily mixed on a flat plate to insure thorough blending). Mix until the color is uniform or a homogeneous blend achieved.

Dearating

Scotchcast Resin 210 is so thick that evacuating to remove entrapped air is not suggested.

Curing

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

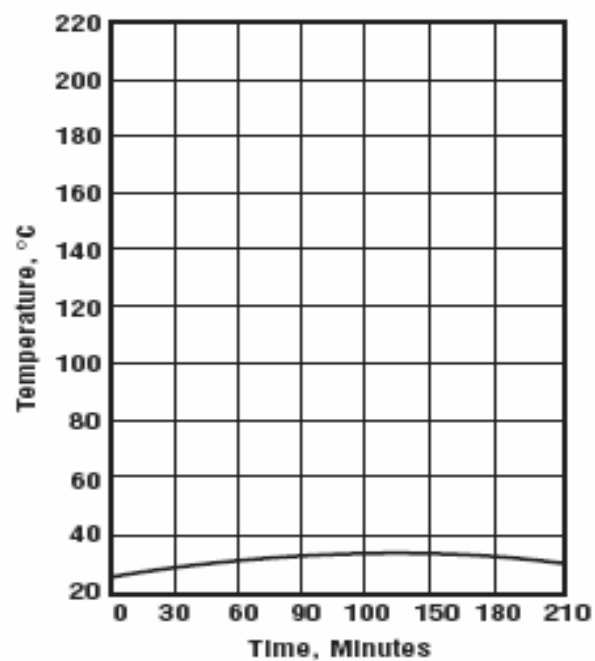
Storage

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 lightly closed. Storage at conditions outside those suggested may compromise the performance of the resin.

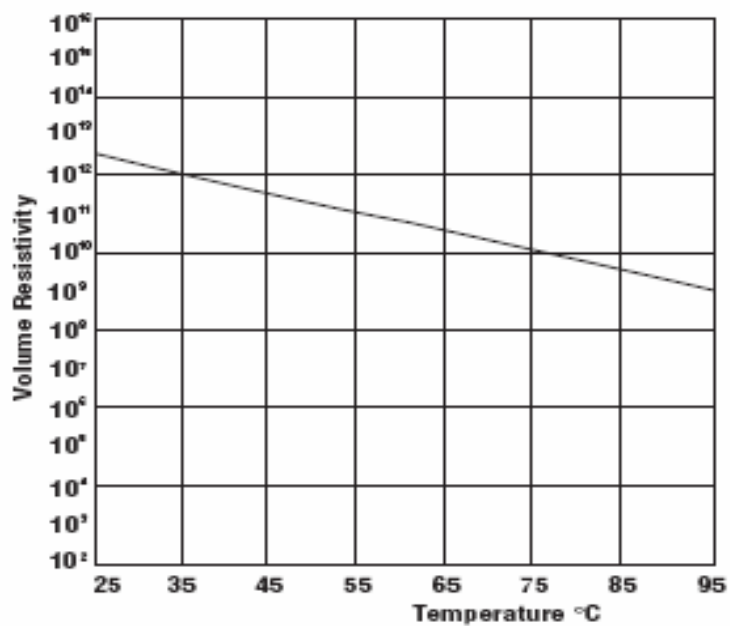
Handling and Safety Precautions

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.

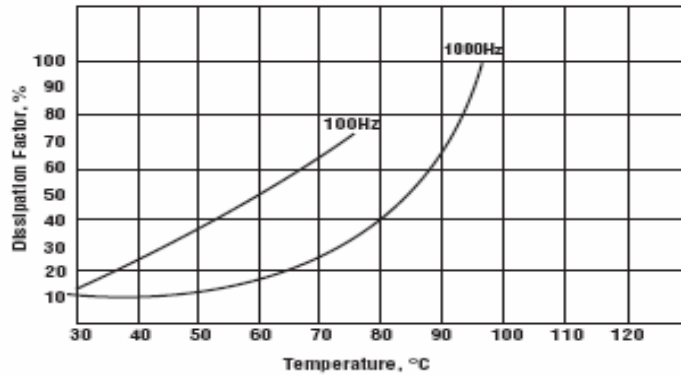
Exothermic Heat Rise
for 1 lb Sample



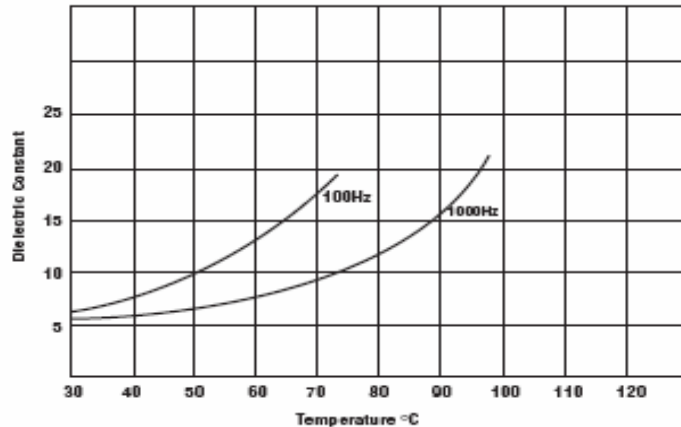
Volume Resistivity
ohm-cm
Fed. Std. 406, Method 4041



Dissipation Factor %
 Fed. Std.406, Method 4021
 (Test Frequencies in Hertz)



Dielectric Constant
 Fed. Std.406, Method 4021
 (Test Frequencies in Hertz)



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