Technical data sheet

Product:	9
Manufacturer:	3M DEUTSCHLAND GMBH
Product group:	ELEKTRO
Article group:	VERGUSSMASSE
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SCOTCHCAST® ELECTRICAL RESIN 9

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Scotchcast® Electrical Resin 9

Two-Part, Room-Curing, Class B (130˚C), Semiflexible, Filled Epoxy Liquid Resin

1. Product Description

3M™ Scotchcast® Electrical Resin 9 is an easy-to-use resin system possessing medium viscosity and unique handling properties. It has a simple 1:1 mix ratio (by weight), a low toxicity potential and is frequently used in applications requiring excellent thermal shock and mechanical shock resistance. The resin's low exotherm and good pot life allow the user to mix substantial quantities at one time. High adhesion, low stress and low exotherm also reduce the effect of strain and temperature on sensitive components that have been coated with this resin.

- Good handling qualities
- Low exotherm
- High thermal and mechanical shock resistance

2. Handling Properties

Mix Ratio (A:B)	Wt1:1
	Vol (%) 47:53
Viscosity	A = 90,000 cps
@ 23℃ (73℉)	B = 20,000 cps
	Mixed = 28,000 cps
Density	A = 1,448 kg/l
	B = 1,280 kg/l
Flash Point	A = 201℃
	B = 180℃
Gel Time	28 min. @ 60℃
Curing Guide	23℃ 24-48 hrs
	60℃ 2 hrs
	95℃ 1 hr

3. Typical Properties

Physical Properties	Typical Value
Color	Brown
Hardness (Shore D)	70
Specific Gravity (cured)	1.42
Compressive Strength[1] 10% Compression	 309 kg/cm^2
Tensile Strength[2] Ultimate	 155 kg/cm^2
Elongation (% at break)[2]	19
Flexural Strength[3]	77 kg/cm^2
Thermal Conductivity[4] (Cal ● cm/cm^2 ● sec ● ℃)	7,4 x 10 $^{-4}$
Linear Thermal Expansion[4] (23℃ to 113℃) (length/unit length/℃)	13 x 10^{-5}
Thermal Shock[4]	pass
Thermal Shock[6] 10 cycles – 55 to 130C 6,35 mm Olyphant Insert	 pass
Electric Strength[5] 3,175 mm sample	13,8 kV/mm
Mechanical Shock[4]	3,5 kg
Moisture Absorption[4] % weight increase, 240 hrs. @ 96% R.H.	 0.8
Thermal Aging % weight loss, 1000 hrs. @ 130℃ Hardness Change (Shore D)	 2.5 +13
Dielectric Constant[7] 1000 Hz 23℃	4.6
Dissipation Factor[7] 1000 Hz 23℃	0.10
Volume Resistivity[8] 23℃ (ohm-cm)	1x10 ^{13}
Oiling Water Resistance 7 days - % weight gain - Hardness Change (Shore D)	 2.5 -8
Flamability[4]	Self-extinguishing

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]Fed. Std. No. 406, Method 4031
[6]3M Test Method
[7]Fed. Std. No. 406, Method 4021
[8]Fed. Std. No. 406, Method 4041

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

4. User Information

4.1 Mixing

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

4.2 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 the liquid resin to contain the foaming that takes place under vacuum.

4.3 Casting and Impregnating

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

4.4 Curing

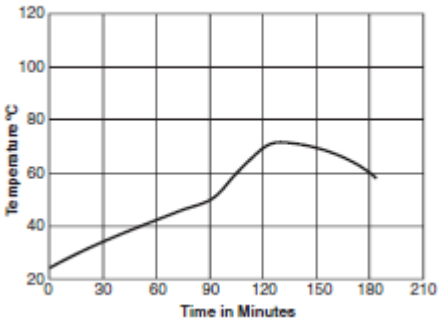
Where minimum stress and maximum thermal shock resistance are required, the ambient temperature cure cycle is recommended. If an oven cure is used, time should be added to the cure cycle to allow the resin to reach the curing temperature. Cure using cycles shown under **Handling Properties.** Where higher temperatures are not objectionable and the size of the casting not excessive, the resin can be quick-cured in one hour at 95℃.

4.5 Shelf Life & Storage

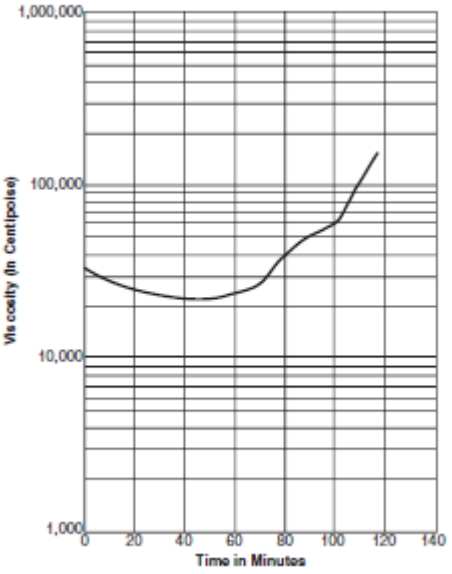
Both parts of this resin system should be stored at temperatures between 20℃ to 30℃, and 30% to 60% relative humidity. When not in use, containers should be kept tightly closed. Storage at conditions outside those suggested may compromise the performance of the resin.

5. 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.

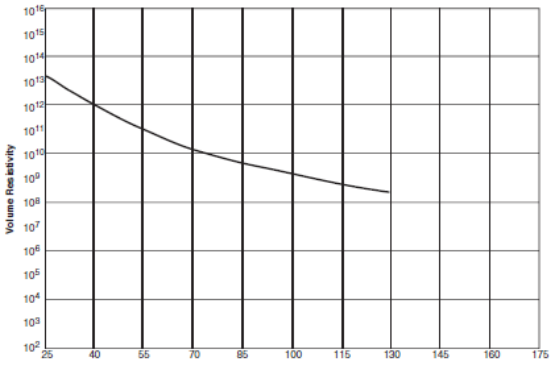


Exothermic Heat Rise for 1lb. Sample

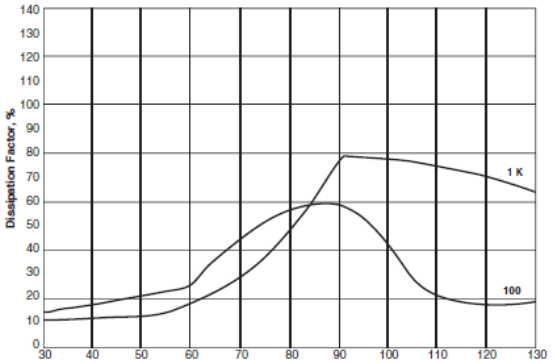


Brookfield Viscosity vs Time @ 23℃ 1 lb. sample

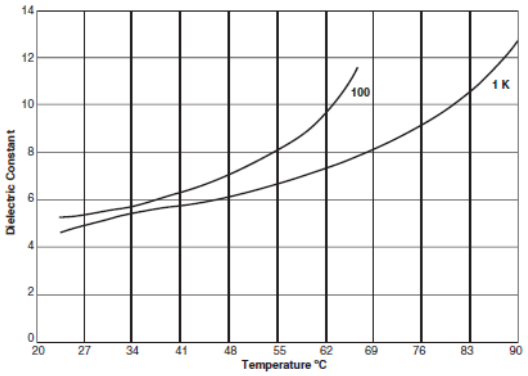
Volume Resistivity (ohm-cm)
Fed. Std. No. 406, Method 4041



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



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



6. Additional Information

To request additional product information see address below.

Important Notice

All statements, technical information and recommendations contained in this document are based upon tests or experience that 3M believes are reliable. However, many factors beyond 3M's control can affect the use and performance of a 3M product in a particular application, including the conditions under which the product is used and the time and environmental conditions in which the product is expected to perform. Since these factors are uniquely within the user's knowledge and control, it is essential that the user evaluates the 3M product to determine whether it is fit for a particular purpose and suitable for the user's method or application.

Values presented have been determined by standard test methods and are average values not meant to be used for specification purposes.

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