Scotchcast™ Electrical Resin 226

Two-Part, Room-Curing, Unfilled, Polyurethane Liquid Resin

Data Sheet

Product Description

3M™ Scotchcast™ Electrical Resin 226 is a rubbery castor-based polyurethane that combines very low viscosity with a good workable pot life and a demold time, at room temperature, of as little as six hours. Resin 226 maintains good electrical properties in both wet and dry environments. It also has a long-term heat stability (130°C) and good toughness. Resin 226 is used for a wide range of electrical and electronic potting and casting applications. For example, its low exotherm and low cure shrinkage, make possible the potting of small, heat-sensitive components, as well as the casting of large quantities of the resin at one time. And the very low viscosity of the product makes it possible to quickly fill and impregnate sand-filled modules. Resin 226 is formulated with materials that have low volatility at room temperature, minimizing toxicity potential. The isocyanate used is not TDI, and it does not contain MOCA.

- Good electrical, physical, chemical and thermal properties.
- Excellent hydrolytic stability
- Low viscosity

Handling Properties

Mix Ratio (A:B)	Wt 2:5
	Vol 23.6:76.4
Initial Viscosity@	A = 190 cps
23˚C (73˚F)	B = 750 cps
	Mixed = 650 cps
Density	A = 10.3 lbs/gal
	B = 8.0 lbs/gal
Flash Point	A = 204°C (400°F)
	B = 288°C (550°F)
Gel Time	15 min. @ 60°C (140°F)
Curing Guide	Demold
	23°C (73°F) 6 hrs
	67°C (152°F) 1 hr
	Full Cure
	23˚C (73˚F) 72 hrs
	67˚C (152˚F) 6 hrs

Test Methods

[1]Fed. Std. No. 406, Method 1011
[2]3M Test Method
[3]MIL-I-16923E
[4]ASTM D-7486
[5]Fed. Std. No. 406, Method 4031
[6]Fed. Std. No. 406, Method 4041[7]

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	Black
Specific Gravity	1.06
Hardness (Shore A)	75
Tensile Strength	980 psi (68.9 kg/cm^2)
Elongation[1]	105%
Thermal Shock 10 cycles - 55°C to 130°C 1/4" (6.25 mm) Olyphant	Pass
Mechanical Shock[3] (Ball drop, lbs.)	>7.75
Brittle Point[4]	-11°C
Thermal Conductivity (cal · cm/cm2 · sec · °C)	4.9 x 10^{-4}
Linear Thermal Expansion (length/unit length/°C)	23 x 10^{-5}
Electric Strength[5] (1/8", 3.175 mm)	420 V/mil 16,500 volts/mm
Thermal Aging (% Weight Loss, 1000 hr. @31°C)	.75%
Hydrolytic Stability (120 days, 71°C, 95% R.H.)	
Hardness after	75
Weight Gain	.45%
Naval Avionics (4 Weeks, 100°C, 95% R.H.)	
Hardness after, Shore A	65 Pass
Weight Gain	.6%
Volume Resistivity[6] (ohm-cm, 23°C, 95% R.H.)	
Initial	6.5 x 10^{13}
After one week (100°C, 95% R.H.)	3.3 x 10^{13}
Exothermic Heat Rise (over room temperature)	
454 gram sample	50°C (90°F)

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. Parts A and B should be proportioned to within 2% accuracy and then combine thoroughly. To obtain a homogeneous mixture, extremely thorough mixing with intermittent scraping of the sides and bottom of the mixing container is required. If not mixed thoroughly, the product will fail to cure, exhibit soft or tacky areas, or exhibit hard, brittle areas.

Deaerating

The thorough mixing requirements of this product frequently result in the entrainment of moisture laden air. Deaeration to remove this air and moisture is recommended. This is accomplished by evacuating the 3M™ Scotchcast™ Electrical Resin at room temperature to between 5 and 10 mm of mercury absolute pressure. Container side walls should be four times the height of the liquid resin to contain the foaming that takes place under vacuum.

Priming

Where adhesion is critical, the application surface must be primed with 3M™ Scotchcast™ Electrical Resin Primer 5136. Instruction sheets on these products are available on request.

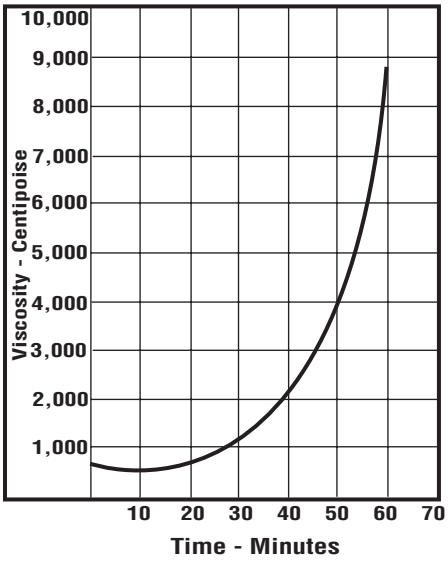
Storage

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.

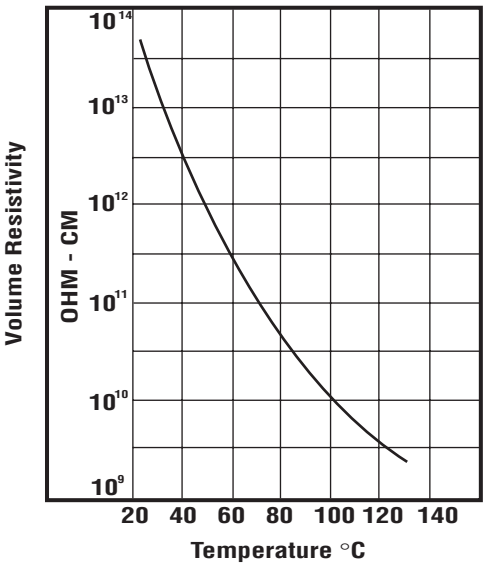
Handling and Safety Precautions

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

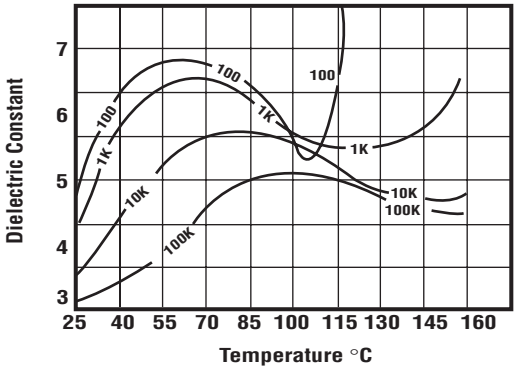
Potlife @ Room Temperature
(100 gram sample)



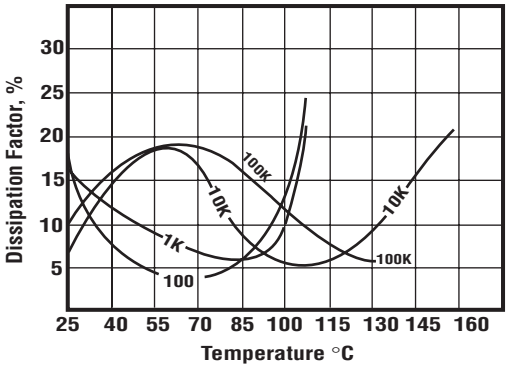
Volume Resistivity
(OHM-CM)
Fed. Std. 406, Method 4041



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



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



3M and Scotchcast are trademarks of 3M Company.

Important Notice

All statements, technical information, and recommendations related to 3M's products are based on information believed to be reliable, but the accuracy or completeness is not guaranteed. Before using this product, you must evaluate it and determine if it is suitable for your intended application. You assume all risks and liability associated with such use. Any statements related to the product which are not contained in 3M's current publications, or any contrary statements contained on your purchase order shall have no force or effect unless expressly agreed upon, in writing, by an authorized officer of 3M.

Warranty; Limited Remedy; Limited Liability. This product will be free from defects in material and manufacture for a period of one (1) year from the time of purchase. **3M MAKES NO OTHER WARRANTIES INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** If this product is defective within the warranty period stated above, your exclusive remedy shall be, at 3M's option, to replace or repair the 3M product or refund the purchase price of the 3M product. **Except where prohibited by law, 3M will not be liable for any indirect, special, incidental or consequential loss or damage arising from this 3M product, regardless of the legal theory asserted.**

3M

Electrical Markets Division
6801 River Place Blvd.
Austin, TX 78726-9000
1-800-676-8381
Fax 1-800-828-9329
www.3M.com/electrical

Printed on 50% recycled paper with 10% post-consumer

Litho in USA