



# Scotchcast™

## Electrical Resin 5555

### One-Part, Motor, Transformer, Coil Insulating Epoxy Resin

- Fast curing
- Excellent electrical properties
- Superior cold flow resistance
- Excellent heat, chemical and moisture resistance
- Superior cut-through resistance
- UL 1446 Electrical Insulation System (EIS) recognition at class 120(E), 130(B), 155(F), and 180(H)

3M™ Scotchcast™ Electrical Resin 5555 is a one-part, green pigmented, rapid heat curing powder coating. It is designed to provide a continuous, tough moisture and chemical resistant dielectric coating for motor stators, armatures, and transformers.

Electrical resin 5555 is manufactured by a fusion blend process, insuring that each individual particle of powder contains all the components necessary to effect a complete cure and attain stated performance properties.

Resin 5555 can be applied via cold electrostatic fluid bed, hot venturi spray or hot fluid bed dip.

When applied electrostatically to a cold part, induction heat is recommended to melt and flow the powder to a tough, moisture and chemical resistant dielectric coating for various electrical devices.

When applied to a hot part the resin melts, flows to a controlled extent, then cures, bonding to the substrate and coalescing into a smooth, continuous, essentially uniform, thick dielectric coating.

Resin 5555 has two gel times in order to accommodate those applications that need slightly higher flow, or for application equipment that requires rapid curing.

### Scotchcast™ Electrical Resin 5555 – Typical Properties

Property	Value	
Color	Green	
Specific Gravity <sup>1</sup> (cured)	1.7	
Dielectric Strength <sup>3</sup> 12 to 14 mil coating	1300 v/mil	
Impact Resistance <sup>2</sup> 12-15 mil coating 1/8" sandblasted steel panel Gardner 5/8" Radius Impact Tester	100 inch-lbs	
Cut-Through Resistance <sup>2</sup> - 1 lb wt: 18 AWG wire	>340°C (644°F)	
Edge Coverage <sup>2</sup> - 12 to 15 mil coating on flat	5555 10G 5555 22G	35-40% 30-40%
Gel time <sup>2</sup> @ 392°F hot plate	5555 10G 5555 22G	9 to 11 seconds 21 to 23 seconds

\* Not recommended for specification purposes. Product specifications will be provided upon request.

Test Methods

<sup>1</sup>ASTM D-792

<sup>2</sup>3M Test Method

<sup>3</sup>ASTM D-149

## Usage Information

### Method of Application

The rapid cure of Scotchcast™ Electrical Resin 5555 permits the use of high-speed production methods. The powder can be readily applied by electrostatic fluid bed, venturi spraying techniques as well as through the use of fluid bed dipping of preheated parts. Automated and manual types of application equipment are both available. Equipment manufacturers' names can be suggested upon request.

### Curing

The cure of electrical resin 5555 to a thermoset condition involves a time/temperature relationship. The retained heat in application units having high heat capacity is sufficient in many cases to effect a cure of the resin without the need for post-curing facilities. For example, if an application surface can retain a temperature of 204°C (400°F) for 90 seconds after coating, it will be fully cured. Small articles, or those with large surface-to-mass ratio, lose heat rapidly and may require a higher preheat temperature and/or additional oven-curing.

The figures below represent nominal guidelines for obtaining the resin's adhesion, impact and chemical resistance characteristics.

### Scotchcast 5555 (10G)

Cure Temperature	Time
177°C (350°F)	6 minutes
204°C (400°F)	150 seconds
232°C (450°F)	90 seconds

### Scotchcast 5555 (22G)

Cure Temperature	Time
177°C (350°F)	8 minutes
204°C (400°F)	4 minutes
232°C (450°F)	2 minutes

## Important Notice

All statements, technical information, and recommendations related to Seller's products are based on information believed to be reliable, but the accuracy or completeness thereof is not guaranteed. Before utilizing the product, the user should determine the suitability of the product for its intended use. The user assumes all risks and liability whatsoever in connection with such use.

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Time does not include that required to reach the cure temperature. The user must determine the time required for the coated substrate to reach listed temperatures.

### Preheat Temperature Range

If the part is to be coated via venturi spraying or fluid bed dip, the part must be preheated to a temperature ranging from 204°C (400°F) to 260°C (500°F). The optimum preheat temperature depends upon the size, heat capacity and configuration of the object to be coated, as well as the method of application. The ideal coating temperature will vary for each application and is best determined by experimentation.

### Handling and Safety Precautions

Read all Health Hazard, Precautionary, and First Aid statements found in the Material Safety Data Sheet and/or product label of chemicals prior to handling or use.

### Storage

Laboratory evaluation indicates that the usable shelf life of the product is 18 months from the date of manufacture when stored at temperatures not exceeding 21.1°C (70°F), providing the material is stored in its original container. Care should be taken when removing the resin from the original container to prevent inclusion of foreign material. After the resin removal, the bag should be retied immediately. This will help to avoid agglomeration caused by excess moisture. For best results, store in a cool, dry place.

### Insulation System

Scotchcast electrical resin 5555 has UL 1446 and IEC 85 system recognition as major insulation for use in motor, transformer, and coil constructions. The product is listed under File Number E163090, System Designation 3M120-1, 3M130-1, 3M155-1, and 3M180-1. These systems are rated class E, B, F and H respectively.

Users interested in applying these insulation systems to their design are invited to contact 3M for approval letter to obtain access to the UL file for further information.

### Ordering Information

For ordering technical or product information, or a copy of the Material Safety Data Sheet, call:

Phone: 800/722-6721 or 512/984-1038

Fax: 877/601-1305 or 512/984-6296

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