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TECHNICAL BULLETIN

50-3150FRBK
FLAME RETARDANT THERMALLY CONDUCTIVE EPOXY RESIN; UL 94 V-0 LISTED

DESCRIPTION:

50-3150FRBK is a thermally conductive, 2 component epoxy system for potting and encapsulation. It is formulated to meet the stringent non-burning requirements of UL94 V-0. This system offers excellent heat transfer, low shrinkage, and outstanding insulation properties.

The resin 50-3150RFRBK has 4 different catalysts to choose from depending on desired final properties. Catalyst 12, Catalyst 190, and Catalyst 30 are listed with Underwriter's Laboratory for passing UL 94 V-0. For low mixed viscosity with no UL listing requirements Catalyst 150 is available.

50-3150FRBK with Catalyst 30 has a UL (746B) **Relative Temperature Index (RTI) rating of 130°C**.

50-3150FRBK with Catalyst 190 **passes NASA's outgassing requirements** per ASTM E595.

This system is an excellent choice for applications requiring high thermal conductivity and flame retardancy. Typical applications for 50-3150FRBK include potting and encapsulating power supplies, transformers, electric motors, capacitors, batteries, coils, insulators, sensors, devices for intrinsic safety, etc.

TYPICAL PROPERTIES:

Viscosity, cps, 25 °C	
50-3150RFRBK Resin	85,000
Mixed with Cat. 190	28,000
Mixed with Cat. 30	17,000
Mixed with Cat. 12	2,000
Mixed with Cat. 150	1,500
Color	Black
Hardness, Shore D	90
Operating Temp. Range,°C	-60 to +200
Specific Gravity, 25 °C	1.6
Compressive Strength, psi	15,000
Linear Shrinkage, in/in	0.002
Tensile Strength, psi	9,850
Dielectric Strength, V/mil	485
Dielectric Constant, 60 Hz	5.6
Dissipation Factor, 60 Hz	0.015
Volume Resistivity, ohm-cm, 25 °C	1.5×10^{15}
Coefficient of Expansion, ppm/°C	14

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Thermal Conductivity, W/m·°K	2.16
Heat Distortion, °C	155
Outgassing (with Cat. 190)	
Cure: 25°C for 12-24 hrs	
%TML	0.55
%CVCM	0.01
%WVR	0.10
Cure: 60°C for 1 hr	
%TML	0.40
%CVCM	0.01
%WVR	0.13

INSTRUCTIONS FOR USE:

Note: 50-3150RFRBK contains fillers. Mix thoroughly before using.

A. Catalyst 190 listed with UL 94 V-0 and passes NASA outgassing:
   1. By weight, thoroughly mix 100 parts 50-3150RFRBK resin to 5 parts Catalyst 190.
   2. Degas, pour, and cure according to one of the following recommended cure schedules:
      a) 25 °C 12-24 Hours
      b) 60 °C 1 Hour

B. Catalyst 30 listed with UL 94 V-0 and RTI Rating of 130 °C:
   1. By weight, thoroughly mix 100 parts 50-3150RFRBK to 10 parts Catalyst 30.
   2. Degas, pour, and cure according to one of the following recommended cure schedules:
      a) 85 °C 3-4 Hours
      b) 100 °C 2-3 Hours

   For optimum performance, an additional 2 hours at 185 °C is recommended.

C. Catalyst 12 listed with UL 94 V-0 Rating:
   1. By weight, thoroughly mix 100 parts 50-3150RFRBK to 12 parts Catalyst 12.
   2. Degas, pour, and cure according to one of the following recommended cure schedules:
      a) 25 °C 48 Hours
      b) 65 °C 4-6 Hours

D. Catalyst 150, not UL listed:
   1. By weight, thoroughly mix 100 parts 50-3150RFRBK to 17 parts Catalyst 150.
   2. Degas, pour, and cure according to one of the following recommended cure schedules:
      a) 25 °C 24 Hours
      b) 35-40 °C 2-3 Hours

STORAGE, HANDLING, & SAFETY:

Store both components at 25 °C in original containers. The expected shelf life is 12 months in original containers.
Please read the Safety Data Sheet before using this or any other chemical.

AVAILABILITY:

50-3150RFRBK is available in quarts, gallons, and 5-gallon pails.

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