834B

Black Flame Retardant Epoxy, Encapsulating & Potting Compound

834B is a black, rigid, flame-retardant thermal potting compound that offers extreme environmental, mechanical and physical protection for printed circuit boards and electronic assemblies.

This 2-part epoxy is designed for applications where thermal management and self-extinguishing are critical. It also provides excellent electrical insulation and protects components from static discharge, vibration, abrasion, thermal shock, environmental humidity, salt water, fungus, and many harsh chemicals.

Features & Benefits

Flame-retardant—meets UL 94V-0

Convenient 2A:1B volume mix ratio

Low exotherm

Very high compressive and tensile strength

Excellent adhesion to a wide variety of substrates including metals, composites, glass, ceramics, and many plastics

Excellent electrical insulating characteristics

Non-halogenated flame-retardant fillers

Solvent-free

Cure Instructions

Allow to cure at room temperature for 72 hours, or cure in an oven at one of these time/temperature options:

Temperature	65 °C	80 °C	100 °C
Time	2.5 h	1 h	20 min

Available Packaging

Part #	Packaging	Net Vol.	Net Wt.
834B-2.7L	3 Can kit	2.7 L	4.30 kg
834B-10.8L	3 Can kit	10.8 L	17.2 kg
834B-60L	3 Pail kit	60 L	95.6 kg

Storage and Handling

Store between 16 and 27 ˚C in a dry area, away from sunlight (see SDS). Storage below 16 °C can result in crystallization.

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Liquid Properties

Chemistry	Epoxy	—
Density	1.6 g/mL (Mixed) 1.7 g/mL (A) 1.4 g/mL (B)	ASTM D1475
Viscosity @ 25 ˚C	16 000 cP (Mixed) 28 000 cP (A) 2 100 cP (B)	Brookfield Engineering labs Inc. IPCTM-65- Method 2.4.24.4
Mix Ratio	2:1 (Volume) 2.4:1 (Weight)	—
Working Time [a]	1 h	—
Shrinkage	1.1%	Calculated
Shelf Life	5 y	—

[a] Based on 100 g sample. Varies by volume and geometry.

Cured Properties

Flame Retardancy	Meets UL 94V-0	—
Color	Black	—
Density	1.6 g/mL	Hydrostatic Weighing
Service Temperature Range	-40–175 ˚C	—
Intermittent Temperature	-50–200 ˚C	—
Thermal Conductivity @ 25 ˚C Specfic Heat Capacity @ 25 ˚C Thermal Diffusivity @ 25 ˚C	0.8 W/(m·K) 1.5 J/(g·K) 0.3 mm^2/s	ASTM E1461
Glass Transition Temperature (T_g)	56 ˚C	ASTM E1545
Coefficient of Thermal Expansion (CTE)	74 ppm/˚C (Prior T_g) 107 ppm/˚C (After T_g)	ASTM E831
Hardness	85 D	ASTM D2240
Tensile Strength	17 N/mm^2	ASTM D638
Compressive Strength	74 N/mm^2	ASTM D695

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Cured Properties Continued

Lap Shear	8.2 N/mm^2 (Stainless Steel) 11 N/mm^2 (Aluminum) 1.8 N/mm^2 (ABS) 2.2 N/mm^2 (PC)	ASTM D1002
Resistivity	2.1 x 10^{12} Ω·cm	ASTM D257
Breakdown Voltage @ 3.175 mm Dielectric Strength @ 3.175 mm	47 000 V 376 V/mil	ASTM D149
Dielectric Constant @ 1 MHz Dissipation Factor @ 1 MHz	3.1 0.01	ASTM D150
Chemical Absorption Weight Gain, 30 days @ 25 °C	11 % (Acetone) 12 % (Ethyl Acetate) 0.7 % (IPA) 3 % (Sulphuric Acid 3%) 4 % (Sulphuric Acid 30%) 0.3 % (10% NaOH) 0.7 % (10% NaCl) 0.8 % (Water) 0 % (Transmission Oil) 0 % (Transformer Oil) 6 % (Gasoline)	—

Application Instructions

Read the product SDS and Application Guide for more detailed instructions before using this product.

Recommended Preparation

Clean the substrate with 824 99.9% Isopropyl Alcohol, so the surface is free of oils, dust, and other residues.

Mixing

1. Scrape settled material free from the bottom and sides of the part A container; stir the contents until homognous. Use a paint shaker if available.
2. Measure 2 parts by volume of the part A and pour into the mixing container. Ensure all contents are transferred by scraping the container.
3. Measure 1 part by volume of the part B and pour into the mixing container. Ensure all contents are transferred by scraping the container.
4. Thoroughly and gently mix parts A and B together. Avoid introducing air bubbles.
5. To de-air, let sit for 15 minutes or put in a vacuum chamber at 25 inHg for 2 minutes.
6. If bubbles are present at the top, break them gently with the mixing paddle.
7. Pour the mixture into a container holding the components to be protected.
8. Close the part A and B containers tightly between uses to prevent skinning.

If crystallization/solidification occurs, reconstitute the product by warming to between 55 and 65 °C until it becomes fully re-liquified. Let the material cool to room temperature before mixing, to prevent flash cure.

Mixing >1 kg at a time decreases working time and can lead to a flash cure. Limit the size of hand-mixed batches. For large production volumes, contact MG Chemicals Technical Support for assistance.