Appliance

APPLIANCE ENGINEER®

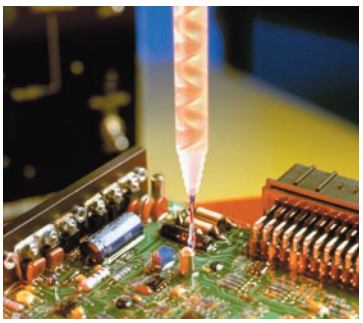
Electronics Report Engineering

Keeping It Cool

A two-component polyurethane compound helps to cool down electronic assemblies and provides quick heat dissipation away from hot components.

THE 50-2369 FR from Epoxies, Etc… (Cranston, RI, U.S.; www.epoxies.com) is said to be the fastest self-extinguishing thermally conductive polyurethane potting compound available. Not only does it provide a quick heat-dissipating system in a polyurethane chemistry, it also passes UL's 94V-0 self-extinguishing test and meets RoHS requirements.

Like most potting compounds (epoxy or urethane), 50-2369 FR is made up of two components that, when mixed, will react and harden. "This gives the user the best combination of ease of use along with good storage life," explains Al DeSisto, director of technical sales.



A new potting compound is said to be unique in the marketplace with its combination of thermal conductivity, hydrolytic stability, insulation resistance, UL 94V-0 rating, and RoHS compliance.

However, DeSisto says the new compound is formulated with a proprietary blend of resins and fillers that gives it an outstanding heat dissipating capability. "Its ability to dissipate heat allows components to run at lower temperatures," he says. "This usually translates to longer component life and better part reliability."

While most UL 94V-0–listed products are rigid epoxies that stress sensitive components during or after cure, DeSisto says the new polyurethane compound cushions and protects electronic components. "Polyurethane compounds are inherently elastomeric in nature," he tells APPLIANCE. "This feature makes them ideal for applications where there may be extreme vibration, shock, impact, or rapid temperature excursions. Other polymer compounds may be too brittle for these conditions; 50-2369 FR resists cracking and maintains its physical properties."

Formulated to provide excellent electrical insulation properties, the compound helps to protect assemblies and components while helping to maintain the assemblies' electrical integrity. The proprietary formulation also allows the self-extinguishing potting compound to pass the stringent flame-retardant UL 94V-0 test. "It was only through extensive development in our laboratory that we were able to achieve this distinction," says DeSisto.

As electronics get smaller and generate more heat, the potting compound can be applied to most product designs. "It is useful anywhere that it is beneficial to remove heat or transfer it away from a specific area—power supplies, resistors, handles," DeSisto explains. "It is also useful as an encapsulant for securing components used in high vibration or physical shock."

In addition, the compound's polyurethane chemistry means it has good moisture and overall weather resistance, making it a good solution for outdoor or water-based applications. "In equipment such as a washing machine or dishwasher, 50-2369 FR could encapsulate a circuit board and provide protection against moisture, humidity, or immersion in aqueous solutions," DeSisto tells APPLIANCE. ■