

Custom Solution Exceeds Expectations in Life-Saving Cardiac Device

PolyOne solves design and material challenges while eliminating potential delays and added retooling costs.

Situation

When PolyOne first began collaborating with a leading North American manufacturer of cardiology devices on the design of its newest automated external defibrillator (AED), time was a critical factor.

At the start of the project, the OEM selected a thermoplastic polyurethane (TPU) from another supplier. This structural part needed to provide sealing and impact resistance and had to be durable, waterproof, and oil- and abrasion-resistant while providing patient comfort.

Midway through the product development cycle, designers determined that a UL rating was necessary. That meant the original TPU material would have to be replaced. Tooling for the TPU part was already in an advanced stage of production, so the manufacturer couldn't retool for a new material without incurring a substantial time and cost penalty.

The PolyOne Difference

Based on their extensive portfolio of thermoplastic elastomer (TPE) technologies and knowledge of the healthcare field, the PolyOne team suggested a customized material solution from the OnFlex™ HFFR portfolio that would meet both performance and manufacturing challenges.

The injection-molded part is positioned between two high-impact PC/ABS parts in a sandwich design. An important requirement was the molding of thin and thick sections (0.125 in to 0.5 in) as required by the ergonomic design, with minimal sink or flow marks. The part serves as an overmold for structural support in the handle area, while the rest of the part acts like a large O-ring to dampen any physical contact. A rigid plastic handle made of reinforced PET is overmolded with the TPE and completely encapsulated.



Delivering a Value-Added Solution

Flame-retardant TPEs were too smooth, too plastic in feel, and lacked the texture needed for a solid grip. As a result, PolyOne formulated a custom TPE as a drop-in replacement that would meet the application's requirements with no retooling required.

The material also had to meet a minimum UL94 V1 rating, but PolyOne exceeded the requirement by developing a TPE with a UL94 V0 rating. The custom compound also provided the necessary tactile qualities. Finally, PolyOne met the critical time challenge by providing color-matched samples and flame testing results in six weeks.

PolyOne helped the customer avoid retooling, which would have added up to \$300,000 to the project's cost, and would have also created a 16-week time delay. Using its broad formulation expertise to meet the OEM's compressed time-to-market schedule, PolyOne provided a complete solution with samples and flame testing, and its team attended molding trials to ensure the parts processed easily met performance requirements.

Product choices often vary by region due to differences in regulatory and agency requirements, availability and other key factors. Please contact your nearest sales office for assistance in choosing the right solution for your locale.

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