

High-Performance Edgetek™ Compound Sparks Sales for Market Leader

PolyOne's high temperature polyamide solution helps the customer regain its market leadership position by lowering environmental impact and eliminating €66,700 (\$87,600 US) in assembly costs.

Situation

To remain competitive and keep a leadership position in the market, a large international OEM specializing in electrical power management applications recently sought to redesign one of its key products, a switch disconnecter, with the intent of replacing a thermoset material with a thermoplastic solution. The disconnecter, also known as an isolator switch, is used in a variety of industrial and power distribution systems to ensure safety during service and maintenance. The redesign focused on a cap fuse connector, which was originally compression molded from a thermoset polyester material and then manually assembled to the device.



Designers gathered the following list of material requirements:

- Injection moldable thermoplastic
- RoHS compliant formula
- Halogen-free flame retardant grade
- Performance equivalent to thermoset polyester

Further, the material solution had to be more cost-effective than other high-end engineering thermoplastics such as PPA, PPS, PEI, PSU, and PES.

In order to be selected for this application, the material had to meet more specific performance targets set by the OEM's technical department, including:

- UL94 V-0 / 0.8mm flammability
- IEC 606095-2-12 Glow Wire (GWFI) performance 960°C / 0.8mm
- 270°C Heat Deflection Temperature (HDT)
- IEC 60112 600V Comparative Tracking Index (CTI)
- High flow for multicavity tools
- Ability to overmold onto a metal contact without cracking

The PolyOne Difference

The PolyOne sales and technical team addressed the challenge by recommending the Edgetek™ AM material, which includes non-halogenated, flame-retardant technology. This high temperature polyamide compound has lower specific gravity and is less corrosive than existing halogenated flame-retardant polyamide materials, leading to longer tool life. Formulated for easy processing, the material is also ideal for molding thin-walled parts in multi-cavity tools.



In this application, the Edgetek solution exhibited a balance between performance and operational efficiency that no other competing material could provide, including:

- UL94 V-0 and UL746B ratings achieved
- IEC 606095-2-13 Glow Wire (GWIT) 750°C target met
- Oxygen Index (EN ISO 4589-2): >32%
- Low moisture sensitivity
- Excellent colorability, meets RAL color target

PolyOne's team also worked with the manufacturer to fine tune the selected grade for optimum performance and processability.

Delivering a Value-Added Solution

Using non-halogenated, flame-retardant Edgetek™ AM for the new cap fuse connector design enabled the manufacturer to achieve several goals.

More efficient production helped the OEM to retain its market leading position and reach a sales objective of 1.5 millions units per year while offering its customers a more environmentally conscious product that eliminates halogens.

Compared to the thermoset polyester it replaces, the Edgetek AM compound has a lower specific gravity, so more parts can be produced from each pound of material.

Because Edgetek AM can be overmolded onto the cap fuse metal contact without cracking, the manufacturer was able to remove a secondary assembly operation for a savings of €66,700 (\$87,600 US). It also eliminated the risk of connection failures, which had occurred regularly on cap fuses produced with thermoset materials.

PolyOne offers specialized solutions that are targeted at helping customers improve operational efficiency, meet environmental targets, and maximize value in every way possible.

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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