

Resilient TPE Slices Production Overhead for Power Tool Manufacturer

PolyOne TPE material enables use of two-shot molding to increase production efficiency and reduce scrap, saving \$55,000 in the process.

Situation

A leading North American manufacturer of home power tools sought a new solution for producing the “boot,” or soft protective cover, for several of its power saw product lines. The design team had two objectives: improve vibration damping performance of the boot to deliver a better user experience, and streamline manufacturing of the part to reduce system costs.

At the time, the boot was injection molded from acrylonitrile-ethylene-styrene (AES) as a standalone part and assembled to the housing separately. The company foresaw that integrating this step into the molding process for the saw housing would cut assembly time and overall costs. At the same time, adding a softer material could increase damping performance, which can help power tool users avoid health issues such as carpal tunnel syndrome and tendinitis related to constant vibration.

However, before making a change involving investment in new tooling and processing expertise, the company wanted to be confident that the solution would make sense from an economic perspective.

The PolyOne Difference

The manufacturer began working with PolyOne to find a thermoplastic elastomer (TPE) solution to meet its dual requirements. PolyOne’s team recommended the use of overmolding (two-shot injection molding) to integrate the boot with the saw housing, and trialed several products before customizing a grade based on its extensive portfolio. This TPE provided a lower durometer than AES for enhanced vibration damping combined with durability for demanding use conditions.

While pleased with the material’s performance, the company still wanted to verify that a substantial investment in overmolding – including tooling and testing – would pay off in lower system costs. PolyOne gathered detailed data from this customer’s production facility in Mexico and helped them calculate and compare the costs of the two solutions.

These calculations showed that PolyOne’s TPE would deliver significant cycle time efficiencies and reduced scrap rates, more than offsetting its slightly higher material cost and higher specific gravity. As a result, the manufacturer made the decision to move forward. Currently, the company is producing 800,000 housings annually using the specialty TPE material.



Delivering a Value-Added Solution

PolyOne's customization and process optimization expertise produced a TPE grade that surpassed the performance of the previous material and enabled the introduction of a more efficient process. Overmolding instead of standalone molding streamlined production and eliminated secondary assembly steps. This cut cycle time by 27 percent. Adding to the overall value of the solution, the TPE yields significantly less scrap than the previously used AES material.

With the PolyOne material, the manufacturer is expected to save more than \$55,000 per year. The company anticipates achieving ROI for the new solution within 12 months.

Equally important, the PolyOne TPE added value to the company's products by reducing vibration for a more pleasant user experience.

PolyOne offers customized solutions targeted at helping customers grow and increase profitability by delivering the material performance required while also improving operational efficiency to maximize value 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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