

Challenge Accepted.



TPE HEIGHTENS PRODUCT IMPACT AND PROFITABILITY

 **AVIENT™** » CASE STUDY: ONFLEX-S™ THERMOPLASTIC ELASTOMERS



THERMOPLASTIC ELASTOMER FOR OVERMOLDING ATTRACTIVE, PRACTICAL HANDGRIPS ONTO ABS RESIN

THE CHALLENGE

Facing strong competition from all-plastic garden sprayers, a leading garden equipment manufacturer decided to create a new, high-end line of sprayers featuring enhanced quality, durability and aesthetics. To provide a secure grip for safety and usability, the company planned to overmold a thermoplastic elastomer (TPE) onto the handle and other selected areas of the sprayer. In order to optimize its profit margins, the company sought to control system costs by avoiding secondary assembly and handling. The use of 2K (two-component) molding—in which the base resin is injected and allowed to set up for a short time, and then is overmolded by injecting the TPE—streamlines the manufacturing process.

However, the original TPE that the company selected caused issues during 2K molding. It required a high temperature and a strong injection pressure to bond to the acrylonitrile-butadienestyrene (ABS) substrate, which caused the resin to deform. In turn, deformation negatively impacted part tolerances, leading to poor fit and performance of the sprayer.

Product developers reported that they needed a better TPE to provide superior bonding performance with ABS without requiring high temperature and pressure during 2K molding. Without it, the company faced the prospect of having to use another production technique that would cost more and take longer. Other requirements were abrasion resistance and excellent aesthetics.

THE SOLUTION

Avient was asked to suggest a suitable TPE for this application. They recommended OnFlex-S™ K 65A-3E1709 multicomponent TPE, which offers excellent adhesion to ABS and can be molded at lower temperatures and injection pressures than competitive products. OnFlex-S TPEs also provide an attractive appearance and resist scratching and marring.

For this manufacturer, another appealing aspect of working with this material was Avient's dedicated TPE production line in Spain, which is used solely to manufacture TPEs for overmolding applications. The company valued the high quality and technical precision offered by this specialized production line.

Avient's technical experts assisted the company with molding trials to ensure the ideal temperature and pressure parameters.

THE IMPACT

With its enhanced processability, OnFlex-S K 65A-3E1709 thermoplastic elastomer enabled the company to solve its 2K molding issues and reduce system costs. The material helps the company produce attractive, high-quality garden sprayers featuring precisely fitting parts. The new products have been very well received by consumers, and have allowed the company to address the competitive threat from all-plastic sprayers.

- **Lower system costs = higher margins:** By reducing waste from part deformation, the Avient TPE allowed the manufacturer to leverage efficient, fast 2K molding for system cost reduction. These savings help the company to achieve high margins on its top-of-the-line sprayers.
- **High-end product line = competitive advantage:** With Avient's OnFlex-S TPE, developers successfully designed and produced a new, high-end product line that compares favorably with all-plastic sprayers in terms of appearance, performance and durability.
- **Gripping feel = safety and usability for customers:** Hand grips created from overmolded OnFlex-S TPE provide excellent anti-slip performance even when wet. Customers can keep a firm grasp of the sprayer to prevent dropping or twisting.
- **Abrasion resistance = excellent appearance to uphold corporate image:** The Avient material resists scratching and scraping that commonly occur when sprayers are dragged along the ground or left out in all types of weather. Maintaining aesthetics is vital to keeping the high end, high quality brand image.

According to company sources, the Avient TPE not only delivered the high-quality appearance and excellent gripping performance needed for the upscale sprayers, it also met the challenges of 2K molding with ease. With OnFlex-S TPE, the company achieved system cost benefits that have made this product line a profitable one.

To learn more about OnFlex-S™ TPEs, contact Avient at +1.844.4AVIENT (1.844.428.4368) or visit avient.com