Luxury Vehicles Sport Molded Door Panels That Rival Leather

Geon™ VBX3558 Powder Compound realistically reproduces the premium look and feel of leather, right down to the stitching.

Situation

Traditionally, automakers have paired leather interior door panels with luxury vehicles to achieve an overall high-end look. One major automotive supplier, however, questioned the norm when designing the interiors for a major automaker’s newest vehicle. While leather offers a lavish look and feel, the production time and cost seemed excessive compared to slush molding. On the other hand, in the supplier’s experience, molded vinyl door panels were unable to recreate details such as stitching and a dry touch that make leather door panels so attractive.

In fact, the supplier specializes in automotive interiors and had encountered production issues with certain vinyl materials. In slush molding a door panel, vinyl powder is added to a hot mold, which melts the powder to a 1 mm-thick coating, and the mold then rotates so that the melted material can fill the entire cavity. The supplier found that the vinyl powders it was using clumped in the corners of the mold during processing rather than filling the mold, causing air entrapment and generating unacceptable amounts of scrap. In addition, difficulty in removing these materials from the mold meant that they could not reproduce intricate geometric details.

The PolyOne Difference

The supplier’s design team approached PolyOne in hopes of finding an alternative material that could replace leather yet eliminate processing issues. PolyOne’s design and formulation team created a compound modified for the supplier’s specific processing environment. Further, the team developed a custom colorant that matches the automaker’s interior color specs, and then compounded it into the final product so that the armrest could be molded in color. Finally, the material was formulated to mimic the plush look and dry feel of leather.
Delivering a Value-Added Solution

The PolyOne solution eliminated processing issues the PolyOne customer had encountered with competitive materials, such as air entrapment and demolding difficulties. Further, it elegantly reproduced the stitching and graining found on leather armrests. According to the customer, both the look and feel of the molded vinyl armrests is an aesthetic match to the luxury vehicle interior.

Based on industry averages, a leather armrest typically adds $30 to the cost of producing a single door, while the approximate cost of a slush molded vinyl armrest is about $10 per door. By switching to PolyOne’s Geon™ Powder Compounds, the customer will be able to produce the interior door panels with an estimated savings of $20 per door, or $80 per vehicle, which translates to roughly $800,000 per year assuming niche vehicle production levels.

Finally, the customer estimates that the PolyOne solution has reduced scrap rates by at least 10% over competitive materials. Given industry-specific cost structures for niche vehicle door production, this improvement can be estimated to save the customer an estimated $100,000 annually.