

# Interior details

A range of enhanced thermoplastic solutions are responding to new application trends in automotive interiors

**A**ttractive surfaces continue to be in high demand in automotive interiors, where the plastic components in a vehicle's cockpit must incorporate light, friendly colours and good tactile properties.

For this purpose, application engineers at Bayer MaterialScience ([www.bayerbms.com](http://www.bayerbms.com)) have developed and tested a production-ready process for films known as film insert moulding to combine the recognised surface quality of Desmopan (TPU) used in slush skins for instrument panels, with the reliability and effectiveness of the injection moulding process. (Substrate materials include thermoplastics such as PC/ABS blends or polypropylene.)

"Plastics have been an integral part of automotive interiors for a long time now," says Jürgen Hättig, a TPU specialist at Bayer. "The reasons include safety aspects and, of course, the high degree of design freedom they offer users. Nevertheless, plastics in cars shouldn't look cheap."

Soft touch coating treatment is one of the processes the automotive industry is looking at, and Bayer is looking at bringing down the process cost by developing film insert moulding. The process is based on thin skins of Bayer's Desmopan TPU joined on one side to a thin mat. This material combination is manufactured in an extrusion coating process by Bayer's partner Capplast.

Measuring up to 2.7m in width, the film material is free of plasticisers but still flexible at low temperatures. It can be back-injected with thermoplastics to form a strong com-



posite with a durable and scratch-resistant surface. The Desmopan material creates a surface that is dry and soft to the touch, while the surface texture of the composite is determined by the mould.

"One key element of this method is the mat on the back of the Desmopan films," observes Hättig. "The mat gives the injection moulded part the necessary stability, but it also serves as a kind of 'interface' to plastics that used to be difficult to combine with TPU, such as polypropylene."

The new method significantly closes the gap between the simple injection moulding of non-modified parts and the two-component moulding process. Although the expensive coating step is eliminated entirely, users are still free to choose the colour because the desired tones can be easily incorporated during extrusion of the TPU/mat composite.

to Borealis, the dashboard specifications set by Fiat were particularly challenging — to keep a high level of aesthetic surface appeal and avoid visual defects, the car-maker specified a mono-material solution for the 500's main interior parts.

Poland-based moulder Plastal chose Daplen EE168AI to meet requirements for excellent scratch resistance and low gloss, while also guaranteeing a consistent finish and high quality parts integration through the material's high dimensional stability and low thermal expansion. In addition, the impact/stiffness ratio offered by Daplen EE168AI enhances vehicle safety.

The dashboard benefits from the lightweight characteristics of polypropylene without compromising on part performance, where the lighter weight components can contribute towards lower overall vehicle weight to reduce fuel consumption and carbon emissions.

Part manufacturer TRW Automotive Electronics & Components is leveraging on a broad range of engineered polymer resins to respond to new demands for automotive air registers and other interior components.

"The design and performance of air registers have a big impact on consumers' impression of the dashboard and interior of a car," says Dirk Lauhoff, product development leader of TRW. "To meet our automotive customers' needs for innovative, high-quality components, TRW developed In Mold Assembly, an injection moulding process which produces an assembly of separate components which are firmly joined together but able to move. All components are moulded parallel in one tool on one injection moulding machine within one cycle."

TRW worked with DSM Engineering Plastics ([www.dsmepl.com](http://www.dsmepl.com)) materials for air registers and other components. Xantar C, a blend of polycarbonate and ABS for covers and housings, offers the highest flow in its class plus high impact strength, while its low outgassing improves the auto interior environment by reducing odour and fogging. Akulon Ultraflow polyamide 6 provides exceptional rigidity and best surface quality for horizontal vanes, and Arnite PBT combines high strength and rigidity with excellent processing for vertical vanes.



## Design and performance

The Fiat 500 car was able to achieve superior aesthetics through a highly differentiated visual appearance through the use of a polypropylene-based Daplen thermoplastic olefin (TPO) grade supplied by Borealis ([www.borealisgroup.com](http://www.borealisgroup.com)) on its dashboard.

Italian car manufacturer Fiat was focused on developing the visual appeal of both interior and exterior components. According