Fiat Ducato – door cladding & bumper

Case Study

The case

Vehicle manufacturers globally are continuously seeking ways to differentiate their vehicles and sharpen the competitive edge of their brands. With consumer expectations constantly rising regarding image and quality, Fiat sets high priority on the surface aesthetics and scratch resistance of TPOs for both interior and exterior parts.

The challenge

For the Fiat Ducato bumper, outstanding scratch resistance was set as an absolute requirement, combined with high level surface aesthetics. This was a formidable challenge considering the very large, grained surface area of the bumper ensemble – a left and right fender with a middle bumper fascia including the grille. The door cladding was no less a challenge, demanding a matt surface with top class aesthetics and excellent scratch resistance combined with a good MAR effect.

The solution

Bumper

The challenge was met using Daplen™ EE103AE, a high MFR grade ideal for parts with high flow length - wall thickness ratio and the need for excellent surface aesthetics. Thanks to its low thermal expansion this material is suitable for moulding parts requiring a low change of dimensions over a broad temperature range.

The light grey bumper colour chosen by Fiat was especially demanding for the ageing test; the grade was formulated with an increased content of master batch and some additives, and approved by Fiat. Results show that the grade delivers outstanding scratch resistance. The parts are moulded by Ergom in Italy.

Door cladding

The specifications set by Fiat were particularly challenging, since the material characteristics required to meet them usually tend to move in opposite directions. Nonetheless a solution was found in Daplen EE168AI, a 12 % talc fill material which shows particular promise for further automotive applications. The main door cladding part is moulded by Lear in Italy, and the balustrade part by Plast Claudio, Italy.

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The products

Daplen offers a very good balance in stiffness/impact and has very good scratch resistance and low gloss.

Daplen EE103AE:

is a 10 % mineral filled and elastomer modified and UV stabilised polypropylene compound intended for injection moulding.

Daplen EE168AI:

is a 12 % mineral and elastomer modified polypropylene compound specially developed for automotive interior parts where high scratch resistance, low gloss and high dimensional stability is a necessity.

Physical properties	EE103AE Bumper	EE168AI Door cladding
Density [kg/m³]	950	990
Tensile modulus [MPa]	1,400	1,700
Charpy notched impact		
+23°C [kJ/m²]	60	13
-20°C [kJ/m²]	6	5
HDT B [°C]	92	97
CLTE [µm/mK]	1.0	1.1

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