

BMW X5/X6 Fender

The case

Pioneering quality and innovation put BMW at the forefront of automotive developments. For the latest X5/X6 model, BMW's commitment to improving safety, aesthetics, environmental performance and production costs required a technological breakthrough for the automotive industry. The result: the world's first fully-integrated fender module.



The challenge

BMW set strict specifications for achieving the most complex and highly integrated Class A body application to be seen in production to date.

Consolidating into one module such parts and functions as headlamp reinforcements and wheel housing, cleaning systems, airbag sensors and cooling devices, was fundamental to achieving BMW's requirements for reduced vehicle weight and production costs.

To raise SUV safety levels on the new X5/X6, the fender can deform up to 80 mm on impact, reducing significantly the potential for major injury to a pedestrian in the event of a low-speed collision.

Finally, to create a consistent, high-quality component the fender material had to combine exceptional surface aesthetics with low thermal expansion, high dimensional stability and ease of processing.

The solution

Daplen™ EF341AE from Borealis was selected by BMW as the material capable of meeting the challenge.

The polypropylene-based ThermoPlastic Olefin (TPO) compound was specifically tailored in order to create the first 100% plastic one module fender – the result of long-term cooperation between Borealis, component manufacturer Plastic Omnium Auto Exterior and the BMW Group.

With its integrated functions, the fender has delivered a step change in vehicle innovation, providing a 50% lighter-weight alternative to traditional steel components.

Daplen was also selected for its dimensional stability, which prevents warpage caused by expansion and contraction. This stability has created an optimal design blend with the rest of the steel exterior body of the new BMW X5/X6, providing the smooth, high quality Class A appearance required.

Added to this, Daplen EF341AE met Plastic Omnium's specific requirements regarding offline painting and, as a ready to use material, ease of processing. Borealis provided mould design and process management support to the component manufacturer to facilitate production.

The product

Daplen offers excellent surface quality, a very good balance in stiffness/impact and has low thermal expansion.

Daplen EF341AE:

Is a high-end 30% mineral filled TPO based on proprietary Borstar technology.

Physical properties	Daplen EF341AE
MFI [230°C/2.16 kg]	15
Tensile Modulus [MPa]	3,100
Notched Impact 23°C [kJ/m ²]	7.5
CLTE [$\mu\text{m}/\text{mK}$]	49



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