
Stronger and Lighter Toray Carbon

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Torayca M46X carbon fibre from Toray Industries is around 20% stronger than other fibres in the company's Torayca MX range while maintaining a high tensile modulus enabling weight reductions in composite parts.

Typically, there is a trade-off between the tensile modulus and strength of carbon fibres and boosting the strength, the company explains, while maintaining the modulus with a tensile modulus exceeding 350 GPa presents technological challenges. However, the sporting and leisure goods market demands both qualities to maintain performance while utilising less fibre to lower the weight of moulded parts.

Torayca M46X has been enabled by nano-level controls of the graphite crystallite structure inside fibres resulting in an ultrafine and ultra-high orientation.

The company will also manufacture Torayca M46X prepregs (resin-impregnated intermediate base materials) utilising its proprietary Nanoalloy microstructure control technology. The new product will significantly enhance compressive strength to boost stiffness while retaining strength, reducing the weight of finished products and broadening design flexibility.

The Torayca MX series was created by applying technologies to control graphite crystallite structures and orientations inside fibres. The first offering in this series was Torayca M40X, launched in 2018. This product has since earned a solid reputation as a high-performance carbon fibre and prepreg matching market requirements.

Read the [original article](#) on Innovation in Textiles.