In-Situ refiner compounding approach for TMP-fibre thermoplastic composites:
Recent developments at the Centre of Wood Science and Technology, University Hamburg

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Abstract

The distinctive characteristics of thermomechanical pulp (TMP) fibres, make it a promising candidate for the utilization in polymer composites. However, due to the low bulk density of TMP fibres, the feeding of fibres into the conventional compounding process (e.g. extruders) is quite challenging. TMP is usually used for the production of medium density fibreboards (MDF). The fibres are basically made out of wood chips which undergo a defibration process via a refiner resulting in fibres with a high aspect ratio. At the Centre of Wood Science and Technology, University Hamburg a novel in-situ one step compounding process is developed in order to solve the feed-in problem of TMP fibres. The in-situ compounding approach combines the defibration and compounding process of fibres and polymer in one step while using a refiner. The conference presentation will present the potentials of TMP as reinforcement element in composites and the recent results of the composites produced with the in-situ approach. We will give an overview about the composites performance and the effect of composite micro-structure on mechanical and physical properties.