

Regenerated cellulose fibers as filler in PP for improved foam injection molding

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Regenerated fibrous cellulose (TENCEL® FCP) was successfully used as filler for polypropylene (PP) to enhance the processability in foam injection molding (MuCell® process) and to simultaneously upgrade the mechanical performance of the polymer. Compared to talcum as filler, a finer and more homogeneous foam structure could be obtained and besides the mechanical performance of the composite material can be enormously improved. Tensile strength, impact behaviour and heat deflection temperature were increased even at a very low material density (below 0.9 gcm^{-3}) in comparison to unfilled PP or PP compounds with common fillers (talcum). Further advantages of using cellulose fibres in the PP foam injection process are a reduction of cooling and cycle time. These results promise a great potential of these composites for developments of ultra-lightweight construction parts. In addition, regenerated fibrous cellulose can be successfully used in the foam injection molding by using chemical blowing agents.