Development of new biomass-based furan/glass composites manufactured by the double-vacuum-bag technique - DTU Orbit (09/01/2019)

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The present study addresses the development of new biomass-based furan resin/glass fibre composites manufactured by the double-vacuum-bag technique using a two-stage cure cycle to allow removal of water from the resin. The volumetric composition and mechanical properties of the composites are measured and analysed with focus on the porosity content. The so-called matrix correlated porosity factor is determined to be 0.096, meaning that the furan matrix itself contains 8.8% porosity. In the optimal case of no matrix porosity, stiffness of the composites compares well with the stiffness of conventional thermosetting/glass composites, but with lower strength. The findings of the present study show that a more efficient water removal during manufacturing, a lower porosity content and a less brittle stress-strain behaviour of the furan matrix are to be addressed to further improve the properties of the composites.

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