

Influence of Activated Charcoal as Filler on the Properties of Wood Composites

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ABSTRACT

In the present work a small percentage of activated charcoal was added in the thermosetting urea–formaldehyde (UF) resin and the performance of adhesives and wood composite was observed. The effect of activated charcoal on the curing kinetics and the Crosslink density of UF resin was investigated, using differential scanning calorimetry. The activated charcoal has an accelerating effect on the curing of the UF resin. The Crosslink density of resin increases and the activation energy decreases. The influence of the activated charcoal addition was particularly noted in medium density fiberboard by the increase in the value of modulus of rupture and internal bond strength of the panel, a direct indication of the performance improvement with the addition of a small amount of activated charcoal. The formaldehyde emission significantly decreases with the addition of activated charcoal.

KEYWORDS: Crosslink density; Activation energy; Activated charcoal; Urea–formaldehyde resin; Formaldehyde emission; Medium density fiberboard

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