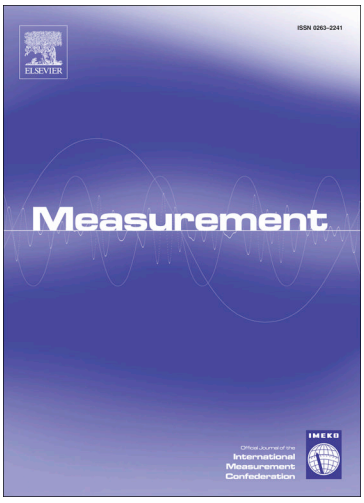

Novel engineered scrimber with outstanding dimensional stability from finely fluffed poplar veneers

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Novel engineered scrimber with outstanding dimensional stability from finely fluffed poplar veneers

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Abstract The aim of this study is to prepare a novel wood engineered scrimber with outstanding dimensional stability as well as excellent mechanical properties. A novel technique was exploited for preparation of thick finely fluffed poplar veneers (FFPVs). The physical properties of the veneers before and after fluffing process were compared, and the mechanical properties and dimensional stability of the resultant scrimber were also investigated. The results showed that there was a fivefold increase in water absorption rate (WAR) for FFPVs. Correspondingly, compared with traditional scrimber from the veneers without fluffing, the novel scrimber (Nscrimber) from FFPVs had a slight decline in mechanical strength. However, its dimensional stability was significantly improved, where the thickness swelling rate (TSR) decreased by approximate 74%.

Key words: Biomaterials; composite materials; Engineered wood products; scrimber; fine fluffing; dimensional stability

1 Introduction

Due to the shortage of high-quality logs, great efforts have been made to wood-based structural materials from fast-growing tree species, such as laminated veneer lumber (LVL), glulam, I-beams, etc [1-3]. Recently, there is a growing interest in scrimber [4, 5], which is a reconstituted wood product with high raw material utilization rate and excellent mechanical properties from integrated parallel strips. As reported, the flexural strength of the scrimber prepared from fast-growing wood was above