

Studies on liquor phase acetylation of wood and the dimension stability and decay resistance of acetylated wood

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Abstract This paper deals with some factors affecting on liquor phase acetylation of wood from three species (*Pinus massoniana*, *Populus cathayana*, *Betula platyphylla*), and the dimension stability and decay resistance of acetylated wood. When acetic anhydride and xylene were used as treating liquor at the volume rate of 1:1, the optimum reaction temperature was 120°C, and the reaction period was 7 to 11 hours. The antishrink efficiency of acetylated wood could reach more than 60% when weight percent gain (WPG) was 15% or more. The decay resistance of treated wood blocks with WPG of 11.75-17.98% was 3 to 34 times higher than that of the controls.

Keywords Liquor phase acetylation; Dimension stability; Antishrink efficiency; Decay resistance

阔叶树防腐处理材的胶合

要使低值阔叶树材能有效地利用于层积材和开发多种结构产品的主要因素是胶合。

对于各种次等的、低利用价值的阔叶树材,可用的各种室外型树脂及其配方的资料有限,在防腐处理材相互胶合方面的知识也存在着空白。

本项研究的目的是测定蓄积量丰富但利用价值低的三种树种木材的胶合性能,这三种树种是鹅掌楸、红花槭和山地栗。同时还测定了一种商业上很重要的针叶树材。采用ASTM的试验方法,重点是评定胶层的质

量。所用的胶粘剂包括冷固性与热固性酚醛树脂,间苯二酚-甲醛树脂及各种酚醛配比。试验设计中的其它参数包括两种木材含水率(12、18%)、五氯酚油剂、水溶性铜铬砷盐防腐剂。

间苯二酚-甲醛树脂胶合时对高含水率与防腐处理最不敏感。加有间苯二酚的热固性酚醛树脂可与纯间苯二酚树脂相媲美。单纯酚醛树脂即使在加热固化条件也很受防腐处理影响,使胶层质量下降。初步结论是:低值阔叶树材只有用间苯二酚树脂或添加间苯二酚的酚醛树脂才能获得最佳的层积性能。

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