

Decay resistance of acetic, propionic and butyric anhydrides modified rubberwood against white rot (*Trametes versicolor*)

ABSTRACT

The effectiveness of rubberwood modified with acetic, propionic and butyric anhydrides against white rot *Trametes versicolor* was investigated. Specimens measuring 5 mm × 20 mm × 20 mm (l × w × t) underwent a Soxhlet extraction with toluene/methanol/acetone (4:1:1 by volume) for 8 h, and then oven-dried at 103 °C for 24 h. The specimens were vacuum-impregnated with anhydrides for durations ranging from 0.25 to 24 h at 120 °C. The weight percent gain (WPG) was calculated and the chemical bonding was analysed with Fourier transform infra-red (FTIR). The specimens were leached in deionised water according to EN 84 (1997) and exposed to white rot in an incubation room at 22 °C for 16 weeks. The study found that the acetic, propionic and butyric anhydrides reduced the rate of decay but did not totally protect rubberwood from *T. versicolor*. All the modified rubberwoods were classified as durability class 1 comparable to Scots pine and European beech. The final moisture content had a positive correlation with weight loss following decay. Scanning electron microscopy showed that hyphae penetrated cells in both untreated and modified rubberwood.

Keyword: Rubber tree; Modification; Deterioration; Basidiomycete