

Effects of hot oil treatment on colour and chemical changes in 15-year-old Acacia hybrid

Abstract

Acacia hybrid trees aged 15 years were harvested and cut into samples consisting of sapwood and heartwood taken from the bottom, middle and top portions of the tree. The wood samples were thermally modified using temperatures of 180, 200 and 220 °C, and treatment times of 30, 60 and 90 min. The colour changes in the sapwood and heartwood were measured using a chroma meter and the results presented according to the CIE L*a*b * colour coordinate system. The results showed that temperature at a certain treatment time enhanced and darkened the treated wood. The colour of treated sapwood could be enhanced to match the colour of natural Acacia hybrid heartwood. For chemical analysis, wood samples were dried and ground into sawdust. Untreated samples were used as controls. The results showed that the holocellulose contents decreased between 1.0 and 11.7% for sapwood, and 2.3 and 12.8% for heartwood. The cellulose contents decreased as much as 1.9% to 20.0% for sapwood and 2.3 to 22.1% for heartwood. The hemicellulose contents increased to 4.1% for sapwood and 5.7% for heartwood. Lignin contents increased to 15.4% for sapwood and 11.6% for heartwood.