Physical and thermal properties of microwave-dried wood lumber impregnated with phenol formaldehyde resin.

ABSTRACT

In this study, microwave-dried oil palm trunk core lumber was impregnated with phenol formaldehyde resin using high pressure vacuum chamber. The impregnation of oil palm trunk core lumber was performed under 3 bar pressure and cured in an oven at 150°C for 2 h. The impregnation of oil palm trunk core lumber was carried out at different time intervals (15, 30, 60, 90, 120 min) to obtain different density lumber and compared with microwave-dried oil palm trunk core lumber and rubberwood. The physical and thermal properties of microwave-dried oil palm trunk core lumber, impregnated oil palm trunk core lumber and rubberwood were studied. In general, the impregnated oil palm trunk core lumber obtained better physical properties than microwave dried oil palm trunk core lumber but slightly lower than rubberwood. The thermal stability of oil palm trunk core lumber was analyzed by using thermogravimetric analysis and it shows that rubberwood exhibited better thermal stability than impregnated oil palm trunk core lumber.

Keyword: Different densities; High pressure; Oil palm trunks; Phenol formaldehyde resins; Rubberwood; Time interval; Vacuum chambers.