

Impulse flashover characteristics of oil palm trunk (OPT) veneer plywood

ABSTRACT

Oil palm is one of the largest crop industries in South East Asia, thus, it is of importance to use all parts of the Oil palm trees. Recently Oil Palm Trunks (OPT) have been used to make veneer, which can be processed to produce plywood. Even though OPT plywood doesn't have the same mechanical properties as timber, with proper treatment and adhesives during the processing of veneer to plywood, it can be made to compete with hardwood. OPT plywood has been used in various applications from wooden appliances to housing and roofing structures. These structures are at risk of surface flashovers through lightning and electrical breakdowns. However, no study has been conducted on the effects or characteristics of OPT plywood. In this paper, the effects of impulse surface flashover under different conditions on three-layered OPT plywood has been analyzed. Experiments were conducted to identify the characteristics of OPT under clean and dry, clean and wet, and contaminated surface conditions for both parallel and perpendicular fiber orientations. The 50% breakdown voltage was determined by the up and down method. Results identified the importance of the fibre orientation and the decrease in breakdown voltage under contaminants.

Keyword: Oil palm trunk; Plywood; High voltage