Properties of laminated veneer lumber (LVL) made from laran (Neolamarckia cadamba) veneers using different glue spread amounts

ABSTRACT

This study was initiated to reduce the production cost which is affected mostly by the amount of glue spread. The least and suitable glue consumption was investigated by determining mechanical and physical properties of Laminated Veneer Lumber (LVL) using different amounts of glue spread which were 150 g/m^2, 200 g/m^2, 250 g/m^2 and 300 g/m^2. The adhesive used was Phenol Resorcinol Formaldehyde (PRF) and the test methods were done according to JAS 233:2003 and ASTM D734. Modulus of Elasticity (MOE) and Modulus of Rupture (MOR) increased steadily along the increase amount of glue spread. MOE and MOR obtained were from 300 g/m^2 glue spread which were 5701.71 N/mm^2 and 44.45 N/mm^2 respectively. The tensile shear strength also increased and the highest was 300 g/m^2 glue spread with 10.74 N/mm^2. As for physical properties, only density had increase along the glue amount with highest value of 439.73 kg/m^3 by 300 g/m^2 whereas water absorption and delamination decreased along increasing of glue spread with lowest value of 101.99 % and 0.92 %. Thickness swelling had an irregular trend with lowest value of 0.76 % for 250 g/m^2 glue spread amount. Overall, the insignificance ranges from 200 g/m^2 until 300 g/m^2 thus can be suggested that glue spread amount can be reduced until 200 g/m^2 to reduce production cost and prevent wastage.