

**THE EFFECT OF LAYERS AND COMBINATIONS ON STRENGTH AND  
PHYSICAL PROPERTIES OF LAMINATED VENEER LUMBER (LVL) FROM  
OIL PALM TRUNK (OPT)**

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## ABSTRACT

### **THE EFFECT OF LAYERS AND COMBINATIONS ON STRENGTH AND PHYSICAL PROPERTIES OF LAMINATED VENEER LUMBER (LVL) FROM OIL PALM TRUNK (OPT)**

The aim of this study is to evaluate the effects of the layers and combinations on strength and physical properties of Laminated Veneer Lumber (LVL) from Oil Palm trunk. 5, 6 and 7 layers with four veneer combination marked C1 veneer from outer layer of bottom portion with inner layer from top portion of OPT. C2 is veneer combination from outer layer and inner layer of bottom portion, C3 is fully veneer from inner layer of top portion and C4 is fully veneer from inner layer of bottom portion were used to manufactured the 19 mm thick OPT LVL. The veneer is being carried out using two different rotary peeling machines with chuck for outer layer and chuck-less mechanism for inner layer for portions, bottom and top. It's to maximize the oil palm trunk utilization. Each portion was cut to 8 ft approximately. The Urea Formaldehyde (UF) was used as a binder. The LVL panels were cut and tested in accordance to Japanese Agriculture Standard for structural LVL (1494). A bending shear test for flatwise and edgewise directions were carried out. The results were analyzed by ANOVA and Duncan's Multiple Range Test using SPSS package. The results showed that 7 layers and the veneer combination C2 is high strength. The delamination test was tested for cold and boiling water. From the testing, it was found that, the UF adhesives is suitable for OPT veneer in cold water and not suitable in boiling water or in high temperature.