

Abstract

Oriented Strand Lumber and Laminated Strand Lumber, new products family called Engineering Wood Products are Structural Composite Lumber. In this study, physical and mechanical properties LSL and OSL products is investigated. Urea-formaldehyde resins containing a certain amount of nanoclay as resin used in the manufacture of this products. variable factors used in This timbers the construction of which include *Paulownia Fortunei* and *Populus deltoides* wood species and nano clay to zero, 2.5, 5 and 7.5 % by weight of dry resin. Factors such as temperature pressing (120 °C), press time (5 minutes), pressure press (11 kg/cm²), adhesives used (UF) resin consumption (10% of the dry weight of wood material) fixed is used. The products produced with two woody species and four levels nanoclays. Properties Thickness Swelling (TS), Water Absorption (WA), Modulus of Rupture (MOR), Modulus of Elasticity (MOE), Internal Bond (IB), the compression parallel with the long axis to of the product, the shear strength and Screw Holding capacity (SH) study of boards analyzed. Statistical analysis shows that the effect of species and nanoclay on the properties of the measured and their interactions with each other at the 95% level of significance. It was found that the properties of WA, TS (both 2 and 24 hours after immersion in water), MOR, MOE, shear strength and compression parallel to the long axis of the board, with an increase of 5% nanoclay there has been significant improvement in strength. While of the IB and SH capacity timber containing 7.5% nanoclay are significantly different from the other samples. The best yield strengths of the SH capacity, shear strength, compression parallel with the long axis to of the product and the IB shown by OSL. Best Performance at other resistances by LSL was observed. In all properties, *Populus deltoides* species compared to *Paulownia Fortunei* has an excellent performance.

Keyword: Laminated Strand Lumber, Oriented Strand Lumber, Nano clay, *Paulownia Fortunei*, *Populus deltoides*



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**The Thesis Submitted for the Degree of Master of Science
(In Composite wood products)**

**Manufacture of Laminated Strand Lumber and
Oriented Strand Lumber made from Paulownia and
Poplar wood by Urea-formaldehyde resin containing
Nano clay**

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