WOOD

NPARR 3(3), 2012-0329, The technology on producing the first class plywood using fast growing Eucalyptus timber

There were three key factors including glue quantity of veneer, hot-pressing time, hot-pressing temperature to be researched on the effect of plywood performance, which gave an effective conclusion about technology parameter. The results indicated that the three factors obviously were related to the bonding strength and ranked as hot-pressing time > glue quantity of veneer > hot-pressing temperature in sequence. The best groups for production technology were that glue quantity of veneer was 320 g/m² with hot-pressing time and temperature of 1.2 mm/min and 135°C, respectively (Kai Fu Li et al, Applied Mechanics and Materials, 2012, 193-194, 496-499).

NPARR 3(3), 2012-0330, Constructional bamboo plywood process control and production process

Focusing on the problems of the bamboo plywood existing in the construction field, we have proposed an optimal process for the building bamboo plywood through controlling the preparation process of the bamboo plywood. In our work, moso bamboo was selected as the objective and then a variety of performances of the bamboo plywood were tested with the heat-up-heat-down process. Experiments show that in the same conditions of MC 10%, RC 7%-8%, the best optimum processes of 12mm thick constructional bamboo plywood is 15min pressing time, the pressing temperature between 155°C to 160°C and the sheet density of 0.85 g/cm³. The optimal process to make the performance of bamboo plywood substantially exceeded the European standard the OSB/4 levels. It can provide practical application of engineering and production design with reference value and theoretical basis for the bamboo plywood (Ming Zhi Feng et al, Applied Mechanics and Materials, 2012, 184-185, 728-731).

NPARR 3(3), 2012-0331, Evaluation and application of the invasive weed Mikania micrantha as an alternative reinforcement in recycled high density polyethylene

In this study Mikania micrantha particle (MP) and fiber (MF) were added to recycled high density polyethylene (rHDPE) for producing natural fiber (or particle) reinforced plastic composites (NFRPC) by the flat-platen pressing process. The results showed that the flexural strength and stiffness of NFRPC were significantly improved through incorporating M. micrantha particle and fiber. Higher aspect ratio of reinforcement displayed stronger mechanical properties. The vertical density profile in composites significantly influenced the mechanical properties of NFRPC. A conventional V-shaped profile and a uniform vertical density profile (homo-profile) were observed in MP and MF based NFRPC, respectively. Additionally, with increasing lignocellulose content, a more uniform vertical density profile and higher wood screw holding strength were observed. These results indicate M. micrantha particle and fiber are excellent reinforcements for NFRPC applications [Chen, Y.-L., Lin, C.-Y., Wu, T.-L., Chung, M.-J., Chen, T.-Y., Yang, T.-H., Chen, H.-C., and Wu, J.-H*(Department of Forestry, National Chung Hsing University, Taichung, 402, Taiwan), BioRes., 2012, 7(2), 2403-2417], Taiwan].