

Mechanism of Veneer Colouring for Production of Multilaminar Veneer from Plantation-Grown Eucalyptus Globulus

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Abstract : There is large plantation of Eucalyptus globulus established which has been grown to produce pulpwood. This resource is not suitable for the production of decorative products, principally due to low grades of wood and “dull” appearance but many trials have been already undertaken for the production of veneer and veneer-based engineered wood products, such as plywood and laminated veneer lumber (LVL). The manufacture of veneer-based products has been recently identified as an unprecedented opportunity to promote higher value utilisation of plantation resources. However, many uncertainties remain regarding the impacts of inferior wood quality of young plantation trees on product recovery and value, and with respect to optimal processing techniques. Moreover, the quality of veneer and veneer-based products is far from optimal as trees are young and have small diameters; and the veneers have the significant colour variation which affects to the added value of final products. Developing production methods which would enhance appearance of low-quality veneer would provide a great potential for the production of high-value wood products such as furniture, joinery, flooring and other appearance products. One of the methods of enhancing appearance of low quality veneer, developed in Italy, involves the production of multilaminar veneer, also named “reconstructed veneer”. An important stage of the multilaminar production is colouring the veneer which can be achieved by dyeing veneer with dyes of different colours depending on the type of appearance products, their design and market demand. Although veneer dyeing technology has been well advanced in Italy, it has been focused on poplar veneer from plantation which wood is characterized by low density, even colour, small amount of defects and high permeability. Conversely, the majority of plantation eucalypts have medium to high density, have a lot of defects, uneven colour and low permeability. Therefore, detailed study is required to develop dyeing methods suitable for colouring eucalypt veneers. Brown reactive dye is used for veneer colouring process. Veneers from sapwood and heartwood of two moisture content levels are used to conduct colouring experiments: green veneer and veneer dried to 12% MC. Prior to dyeing, all samples are treated. Both soaking (dipping) and vacuum pressure methods are used in the study to compare the results and select most efficient method for veneer dyeing. To date, the results of colour measurements by CIELAB colour system showed significant differences in the colour of the undyed veneers produced from heartwood part. The colour became moderately darker with increasing of Sodium chloride, compared to control samples according to the colour measurements. It is difficult to conclude a suitable dye solution used in the experiments at this stage as the variables such as dye concentration, dyeing temperature or dyeing time have not been done. The dye will be used with and without UV absorbent after all trials are completed using optimal parameters in colouring veneers.

Keywords : Eucalyptus globulus, veneer colouring/dyeing, multilaminar veneer, reactive dye

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