

## **Characterizing Surface Defects of Solid Wood of Dark Red Meranti (*Shorea sp.*), Melunak (*Pentace sp.*) and Rubberwood (*Hevea Brasiliensis*) in Planing Process**

### **ABSTRACT**

The machining parameters affect surface quality and usually, wood planing process is heavily influenced by external parameters. External parameters concern mainly the machining process parameters such as: the feeding speed, the depth of cut, the cutting tool diameter and geometry, the cutting geometry, the cutting technique (up or down milling). This study was carried out to determine the planing properties of naturally grown Melunak (*Pentace sp.*), Dark Red Meranti (*Shorea sp.*) and Rubberwood (*Hevea brasiliensis*). Some machining defects such as fuzzy grain, torn grain and chip marks often occur in lumbers at the planing process and it decreases the machining yield. To understand and optimize the planing characteristics of this wood species, a series of experiments were carried out using a weinig Unimate 23E moulder (cutter-head rpm of 6000, cutter diameter 120 mm) to produce machined surface with differing depth of cut ranging from 0.8 to 2.4 mm, by altering the feed rate from 8 to 16 m min<sup>-1</sup> according to ASTM D 1666-87. Based on the preliminary results of this study, the best results were obtained at 0.8 mm of depth of cut and feed rate of 8 m min<sup>-1</sup> for Dark Red Meranti. While, the poorest results was on Melunak wood at 2.4 mm of depth of cut and 16 m min<sup>-1</sup> of feed speed. This research also revealed that the combination of feed rate, depth of cut and wood species used had no significant effect on the surface quality of samples.