

A comparison of abrasive sanding dust emission characteristics of oil palm wood and rubberwood

ABSTRACT

With the increasing interest in using oil palm wood (OPW) in the manufacture of value-added wood products in the South East Asian region, the subject of dust emission in relation to the variable density of OPW is a matter of concern. Therefore, this study evaluated the dust emission characteristics of untreated and phenol-formaldehyde-treated OPW during the abrasive sanding process. Rubberwood was the solid wood material used in this study for comparison purposes. The abrasive sanding process was carried out using an orbital sander with aluminium oxide abrasive paper with a grit size of 150. The sample boards were weighed before and after sanding to determine the amount of stock removed. The dust concentration and dust particles diameter was influenced by the material type, material density variation, and material hardness. The study revealed that both untreated and treated OPW produced higher dust concentration and higher proportions of fine respirable dust particles compared with rubberwood during the abrasive sanding processes, and therefore, it is important for a more stringent permissible exposure level (PEL) standard for dust emission to be established for OPW processing. In this context, the existing PEL of 5 mg/m³ of dust is inappropriate and needs a revision if OPW is to be successfully used in the value-added wood products industry.

Keyword: Abrasive sanding; Oil palm wood; Dust; Density; Hardness