**PROPERTIES OF CLAY-BASED NANOCOMPOSITE COATING ON *Acacia mangium* SOLID WOOD FLOORING**

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*Abstract:* The purpose of this study is to determine and evaluate the effect of different percentages of nanoclay (1, 3 and 5% wt.) on physical, mechanical and optical properties of clay-based nanocomposite coating of *Acacia mangium* solid wood flooring. The polyurethane (PU) and nanoclay were mixed by using manual method. To evaluate the effect of different percentage of nanoclay in PU, three types of properties assessments which were physical (resistance to chemical household and temperature change resistance), mechanical (abrasion, adhesion cross-cut, adhesion pull-off, hardness and impact) and optical (gloss and haze) were conducted. Generally, physical properties of PU/nanoclay coating formulation had improved as the percentages of nanoclay increased, however, the optical and some mechanical properties had decreased. Addition of 3% wt. nanoclay maximized the addition cross-cut and impact properties while increment of 5% nanoclay was able to maintain the film colour and structure of the paint after weathering process. The results also indicated that increasing the percentages of nanoclay in PU paint led to marked decreased in the adhesion pull-off, abrasion, hardness, gloss and haze of the PU/nanoclay paint formulation due to the aggregation of nanoclay particle during the mixing procedure. However, there are no changes observed on the PU/nanoclay film applied on the wood surfaces for the resistance to chemical household test. Thus, by increasing the percentage of nanoclay at 3% into PU paint formulation, the physical, adhesion cross-cut and impact properties of PU/nanoclay coating on *Acacia mangium* wood flooring were improved where nanoclay act as protective barrier to prevent destruction happened beyond the topcoat layer of paint.

*Keywords: Clay-based nanocpmposite, coating, Acacia mangium, solid wood, flooring*