

## **Development of coating materials from liquid wax esters for wood top-based coating.**

### **ABSTRACT**

Of late, UV-curable products are gaining attention in the wood industry because of the effectiveness and efficiency of this method. UV-curable surface coatings are widely used because of their excellent properties and because they are environmentally friendly products. In this study, immobilized *Candida antarctica* lipase B was used to catalyze formation of liquid wax esters, such as adipate esters, via a solvent-free process. The adipate esters formed were then used as UV-curable reactants in the wood coating formulations, consisting of epoxy acrylate, additives, and a photoinitiator. The performance of the products was evaluated by coating them onto glass tiles (using gel content, hardness, and scratch resistance tests) and wood panels (using adhesion, impact, and heat resistance tests). The coated film from this formulation performed well during the evaluation tests. The gel content exhibited more than 90% polymerization, while the pendulum hardness gave a value of 55.25%. Both analyses were significant in determining the effect of irradiation cycles. A scratch test was also carried out to verify the resistance of the coating. The maximum weight load which can be resisted by the wax esters formulation is 4.5 N.

**Keyword:** Adipate esters; Liquid wax esters; Coating formulation; Radiation curing; Wood coating.