NANOPARTICLE EFFECT ON SCRATCH AND YELLOWING RESISTANCE OF UV CURABLE WOOD COATINGS

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Coating systems can be divided into different groups according to the curing mechanism and usage areas. UV Curable systems are a very important and developing part of coating systems because of the advantages they provide [1].

In recent years, the usage of nanoparticles has become of great interest in the coating industry to obtain functional coatings. Functional coatings are coatings that applied to surface to gain some special properties such as scratch and UV resistant. [2,3]. Especially for wood coatings, the biggest and undesirable problems are scratch and yellowing problems. There are some different ways to eliminate this problem, one of them is using light stabilizers such as; UV absorbers, HALS (Hindered amine light stabilizers) and antioxidants [4-6] and the other one is usage of nanoparticles.

In this study, an alternative approach was used to improve the scratch and yellowing resistance performance of coatings instead of adding nanoparticles to the formulations. UV-curable wood coating formulations were developed, applied to wood panels and after curing, their performances were tested (gloss, adhesion, hardness, scratch) and compared to each other and standard formula. The surface properties of the coatings were also examined with Scanning Electron Microscopy (SEM). In addition, yellowing resistance of coated panels were tested with accelerated weathering test device and the obtained data were compared with standard formula and each other.

Keywords: UV curing, wood coatings, scratch resistance, yellowing resistance, nanoparticles

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