
EFFECT OF SOME TECHNOLOGICAL FACTORS DISPERSION TITANDIOXID (TiO₂) NANO TO THE QUALITY OF THE COATING FILM ON WOOD PRODUCTS

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SUMMARY

The article presents results of studies on the effect of concentration and dispersion time of TiO₂ nano to the quality of the coating film on wood surface. TiO₂ nano particles were dispersed in Butyl acetate solvent which has LAS surfactant at the concentrations of 0.05%; 0.1%; 0.15%; 0.2%; 0.25% in 1 hour, 2 hours, 3 hours, 4 hours, 5 hours respectively by ultrasound waves and magnetic stirrers, these solvent was then added gloss PU coating, PU hardness and stirred with 200 - 300 rpm for 15 minutes. This coating solution was sprayed on the wood surface samples. The results show that, the ultraviolet absorption of PU coating solution mixed with TiO₂ nano was very strong compared to the controlled PU solution. The quality of the PU-TiO₂ coating film has been improved more significantly than the controlled PU coating film: The surface hardness increased from 3.29 to 4.09 H; mass loss rate due to abrasion decreased from 0.1305% to 0.1057%; chemical and water resistance increased from 4.01 to 5; the color deviation ΔE also decreased from 14.85 to 9.62. No cracking or peeling of PU-TiO₂ coating film on wood surface; simultaneously there is not significantly changed about characteristic infrared absorption intensity for chemical structure groups in PU coating film mixed with nano TiO₂. So, to ensure the quality of the surface finishing of wood products and bring about economic efficiency, TiO₂ nano particles should be appropriately used at the concentration of 0.158% and in 3.651 hours of dispersion.

Keywords: Coating film, dispersion, solvent, TiO₂ nano, wood products.

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