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COLOUR CHANGES IN WOOD SURFACES MODIFIED BY A NANOPARTICULATE BASED TREATMENT

HALIL TURGUT SAHIN

SULEYMAN DEMIREL UNIVERSITY, FACULTY OF FORESTRY, DEPARTMENT OF FOREST
PRODUCTS ENGINEERING
ISPARTA, TURKEY

GEORGE I. MANTANIS

TECHNOLOGICAL EDUCATION INSTITUTE OF LARISSA, DEPARTMENT OF WOOD AND
FURNITURE DESIGN AND TECHNOLOGY, LABORATORY OF WOOD TECHNOLOGY
KARDITSA, GREECE

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ABSTRACT

This work reports on the colour changes in wood surfaces, namely from the species European pine, fir, Bosnian pine, chestnut and cherry, which have been modified by a new nanoparticulate treatment. Colour values (CIE L*, a*, b*) for both control and treated wood samples have been studied for each of the five different species. The results have shown a certain effectiveness of the anti-UV surface treatment used, while lower effects were due to ultraviolet light induced photodecolouration.

The largest improvements against discolouration were observed with cherry wood. It was observed that anti-UV compound applied on chestnut was particularly less effective ($\Delta L = -4.64$) in respect to other species. It appears that the yellowness show systematic trends with anti-UV treated samples. However, the UV irradiation appears to change surface yellowness of coniferous species more than hardwood species. The anti-UV treated hardwood surfaces (chestnut and cherry) yielded higher gloss than the anti-UV treated softwoods (pine and fir).

KEYWORDS: Wood, ultraviolet radiation, nanoparticulate based treatment, European pine (*Pinus sylvestris*), Bosnian pine (*Pinus leucodermis*), Greek fir (*Abies cephalonica*), chestnut (*Castanea sativa*), cherry (*Prunus avium*).

INTRODUCTION

Wood has been used for centuries as fuel and as a construction material. Typically it is an organic material, being composed of cellulose fibers embedded in a matrix of lignin and hemicelluloses. The main problems relating to aesthetic appearance of wood occur when exposed