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
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Effects of Bleaching Process on Hardness and Glossiness of Pine Wood (*Pinus Sylvestris* L.) Exposed to Outdoor Conditions

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 [Keywords](#)
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Abstract: This study was performed to determine the effects of exposure to outdoor condition and of the bleaching process after exposure outdoor conditions after the bleaching process on hardness, both parallel and perpendicular to the fibre axis, on Scotchs pine (*Pinus Sylvestris* Lipsky) wood. For this purpose, samples were exposed to outdoor conditions for 12 months, and afterwards they were bleached with solution groups of 18% NaOH+H₂O₂, NaSiO₃+H₂O₂ and Ca(OH)₂+H₂O₂. After the bleaching process after exposure to outdoor conditions, hardness was determined according to ASTM-D 4366 and glossiness was determined according to ASTM-D 523. The mean hardness values (swing) of the control samples, the samples exposed to outdoor conditions and the samples, treated after for exposure to outdoor conditions were 28.5, 21.5 and 27.3 respectively. Glossiness values parallel to the fibre axis were found to be 10.2 for control samples, 6.3 for samples exposed to outdoor conditions, and 8.7 for samples bleached with solution group after exposure to outdoor conditions. Glossiness values perpendicular to the fibre axis were found to be 8 for control samples, 4.4 for samples exposed to outdoor conditions and 7 for samples treated with solution groups after exposure to outdoor conditions. It was found that exposure outdoor conditions resulted in a decrease in the hardness and glossiness of wooden material; however, it decreased with bleaching after exposure to outdoor conditions. These results show that bleaching materials can be used for the restoration of wooden materials exposed to outdoor conditions.

Key Words: Weathering, bleaching, hardness, gloss

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