

## Accelerated and Natural Weathering Performance of Impregnated Wood Samples

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### Abstract

Numerous chemicals are currently applied for wood protection against weathering. However, most of these chemicals cannot provide a long-term protection on wooden surface. Therefore, water repellent materials are needed to stabilize the wood surfaces and make it permanent against photodegradation. In this study, the influence of Poly Ethylene Glycol (PEG 600), N,N-(1,8-Naphthalene) hydroxylamine (NHA-H) and Methyl Hydrogen Silicon (MHS) against UV light was investigated. For this purpose, wood samples were impregnated with these chemicals according to full cell process (or vacuum). After impregnation, the samples were exposed to accelerated weathering (500 hours) and 6 months natural weathering. Optical and chemical changes on the surface of treated and untreated wood samples were studied by color changes, glossiness and Fourier Transform Infrared Spectroscopy (FTIR) analysis. When the results regarding total color change were examined, the best results were obtained in the sample group impregnated with MHS both in the accelerated outdoor test and the natural outdoor test. In the control specimens, new peaks were formed at 2927 cm<sup>-1</sup> and 1697 cm<sup>-1</sup> waves, while the chemical structure maintained its integrity in samples impregnated with MHS.

**Keywords:** Methyl Hydrogen Silicon, N,N-(1,8-Naphthalene) hydroxylamine, Poly Ethylene Glycol, Weathering