
Development of a new bio-friendly wood preservative using natural materials



Wood preservation is a branch of science which is always looking for new up-to-date solutions to maintain unaltered the characteristics of timber. Especially nowadays, the availability and use of environmentally friendly wood preservatives are strictly required. In this way several ideas and many publications have been proposed to replace heavy-metal based formulations in the last years e.g. using tannins. However, there are still some drawbacks for the use of tannins in wood preservation in order to make them interesting and applicable for industrial use, like their high solubility in water and consequently the high leachability.

Our approach is the optimization of a more performing, environmentally-friendly tannin-bore formulation and the development of new bio-friendly, non-toxic and 100 % natural wood preservatives derived from low cost poly-phenolic compounds. Moreover, the introduction of additives such as phosphoric compounds in the formulation of the wood preservatives will be analyzed to bring new functionality to the wood material (e.g. fire-resistance) without modifying the properties as wood-preservative.

Various wood species and different tannin based formulations will be investigated in this project. The important wood properties will be determined against the European Norms for wood preservation certification to give a statement of the potential of the wood preservative treatment for industrial applications. Also the parameters of importance at the chemical level in such wood preservatives performance induced by the different wood-derived tannins used will be determined.

A successful finish of the proposed project enables knowledge on the usability of various environmentally-friendly tannin based formulations as wood preservatives and the influence of these formulations to the process of timber treatment and final wood properties (e.g. long-term protection, resistance against biological agents). The gained knowledge is essential for further projects to get commercially useable results.

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