



Research for the Benefit of SMEs		
<p>Title: Development of a solvent-free coating process for wooden facades</p> <p>Acronym: DURAWOOD</p> <p>Grant Agreement Number: 232296</p> <p style="text-align: center;"></p>		
Deliverable 3.1	Selection of the most important wood-destructible fungi, identification of species-specific sequences for the chosen fungi and PCR systems for the selected most wood-destructible fungi. (Report)	
Associated WP	WP3 – Microbiological Testing	
Associated Task	Task 3.1 – Design of a PCR detection system for wood-destructible fungi	
Due Date	M6, 31th May	
Date Delivered		
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Partners Involved	TTZ	
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Dissemination Level	RE	

Publishable Executive Summary

This report outlines the work carried out as part of an EC funded project called DURAWOOD - Development of a solvent - free coating process for wooden facades.

For the microbial testing of wood treated with the DURAWOOD method a group of most important wood-destructible fungi was defined and a rapid detection method for this group of fungi based on PCR systems was developed. With these PCR systems it should be possible to perform comparative microbiological tests to evaluate the DURAWOOD method relating to the impact of wood-destructible fungi in a less time consuming way as by testing according to the EN 113 standard requiring at least 16 weeks only for incubation time for one test series.

A literature-based survey has been carried out to identify the most important wood-destructible fungi. Based on actual papers dealing with the development and testing of new wood preservatives, the European norm EN113 (Wood preservatives – Method of test for determining the protective effectiveness against wood destroying basidiomycetes- Determination of the toxic values) and the common literature **14** fungi were determined and in coordination with the industrial project partners defined as the group of the most important wood-destructible fungi relevant for the project.

For the development of the specific PCR systems species-specific DNA sequences for each of the chosen fungi were determined and specific primer sequences were defined. The primer sequences were successful tested “in silico” by a comparison with all known DNA sequences published in the gene databanks to ensure the specificity of the chosen primer sequence.

The PCR systems were tested successfully in respect of their specificity with DNAs of the defined group of fungi and several common moulds. The sensitivity was determined by identifying the detection limit of the developed primer systems with 10-fold serial dilutions of positive DNA in respect of the tested primer system. Most of the tested primer systems have a detection limit of approximately 1 genome per 25 µl PCR sample.

A new highly specific and sensitive detection method for wood-destructible fungi was established. The future research in the part of the microbial testing of the DURAWOOD project will be based on this new method to ensure a faster testing of wood preservatives.