

TECHLINE

Decay Processes and Bioprocessing

Immunodiagnostic Wood Decay Test

Billions of dollars are spent annually to replace wood products destroyed by wood decay fungi. A large percentage of this loss is incurred by consumers. Researchers at the Forest Products Laboratory (FPL) recently developed a new testing procedure, the immunodiagnostic wood decay test, that detects decay fungi in wood prior to any visible damage. Other than culturing and microscopic observation, no other reliable methods are currently available for early detection of decay in structures. Earlier detection of the presence of wood decay fungi will prolong the service life of wood by preventing unnecessary replacement and will ensure that all infected wood can be replaced or remedially treated to prevent recurrence of decay.

The immunodiagnostic wood decay test is a rapid, inexpensive, and accurate way to determine if fungal decay is present in wood. The test detects the presence of wood decay fungus prior to visible decay or measurable strength loss. It can be used by inspectors, millworks companies, structural engineers, and wood crafters in a variety of applications:

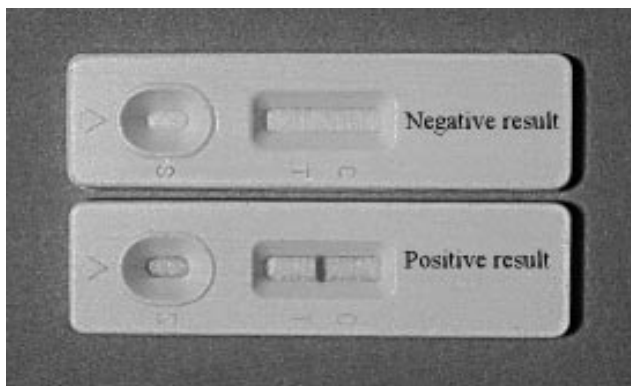
- Building inspections
- Historical restorations
- Utility pole inspections
- Structural maintenance programs (e.g., bridge decks, piers, railway ties, wooden aircraft frames)
- Response to warranty inquiries
- Efficacy tests of new preservatives
- Quality assurance for lumber or other wood products

The immunodiagnostic wood decay test is a one-step test that detects antibodies to decay fungi. Wood shavings from the sample are soaked in an extraction fluid for 2 hours. The extracted sample is added to the sample window of a test cassette. If the extracted sample contains fungal antigen, it binds to a latex conjugate and forms a complex that migrates forward on the test strip. Another antibody immobilized on the test strip captures the complex and forms a blue band that remains in the test cassette window, indicating a positive result.

This patented technology is not yet commercially available but is available for licensing to an interested manufacturer.



A test sample of wood shavings is removed by drilling a small hole.



Test results are revealed by checking the test cassette for the presence of a blue line. If the line appears, decay is present.

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References

Clausen, C.A. 1994. Dyed particle capture immunoassay for detection of incipient brown-rot decay. *J. of Immunoassay* 15(3): 305-316.

Clausen, C.A.; Green, F. 1996. Method and apparatus for immunological diagnosis of fungal decay in wood. U.S. Patent No. 5,563,040.



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