

Bond strength of wood adhesives: the sensitivity of standard test methods to imperfections

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Problem

Some of the current standard test methods on the shear strength measurement of wood adhesives are quite general and associated with uncertainties due to the sensitivity of their results to imperfections in specimen preparation and testing.



Goal

The aim of this research is to highlight and evaluate some drawbacks and uncertainties related to possible imperfections associated with the use of key European and American standard test methods (including EN 302-1 and ASTM 905-8) on the shear strength measurement of wood adhesive bonds.



Background

The issues related to the repeatability and sensitivity of some of the standard test methods to imperfections have been reported in a few research works in the past.

The focus of the previous studies on this topic has mostly been on the accuracy of the test methods when subjected to parameters that directly or indirectly may influence the performance of one or more links in the bond line (Figure 1).

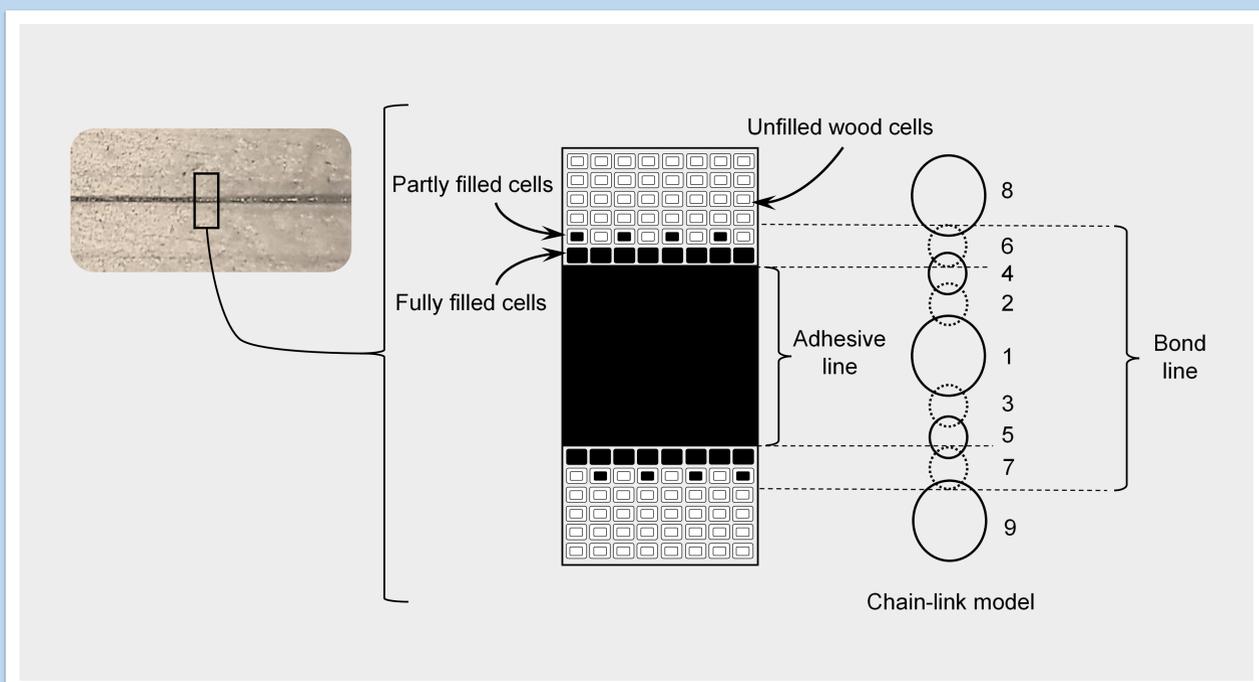


Figure 1. The chain-link model in a wood-wood glued element.



Outlook

The current research will determine the significance of the influence of imperfections in specimen preparation and testing (i.e., geometrical, technical, and species-related aspects) on the reliability of the standard test methods under various conditioning procedures.

The results will encourage the development of more reliable product-specific test methods for evaluating the suitability of wood adhesives for different products and applications.

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References

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