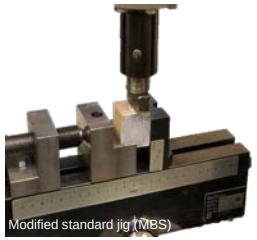
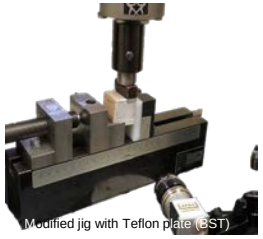
Photo of you, name, hometown

Identification and Development of Test Methods for More Accurately Evaluating the Bond Strength of Adhesively Laminated Wood Products

The compression block shear test is the common method of measuring the bond strength of the bondline of an adhesively laminated wood product. However, it was reported that the result was inaccurate due to the friction between the specimen and the jig. My research was mainly about the assessment and improvement of this method.

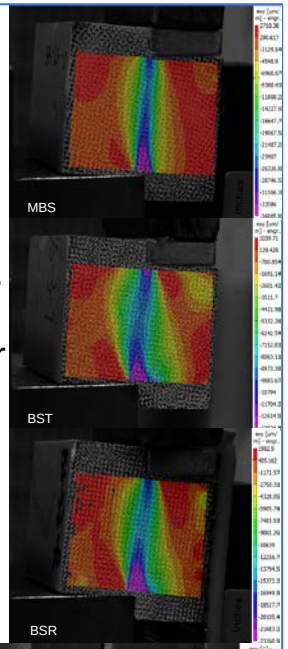
- The research was divided into two parts: 1) examination of the influence of different compression block shear setups on the shear strain distribution of a bondline; and 2) analysis of another two non-standard shear strength test methods.
- The first tests were conducted on three modified setups shown on the right. During the test, the DIC system was used to obtain the shear strain distribution on the surface of a specimen.
- The two test methods used in the second part were Arcan shear test and double block shear. The DIC system were also used in these two types of tests.

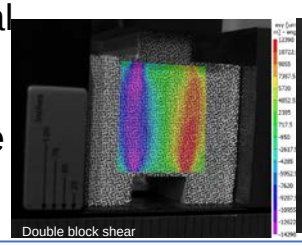

Modified standard jig (MBS)

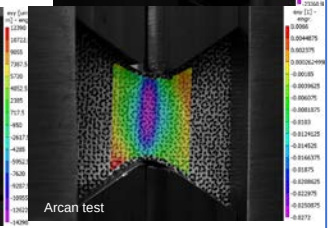

Modified jig with Teflon plate (BST)


Modified jig with rolling plate (BSR)

- The figures on the right show the shear strain distribution of the specimens at or near the moment of failure after being pressed. The shear strain was basically concentrated near the area of a bondline, the shear strain value in the middle of the bondline was slightly larger, and the stress concentration appeared at the two ends or one end.
- In terms of strain distribution, double shear was also proved to be one method to measure the shear strength of the bondline. The both bondlines were subjected to shear force but in opposite directions.
- Similarly, the Arcan test bondline was all shear strain, which was closer to the ideal pure shear force statues.
- In summary, the two non-standard methods have drawbacks in actual experimental operations and results. In the modified standard method tests, the experimental results from the roller plate modified jig were relatively good.




Double block shear


Arcan test

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