



## Elastic Behavior of Cross Laminated Timber and Timber Panels with Regular Gaps: Thick-Plate Modeling and Experimental Validation

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**Summary:**

In the present paper, the influence of periodic gaps between lamellas of Cross Laminated Timber (CLT) on the panel's elastic behavior is analyzed by means of a periodic homogenization scheme for thick plates having periodic geometry. Both small gaps, due to the fabrication process of not-gluing lateral lamellas, and wider gaps are investigated. The results obtained with the periodic homogenization scheme are compared to existing closed-form solutions and available experimental data. It appears that the plate bending stiffness can be well predicted with both homogenization and simplified methods, while only the homogenization approach is in agreement with the experimental in-plane and out-of-plane shear behavior. The influence of several properties of CLT lay-up on the mechanical response is pointed out as well.

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