





## Charring Behavior of Cross Laminated Timber with Respect to the Fire Protection

<https://research.thinkwood.com/en/permalink/catalogue267>

Author: Tiso, Mattia  
Organization: SP Technical Research Institute of Sweden  
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Format: Report  
Material: CLT (Cross-Laminated Timber)  
Topic: Fire  
Keywords: Small Scale  
Cone Calorimeter  
Heat Flux  
Gypsum Type F  
Plywood  
Fire Resistance  
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Research Status: Complete

### Summary:

Timber buildings made with Cross-laminated Timber (CLT) panels are becoming wide spread in Europe. The fire resistance of CLT panels depends upon several parameters, including the number of layers and their thickness. At the present, EN 1995-1-2:2004 does not provide specific information on the fire design of CLT panels. Several fire resistance tests of CLT panels were performed in different scales by furnace testing using the standard fire curve according to ISO 834-1:1999, however the large number of possible combination of CLT products makes testing too complicated and expensive as a tool for the verification of the fire resistance of several combinations. In this report are presented nine small-scale tests carried-out at SP Wood Technology (Technical Research Institute of Sweden). The tests consisted in specimens of CLT and massive timber exposed at a two steps of constant heat flux in a cone calorimeter (50 and 75 kW/m<sup>2</sup>). Some specimens were exposed with two different types of fire protection (gypsum plasterboard type F and plywood) and some were tested unprotected. Later, thermal simulations with the same set-up of tests were implemented on the finite element software package in Safir 2007, with the time-temperature curve given by ISO 834 as input; also the analytical calculation of the charring depth following the Eurocode 5 part 1-2 was done. The target of this thesis is to compare performed CLT furnace tests with the smallscale cone calorimeter tests carried out, the numerical results of the thermal model and the analytical results obtained.

Online Access: Free

### Resource Link

<http://www.diva-portal.org/smash/get/diva2:962826/FULLTEXT01.pdf>



## Field Measurement of Vertical Movement and Roof Moisture Performance of the Wood Innovation and Design Centre: Instrumentation and First Year's Performance

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Organization: FPInnovations  
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Format: Report  
Material: CLT (Cross-Laminated Timber)  
Glulam (Glue-Laminated Timber)  
Application: Wood Building Systems  
Topic: Design and Systems  
Serviceability  
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Long-term  
Moisture  
Plywood  
Roofs  
Shrinkage  
Tall Wood  
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### Summary:

Two of the major topics of interest to those designing taller and larger wood buildings are the susceptibility to differential movement and the likelihood of mass timber components drying slowly after they are wetted during construction. The Wood Innovation and Design Centre in Prince George, British Columbia provides a unique opportunity for non-destructive testing and monitoring to measure the 'As Built' performance of a relatively tall mass timber building. Field measurements also provide performance data to support regulatory and market acceptance of wood-based systems in tall and large buildings.

This report first describes instrumentation to measure the vertical movement of selected glulam columns and cross-laminated timber (CLT) walls in this building. Three locations of glulam columns and one CLT wall of the core structure were selected for measuring vertical movement along with the environmental conditions (temperature and humidity) in the immediate vicinity. The report then describes instrumentation to measure the moisture changes in the wood roof structure. Six locations in the roof were selected and instrumented for measuring moisture changes in the wood as well as the local environmental conditions.

Online Access: Free

### Resource Link

<https://library.fpinnovations.ca/en/permalink/fpipub44205> [↗](#)