FIRE AND MASS TIMBER

"Large wood structural members are actually self preserving in fires." Possibility of fire safety with wood building is as good as any other kind of building." <u>Craig Applegath</u>, Founding Principal DIALOG's Toronto Studio

HOW DOES MASS TIMBER PERFORM WHEN EXPOSED TO FIRE?

Mass timber provides inherent fire resistance through the formation of an insulating char layer when exposed to fire. The char layer protects the remain timber that is able to maintain the structural integrity of the building^{1,2}. The rate of char formation is predictable with CSA O86-14 -Engineering Design In Wood suggesting between 0.65 to 0.8 mm/min^3 .

WOOD CHARRING PROTECTS



The unburnt wood, protected by the charred wood, retains up to 100 percent of its initial strength.

Source: Fire Performance, reThink Wood

Disclaimer: This summary of a complex topic is intended for educational purposes only and does not replace independent professional judgment or the need to delve further into the literature. The Mass Timber Institute neither endorses, approves nor assumes responsibility for the content, accuracy or completeness of the information presented.

The Future of Sustainable Wood Building

TEST RESULT

A CAN/ULC S101 fire endurance testing has shown the capacity of Cross Laminated Timber (CLT) to provide reliable fire-resistance ratings up to **3 hours**² – one hour longer than code requirements in North America⁴.

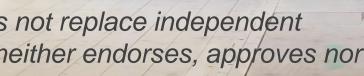
FUTURE RESEARCH

Other fire issues that have been identified for research include⁵:

- Fire properties of NLT, DLT, SCL, and other elements such as fire stopping and fire doors.
- Fire risk assessment skills in the mass timber field in Canada.

REFERENCES AND RECOMMENDED READINGS

- ¹Fire Safety design in buildings (Canadian Wood Council)
- ²Fire performance of cross-laminated timber assemblies Revised edition (FP Innovations)
- ³Ontario's Tall Wood Building Reference (MNRF, 2017)
- ⁴Fire performance of mass-timber encapsulation methods and the effect of encapsulation on char rate of cross laminated timber (NRC Publication)
- ⁵Research and education environmental scan (Cobden, 2018)
- Summary of the fire protection foundation report fire safety challenges of tall wood buildings (Barber & Gerard, 2015)
- Designing for fire protection (Think Wood)





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