



## Moisture Monitoring and Modeling of Mass-Timber Building Systems

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**Summary:**

The use of mass timber structural products in tall building applications (6–20 stories) is becoming more common around the world including North America. A potential concern is the environmental wetting of mass timber products during construction because such products may dry out more slowly than light-frame structural lumber, and wood, as an organic material, is susceptible to deterioration at elevated moisture contents. In order to better understand the moisture conditions present in high rise timber constructions, a long-term moisture monitoring program was implemented on an eight story, mixed-use, mass timber framed building in Portland, Oregon. The building was monitored with an array of moisture meters to track moisture content throughout the building’s construction and operation. This paper presents data covering a period just over one year starting from the manufacture of crosslaminated timber (CLT) panels. Hygrothermal properties of CLT samples of the same type used in the building were measured in the laboratory, and wetting and drying experiments on representative CLT samples were conducted. Simulated moisture contents using a one-dimensional hygrothermal model compared reasonably well with laboratory experiments and building site measurements.

Online Access: Free

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