Mass Timber

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Forest Products

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For over two decades, the University of Maine has been a leader in the research, qualification, and testing of mass timber components and assemblies.

As part of the vision of advancing forest-based technologies and supporting our region's forest products industry, the University of Maine provides state-of-the-art fabrication and testing facilities to support mass timber evaluation, analysis and development.

Our team of dedicated scientists, engineers and technicians collaborate to fulfill their mission to deliver a broad range of technical services and resources to industrial clients, government agencies and municipalities, and academic research groups to advance the understanding of mass timber building science.

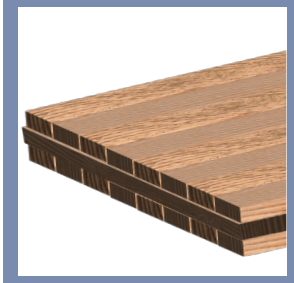
In the face of industry-wide change, the University of Maine continues to accelerate the commercialization of ground breaking technologies, while advancing the adoption of new processes and product improvements. This focus provides opportunity for our state's sawmills to remain competitive in a global market while supporting new and innovative products to Maine's forest economy.

Developed in Europe in the 1990's, cross-laminated timber (CLT) has recently been introduced to the United States, codified into the 2021 International Building Code (IBC) to allow commercial construction of mass timber buildings up to 18 stories. With this code adoption in the U.S., CLT demand is predicted to increase, especially for mid-rise construction. With our abundant and renewable softwood resources and proximity to large Northeastern U.S. metropolitan areas, Maine is well positioned to competitively supply mass timber products to these markets.

The University of Maine operates the Advanced Structures and Composites Center (ASCC), focused on moving technologies from design state to a commercially viable product. Since 1996, the ASCC has conducted hundreds of federal and industrial trials on wood and wood-based composite materials. The 100,000 ft^2 (8,100 m^2) facility employs more than 260 personnel with expertise across multiple disciplines to support composite technology commercialization. The ASCC may be hired to jointly develop a product, or solely as a contractor to manufacture and/or test wood composite products. As an ISO 17025 accredited testing laboratory, the ASCC is capable of conducting most wood composite testing including the CLT qualification tests required under ANSI/APA PRG 320, Standard for Performance-Rated Cross Laminated Timber.

Mass Timber Types

Lumber-Based Assemblies

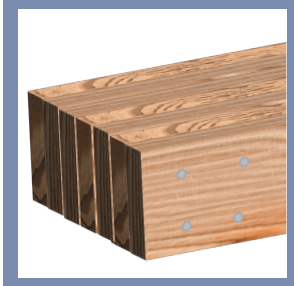


Cross-Laminated Timber (CLT)

Alternating perpendicular layers of dimensional lumber joined using glue to form structural panels.

Dowel-Laminated Timber (DLT)

Parallel or alternating perpendicular layers of dimensional lumber joined using dowels to form structural panels.



Nail-Laminated Timber (NLT)

Parallel or alternating perpendicular layers of dimensional lumber joined using nails to form structural panels.

Glue-Laminated Timber (GLT)

Parallel layers of dimensional lumber joined using glue to form panels or beams and columns (glulams).

Veneer & Strand-Based Assemblies

Mass Plywood Panels (MPP)

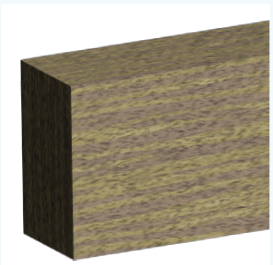
Alternating perpendicular layers of wood veneer sheets joined using glue to form panels, beams and columns.

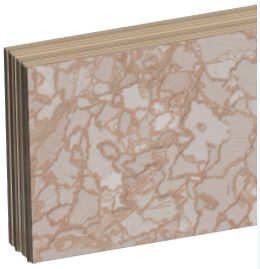
Laminated Veneer Lumber (LVL)

Parallel layers of wood veneer sheets with the grain along the length axis joined using glue to form beams and columns.

Parallel Strand Lumber (PSL)

Parallel layers of wood veneer strands with the grain along the length axis joined using glue to form beams and columns.





Laminated & Oriented Strand Lumber (LSL; OSL)

Parallel layers of long (LSL) or short (OSL) length-to thickness stranded wood flakes joined using glue to form beams and columns.

Mass Timber Benefits

Environmental: As a renewable and sustainable resource, mass timber reduces the use of fossil-fuel intensive materials. With a lighter carbon footprint, roughly half the weight of mass timber is carbon removed from the atmosphere and stored in-use.

Prefabrication & Construction Efficiency: Mass timber construction is faster, leading to less construction traffic, and requires fewer workers than similarly sized concrete construction projects.

Seismic Performance: The fact that mass timber weighs less than other materials offers some structural advantages such as smaller foundations and lower forces during seismic events.

Fire Performance: The natural charring action of large wood members allows mass timber to maintain its structural integrity over a significant time during a fire.

Biophilia: Numerous studies have shown that being surrounded by natural materials (like mass timber) at home, work or school has positive effects on our health and well-being.

composites.umaine.edu/woodcomposites/

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