



AMERICAN WOOD COUNCIL

U.S. Model Codes and Eurocodes Differences in Scope and Adoption

General Overview

As a general matter, the primary difference is that U.S. Codes are prescriptive as related to allowable building size while many European member states¹ have in place a performance-based approach that does not prescribe a limit. In those jurisdictions that utilize a performance-based approach, design teams must still demonstrate adequate safety measures to support their building design. For EU countries that follow a prescriptive approach, design teams can pursue alternative methods and materials in a similar fashion to the U.S. Use of performance-based design for new and innovative construction is associated with greater costs and potential acceptance risks.

Eurocodes

In 2004, the European Union published 10 Eurocodes that are widely enacted throughout Europe and provide uniformity of technical requirements for design. This compilation of Eurocodes is not a building code directly comparable to International Code Council (ICC) I-Codes used in the U.S. Rather, the Eurocodes are more limited in scope and most closely mirror the few chapters of the ICC International Building Code (IBC) for structural loads, material design properties, and serviceability criteria. Unlike ICC I-Codes, the Eurocodes do not address occupant or building fire safety, which are fundamental pieces of the ICC I-Codes. As such, the Eurocodes do not prescribe specific height and area allowances for mass timber that appear in the 2021 and later editions of the IBC. Instead, height and area allowances, if any, are addressed by EU country specific building regulations described later.

For wood design, Eurocode 5: *Design of timber structures*, is similar in scope to IBC Chapter 23 *Wood*. Both provide requirements for the design of wood building elements. Eurocode 5 contains design requirements in the body of the document, whereas, IBC Chapter 23, references AWC's *National Design Specification (NDS) for Wood Construction, Special Design Provisions for Wind and Seismic* and other design standards for requirements. Because of differences in product standards for wood products including those for cross-laminated timber, their respective design values and performance under fire exposure, Eurocode 5 provisions and product criteria are not directly usable under the IBC.

Eurocode 5 is maintained by a Work Group within CEN (European Committee for Standardization) having membership from EU member states and is scheduled to be

¹ While many EU Member States are performance based, several EU Member States do in fact prescribe building height limits, including France, Germany, Ireland, Norway and Denmark. See N Birgit Östman (2022) National fire regulations for the use of wood in buildings – worldwide review 2020, *Wood Material Science & Engineering*, 17:1, 2-5, DOI:10.1080/17480272.2021.1936630.



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updated in 2025, following 10-years of development. Each country has a National Annex in which exceptions are included specific to the country. AWC standards referenced in the IBC are updated every 5 years or more frequently and are adopted throughout U.S. by state and local adoption of the I-Codes.

EU Country Specific Building Regulations

While significant harmonization of technical aspects of design occurs through Eurocode, every European country has its own building regulations for building types and uses, and several have local differences. Much like the U.S. and Canada, each country in Europe establishes its own allowable height, number of stories, and fire resistance ratings for all types of construction. These allowances for wood buildings vary across Europe and the rest of the world. Of 40 countries surveyed in 2020² several in Europe have no prescriptive limit (NL) on the number of stories while others are limited to 7 or fewer stories. The survey noted that even with harmonized technical requirements that common national regulations for building types and uses differ because “fire safety is governed by national legislation and is thus on the political level.” In the U.S., fire safety regulations for building types and height are part of the comprehensive I-Codes, which have to date facilitated uniformity of state adopted requirement for mass timber up to 18 stories. That said, the U.S. I-Codes include a performance code as well as provisions that allow the use of alternative methods and materials that can be used to allow for construction that exceeds the prescriptive limits.

The approach that AWC has taken in Florida is a hybrid of both performance and prescriptive measures. Taking advantage of the ability in Florida to pursue alternative methods and materials approaches, AWC has compiled a comprehensive set of requirements as a guide that in fact operate as prescriptive limits to build with mass timber in Florida. In the introduction to the guide, AWC clarifies that:

This Guide is intended to assist the Code Official in review and permitting of mass timber buildings; however, it is not intended to limit or restrict buildings from being larger or taller, provided the authority having jurisdiction is satisfied that performance objectives are met.

This approach may also be pursued in other jurisdictions that have not yet adopted mass timber code provisions in the U.S. to facilitate design teams ability to secure permits and build in accordance with the latest ICC I-Codes.

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Please reach out to Phil Line at pline@awc.org if you have any questions or would like to take a deeper look at any elements of the EU code approach.

² See id.