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Timber structures — Glued laminated timber — Assignment of glued laminated timber characteristic values from laminate properties

Structures en bois — Bois lamellé-collé — Valeurs caractéristiques du bois lamellé-collé sur la base des propriétés des lamelles

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 165, *Timber structures*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

This document was prepared in response to the growing interest in development of the strength and stiffness of structural glued laminated timber (glulam) from the characteristic values of lumber laminations.

Since its first introduction in 1890s, glulam has been used in timber construction for over 125 years with excellent track record of performance. Many countries around the world, which have experience in glulam construction, have various glulam production capabilities that are supported by methodologies or analytical models for development of glulam strength and stiffness from the characteristic values of lumber laminations. This document reviews methodologies from Europe, the USA, Australia/New Zealand, and Canada that have successfully demonstrated their acceptance through years of practice and end uses.

This document does not cover all methodologies around the world and is not intended to exclude other methodologies that can demonstrate their capabilities of correlating the analytical results with the actual product performance. This document will be updated with those additional methodologies when their documentation becomes available in the future.

This document promotes the understanding of the differences between methodologies as a first step toward an international harmonization in the process of assigning glulam characteristic values from laminate properties.

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Timber structures — Glued laminated timber — Assignment of glued laminated timber characteristic values from laminate properties

1 Scope

This document reviews the methodologies or analytical models that have been used to develop the strength and stiffness of structural glued laminated timber (glulam) from the characteristic properties of lumber laminations. The review is limited to the methodologies used in Europe, the USA, Australia/New Zealand, and Canada as they represent different fundamental philosophies in these areas. As a result, the methodologies are not intended to be combined unless there is clear understanding of the fundamental assumptions adopted by the respective methodologies.

NOTE Detailed assumptions used by the respective methodologies are available from the standards listed in the Bibliography.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

4 European methodologies

EN 14080 provides three different routes for producer to classify the glulam and all of them are related to properties in structural sizes. The glulam standard covers only properties related to nominal 12 % moisture content (in lamination, joint, and structural specimen tests, moisture content may be 12 ± 3 % without mandatory adjustments).

4.1 General

Mechanical resistance of glulam is intended to be determined from and declared:

— on the basis of geometrical data (e.g. cross-sectional sizes of laminations and layups) and material properties (strength, stiffness and density properties of laminations and strength properties of finger joints); or

— from tests.

4.1.1 Timber

Timber is strength graded according to EN 14081-1.

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