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Timber structures — Finger-jointed timber — Manufacturing and production requirements

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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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For an explanation on 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 the following URL: www.iso.org/iso/foreword.html.

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

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Introduction

Finger-jointed timber is viewed as an alternative and substitute for sawn timber. Finger-jointed timber makes use of timber of various lengths and enables localized defects, particularly knots, to be docked out of otherwise high-quality sawn timber.

Qualification (initial type testing) and compliance (factory production control) testing are specified to assess if the components and manufacturing procedures used (finger joint profile, end pressure and other production variables) are appropriate for the characteristic values being claimed. A representative sample of the potential production is evaluated for tension and bending strength and finger joints are assessed for bond quality using delamination or wood fibre failure tests.

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Timber structures — Finger-jointed timber — Manufacturing and production requirements

1 Scope

This document specifies the product and performance requirements for finger-jointed structural timber made from sawn timber elements.

The document does not cover products made using impressed (die-formed) joints or finger-jointed laminations for glued laminated timber, which is covered in ISO 12578.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 9709, *Structural timber — Visual strength grading — Basic principles*

ISO 10983, *Timber — Finger joints — Minimum production requirements and testing methods*

ISO 12122-2, *Timber structures — Determination of characteristic values — Part 2: Sawn timber*

ISO 13910, *Timber structures — Strength graded timber — Test methods for structural properties*

ISO 13912, *Structural timber — Machine strength grading — Basic principles*

ISO 20152-1, *Timber structures — Bond performance of structural adhesives — Basic requirements*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

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

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

3.1
finger joint
end joint formed by machining a number of similar, tapered, symmetrical fingers in the ends of timber pieces that are then bonded together

3.2
finger-jointed timber
timber that contains two or more component pieces end-joined by *finger joints* (3.1)

Note 1 to entry: All pieces are of a single species or recognized species group, have the same nominal cross-section and the finger joints are formed using a common adhesive and production method.

3.3
production batch
finger-jointed timber (3.2) made during a continuous run on one production line

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3.4
strength grade
population of timber having a set of structural properties and utility requirements

Note 1 to entry: Strength grade is defined in accordance with principles detailed with ISO 9709 (visual grading) or ISO 13912 (machine grading).

3.5
service class
service conditions to which *finger-jointed timber* (3.2) is subjected

Note 1 to entry: Service classes are defined in ISO 20152-1.

3.6
qualification
initial type testing
testing of *finger joints* (3.1) or *finger-jointed timber* (3.2) that is used to establish the statistical variables that describe the finger joint strength applicable to *strength grade* (3.4) and the parameters appropriate to the bond quality of the *service class* (3.5)

3.7
compliance
factory production control testing
process of demonstrating that *finger-jointed timber* (3.2) has strength values and bond quality of the specified *strength grade* (3.4) and *service class* (3.5)

3.8
standard length
length used in testing to determine characteristic values

Note 1 to entry: Standard lengths are defined in ISO 13910.

Note 2 to entry: Characteristic values are defined in ISO 12122-2

Note 3 to entry: Finger-jointed timber can be used as a substitute for sawn timber and therefore has its properties determined over the same test lengths.

4 Symbols

d	depth of finger-jointed timber in millimetres
b	width of finger-jointed timber in millimetres
$f_{k,m}$	characteristic strength in bending of a strength grade in megapascals
$f_{k,t}$	characteristic strength in tension of a strength grade in megapascals
$f_{k,m,verif} = k_{fj} f_{k,m}$	characteristic finger joint strength in bending of a single finger joint required for verification in megapascals
$f_{k,t,verif} = k_{fj} f_{k,t}$	characteristic finger joint strength in tension of a single finger joint required for verification in megapascals
k_{fj}	factor that allows for the effect of multiple finger joints in a standard length
L	standard test length for tension or bending as defined in ISO 13910 in millimetres
M	number of finger joints that occur in a standard length

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