

# DRAFT INTERNATIONAL STANDARD

## ISO/DIS 12122-3

ISO/TC 165

Secretariat: SCC

Voting begins on:  
2015-08-17

Voting terminates on:  
2015-11-17

---

---

## Timber structures — Determination of characteristic values —

### Part 3: Glued laminated timber

*Structures en bois — Détermination des valeurs caractéristiques —  
Partie 3: Exigences pour les bois lamellé-collé*

ICS: 91.080.20

**iTeh STANDARD PREVIEW**  
(standards.iteh.ai)  
Full standard:  
<https://standards.iteh.ai/catalog/standards/sist/984b7e2c-5ecb-49eb-85e8-4de1292e23b1/iso-12122-3-2016>

THIS DOCUMENT IS A DRAFT CIRCULATED FOR COMMENT AND APPROVAL. IT IS THEREFORE SUBJECT TO CHANGE AND MAY NOT BE REFERRED TO AS AN INTERNATIONAL STANDARD UNTIL PUBLISHED AS SUCH.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.

RECIPIENTS OF THIS DRAFT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION.



Reference number  
ISO/DIS 12122-3:2015(E)

© ISO 2015

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

Full standard:  
<https://standards.iteh.ai/catalog/standards/sist/984b7e2c-5ecb-49eb-85e8-4de1292e23b1/iso-12122-3-2016>



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2015, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Ch. de Blandonnet 8 • CP 401  
CH-1214 Vernier, Geneva, Switzerland  
Tel. +41 22 749 01 11  
Fax +41 22 749 09 47  
copyright@iso.org  
www.iso.org

# Contents

Page

|  |    |
|--|----|
| Foreword .....   | iv |
| Introduction.....  | v  |
| 1 Scope .....  | 1  |
| 2 Normative references .....   | 1  |
| 3 Terms and definitions .....  | 1  |
| 4 Symbols (and abbreviated terms).....   | 1  |
| 5 Reference Population.....  | 1  |
| 6 Sampling .....   | 2  |
| 6.1 Sampling method .....  | 2  |
| 6.2 Sample size .....  | 2  |
| 7 Sample conditioning .....  | 2  |
| 8 Test data .....  | 2  |
| 8.1 Test method .....  | 2  |
| 8.2 Test data compatible with product description .....  | 3  |
| 8.3 Failure modes .....  | 3  |
| 9 Evaluation of characteristic values for structural properties .....  | 3  |
| 9.1 Structural properties .....  | 3  |
| 9.2 Characteristic modulus of elasticity and shear modulus .....   | 3  |
| 9.3 Characteristic values of strength .....  | 3  |
| 9.3.1 Characteristic bearing strength .....  | 3  |
| 9.3.2 Other characteristic values for strength based on the 5 <sup>th</sup> percentile test value.....           | 3  |
| 10 Report .....  | 3  |
| Annex A (informative) Commentary .....   | 4  |
| A.1 Commentary on scope .....  | 4  |
| A.2 Commentary on normative references.....  | 4  |
| A.3 Commentary on terms and definitions.....   | 4  |
| A.4 Commentary on symbols .....  | 4  |
| A.5 Commentary on reference population .....   | 4  |
| A.6 Commentary on sampling .....   | 5  |
| A.7 Commentary on sample conditioning .....  | 6  |
| A.8 Commentary on testing .....  | 6  |
| A.8.1 Commentary on test method.....   | 6  |
| A.8.2 Commentary on test data compatible with product description .....  | 6  |
| A.8.3 Commentary on failure modes.....   | 6  |
| A.9 Commentary on evaluation of characteristic values for structural properties.....                             | 6  |
| A.9.1 Commentary on structural properties.....   | 6  |
| A.9.2 Commentary on characteristic modulus of elasticity and shear modulus .....                                 | 7  |
| A.9.3 Commentary on characteristic values of strength .....  | 7  |
| A.10 Commentary on report.....   | 7  |
| Annex B (informative) Analytical models for determining characteristic properties of glued laminated timber..... | 8  |
| B.1 General .....  | 8  |
| B.2 Models .....   | 8  |

## 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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

ISO 12122-3 was prepared by Technical Committee ISO/TC 165, *Timber Structures*.

ISO 12122 consists of the following parts, under the general title *Timber structures — Determination of characteristic values*:

- Part 1: *Basic requirements*
- Part 2: *Sawn timber*
- Part 3: *Glued laminated timber*
- Part 4: *Engineered wood products*

iteh STANDARD PREVIEW  
(standards.iteh.ai)  
Full standard:  
<https://standards.iteh.ai/catalog/standards/sist/984b7e2d-5ecb-49eb-85e8-4de1292e23b1/iso-12122-3-2016>

## Introduction

This International Standard sets out a framework for establishing characteristic values from test results on a sample drawn from a clearly defined reference population of glued laminated timber. The characteristic value is an estimate of the property of the reference population with a consistent level of confidence prescribed in the standard.

This part of the Standard is to be used in conjunction with ISO 12122-1 Timber Structures – Determination of characteristic values – Part 1:Basic requirements.

This part of the Standard permits the evaluation of characteristic values on testing on commercial sized specimens of glued laminated timber. Where the characteristic values are derived using calculations based on laminate structural properties, this standard does not apply, but Annex B references other methods for estimating characteristic values.

In some cases, characteristic values determined in accordance with this Standard may be modified to become a design value.

The Standard has the following Annexes:

Annex A presents a commentary on the standard

Annex B presents information on analytical models for determining characteristic values of glued laminated timber

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

Full standard:  
<https://standards.iteh.ai/catalog/standards/sist/984b7e2c-5ecb-49eb-85e8-4de1292e23b1/iso-12122-3-2016>

# Timber Structures — Determination of characteristic values — Part 3: Glued laminated timber

## 1 Scope

This International Standard gives methods of determination of characteristic values for a defined population of glued laminated timber products, calculated from test values.

It presents methods for the determination of:

- a) characteristic value of mean-based properties, and
- b) characteristic value of 5<sup>th</sup> percentile-based properties.

**NOTE** An informative Annex to this standard gives information on methods that have been successfully used to estimate the characteristic values of glued laminated timber products from properties of the laminates.

## 2 Normative references

The following referenced documents are indispensable for the application 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.

This International Standard incorporates dated or undated reference, provisions and other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this International Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication applies.

ISO 8375 Timber structures - Glued laminated timber - Test methods for determination of physical and mechanical properties

ISO 12122-1 Timber structures – Determination of characteristic values – Part 1: Basic requirements

ISO 12578 Timber structures — Glued laminated timber — Component performance and production requirements

## 3 Terms and definitions

For the purposes of this document, the relevant terms and definitions presented in ISO 12122-1 and ISO 12578 apply.

## 4 Symbols (and abbreviated terms)

Symbols defined in the relevant ISO product or test standard shall be used. Other symbols are defined in ISO 12122-1.

## 5 Reference Population

In addition to the requirements for definition of the reference population in ISO 12122-1, the following attributes of glued laminated timber may be included:

- a) sources of raw material;
- b) seasoning method (if seasoned);
- c) grading or production method for laminates including presence and frequency of finger joints;
- d) layup of the glued laminated product;
- e) specification of adhesives, method of application and method of curing adhesives;
- f) quality control measures;
- g) secondary processing, such as preservative treatment, fire retardant treatment, profiling..., etc.; or
- h) variations in the laminates (if any)

## 6 Sampling

### 6.1 Sampling method

The sampling method shall comply with the performance objective of sampling defined in ISO 12122-1.

Representation of each of the variants in the sample shall approximate the representation of the same variants in the reference population.

NOTE See Clause 10 and ISO 12122-1 for reporting requirements on the sampling method. The report should indicate a response to each of the identified attributes of the reference population listed in compliance with Clause 5 in this Standard or otherwise important to the description of the reference population.

### 6.2 Sample size

The sample size shall comply with requirements of ISO 12122-1 and shall take into account the coefficient of variation ( $V$ ) expected for the glued laminated timber in the reference population.

NOTE 1 See Notes under the relevant clause in ISO 12122-1.

NOTE 2 ISO 12122-1 gives some guidance on selecting sample size.

## 7 Sample conditioning

The sample storage and testing environment shall reflect conditioning in accordance with the definition of the reference population as indicated in ISO 12122-1. Due to the large size of glued laminated timber, it is acceptable to test the sample at as-tested conditions provided that the results are adjusted in accordance with Clause 8.2.

## 8 Test data

### 8.1 Test method

The test data shall be obtained from

- a) ISO 8375 or
- b) a standard test method appropriate for the glued laminated timber reference population provided equivalency factors with ISO 8375 can be established.

NOTE 1 See Notes under the relevant clause in ISO 12122-1.

NOTE 2 Test methods involve many variables that will affect results including loading configuration and rates, specimen positioning and measurement methods. The level of precision of these variables should be appropriate to the objectives of the testing, and the adjustments required in Clause 8.2.



## 8.2 Test data compatible with product description

Where the characteristic value is applicable to a standard size or moisture content, adjustments to the raw test data may be required. Any adjustment shall be in accordance with ISO 12122-1 and shall be detailed in the report.

NOTE These adjustments include those required to pool data from different test programs as outlined in ISO 12122-1.

## 8.3 Failure modes

The failure modes obtained in the tests shall be recorded.

The data shall only be included in the analysis if it comes from a test in which the failure mode appropriate to the property was obtained.

NOTE The same test method may produce different failure modes on different products. The characteristic value may be under-estimated by tests that produce failure modes that are different to ones that the test method was intended to produce.

## 9 Evaluation of characteristic values for structural properties

### 9.1 Structural properties

For glued laminated timber, determination of the characteristic values for structural properties shall be in accordance with ISO 12122-1 using data of material properties from glued laminated timber tests (see Annex A for more information).

NOTE Annex A gives guidance on the type of property that is appropriate for glued laminated timber.

### 9.2 Characteristic modulus of elasticity and shear modulus

The characteristic modulus of elasticity and shear modulus used for serviceability shall be the mean value, taken as the average of the test values evaluated in accordance with ISO 12122-1 and in the case of its use in the ultimate limit state it shall be either the average or the 5<sup>th</sup> percentile value.

NOTE In some cases, where a reduction of modulus of elasticity is not already factored into the behaviour equation used for design, a 5<sup>th</sup> percentile value of modulus of elasticity may be required to design for beam or column stability.

### 9.3 Characteristic values of strength

#### 9.3.1 Characteristic bearing strength

The characteristic values for bearing strength, both parallel and perpendicular to grain, shall be the mean property obtained from results of tests.

#### 9.3.2 Other characteristic values for strength based on the 5<sup>th</sup> percentile test value

The 75% lower single-sided confidence limit of the test 5<sup>th</sup> percentile value shall be evaluated. Suitable methods for evaluating the 5<sup>th</sup> percentile value of the test data and estimating the 75% lower single-sided confidence limit are presented in ISO 12122-1.

## 10 Report

The report shall comply with the requirements of ISO 12122-1.