INTERNATIONAL STANDARD

ISO 19993

Second edition
2020-04

Timber structures — Glued laminated timber — Face and edge joint cleavage test

Structures en bois — Bois lamellé-collé — Essai de fendage des joints face à face et longitudinaux

Reference number
ISO 19993:2020(E)

© ISO 2020



COPYRIGHT PROTECTED DOCUMENT

© ISO 2020

All rights reserved. Unless otherwise specified, or required in the context of its implementation, 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
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

© ISO 2020 – All rights reserved

Contents

Page

Foreword ..... **iv**
Introduction ..... **v**
1 Scope **1**
2 Normative references **1**
3 Terms and definitions **1**
4 Principle **1**
5 Apparatus **2**
6 Preparation of test pieces **2**
7 Procedure **3**
7.1 General 3
7.2 Conditioning for wet cleavage 4
7.3 Cleaving and assessment 4
8 Test report **4**
Annex A (informative) **Advisory acceptance criteria after both ambient and wet conditioning** **5**

© ISO 2020 – All rights reserved

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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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*.

This second edition cancels and replaces the first edition (ISO 19993:2007), which has been technically revised.

The main changes compared to the previous edition are as follows.

— The acceptance criteria have been amended so that they are now contained in Annex A in keeping with the fact that this document deals only with a testing method.

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.

© ISO 2020 – All rights reserved

Introduction

This document was developed by TC 165 as a factory quality assurance test to be used for structural glulam and applied to the face and edge joints of each production batch. Advisory acceptance criteria are included in Annex A so that ISO 19993 is an independent document. The test is intended for use in establishing the effectiveness of inter-laminar face and edge bond in structural glued laminated timber of each production batch. It is not intended for use in initial type testing or to establish the effectiveness inter-laminar bond brought about by major changes of a production process such as change of adhesive, cramping pressures, adhesive curing or similar where cyclic delamination or block shear is preferred. There is nothing in principle that would prevent the test method from being applied to non-structural glulam.

Dry specimens are tested under ambient conditions and wet specimens are tested under ambient conditions after a vacuum-pressure soak under circumstances defined within the document.

© ISO 2020 – All rights reserved

Timber structures — Glued laminated timber — Face and edge joint cleavage test

1 Scope

This document specifies methods of evaluating the effectiveness of glued laminated timber face and edge bonds within a manufacturing plant by cleaving of the glue line in both dry and wet conditions. It is not intended that it be used for initial type testing where cyclic delamination or block shear is preferred. It is based on the principle that, provided minimum wood failure percentages are met, then the bond strength exceeds the perpendicular to the grain tension strength of the under-lying substrate and therefore the bond is not the weak element limiting the integrity of a glulam assembly.

2 Normative references

There are no normative references in this document.

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:

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

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

3.1
wood failure
area of wood fibre remaining on the bond line following completion of the *cleavage* (3.2) test expressed as a percentage of the total test area excluding any areas of wood defect (gum vein and similar)

3.2
cleavage
rupture parallel to the wood grain of a glulam face or edge joint bond line or the adjacent adherend by the application of normal stress

4 Principle

A specimen consisting of a full cross-section of laminated timber is cleaved apart in the plane of the bond lines and wood failure is assessed after wet or dry conditioning.

Cleavage is achieved by cutting a saw kerf that straddles the bond line then using a chisel, usually a bricklayer's bolster, that is placed in the saw kerf and is struck with a hammer to produce stresses perpendicular to the grain, in other words, to induce cleavage. If there is sufficient wood failure it means that the adhesive bond is stronger than that of the wood and that there is no loss of strength perpendicular to the grain at the interface between laminations.

© ISO 2020 – All rights reserved