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Adhesives — Wood adhesives for non-structural applications — Determination of tensile shear strength of lap joints

Adhésifs — Colles pour bois à usages non structuraux — Détermination du pouvoir adhésif des collages longitudinaux par l'essai de cisaillement

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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.

ISO 19210 was prepared by CEN/TC 193 as EN 205:2016 and was adopted (without modification) by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 11, *Products*.

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Introduction

International Standards giving a common classification with respect to durability classes for wood adhesives allow considerable improvement in consumer protection in any future product liability system with regard to properties guaranteed by the adhesive manufacturer.

The methods described in this document are suitable for the following and other applications:

— assessing the usability and quality of adhesives for wood and derived timber products;

— classifying these adhesives into the durability classes D1 to D4 of ISO 19210 (thermoplastic adhesives) and C1 to C4 of EN 12765 (thermosetting adhesives);

— assessing effects on the bond strength resulting from the bonding conditions chosen, the various conditioning sequences and the treatment of the test pieces before and after bonding.

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Adhesives — Wood adhesives for non-structural applications — Determination of tensile shear strength of lap joints

SAFETY STATEMENT — Persons using this document should be familiar with the normal laboratory practice, if applicable. This document does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any regulatory conditions.

ENVIRONMENTAL STATEMENT — It is understood that some of the material permitted in this document may have negative environmental impact. As technological advantages lead to acceptable alternatives for these materials, they will be eliminated from this document to the extent possible. At the end of the test, it is essential that the user of this document take care to carry out an appropriate disposal of the wastes according to local regulation.

1 Scope

This document specifies tests for adhesives for wood and derived timber products for the assessment of their resistance to hot and cold water. It can be used for the assessment of the strength of bonds with a thin bond line. It does not apply to adhesives for structural use or to the manufacture of particleboards, fibreboards and plywood. It does not replace tests on finished products.

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 5893, *Rubber and plastics test equipment — Tensile, flexural and compression types (constant rate of traverse) — Specification*

ISO 19209, *Adhesives — Classification of thermoplastic wood adhesives for non-structural applications*

EN 923, *Adhesives — Terms and definitions*

EN 12765, *Classification of thermosetting wood adhesives for non-structural applications*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 923 and the following 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
thin bond line
close contact adhesive joint where the adhesive layer is nominally 0,1 mm thick

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3.2
thermoplastic wood adhesive
adhesive whose main constituent is a thermoplastic resin and which has been formulated for bonding wood

3.3
thermoset wood adhesive
monomer, polymer or copolymer, which when cured, changes into a substantially infusible and insoluble product and which has been formulated for bonding wood

4 Principle

A symmetrical bonded single-lap joint between two symmetrical wooden adherends is subjected to specified conditioning treatments and strained to rupture by a tensile force parallel to the grain.

5 Safety

Persons using this document shall be familiar with normal laboratory practice.

This document does not purport to address all the safety problems, if any, associated with its use.

It is the responsibility of the user to establish health and safety practices and to ensure compliance with any regulatory conditions.

6 Apparatus

The testing machine shall be a constant-rate-of-traverse machine as described in ISO 5893. If a constant-rate-of-traverse machine is not available, a constant-rate-of-loading machine shall be used causing a rupture within the time limits specified in 7.5.

The jaws shall grip the test pieces with a wedge action and permit self-alignment while the test pieces are being pulled.

7 Procedure

7.1 Preparation of bonded assemblies

Prepare two panels (see Figure 1) from a thick unsteamed, conditioned, straight-grained board of beech (*Fagus sylvatica* L.) with a nominal density of (700 ± 50) kg/m^3 with a moisture content of (12 ± 1) %. It is permissible to prepare panels from different boards unless it is essential to minimize differences in the wood in order to conduct special comparative tests.

Ensure that the angle between the growth rings and the surface to be bonded is between 30° and 90°.

Cut the panels across the direction of the grain to a length equal to a multiple of 300 mm with the necessary allowance for cross-cutting and along the grain to a width of approximately 130 mm making an allowance for the width of cut as shown in Figure 1.

For tests, use two panels of (5,0 ± 0,1) mm thickness.

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