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Adhesives for non-structural wood applications — Test method and requirements for resistance to static load

Adhésifs pour bois à usages non structuraux — Méthode d'essai et exigences pour la résistance à la charge statique

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Foreword

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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 document should be noted (see www.iso.org/directives).

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This document was prepared by European Committee for Standardization as EN 14256:2007, and was adopted without modification other than those given below. It was assigned to Technical Committee ISO/TC 61, *Plastics*, subcommittee SC 11, *Products* and adopted under the “fast-track procedure”.

— changed "this European Standard" to "this document";

— EN 14256 has been added in Clause 2;

— omitted article "The" in the heading of 10.2.

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.

Adhesives for non-structural wood applications — Test method and requirements for resistance to static load

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 determine any regulatory conditions.

1 Scope

This document specifies a method for determining the ability of a test piece bonded with a thermoplastic adhesive, to support a given load for a specified time without fracture or excessive distortion, and specifies performance requirements for mean survival time.

It should be used in conjunction with ISO 19209 and ISO 19210, which describe durability classes and corresponding test methods for non-structural wood adhesives based on their ability to withstand various water treatments and relatively rapidly applied loads. The test described in this standard may be used to assess joints made with thin glue line, as defined in ISO 19210.

NOTE The test described in this document is not a mandatory requirement for the classification of adhesives into the classes D1, D2, D3 and D4 given in ISO 19209. It is an additional test that can be specified by a purchaser if required.

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 19210:2017, *Adhesives — Wood adhesives for non-structural applications — Determination of tensile shear strength of lap joints*

EN 923, *Adhesives — Terms and definitions*

EN 13183-1, *Moisture content of a piece of sawn timber — Part 1: Determination by oven dry method*

EN 13183-2, *Moisture content of a piece of sawn timber — Part 2: Estimation by electrical resistance method*

EN 14256, *Adhesives for non-structural wood applications — Test method and requirements for resistance to static load*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 923 apply.

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

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

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

4 Principle

A number of test pieces, each incorporating a symmetrical single lap joint between two rectangular wooden adherents, is placed in a jig in a climatically controlled environment. A weight is suspended from the jig applying a constant shear force to each joint for a period of 21 d. The time after which any joint fails is reported.

5 Apparatus

5.1 **Jigs**, for holding the test pieces (see Figure 1).

5.2 **Weights**, (30,0 ± 0,5) kg with means of attachment to the jigs.

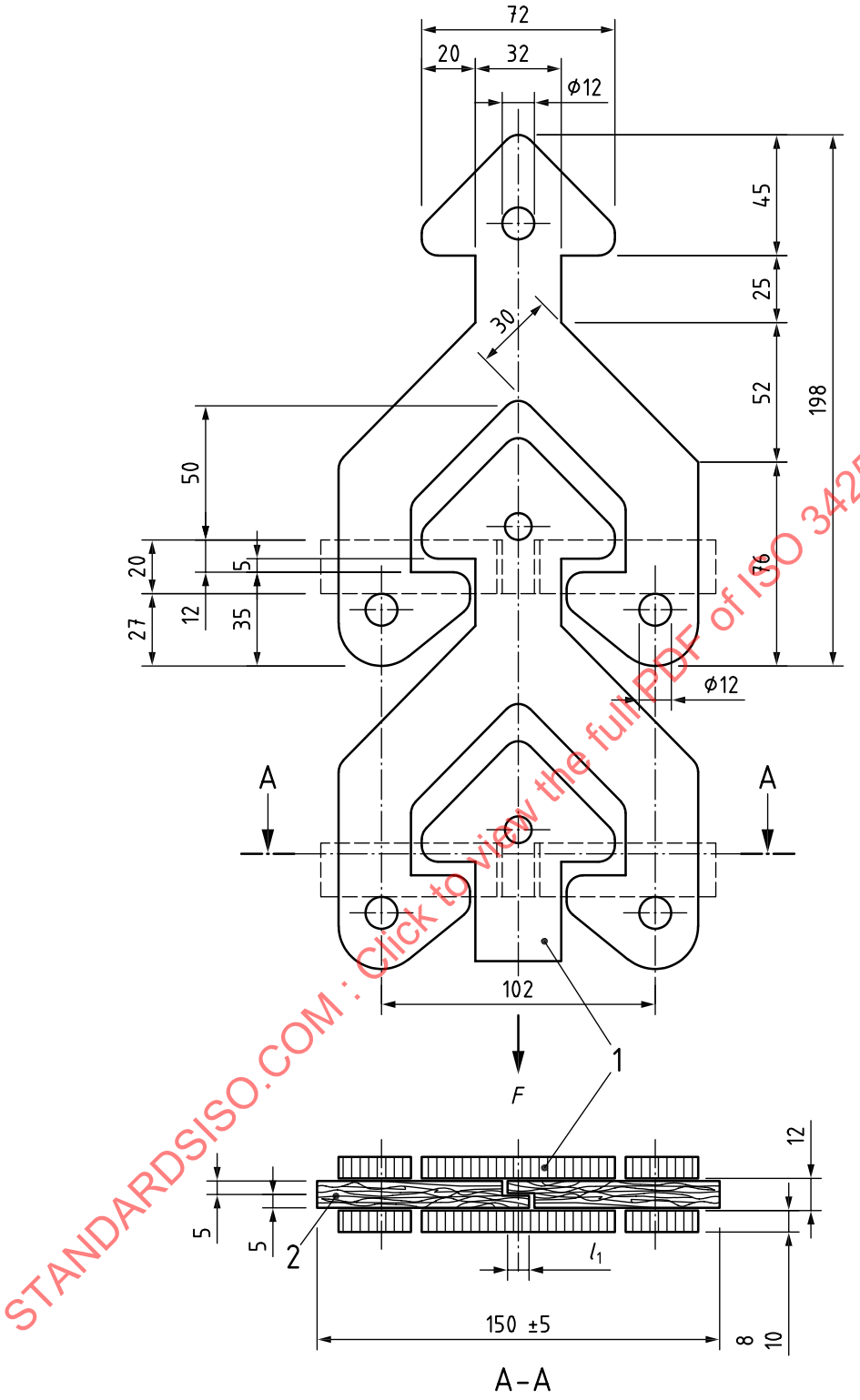
5.3 **Enclosure**, capable of maintaining the test piece assembly at (23 ± 2) °C and (50 ± 5) % relative humidity.

6 Sample preparation

6.1 Preparation of test pieces

Prepare 10 test pieces, thin line only, in accordance with ISO 19210:2017, 7.1 to 7.2 but with an overlap of (20,0 ± 0,2) mm. A diagram of the test piece is given in Figure 1.

All dimensions in millimetres ±0,5 unless otherwise stated



Key

1 plywood (5 to 7 ply)

2 test piece [the overlapping dimension l_1 is (20,0 ± 0,2) mm]

Figure 1 — Jig for assessing the resistance of bonded lap joints to a static load; hanging device made of 5 to 7-ply plywood

Make flat-bottomed cuts of (2,5 ± 0,5) mm width in the test pieces across the grain so that an overlap of (20,0 ± 0,2) mm is produced in the middle section, ensuring that cuts just cut through the bond-line but only penetrate as little as possible into the other part of the joint.

Apply the adhesive to be tested according to the manufacturer instructions.

Where no manufacturer instructions are available for the application of the adhesive, use the following bonding procedures:

— The adhesive application shall be on both sides of the joint.

— The adhesive spread shall be (150 ± 10) g/m^2 on each side.

— The open assembly time shall be (120 ± 10) s.

— The closed assembly time shall be (180 ± 10) s.

— The pressing pressure shall be 0,7 N/mm^2 to 1,0 N/mm^2.

— The pressing time shall be minimum of 2 h.

6.2 Conditioning bonded panels or test pieces

After bonding and pressing, condition the bonded assemblies or test pieces for a minimum of seven days but not more than eight days in the standard atmosphere that is to be used for testing, i.e. (23 ± 2) °C and (50 ± 5) % relative humidity, [23/50].

7 Test procedure

Just after the conditioning period described in 6.2, carry out the test at 23/50, testing 10 test pieces. Mount each test piece in the special jig (5.1) and suspend the jigs vertically. It is permissible to suspend one jig from another, up to a maximum of 10. Apply the required load of (30 ± 0,5) kg to the bottom of the jig assembly.

Failure is either when the test pieces are broken or when the two jigs are no longer supported by the specimen and they are in contact with each other because of the extent of its deflection.

Inspect the test pieces daily, and note the time to failure of each test piece, attributing a survival time, for example, of 3,5 d for test pieces failing between 3 d and 4 d, and 4,5 d for those failing between 4 d and 5 d, etc.

Terminate the test after 21 d, or after a mean endurance of 14 d has been achieved, whichever is the sooner. Note the failure in days of each test piece. Standard deviation should be reported in test results.

8 Calculation and expression of results

Calculate the mean survival time for the 10 test pieces and report the individual and mean survival times.

9 Performance requirements

The mean survival time shall not be less than 14 d.

10 Test report

10.1 General

The items listed in 10.2 to 10.4 shall be recorded in the test report.

10.2 Adhesive

a) type and origin of the adhesive;

b) batch number or other marking of uniquely identifying the adhesive used;

c) number of components and working methods (procedure of preparing and applying of adhesive);

d) if known, durability class (for information only).

10.3 Preparation of the test pieces and the testing procedures

a) species of wood with botanical name;

b) moisture content of wood relative to oven-dry mass in accordance with EN 13183-1, or the electric method according to EN 13183-2;

c) characteristic data relating to the bonding procedure (for instance information about the amount of adhesive applied, the open and closed assembly time, pressing pressure, pressing temperature, pressing time);

d) special treatment of the surface of the boards to be bonded (e.g. sanding);

e) time between the termination of pressing and the cutting of the test pieces;

f) number of bonded test pieces.

10.4 Test results

a) indication that the test was carried out in accordance with EN 14256;

b) mean survival time and individual survival times of the test pieces;

c) number of test pieces not failed (unbroken and still supporting the two jigs (see Clause 7) after 21 d loading;

d) any deviations from this document;

e) date of test.