SLOVENSKI STANDARD
SIST EN 302-4:1998

01-februar-1998

Lepila za nosilne lesene konstrukcije - Preskusne metode - 4. del: Ugotavljanje vpliva krčenja lesa na strižno trdnost

Adhesives for load-bearing timber structures - Test methods - Part 4: Determination of the effects of wood shrinkage on the shear strength

Klebstoffe für tragende Holzbauteile - Prüfverfahren - Teil 4: Bestimmung des Einflusses von Holzschwindung auf die Scherfestigkeit

Adhésifs pour structures portantes en bois - Méthodes d'essais - Partie 4: Détermination de l'influence du retrait du bois sur la résistance au cisaillement

Ta slovenski standard je istoveten z: **EN 302-4:1992**

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91.080.20	Lesene konstrukcije	Timber structures

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EUROPEAN STANDARD

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EN 302-4:1992

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Descriptors: Adhesives, timber construction, phenoplasts, aminoplasts, joining, adhesive bonded joints, shear tests, shear strength, shrinkage

English version

Adhesives for load-bearing timber structures - Test methods - Part 4: Determination of the effects of wood shrinkage on the shear strength

Adhésifs pour structures portantes en bois - Méthodes d'essais - Partie 4: Détermination de l'influence du retrait du bois sur la résistance au cisaillement

Klebstoffe für tragende Holzbauteile - Prüfverfahren - Teil 4: Bestimmung des Einflusses von Holzschwindung auf die Scherfestigkeit

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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Contents page

Foreword

This European Standard was prepared by Technical Committee 103, Adhesives for wood and derived timber products.

This European Standard is one of a series dealing with adhesives for use with timber structures, and is published in support of Eurocode No. 5, "Common unified rules for timber structures". The series consists of a classification and performance requirements for two types of phenolic and aminoplastic adhesive for use in different climatic conditions (EN 301), and four test methods (EN 302: Parts 1-4) used to assess the performance of adhesives after specified heat and humidity treatments.

The other tests used in the classification of adhesives for timber structures are given in:

EN 302: Part 1. Determination of bond strength in longitudinal tensile shear

EN 302: Part 2. Determination of resistance to delamination (laboratory method)

EN 302: Part 3. Determination of the effect of acid damage to wood fibres by temperature and humidity cycling on the transverse tensile strength

No existing European Standard is superseded.

National standards identical to this European Standard shall be published at the latest by 1992-12-31 and conflicting national standards shall be withdrawn at the latest by 1992-12-31.

According to the CEN/CENELEC Common Rules, the following countries are bound to implement this European Standard : Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

This Part of EN 302 describes a method for determining the extent to which wood shrinkage under drying conditions will weaken an adhesive bond. It is suitable for the following applications:

a) for assessing the compliance of adhesives with EN 301;

b) for assessing the usability and quality of adhesives for load-bearing timber structures;

c) for establishing whether or not the adhesive is capable of withstanding stresses due to shrinkage of the wood, without unacceptable loss of strength.

This test is intended primarily to obtain performance data for the classification of adhesives for load-bearing timber structures according to their suitability for use in defined climatic environments.

This test is carried out on spruce (*Picea abies* L.).

This method is not intended for use to provide numerical design data and does not necessarily represent the performance of the bonded member in service. It is not intended to be used to assess the suitability of adhesives for the manufacture of wood-based panels.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from 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 European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 301	Adhesives, phenolic and aminoplastic, for load bearing timber structures: Classification and performance requirements.
ISO 5893: 1985	Rubber and plastics test equipment - Tensile, flexural and compression types (constant rate of traverse) - Description

[1] FEPA 43-GB Standard for coated abrasive grains of fused alumina and silicon carbide

3 Principle

A crosswise double lap joint is submitted to a dry storage treatment and then strained to failure by a compressive shear force.

4 Apparatus

4.1 Testing machine

The testing machine shall be either:

a) a constant rate of loading machine, capable of maintaining a rate of loading of (20 ± 5) kN/min; or

b) a constant rate of traverse machine as described in ISO 5893: 1985.

4.2 Climatic cabinets

Enclosures capable of maintaining the bonded assemblies under the following conditions:

a) (40 ± 2) °C and (30 ± 2) % rh

b) (20 ± 2) °C and (65 ± 5) % rh

c) (20 ± 2) °C and (75 to 80) % rh

5 Method

5.1 Selection of timber

Use spruce having a density of (425 ± 25) kg/m^3 measured at (12 ± 1) % moisture content as determined by oven drying. Prepare 6 spruce cover pieces that are knot-free, straight grained, at least 400 mm long and 140 mm wide and of sufficient thickness to give a thickness of (20,0 ± 0,5) mm after conditioning and final preparation, with growth rings that are approximately tangential to the face and have a radius of 60 mm to 140 mm.

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[1] Fédération Européenne des Fabricants de Produits Abrasifs
20 Avenue Reille, F-75014 Paris, France.

Prepare 3 spruce core pieces that are knot-free, straight grained and with growth rings at an angle of 30° to 60° relative to the surface (see figure 1c). The dimensions of the core pieces shall be: at least 400 mm long, 140 mm wide and of sufficient thickness to give a thickness of (40 ± 0,5) mm after conditioning and final preparation.

Condition the core and cover pieces such that the moisture content of the wood is between 16 % and 18 %.

NOTE: Storage at 20 °C and 75 % to 80 % rh would be expected to give rise to a moisture content in the wood of between 16 % and 18 %.

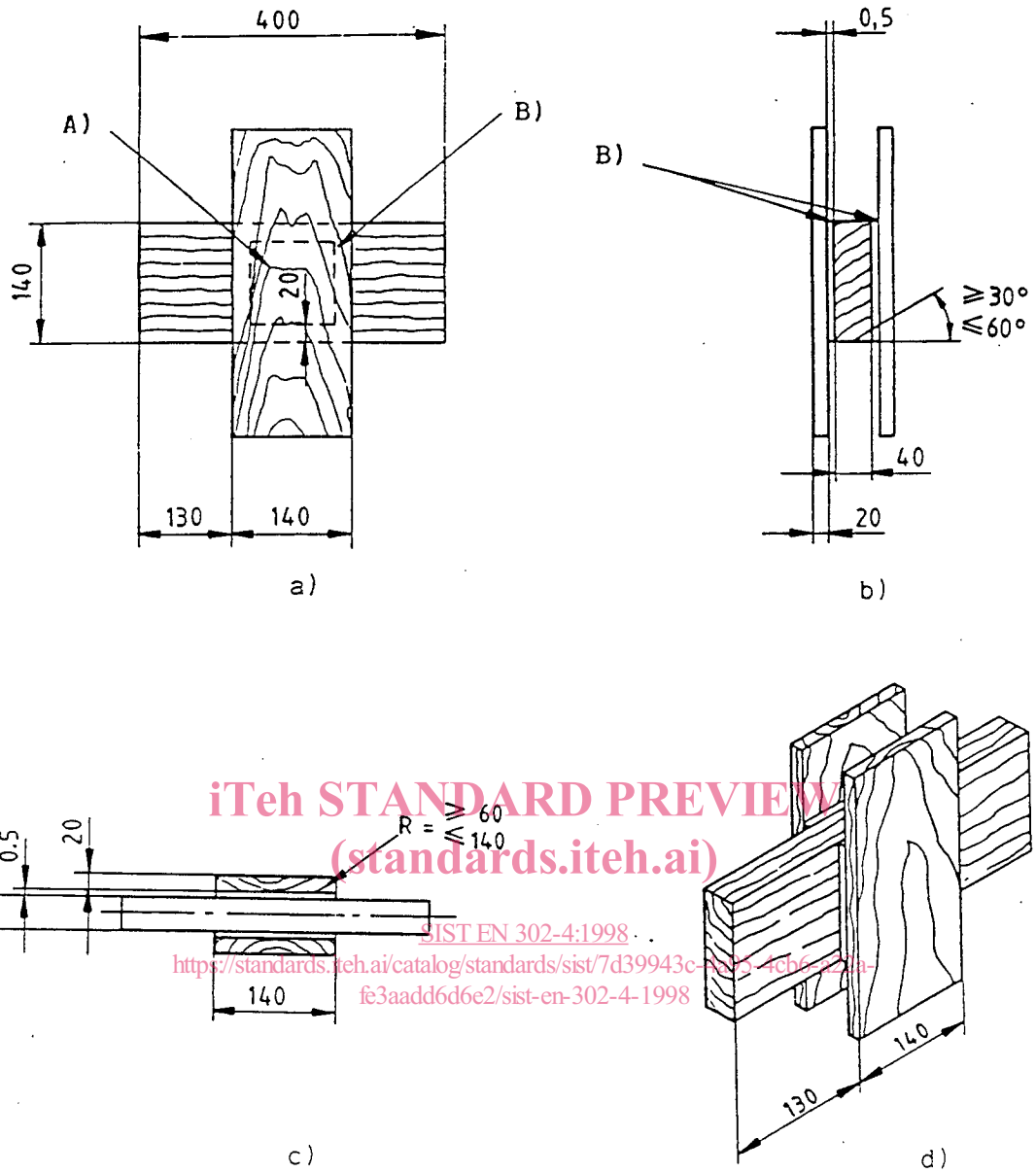
Not more than 24 h before bonding, either lightly plane, or lightly sand using a grade P 100 abrasive paper complying with FEPA Standard 43-GB, each surface to be bonded. Remove any dust carefully. Do not touch or soil the prepared surface.

5.2 Preparation of the bonded assemblies

Prepare the bonded assemblies as shown in figure 1 with the curvature of the growth rings of the cover pieces away from the surfaces to be bonded (figure 1c) and the grain of the cover pieces at right angles to the grain of the core piece (figures 1b and 1c). Place a 0,5 mm thick aluminium spacer frame (figure 2) on each side of the core piece to control the bond area to 100 mm x 100 mm and the bond thickness to 0,5 mm.

Apply a load of (7,7 ± 0,1) kN and maintain for 24 h. Remove the clamps and store the assemblies for 7 days at (20 ± 2) °C and (65 ± 5) % r.h.

NOTE: This pressure corresponds to a pressure of approximately 0,8 MPa applied to the surface of the frame (9600 mm^2).



A) = Bond plane 100 x 100
B) = Aluminium frames

All dimensions are in millimetres

Figure 1: Crosswise bonded assemblies