SLOVENSKI STANDARD
SIST EN 302-3:1998

01-februar-1998

Lepila za nosilne lesene konstrukcije - Preskusne metode - 3. del: Ugotavljanje vpliva kislinskih poškodb lesnih vlaken, nastalih zaradi cikličnih obremenitev s temperaturo in vlago, na prečno natezno trdnost

Adhesives for load-bearing timber structures - Test methods - Part 3: Determination of the effect of acid damage to wood fibres by temperature and humidity cycling on the transverse tensile strength

Klebstoffe für tragende Holzbauteile - Prüfverfahren - Teil 3: Bestimmung des Einflusses von Säureschädigung der Holzfasern durch Temperatur- und Feuchtezyklen auf die Querzugfestigkeit

Adhésifs pour structures portantes en bois - Méthodes d'essais - Partie 3: Détermination de l'influence de l'attaque acide des fibres du bois résultant de traitements cycliques de température et d'humidité sur la résistance a la traction transversale

Ta slovenski standard je istoveten z: **EN 302-3:1992**

ICS:

83.180	Lepila	Adhesives
91.080.20	Lesene konstrukcije	Timber structures

SIST EN 302-3:1998 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 302-3:1992

June 1992

UDC 621.792.053:678.64:694:620.172.251

Descriptors: Adhesives, timber construction, phenoplasts, aminoplasts, joining, adhesive bonded joints, cyclic tests, environmental tests, tensile strength

English version

Adhesives for load-bearing timber structures - Test methods - Part 3: Determination of the effect of acid damage to wood fibres by temperature and humidity cycling on the transverse tensile strength

Adhésifs pour structures portantes en bois - Méthodes d'essais - Partie 3: Détermination de l'influence de l'attaque acide des fibres du bois résultant de traitements cycliques de température et d'humidité sur la résistance à la traction transversale

Klebstoffe für tragende Holzbauteile - Prüfverfahren - Teil 3: Bestimmung des Einflusses von Säureschädigung der Holzfasern durch Temperatur- und Feuchtezyklen auf die Querzugfestigkeit

This European Standard was approved by CEN on 1992-06-01. CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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.

The European Standards exist in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Contents

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 to 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 4: Determination of the influence of shrinkage on the shear 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 of determining the effect on bond strength of damage to wood fibres caused by the action of acids from the adhesive during climatic cycling. 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 wood and load-bearing timber structures;

c) for determining if the adhesive after bonding has a damaging influence on the strength of the wood due to chemical action.

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

---

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

3 Principle

A gap joint between wooden adherends is submitted to defined temperature and humidity cycles and then strained to failure by a transverse tensile load.

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 (10 ± 1) kN/min; or

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

Special mounts are required (see figure 1). One or both mounts shall be attached to the straining heads by a coupling which permits self-alignment of the mounts whilst the test pieces are being pulled.

4.2 Climatic cabinets

Enclosures capable of maintaining the test pieces under the following conditions:

a) (10 ± 2) °C at approximately 100 % rh;

b) (50 ± 2) °C at approximately 100 % rh;

c) (50 ± 2) °C at not more than 20 % rh.

5 Method

5.1 Selection of timber

Carry out this test using spruce having a density of (425 ± 25) kg/m^3 measured at (12 ± 1) % moisture content as determined by oven drying.

Prepare one piece of spruce 60 mm x 60 mm in cross section and at least 800 mm in length that is free from knots, straight grained and with growth rings not wider than 2 mm and at about 45° to the faces of the specimen.

5.2 Preparation of the bonded assemblies

Cut the piece of wood lengthwise into 2 equal pieces of rectangular cross section and store them under controlled climatic conditions to constant mass. Constant mass is defined as the mass attained when the results of two successive weighings over an interval of 24 h differ by not more than 0,1 % of the mass of the specimen.

NOTE 1: In the absence of other special requirements the storage conditions should be (20 ± 2) °C and (65 ± 5) % r.h.. For special applications, other storage conditions may be agreed between the purchaser and the supplier of the adhesive.

Not more than 24 h before bonding, either lightly plane, or lightly sand using a grade P100 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.

Prepare sufficient cardboard spacers 60 mm x 45 mm x 0,5 mm (at least 10 will be required for a piece of wood 800 mm long). Lay these on the cut surface of the wood spaced (35,0 ± 0,5) mm apart with the lengths across the width of the cut surface. Fill the gaps between the spacers with adhesive. Ensure that adhesive is not lost from the test area. Clamp the pieces of wood together with the same orientation with respect to each other as they had before cutting. Apply a pressure of (0,6 ± 0,1) MPa relative to the area of the spacers. Maintain this pressure at (20 ± 2) °C and (65 ± 5) % r.h. (the standard atmosphere, [20/65]) for the time recommended by the adhesive manufacturer, or 24 h, whichever is the longer.

After bonding and pressing, condition the assembly for a minimum of 7 days at (20 ± 2) °C and (65 ± 5) % r.h..

NOTE 2: A longer conditioning time may be used if recommended by the adhesive manufacturer.

Record the time elapsed between the preparation of the bonded assembly and the start of temperature cycling.

5.3 Preparation of the test pieces

Using a sharp 25 mm diameter wood drill and a piece of wood under the assembly to prevent fraying at the edges of the hole, drill holes along the length of the assembly in the plane of the bond at distances between centres of alternately (50,0 ± 0,5) mm and (30,0 ± 0,5) mm so that a series of bond lines (25 ± 1) mm in length is produced (see figure 2). Take care to ensure that the holes are accurately positioned. Plane the assembly symmetrically to (50,0 ± 0,5) mm x (50,0 ± 0,5) mm and cut out the test pieces (60 ± 1) mm long as shown in figure 2.

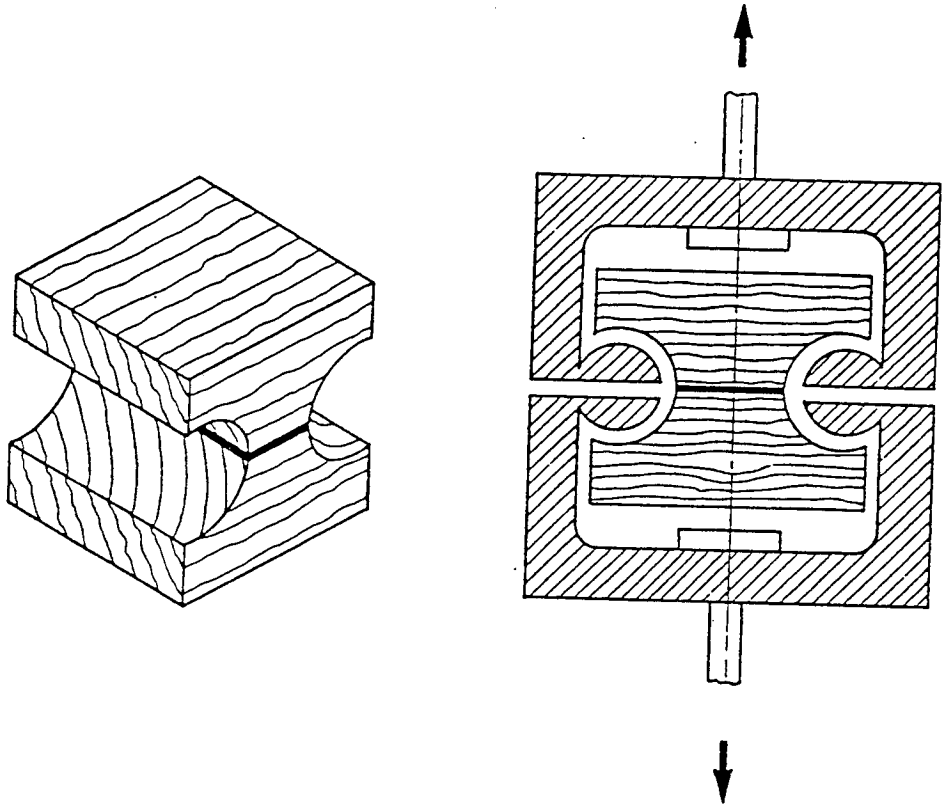
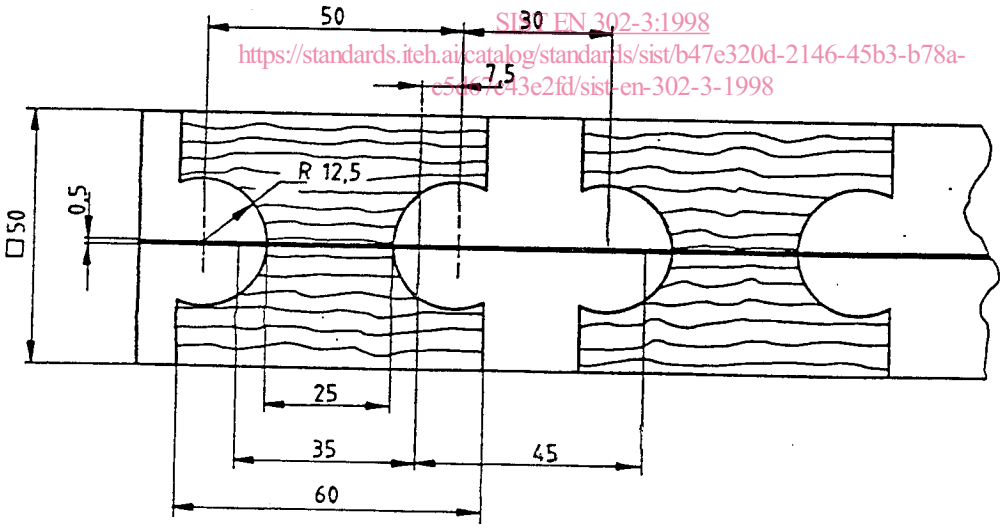


Figure 1: Test piece and mounts for assessing the transverse tensile strength of bonded wooden assemblies



All dimensions are in millimetres

Figure 2: Tensile test pieces cut out of the bonded wooden assembly