SLOVENSKI STANDARD
SIST EN 302-6:2004

01-oktober-2004

Lepila za nosilne lesene konstrukcije - Preskusne metode - 6. del: Določanje časa stiskanja

Adhesives for load-bearing timber structures - Test methods - Part 6: Determination of the conventional pressing time

Klebstoffe für tragende Holzbauteile - Prüfverfahren - Teil 6: Bestimmung der Mindestpresszeit

Adhésifs pour structures portantes en bois - Méthodes d'essai - Partie 6 : Détermination de la durée conventionnelle de maintien sous pression

Ta slovenski standard je istoveten z: **EN 302-6:2004**

ICS:

83.180	Lepila	Adhesives
91.080.20	Lesene konstrukcije	Timber structures

SIST EN 302-6:2004 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 302-6

July 2004

ICS 83.180

English version

Adhesives for load-bearing timber structures - Test methods - Part 6: Determination of the conventional pressing time

Adhésifs pour structures portantes en bois - Méthodes d'essai - Partie 6 : Détermination de la durée conventionnelle de maintien sous pression

Klebstoffe für tragende Holzbauteile - Prüfverfahren - Teil 6: Bestimmung der Mindestpresszeit

This European Standard was approved by CEN on 16 April 2004.

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.

This European Standard exists 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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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Ref. No. EN 302-6:2004: E

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Foreword

This document (EN 302-6:2004) has been prepared by Technical Committee CEN/TC 193 "Adhesives", the secretariat of which is held by AENOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2005, and conflicting national standards shall be withdrawn at the latest by January 2005.

No existing European Standard is superseded.

This document 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 adhesives for use in different climatic conditions (EN 301), four test methods (EN 302 Parts 1 to 4) used to assess the performance of adhesives after specified heat and humidity treatments, and three test methods (ENV 302-5 and EN 302 Parts 6 and 7) to characterise the working properties of the adhesive.

EN 301 and EN 302 Parts 1 to 4 and Parts 6 and 7 have the following titles.

EN 301 *Adhesives, phenolic and aminoplastic, for load-bearing timber structures — Classification and performance requirements*

EN 302 *Adhesives for lead-bearing timber structures — Test methods —*

Part 1: *Determination of bond strength in longitudinal tensile shear strength*

Part 2: *Determination of resistance to delamination*

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

Part 4: *Determination of the effects of wood shrinkage on the shear strength*

Part 6: *Determination of the conventional pressing time*

Part 7: *Determination of the conventional working life*

ENV 302-5:2001 has the title *'Adhesives for load-bearing timber structures — Test methods — Part 5: Determination of the conventional assembly time*'.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

This part of EN 302 specifies a method for determining the conventional pressing time at three temperatures for adhesives for load-bearing timber structures.

This document is only intended for obtaining a reliable basis for comparison of conventional pressing time between adhesives. The method gives results which cannot be applied to the safe manufacture of timber structures without modifications for the influences of timber density/absorbency, moisture content, factory temperature and relative air humidity.

2 Normative references

The following referenced documents are indispensable for the application 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.

EN 302-1:2004, *Adhesives for load-bearing timber structures — Test methods — Part 1: Determination of longitudinal tensile shear strength.*

EN 923:1998, *Adhesives — Terms and definitions.*

3 Terms and definitions

For the purposes of this part of EN 302-1:2004, the terms and definitions given in EN 923:1998 and the following apply.

3.1
conventional pressing time
shortest pressing time (expressed as the mean of 10 individual results) that gives a tensile shear strength of at least 4 N/mm² at a given temperature

NOTE The test procedures are those described in this document.

4 Principle

Standard beech lap joints are tested in tensile shear after various curing times until it is found that the strength has reached a value of 4 N/mm².

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 safety and health practices and to ensure compliance with any European or national regulatory conditions.

6 Apparatus

6.1 **Temperature cabinet**, capable of maintaining the air at a temperature of (15 ± 2) °C.

NOTE It is important to test the adhesive at this temperature although EN 386 specifies a higher temperature during the curing of structural adhesives.

6.2 **Temperature cabinet**, capable of maintaining the air at a temperature of (20 ± 2) °C.

6.3 **Temperature cabinet**, capable of maintaining the air at a temperature of (30 ± 2) °C.

7 Procedure

7.1 Sufficient beech panels shall be prepared in accordance with EN 302-1:2004, Clause 6.1 to enable 12 sets each of 10 test specimens with (0,2 ± 0,1) mm glue lines to be manufactured.

7.2 After conditioning to (12 ± 1) % moisture content, the panels shall be divided into three equal groups and wrapped so that they are airtight, to prevent further change in their moisture content. Each group of the panels shall be transferred to an atmosphere at one of the test temperatures described in Table 1. The components of the adhesive system to be used shall also be stored under these three temperatures respectively.

7.3 After at least 12 h conditioning at the test temperature, the panels shall be glued and pressed. The test pieces shall not be removed from the test temperature during the pressing period. Unless otherwise stated by the manufacturer, the clamping pressure shall be 0,8 N/mm²; Table 1 gives the pressing time for each pair of panels.

NOTE 1 It is a common practice, before bonding is started, to store the adhesive components and the timber overnight at the specified temperature whereby the timber shall be packaged hermetically (air-tight) to prevent changes of moisture content.

NOTE 2 Because wood temperature is difficult to measure, it is a common practice to remove the test pieces from the conditioning cabinet immediately before applying the adhesive to them.

Table 1 — Pressing time and climatic conditions

		Pressing time				
Set	T°	2 h	4 h	8 h	16 h	24 h
a	15°C	not required	a4	a8	a16	a24
b	20°C	not required	b4	b8	b16	b24
c	30°C	c2	c4	c8	c16	not required

7.4 Immediately after the pressing time has elapsed, the panels shall be unclamped and 10 test specimens cut from each of the bonded panels according to EN 302-1:2004, Clause 6.2. They shall be tested according to EN 302-1:2004, Clause 6.5 without delay.

7.5 The conventional pressing time shall be calculated by linear interpolation of those pressing times and their related tensile shear strength that are most near to the time corresponding to a tensile shear strength of 4 N/mm^2. The tensile shear strength at the shortest pressing time for each temperature shall be less than 4 N/mm^2. If needed, use shorter pressing times than those given in Table 1. The calculated conventional pressing time shall be expressed to the nearest 15 min rounded off to the next higher value.

EXAMPLE A pressing time of 4 h gives a mean tensile shear strength of 3 N/mm^2, while the mean tensile shear strength for 8 h pressing time is 6 N/mm^2. The result of the linear interpolation for 4 N/mm² is 5 h 20 min. This calculated value will be rounded off to 5 h 30 min.

8 Test report

The test report shall contain the following information:

a) a reference to this document (EN 302-6);

b) identification of the adhesive system tested;

c) proportions taken when mixing the adhesive for use;

d) value of the conventional pressing times for the three air temperatures respectively;

e) date of testing.