SLOVENSKI STANDARD
SIST EN 302-6:2013

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Nadomešča:

SIST EN 302-6:2004

Lepila za nosilne lesene konstrukcije - Preskusne metode - 6. del: Določanje najkrajšega časa stiskanja pri referenčnih pogojih

Adhesives for load-bearing timber structures - Test methods - Part 6: Determination of the minimum pressing time under referenced conditions

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

Adhésifs pour structures portantes en bois - Méthodes d'essai - Partie 6: Détermination du temps de serrage minimum dans des conditions de référence

Ta slovenski standard je istoveten z: EN 302-6:2013

ICS:

83.180	Lepila	Adhesives
91.080.20	Lesene konstrukcije	Timber structures

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EUROPEAN STANDARD

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EN 302-6

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Supersedes EN 302-6:2004

English Version

Adhesives for load-bearing timber structures - Test methods - Part 6: Determination of the minimum pressing time under referenced conditions

Adhésifs pour structures portantes en bois - Méthodes d'essai - Partie 6: Détermination du temps de serrage minimum dans des conditions de référence

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This European Standard was approved by CEN on 5 February 2013.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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Foreword

This document (EN 302-6:2013) 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 September 2013 and conflicting national standards shall be withdrawn at the latest by September 2013.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 302-6:2004.

The following modifications have been made:

— The pressing times are determined for both close contact glue line and 0,3 mm thick glue line;

— The pressing times to be used in the test are linked to the reactivity of the adhesive.

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

Introduction

This document is one of a series dealing with adhesives for use with timber structures, and is published in support of EN 1995, *Eurocode 5: Design of timber structures*. The series consists of three classification and performance requirements for adhesives for load-bearing timber structures; phenolic and aminoplastic adhesives (EN 301), one component polyurethane adhesive (EN 15425) and emulsion polymerized isocyanate adhesive (prEN 16254) and all together eleven test methods (EN 302 Parts 1 to 7 and EN 15416 Parts 2 to 5).

These European Standards have the following titles:

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

EN 15425, *Adhesives — One component polyurethane for load-bearing timber structures — Classification and performance requirements*

prEN 16254, *Adhesives — Emulsion polymerized isocyanate (EPI), for load-bearing timber structures — Classification and performance requirement*

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

— *Part 1: Determination of 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 5: Determination of maximum assembly time under referenced conditions*

— *Part 6: Determination of the minimum pressing time under referenced conditions*

— *Part 7: Determination of the working life under referenced conditions*

EN 15416, *Adhesives for load bearing timber structures other than phenolic and aminoplastic — Test methods*

— *Part 2: Static load test of multiple bondline specimens in compression shear*

— *Part 3: Creep deformation test at cyclic climate conditions with specimens loaded in bending shear*

— *Part 4: Determination of open assembly time for one component polyurethane adhesives*

— *Part 5: Determination of conventional pressing time*

Safety statement

Persons using this document should be familiar with the normal laboratory practice, if applicable. This document cannot 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 standard can have a negative environmental impact. As technological advantages lead to better alternatives for these materials, they will be eliminated from this standard to the greatest extent possible.

At the end of the test, it is recommended that the user of the standard take care to carry out an appropriate disposal of the wastes, according to local regulations.

1 Scope

This European Standard specifies a method of determining the minimum pressing time for two glue line thicknesses, close contact glue line and 0,3 mm thick glue line (for gap filling adhesive 1,0 mm), at three temperatures. It is applicable to adhesives used in load- bearing timber structures.

This European Standard is only intended for obtaining a reliable base of comparison of pressing time between adhesives. The method gives results that 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 documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 302-1:2013*, Adhesives for load-bearing timber structures — Test methods — Part 1: Determination of longitudinal tensile shear strength*

EN 923:2005+A1:2008*, Adhesives — Terms and definitions*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 923:2005+A1:2008, EN 302-1:2013 and the following apply.

3.1
pressing time
time for which an adhesive joint is pressed

3.2
minimum pressing time
shortest pressing time (expressed as the mean of 10 individual results) that gives tensile shear strength of at least 4 N/mm² at a given temperature under the referenced conditions

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 Apparatus

5.1 Temperature cabinets, which shall be:

— capable of maintaining the air at a temperature of (15 ± 2) °C;

— capable of maintaining the air at a temperature of (20 ± 2) °C;

— capable of maintaining the air at a temperature of (30 ± 2) °C.

5.2 Testing machine, which shall be either:

a) capable of maintaining a constant rate of loading of (2,0 ± 0,5) kN/min; or

b) capable of maintaining constant crosshead speed as described in ISO 5893.

The jaws of the testing machine shall grip the test pieces firmly and prevent slippage during loading. The grip shall be fixed in hinged manner.

6 Procedure

6.1 Sufficient beech panels shall be prepared in accordance with EN 302-1:2013, 7.1. The panels shall enable the manufacturing of at least twelve bonded assemblies (each for ten test pieces), six bonded assemblies for close contact glue line and six bonded assemblies for 0,3 mm thick glue line (1,0 mm for gap filling adhesive).

For very fast setting adhesives and close contact glue line, individual single lap joint test pieces (EN 302-1:2013, Figure 3) may be prepared for the bonding and the performance of the test.

6.2 After conditioning to (12 ± 1) % moisture content, the panels shall be lightly planed or lightly sanded before being divided into equal groups for the three temperatures to be tested and wrapped air-tightly to prevent further change in moisture content. Each group of the panels or a sufficient number of prepared individual test pieces shall be transferred to one of the test temperatures described in 5.1.

6.3 After at least 12 h conditioning in the test temperature, the panels or the individual test pieces shall be glued and pressed using glue spread of 325 g/m² (double sided application), and pour additional adhesive into the grooves of the grooved panel. The open and closed assembly time shall be as recommended by the adhesive manufacturer, but the total assembly time shall not exceed 10 min.

If the adhesive manufacturer wants to test at a lower spread rate, an additional test may be performed using a glue spread of 250 g/m² (single sided application), with maximum 5 min assembly time.

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. For each of the three test temperatures, two pressing times shall be chosen. One pressing time shall give a tensile shear strength below 4 N/mm^2 and one above 4 N/mm^2. If this is not achieved, conduct new tests with shorter or longer pressing times.

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

NOTE 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.

6.4 Immediately after the pressing time has elapsed, the panels shall be unclamped and ten test specimens cut from each of the bonded panels according to EN 302-1:2013, 7.2. They shall be tested according to EN 302-1:2013, 7.6 without delay. The time from unclamping to testing shall not be longer than 10 % of the clamping time. If this is not achieved for short clamping times, then use smaller beech panels than described in 6.1 and prepare less than ten test pieces each time or use individual test pieces as described in 6.1.

6.5 The minimum pressing time shall be calculated by linear interpolation of those pressing times and their related tensile shear strengths which are most near to the time corresponding to a tensile shear strength 4 N/mm². The calculated minimum pressing time shall be expressed to the nearest 5 min (for under 1 h), to the nearest 10 min (for between 1 h and 2 h) and to the nearest 15 min (for longer than 2 h), rounded off to the next higher value.