SLOVENSKI STANDARD
SIST EN 15416-3:2017+A1:2019

01-junij-2019

Lepila (razen fenolnih ali aminskih) za nosilne lesene konstrukcije - Preskusne metode - 3. del: Preskus deformacij lezenja v cikličnih klimatskih pogojih s preskušanci pod upogibno-strižno obremenitvijo

Adhesives for load bearing timber structures other than phenolic and aminoplastic - Test methods - Part 3: Creep deformation test at cyclic climate conditions with specimens loaded in bending shear

Klebstoffe für tragende Holzbauteile ausgenommen Phenolharzklebstoffe und Aminoplaste - Prüfverfahren - Teil 3: Prüfung der Kriechverformung unter zyklischen Klimabedingungen an Prüfkörpern bei Biege-Scherbeanspruchung

Adhésifs pour structures portantes en bois de type autre que phénolique et aminoplaste - Méthodes d'essais - Partie 3 : Essai de déformation par fluage dans des conditions climatiques cycliques avec des éprouvettes chargées en cisaillement par flexion

Ta slovenski standard je istoveten z: **EN 15416-3:2017+A1:2019**

ICS:

83.180	Lepila	Adhesives
91.080.20	Lesene konstrukcije	Timber structures

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EUROPEAN STANDARD

NORME EUROPÉENNE

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English Version

Adhesives for load bearing timber structures other than phenolic and aminoplastic - Test methods - Part 3: Creep deformation test at cyclic climate conditions with specimens loaded in bending shear

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This European Standard was approved by CEN on 30 October 2016 and includes Amendment 1 approved by CEN on 9 February 2019.

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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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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN 15416-3:2017+A1:2019) 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 2019, and conflicting national standards shall be withdrawn at the latest by September 2019.

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

This document includes Amendment 1 approved by CEN on 9 February 2019.

This document supersedes A1 EN 15416-3:2017 A1.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

Compared to EN 15416-3:2007+A1:2010, the following main modifications have been made:

a) reference to EN 16254 for EPI adhesives added in the scope;

b) glue line thickness to be used will be taken from EN 15425 or EN 16254;

c) alternative way of making the test pieces is given in 6.2 and 6.3;

d) possibility to use other climatic conditions as given in 7.1, Table 1 has been deleted;

e) loads have been given a tolerance of ± 50 N in 7.1;

f) duration times can be found in EN 15425 or in EN 16254;

g) measurement of the glue line thickness in the test piece has been introduced.

This document is one of a series dealing with adhesives for use with timber structures, and is published in support of product standards for bonded load-bearing 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 adhesives (EN 15425) and emulsion polymerized isocyanate adhesives (EN 16254), together with 12 test methods (EN 302 Parts 1 to 8 and EN 15416 Parts 1 and 3 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 (PUR) for load-bearing timber structures — Classification and performance requirements*

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

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

— EN 302-2, *Adhesives for load-bearing timber structures —Test methods — Part 2: Determination of resistance to delamination*

— EN 302-3, *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*

— EN 302-4, *Adhesives for load-bearing timber structures — Test methods — Part 4: Determination of the effects of wood shrinkage on the shear strength*

— EN 302-5, *Adhesives for load-bearing timber structures — Test methods — Part 5: Determination of maximum assembly time under referenced conditions*

— EN 302-6, *Adhesives for load-bearing timber structures — Test methods — Part 6: Determination of the minimum pressing time under referenced conditions*

— EN 302-7, *Adhesives for load-bearing timber structures — Test methods — Part 7: Determination of the working life under referenced conditions*

— EN 302-8, *Adhesives for load-bearing timber structures — Test methods — Part 8: Static load test of multiple bond line specimens in compression shear*

— EN 15416-1, *Adhesives for load bearing timber structures other than phenolic and aminoplastic — Test methods — Part 1: Long-term tension load test perpendicular to the bond line at varying climate conditions with specimens perpendicular to the glue line (Glass house test)*

— EN 15416-3, *Adhesives for load bearing timber structures other than phenolic and aminoplastic — Test methods — Part 3: Creep deformation test at cyclic climate conditions with specimens loaded in bending shear*

— EN 15416-4, *Adhesives for load bearing timber structures other than phenolic and aminoplastic — Test methods — Part 4: Determination of open assembly time under referenced conditions*

— EN 15416-5, *Adhesives for load bearing timber structures other than phenolic and aminoplastic — Test methods — Part 5: Determination of minimum pressing time under referenced conditions*

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

Safety statement

Persons using this European Standard should be familiar with the normal laboratory practice, if applicable. This European Standard 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 European Standard may have negative environmental impact. As technological advantages lead to better alternatives for these materials, they will be eliminated from this European Standard to the extent possible.

At the end of the test, it is recommended that the user of this European Standard take care to carry out an appropriate disposal of the wastes, according to local regulation.

1 Scope

This European Standard specifies a method for determining the creep deformation of bonded specimens loaded in bending shear. It is applicable to adhesives used in load bearing timber structures.

It is suitable for the following applications:

a) for assessing the compliance of adhesives to EN 15425 and EN 16254;

b) for assessing the suitability and quality of adhesives for load bearing timber structures.

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 method is not intended to provide data for structural design, and does not necessarily represent the performance of the bonded member in service.

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

EN 923:2015, *Adhesives — Terms and definitions*

EN 15425:2017, *Adhesives — One component polyurethane (PUR) for load-bearing timber structures — Classification and performance requirements*

EN 16254:2013+A1:2016, *Adhesives — Emulsion polymerized isocyanate (EPI) for load-bearing timber structures — Classification and performance requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 923:2015 and the following apply.

3.1
relative creep value
$k_{\mathrm{def}}(t)$

time-dependent increase of the deformation of one specimen

Note 1 to entry: By means of the deflection $w(t)$ and the initial deflection $w(0)$, the relative creep value is calculated using Formula (1).

A1

$$k_{\mathrm{def}}(t)=\frac{w(t)}{w(0)}-1 \tag{1}$$

A1

where

$w(t)$ is the deflection at time t;

$w(0)$ is the initial deflection immediately after initial loading, measured 1 min after the loading of the individual specimen;

$k_{\mathrm{def}}(t)$ is the relative creep value.

3.2
ratio of relative creep
$Rc_i(t)$
ratio of the relative creep values $k_{def}(t)$ of two matched specimens, *tested adhesive, i* and *PRF, i*, at time t

Note 1 to entry: By means of $k_{def}(t)$, *tested adhesive, i* and $k_{def}(t)$, *PRF, i* within one pair of matched bending specimens, *i*, the ratio of relative creep is calculated using Formula (2).

$$Rc_i(t) = \frac{k_{def}(t), tested\,adhesive, i}{k_{def}(t),\ PRF, i} \tag{2}$$

where

$k_{def}(t)$, *tested adhesive, i* is the relative creep value of the respective tested adhesive sample *i*;

$k_{def}(t)$, *PRF, i* is the relative creep value of the respective phenolic-resorcinol (PRF) - sample *i;*

$Rc_i(t)$ is the ratio of relative creep of matched pair of bending specimens *i*.

4 Principle

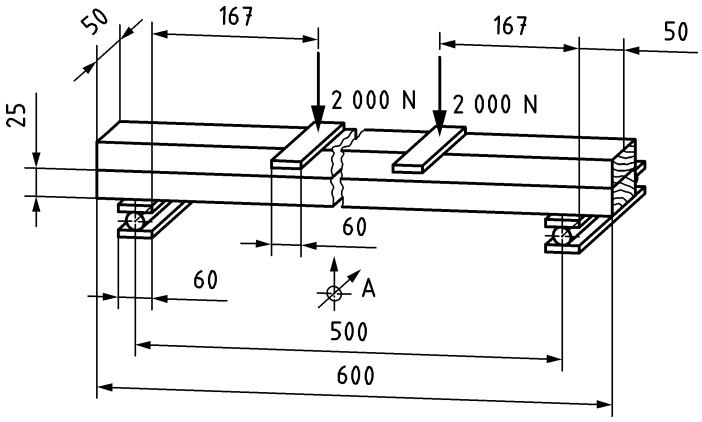
Bending specimens of a constant cross-section are subjected to constant load at cyclically varying climate conditions. Specimens bonded with the adhesive to be tested are compared with specimens bonded with a PRF-adhesive conforming to the requirement of adhesive type GP-I-M as specified in EN 301.

5 Apparatus

5.1 Test jig

A test jig being capable of applying a load of (2 000 ± 50) N in each loading point. The loading principle is shown in Figure 1.

Dimensions in millimetres



Key
A measuring gauge for the measuring of the deflection of the specimen

Figure 1 — Loading principle for the creep deformation test