SLOVENSKI STANDARD
SIST EN 301:2014

01-april-2014

Nadomešča:
SIST EN 301:2006

Lepila na osnovi fenolov in aminoplastov za nosilne lesene konstrukcije - Razvrstitev in zahteve

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

Klebstoffe, Phenoplaste und Aminoplaste, für tragende Holzbauteile - Klassifizierung und Leistungsanforderungen

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Adhésifs de nature phénolique et aminoplaste, pour structures portantes en bois - Classification et exigences de performance

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Ta slovenski standard je istoveten z: **EN 301:2013**

ICS:

83.180	Lepila	Adhesives
91.080.20	Lesene konstrukcije	Timber structures

SIST EN 301:2014 **en,fr,de**

2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 301

October 2013

ICS 83.180

Supersedes EN 301:2006

English Version

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

Adhésifs de nature phénolique et aminoplaste, pour structures portantes en bois - Classification et exigences de performance

Klebstoffe, Phenoplaste und Aminoplaste, für tragende Holzbauteile - Klassifizierung und Leistungsanforderungen

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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

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Foreword

This document (EN 301:2013) 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of an identical text or by endorsement, at the latest by April 2014, and conflicting national standards shall be withdrawn at the latest by April 2014.

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 301:2006.

Compared to EN 301:2006 the following changes have been made:

a) three subclasses for adhesives have been added: for general purpose, for finger jointing and for gap filling purpose;

b) further classification of adhesives according to temperature resistance and for mixed and separate application of adhesive and hardener specified;

c) application of Type I adhesives limited to service class 1;

d) provisions for small modifications of already approved adhesives;

e) requirements for thick glue line in the range of 0,3 mm to 2,0 mm;

f) provisions for delamination tests of hardwood added;

g) pH value for performance of fibre damage test reduced;

h) additional tests for static loads and for separate application of finger joint adhesives.

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Introduction

This document is one of a series of standards dealing with phenolic and aminoplastic adhesives for use with timber structures, and is published in support of product standards for load-bearing timber structures in connection with EN 1995-1-1 *Eurocode 5: Design of timber structures – Part 1-1: General – Common rules and rules for buildings*. The series consists of one standard for classification and performance requirements (EN 301), five test methods (EN 302, Parts 1 to 4 and EN 15416-2) used to assess the performance of adhesives after specified heat and humidity treatments, and three test methods (EN 302, Parts 5 to 7) to characterise the working properties of the adhesive.

SAFETY STATEMENT — Persons using this document should be familiar with the normal laboratory practice, if applicable. This document does not purport to 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 may have a negative environmental impact. As technological advantages lead to acceptable alternatives for these materials, they will be eliminated from this standard to the greatest extent possible.

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

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1 Scope

This European Standard establishes a classification for phenolic and aminoplastic polycondensation adhesives according to their suitability for use for load-bearing timber structures in defined climatic exposure conditions, and specifies performance requirements for such adhesives for the factory manufacture or factory-like manufacturing conditions of load-bearing timber structures only.

This European Standard only specifies the performance of an adhesive for use in an environment corresponding to the defined conditions.

The performance requirements of this European Standard apply to the adhesive only, not to the timber structure. This European Standard does not cover the performance of adhesives for on-site gluing (except for factory-like conditions) nor the production of wood-based panels, except solid wood panels, or modified and stabilised wood with considerably reduced swelling and shrinkage properties, e.g. such as acetylated wood, heat treated wood and polymer impregnated wood.

This European Standard is primarily intended for the use of adhesive manufacturers and for the use in timber structures bonded with adhesives, to assess or control the quality of adhesives. The requirements apply to the type testing of the adhesives. Production control activities are outside the scope of this European Standard.

Adhesives meeting the requirements of this European Standard are adequate for use in a load-bearing timber structure, provided that the bonding process has been carried out according to an appropriate product standard.

2 Normative references

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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.

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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 408, *Timber structures - Structural timber and glued laminated timber - Determination of some physical and mechanical properties*

EN 923, *Adhesives - Terms and definitions*

EN 1245, *Adhesives - Determination of pH*

EN 1995-1-1, *Eurocode 5: Design of timber structures - Part 1-1: General - Common rules and rules for buildings*

EN 12092, *Adhesives - Determination of viscosity*

EN 13183-2, *Moisture content of a piece of sawn timber - Part 2: Estimation by electrical resistance method*

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EN 13183-3, *Moisture content of a piece of sawn timber - Part 3: Estimation by capacitance method*

EN 14080, *Timber structures - Glued laminated timber and glued solid timber - Requirements*

EN 15416-2:2007, *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*

EN 15425:2008, *Adhesives - One component polyurethane 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 and the following apply.

3.1
aminoplastic resin
thermosetting synthetic resin derived from a condensation reaction of the –NH groups or $–NH_2$ groups of amines or amides with aldehydes

3.2
phenolic resin
thermosetting synthetic resin derived from a condensation reaction of a phenol with an aldehyde

3.3
polycondensation adhesive
adhesive mixture made from a resin formed by a polymerisation reaction involving the elimination of water, usually with a hardener

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Note 1 to entry: Such adhesives usually also contain extenders and/or fillers.

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3.4
service class 1
climatic conditions characterised by a moisture content in the materials corresponding to a temperature of 20 °C and the relative humidity of the surrounding air only exceeding 65 % for a few weeks per year

Note 1 to entry: In service class 1, which comprises typical indoor conditions, the average moisture content in most softwoods will not exceed 12 %.

[SOURCE: EN 1995-1-1:2004, 2.3.1.3]

3.5
service class 2
climatic conditions characterised by a moisture content in the materials corresponding to a temperature of 20 °C and the relative humidity of the surrounding air only exceeding 85 % for a few weeks per year

Note 1 to entry: In service class 2, to which most covered exterior conditions belong, the average moisture content in most softwoods will not exceed 20 %.

[SOURCE: EN 1995-1-1:2004, 2.3.1.3]

3.6
service class 3
climatic conditions leading to higher moisture contents than in service class 2

Note 1 to entry: Exterior conditions typically belong to service class 3.

[SOURCE: EN 1995-1-1:2004, 2.3.1.3, modified – Note 1 to entry has been added.]

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3.7
glue line
adhesive layer between the wood members

3.8
thick glue line
glue line of nominal thickness in the range of 0,3 mm to 2,0 mm at the time of bonding

Note 1 to entry: Thick glue lines are achieved by using spacers, grooves or similar devices with a thickness of 0,3 mm to 2,0 mm when two plain members are glued together.

3.9
close contact glue line
glue line of thickness maximum 0,1 mm

Note 1 to entry: Close contact glue line is achieved by pressing together two plane wood members with a clamping pressure of (0,8 ± 0,1) N/mm^2 without grooves, spacers or similar devices.

4 Classification

Adhesives (general purpose, finger jointing or gap filling) for structural purposes shall produce joints of such strength and durability that the integrity of the bond is maintained in the assigned service class throughout the expected life of the structure.

Two types of adhesive, I and II, are classified according to their suitability for use in different climatic conditions:

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— **Type I** to be used in service classes 1, 2 and 3 (EN 1995-1-1);

— **Type II** to be used in service class 1 only.

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NOTE The application of the adhesive types in the different service classes can be restricted by national regulations applicable at the end use site of the bonded timber structure.

These two types of adhesive are further divided into three subclasses according to the end use:

— **General-purpose adhesive (GP)** to be used for glue lines between laminations, for finger joints in laminations and structural timber, and for large finger joints;

— **Finger jointing adhesive (FJ)** to be used for finger jointing of laminations and structural timber only;

— **Gap filling adhesive (GF)** to be used for fibre parallel gluing, e.g. glue lines between glulam components of block-glued glulam and for large finger joints. Gap filling adhesives can in addition be classified as application type **GP** usable for glue lines between laminations and for finger jointing of laminations and structural timber.

Table 1 specifies the thirteen adhesive classes for which this European Standard applies and their designations. The designations consist of:

— type: **I** or **II**;

— application: **GP, FJ** or **GF**;

— maximum test temperature in degrees Celsius: **70** or **90** for type **I**, or maximum use temperature in degrees Celsius: **50** for type **II**;

— use: **M** for mixed application, and **S** for separate application of adhesive and hardener.