

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

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 301:2017 sisaldab Euroopa standardi EN 301:2017 ingliskeelset teksti.	This Estonian standard EVS-EN 301:2017 consists of the English text of the European standard EN 301:2017.
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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

This European Standard was approved by CEN on 16 July 2017.

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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European foreword

This document (EN 301:2017) has been prepared by Technical Committee CEN/TC 193 “Adhesives”, the secretariat of which is held by UNE.

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of an identical text or by endorsement, at the latest by May 2018, and conflicting national standards shall be withdrawn at the latest by May 2018.

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 supersedes EN 301:2013.

Compared to EN 301:2013 the following changes have been made:

- a) EN 15416-2 is replaced by EN 302-8, *Adhesives for load-bearing timber structures — Test methods - Part 8: Static load test of multiple bond line specimens in compression shear*;
- b) adhesives tested for working properties according to Clause 6 will be marked with a “w” in the end of their designation code;
- c) provisions for delamination tests on preservative treated softwood, hardwood and other conifers species;
- d) provisions for what to test when systems are used with a range of hardener dosage;
- e) provisions for small modifications of already tested adhesives;
- f) a new Clause 7 – Marking and labelling has been introduced;
- g) Annex A: Delamination test for finger joints more precisely described;
- h) Annex A: Expression of results included.

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

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 302-1, EN 302-2, EN 302-3 and EN 302-4 and EN 302-8) used to assess the performance of adhesives after specified heat and humidity treatments, and three test methods (EN 302-5, EN 302-6 and EN 302-7) to characterize the working properties of the adhesive.

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 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.

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 stabilized 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

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

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 1995-1-1:2004, *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*

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*

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 –NH₂ 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

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

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]