



SLOVENSKI STANDARD
oSIST prEN 301:2022

01-marec-2022

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

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

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

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

Ta slovenski standard je istoveten z: prEN 301

<https://standards.iteh.ai/catalog/standards/sist/57ed44eb-a9fb-448b-8bf5-e180952457eb/osist-pr-en-301-2022>

ICS:

83.180	Lepila	Adhesives
91.080.20	Lesene konstrukcije	Timber structures

oSIST prEN 301:2022

en,fr,de

**iTeh STANDARD
PREVIEW
(standards.iteh.ai)**

[oSIST prEN 301:2022](#)

<https://standards.iteh.ai/catalog/standards/sist/57ed44eb-a9fb-448b-8bf5-c180952457cb/osist-pren-301-2022>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 301

December 2021

ICS 83.180

Will supersede EN 301:2017

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 draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 193.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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

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

Contents		Page
European foreword.....		3
Introduction		4
1	Scope	5
2	Normative references.....	5
3	Terms and definitions	6
4	Classification.....	7
5	Requirements	10
5.1	General.....	10
5.2	Tensile shear test	12
5.3	Delamination test.....	13
5.4	Fibre damage test.....	13
5.5	Shrinkage test.....	14
5.6	Static load test	14
5.7	Type testing of separate application finger joint adhesive.....	14
6	Working properties of the adhesive.....	14
6.1	General.....	14
6.2	Physical properties of adhesive prepared for use	15
6.3	Use of the adhesive	15
7	Marking and labelling.....	15
Annex A (normative) Delamination test for finger joints with separate spread of adhesive and hardener		16
A.1	Production of the specimens.....	16
A.2	Testing.....	16
A.3	Expression of results.....	17

European foreword

This document (prEN 301:2021) has been prepared by Technical Committee CEN/TC 193 “Adhesives”, the secretariat of which is held by UNE.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 301:2017.

Compared to EN 301:2017 the following modifications have been made:

- a) EN 302-5, EN 302-6 and EN 302-7 added under normative references.
- b) Table 2 – 2 mm glue line – EN 302-3 Mandatory despite pH-value – beech used in the test.
- c) Table 2 – Gap filling adhesives – EN 302-8 – tested with 1 mm glueline.
- d) Clause 5.1 b) test with representative samples of preservative treated Scots pine or Silver fir also covers preservative treated Norway spruce, has been added.
- e) The Bibliography has been deleted.

**iTeh STANDARD
PREVIEW
(standards.iteh.ai)**

[oSIST prEN 301:2022](https://standards.iteh.ai/catalog/standards/sist/57ed44eb-a9fb-448b-8bf5-c180952457cb/osist-pren-301-2022)

<https://standards.iteh.ai/catalog/standards/sist/57ed44eb-a9fb-448b-8bf5-c180952457cb/osist-pren-301-2022>

prEN 301:2021 (E)**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.

iteh STANDARD
PREVIEW
(standards.iteh.ai)

[oSIST prEN 301:2022](https://standards.iteh.ai/catalog/standards/sist/57ed44eb-a9fb-448b-8bf5-c180952457cb/osist-pren-301-2022)

<https://standards.iteh.ai/catalog/standards/sist/57ed44eb-a9fb-448b-8bf5-c180952457cb/osist-pren-301-2022>

1 Scope

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

The performance requirements of this document apply to the adhesive only, not to the timber structure. This document 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 document 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 document.

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

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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, *Adhesives for load-bearing timber structures - Test methods - Part 1: Determination of longitudinal tensile shear strength* [oSIST prEN 301:2022](https://standards.iteh.ai/catalog/standards/sist/57ed44eb-a91b-4486-8815-c180952437cb/osist-pr-en-301-2022)

EN 302-2, *Adhesives for load-bearing timber structures - Test methods - Part 2: Determination of resistance to delamination* <https://standards.iteh.ai/catalog/standards/sist/57ed44eb-a91b-4486-8815-c180952437cb/osist-pr-en-301-2022>

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

prEN 301:2021 (E)

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.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

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 polymerization 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 characterized 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 characterized 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.]

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 can be achieved by pressing together two plane wood members with a clamping pressure of $(0,8 \pm 0,1)$ N/mm² without additional grooves, spacers or similar devices.

4 Classification

<https://standards.iteh.ai/catalog/standards/sist/57ed44eb-a9fb-448b-8bf5-c180952457cb/osist-pren-301-2022>

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:

- Type I to be used in service classes 1, 2 and 3 (EN 1995-1-1:2004).
- Type II to be used in service class 1 only.

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

prEN 301:2021 (E)

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 document 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.

Each application area and use shall be part of the designation.

EXAMPLE EN 301 I 70 GP 0,6M and EN 301 I 70 FJ 0,1S if classified as general purpose adhesive for mixed application and classified as finger joint adhesive for separate application.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[oSIST prEN 301:2022](https://standards.iteh.ai/catalog/standards/sist/57ed44eb-a9fb-448b-8bf5-c180952457cb/osist-pren-301-2022)

<https://standards.iteh.ai/catalog/standards/sist/57ed44eb-a9fb-448b-8bf5-c180952457cb/osist-pren-301-2022>