

Glued-in rods in glued structural timber products -
Testing, requirements and bond shear strength
classification

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ICS 83.180

English Version

Glued-in rods in glued structural timber products - Testing, requirements and bond shear strength classification

Goujons collés dans les produits en bois de structure
collé - Essais, exigences et classification de la résistance
au cisaillement du joint

Eingeklebte Stangen in tragenden geklebten
Holzprodukten - Prüfung, Anforderungen und
Scherfestigkeitsklassifizierung

This European Standard was approved by CEN on 8 February 2021.

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European foreword

This document (EN 17334:2021) 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of an identical text or by endorsement, at the latest by September 2021, and conflicting national standards shall be withdrawn at the latest by September 2021.

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.

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1 Scope

This document specifies test methods for the determination of the suitability of two component epoxy and two component polyurethane adhesives for glued-in steel rods in glued laminated timber (GLT) and glued solid timber (GST) according to EN 14080, cross laminated timber (CLT) according to EN 16351 and laminated veneer lumber (LVL) according to EN 14374.

NOTE 1 The English term “glued-in rods” has been chosen as the established term instead of “bonded-in rods”.

It specifies performance requirements and the determination of characteristic bond strength values for such adhesives for the prefabrication under factory or factory-like conditions of joints between load-bearing timber products and steel rods only. This document does not cover the performance of adhesives for on-site gluing (except for factory-like conditions).

NOTE 2 Factory like conditions provide shelter from direct weathering and dirt, prevent undue movement of the joints during curing of the adhesive and provide temperature and relative humidity conditions and control as in factory production environment.

This document also covers glued-in rods in surface treated wood. It does not cover glued-in rods in modified and stabilized wood with considerably reduced swelling and shrinkage properties, e.g. acetylated wood, heat treated wood, polymer impregnated wood and preservative treated wood.

The joints are intended for load-bearing timber structures in service classes 1 and 2 according to EN 1995-1-1 which are loaded predominantly static or quasi static according to EN 1990 and EN 1991-1-1. The joints are intended for load-bearing timber structures which are not subjected to a prolonged exposure to temperatures over 60 °C.

A design procedure for glued-in rods in glued structural timber products is given in the informative Annex A.

NOTE 3 Several provisions of this document can apply to *in situ* repair and upgrading of existing timber structures including (cracked/fissured) solid wood beams. For adhesives for glued-in rods used in on-site repair or applications with solid timber additional provisions apply, e.g. related to rheology and site temperature conditions. Such provisions are not part of this document.

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*

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

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 923, *Adhesives — Terms and definitions*

EN 10080, *Steel for the reinforcement of concrete — Weldable reinforcing steel — General*

EN 13183-1, *Moisture content of a piece of sawn timber — Part 1: Determination by oven dry method*

EN 14080:2013, *Timber structures — Glued laminated timber and glued solid timber — Requirements*

EN 14358, *Timber structures — Calculation and verification of characteristic values*

EN 14374, *Timber structures — Structural laminated veneer lumber — Requirements*

EN 16351, *Timber structures — Cross laminated timber — Requirements*

EN ISO 898-1, *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 1: Bolts, screws and studs with specified property classes — Coarse thread and fine pitch thread (ISO 898-1)*

EN ISO 3506-1, *Fasteners — Mechanical properties of corrosion-resistant stainless steel fasteners — Part 1: Bolts, screws and studs with specified grades and property classes (ISO 3506-1)*

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:

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

3.1

two component epoxy adhesive

thermosetting synthetic resin derived from a exothermic polymerization reaction of an epoxide group with amines, acid anhydrides, phenols, alcohols or thiols

3.2

two component polyurethane adhesive

urethane polymers which are cross-linked by the reaction between polyol or polyamine with isocyanate