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KINNITUSDETAILID. NÕUDED

Timber structures - Dowel-type fasteners -
Requirements

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 14592:2022 sisaldab Euroopa standardi EN 14592:2022 ingliskeelset teksti.	This Estonian standard EVS-EN 14592:2022 consists of the English text of the European standard EN 14592:2022.
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English Version

Timber structures - Dowel-type fasteners - Requirements

Structures en bois - Éléments de fixation de type tige -
Exigences

Holzbauwerke - Stiftförmige Verbindungsmittel -
Anforderungen

This European Standard was approved by CEN on 13 February 2020.

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European foreword

This document (EN 14592:2022) has been prepared by Technical Committee CEN/TC 124 “Timber structures”, the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by October 2022 and conflicting national standards shall be withdrawn at the latest by January 2024.

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 14592:2008+A1:2012.

The main changes with respect to the previous edition are listed below:

- new concepts concerning dimensions and tolerances, e.g. target diameter;
- improved categories for corrosion protection;
- new specifications on wood density for testing of connections with dowel-type fasteners;
- low cycle ductility classes (seismic performance) and related test method;
- axial stiffness, static ductility and torsional ratio for screws.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: 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 the United Kingdom.

1 Scope

This document specifies the characteristics of the following types of dowel-type fasteners:

- nails;
- staples;
- screws;
- dowels;
- bolts with nuts.

This document covers dowel-type fasteners for structural use in load bearing timber structures only. This document covers also the following additional intended uses of the screws:

- to fix roof or cladding elements to the timber structure, with or without insulation layers; and
- as reinforcement inserted in timber or in a glue laminated timber element to improve its resistance to compression perpendicular to the grain.

This document covers types of dowel-type fasteners, which are manufactured of either carbon steel or stainless steel and which may be coated for the following purposes:

- corrosion protection (as Type 1 coating);
- lubrication, to facilitate insertion (as Type 2 coating);
- withdrawal enhancement and/or collation for nails and staples (adhesive and/or resin coatings) (as Type 3 coating).

This document covers types of dowel-type fasteners, which are manufactured from materials and within the specifications for their geometry related properties, only as they are specified for:

- nails (see G.1);
- staples (see G.2);
- screws (see G.3);
- dowels (see G.4); and
- bolts with nuts (see G.5).

This document specifies also the assessment and verification of constancy of performance (AVCP) procedures of these characteristics and includes provisions for marking of dowel-type fasteners.

This document does not cover dowel-type fasteners treated with fire retardants to improve their fire performance, nor does it cover glued-in rods.

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 409:2009, *Timber structures - Test methods - Determination of the yield moment of dowel type fasteners*

EN 634-2:2007, *Cement-bonded particleboards - Specifications - Part 2: Requirements for OPC bonded particleboards for use in dry, humid and external conditions*

EN 636:2012+A1:2015, *Plywood - Specifications*

EN 1382:2016, *Timber Structures - Test methods - Withdrawal capacity of timber fasteners*

EN 1383:2016, *Timber structures - Test methods - Pull through resistance of timber fasteners*

EN 1990:2002, *Eurocode - Basis of structural design*

EN 1993-1-4:2006/A1:2015, *Eurocode 3 - Design of steel structures - Part 1-4: General rules - Supplementary rules for stainless steels*

EN 1995-1-1:2004¹, *Eurocode 5: Design of timber structures - Part 1-1: General - Common rules and rules for buildings*

EN 10025-2:2019, *Hot rolled products of structural steels - Part 2: Technical delivery conditions for non-alloy structural steels*

EN 10025-3:2019, *Hot rolled products of structural steels - Part 3: Technical delivery conditions for normalized/normalized rolled weldable fine grain structural steels*

EN 10088-1:2014, *Stainless steels - Part 1: List of stainless steels*

EN 10088-2:2014, *Stainless steels - Part 2: Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purposes*

EN 10088-3:2014, *Stainless steels - Part 3: Technical delivery conditions for semi-finished products, bars, rods, wire, sections and bright products of corrosion resisting steels for general purposes*

EN 10088-4:2009, *Stainless steels - Part 4: Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for construction purposes*

EN 10088-5:2009, *Stainless steels - Part 5: Technical delivery conditions for bars, rods, wire, sections and bright products of corrosion resisting steels for construction purposes*

EN 10149-1:2013, *Hot rolled flat products made of high yield strength steels for cold forming - Part 1: General technical delivery conditions*

EN 10204:2004, *Metallic products - Types of inspection documents*

¹ As impacted by EN 1995-1-1:2004/A1:2008 and EN 1995-1-1:2004/A2:2014.

EN 10218-1:2012, *Steel wire and wire products - General - Part 1: Test methods*

EN 10277:2018, *Bright steel products - Technical delivery conditions*

EN 13501-1:2018, *Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests*

EN 13986:2004+A1:2015, *Wood-based panels for use in construction - Characteristics, evaluation of conformity and marking*

EN 14081-1:2016+A1:2019, *Timber structures - Strength graded structural timber with rectangular cross section - Part 1: General requirements*

EN 14358:2016, *Timber structures - Calculation and verification of characteristic values*

EN 15737:2009, *Timber Structures - Test methods - Torsional resistance of driving in screws*

EN ISO 898-1:2013², *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 898-1:2013)*

EN ISO 898-2:2012, *Mechanical properties of fasteners made of carbon steel and alloy steel - Part 2: Nuts with specified property classes - Coarse thread and fine pitch thread (ISO 898-2:2012)*

EN ISO 1460:1994, *Metallic coatings - Hot dip galvanized coatings on ferrous materials - Gravimetric determination of the mass per unit area (ISO 1460:1992)*

EN ISO 1463:2004, *Metallic and oxide coatings - Measurement of coating thickness - Microscopical method (ISO 1463:2003)*

EN ISO 2081:2018, *Metallic and other inorganic coatings - Electroplated coatings of zinc with supplementary treatments on iron or steel (ISO 2081:2018)*

EN ISO 2178:2016, *Non-magnetic coatings on magnetic substrates - Measurement of coating thickness - Magnetic method (ISO 2178:2016)*

EN ISO 3497:2000, *Metallic coatings - Measurement of coating thickness - X-ray spectrometric methods (ISO 3497:2000)*

EN ISO 3506-1:2009, *Mechanical properties of corrosion-resistant stainless steel fasteners - Part 1: Bolts, screws and studs (ISO 3506-1:2009)*

EN ISO 4042:2018, *Fasteners - Electroplated coating systems (ISO 4042:2018)*

EN ISO 6270-1:2018, *Paints and varnishes - Determination of resistance to humidity - Part 1: Condensation (single-sided exposure) (ISO 6270-1:2017)*

EN ISO 6892-1:2019, *Metallic materials - Tensile testing - Part 1: Method of test at room temperature (ISO 6892-1:2019)*

² As impacted by EN ISO 898-1:2013/AC:2013.

EN ISO 8407:2014, *Corrosion of metals and alloys - Removal of corrosion products from corrosion test specimens (ISO 8407:2009)*

EN ISO 8565:2011, *Metals and alloys - Atmospheric corrosion testing - General requirements (ISO 8565:2011)*

EN ISO 9226:2012, *Corrosion of metals and alloys - Corrosivity of atmospheres - Determination of corrosion rate of standard specimens for the evaluation of corrosivity (ISO 9226:2012)*

EN ISO 9227:2017, *Corrosion tests in artificial atmospheres - Salt spray tests (ISO 9227:2017)*

EN ISO 10289:2001, *Methods for corrosion testing of metallic and other inorganic coatings on metallic substrates - Rating of test specimens and manufactured articles subjected to corrosion tests (ISO 10289:1999)*

EN ISO 10666:1999, *Drilling screws with tapping screw thread - Mechanical and functional properties (ISO 10666:1999)*

EN ISO 10684:2004,³ *Fasteners - Hot dip galvanized coatings (ISO 10684:2004)*

EN ISO 11997-1:2017, *Paints and varnishes - Determination of resistance to cyclic corrosion conditions - Part 1: Wet (salt fog)/dry/humid (ISO 11997-1:2017)*

EN ISO 16120-1:2017, *Non-alloy steel wire rod for conversion to wire - Part 1: General requirements (ISO 16120-1:2017)*

EN ISO 16120-2:2017, *Non-alloy steel wire rod for conversion to wire - Part 2: Specific requirements for general purpose wire rod (ISO 16120-2:2017)*

EN ISO 16120-3:2011, *Non-alloy steel wire rod for conversion to wire - Part 3: Specific requirements for rimmed and rimmed substitute, low-carbon steel wire rod (ISO 16120-3:2011)*

EN ISO 16120-4:2017, *Non-alloy steel wire rod for conversion to wire - Part 4: Specific requirements for wire rod for special applications (ISO 16120-4:2017)*

EN ISO 21968:2019, *Non-magnetic metallic coatings on metallic and non-metallic basis materials - Measurement of coating thickness - Phase-sensitive eddy-current method (ISO 21968:2019)*

ISO 965-1:2013, *ISO general purpose metric screw threads - Tolerances - Part 1: Principles and basic data*

ISO 965-2:1998, *ISO general purpose metric screw threads - Tolerances - Part 2: Limits of sizes for general purpose external and internal screw threads - Medium quality*

ISO 965-3:1998, *ISO general purpose metric screw threads - Tolerances - Part 3: Deviations for constructional screw threads*

ISO 965-4:1998, *ISO general purpose metric screw threads - Tolerances - Part 4: Limits of sizes for hot-dip galvanized external screw threads to mate with internal screw threads tapped with tolerance position H or G after galvanizing*

³ As impacted by EN ISO 10684:2004/AC:2009.

ISO 965-5:1998, *ISO general purpose metric screw threads - Tolerances - Part 5: Limits of sizes for internal screw threads to mate with hot-dip galvanized external screw threads with maximum size of tolerance position h before galvanizing*

3 Terms, definitions, symbols, units and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1995-1-1:2004 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/>

3.1.1

smooth shank nail

nail that has a constant cross-section along its entire length

EXAMPLE Round, square or grooved.

3.1.2

ring shank nail

nail that has a profiled shank along a part of its length

EXAMPLE Ringed or twisted.

Note 1 to entry: The profiled length l_g is defined in Figure G.1 b).

3.1.3

staple crown width

distance between the outer edges of the staple legs

3.1.4

dowel

cylindrical metal fastener that does not contain an integral head

3.1.5

bolt

cylindrical metal fastener consisting of a screw part and a nut part