SLOVENSKI STANDARD
oSIST prEN 1996-1-1:2019

01-december-2019

Evrokod 6: Projektiranje zidanih konstrukcij - 1-1. del: Splošna pravila za armirano in nearmirano zidovje

Eurocode 6 - Design of masonry structures - Part 1-1: General rules for reinforced and unreinforced masonry structures

Eurocode 6 - Bemessung und Konstruktion von Mauerwerksbauten - Teil 1-1: Allgemeine Regeln für bewehrtes und unbewehrtes Mauerwerk

Eurocode 6 : Calcul des ouvrages en maçonnerie - Partie 1-1: Règles générales pour ouvrages en maçonnerie armée et non armée

Ta slovenski standard je istoveten z: **prEN 1996-1-1:2019**

ICS:

91.010.30	Tehnični vidiki	Technical aspects
91.080.30	Zidane konstrukcije	Masonry

oSIST prEN 1996-1-1:2019 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 1996-1-1

October 2019

ICS 91.010.30; 91.080.30

Will supersede EN 1996-1-1:2005+A1:2012

English Version

Eurocode 6 - Design of masonry structures - Part 1-1: General rules for reinforced and unreinforced masonry structures

Eurocode 6 : Calcul des ouvrages en maçonnerie - Partie 1-1: Règles générales pour ouvrages en maçonnerie armée et non armée

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This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 250.

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.

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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.

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

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European foreword

This document (prEN 1996-1-1:2019) has been prepared by Technical Committee CEN/TC 250 "Structural Eurocodes", the secretariat of which is held by BSI. CEN/TC 250 is responsible for all Structural Eurocodes and has been assigned responsibility for structural and geotechnical design matters by CEN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 1996-1-1:2005+A1:2012.

The first generation of EN Eurocodes was published between 2002 and 2007. This document forms part of the second generation of the Eurocodes, which have been prepared under a Mandate M/515 given to CEN by the European Commission and the European Free Trade Association.

The Eurocodes have been drafted to be used in conjunction with relevant execution, material, product and test standards, and to identify requirements for execution, materials, products and testing that are relied upon by the Eurocodes.

The Eurocodes recognize the responsibility of each Member State and have safeguarded their right to determine values related to regulatory safety matters at national level through the use of National Annexes.

Introduction

Introduction to the Eurocodes

The Structural Eurocodes comprise the following standards generally consisting of a number of Parts:

- EN 1990 Eurocode: Basis of structural and geotechnical design
- EN 1991 Eurocode 1: Actions on structures
- EN 1992 Eurocode 2: Design of concrete structures
- EN 1993 Eurocode 3: Design of steel structures
- EN 1994 Eurocode 4: Design of composite steel and concrete structures
- EN 1995 Eurocode 5: Design of timber structures
- EN 1996 Eurocode 6: Design of masonry structures
- EN 1997 Eurocode 7: Geotechnical design
- EN 1998 Eurocode 8: Design of structures for earthquake resistance
- EN 1999 Eurocode 9: Design of aluminium structures
- <New parts>

Introduction to EN 1996 Eurocode 6

EN 1996 Eurocode 6 standards, , applies to the design of building and civil engineering works, or parts thereof, in unreinforced, reinforced, prestressed and confined masonry.

EN 1996 deals only with the requirements for resistance, serviceability and durability of structures. Other requirements, for example, concerning thermal or sound insulation, are not considered.

EN 1996 does not cover the special requirements of seismic design. Provisions related to such requirements are given in EN 1998, which complements, and is consistent with EN 1996.

EN 1996 does not cover numerical values of the actions on building and civil engineering works to be taken into account in the design. They are provided in EN 1991.

For the design of new structures, prEN 1996-1-1 is intended to be used, for direct application, together with EN 1990, EN 1991, EN 1992, EN 1993, EN 1994, EN 1995, EN 1997, EN 1998 and EN 1999.

prEN 1996-1-1 is intended for use by:

— committees drafting standards for structural design and related products, testing and execution standards;

— clients (e.g. for the formulation of their specific requirements on reliability levels and durability);

— designers and contractors;

— relevant authorities.

Verbal forms used in the Eurocodes

The verb “shall" expresses a requirement strictly to be followed and from which no deviation is permitted in order to comply with the Eurocodes.

The verb “should” expresses a highly recommended choice or course of action. Subject to national regulation and/or any relevant contractual provisions, alternative approaches could be used/adopted where technically justified.

The verb “may" expresses a course of action permissible within the limits of the Eurocodes.

The verb “can" expresses possibility and capability; it is used for statements of fact and clarification of concepts.

National standards implementing the Eurocodes

The National Standards implementing Eurocodes will comprise the full text of the Eurocode (including any annexes), as published by CEN, which may be preceded by a National title page and National foreword, and may be followed by a National Annex (informative).

The National Annex may only contain information on those parameters which are left open in the Eurocode for national choice, known as Nationally Determined Parameters, to be used for the design of building and civil engineering works to be constructed in the country concerned, i.e.:

— values and/or classes where alternatives are given in the Eurocode,

— values to be used where a symbol only is given in the Eurocode,

— country specific data (geographical, climatic, etc.), e.g. snow map,

— the procedure to be used where alternative procedures are given in the Eurocode,

and it may also contain:

— decisions on the application of informative annexes,

— references to non-contradictory complementary information to assist the user to apply the Eurocode.

National annex for prEN 1996-1-1

This standard gives values within notes indicating where national choices can be made. Therefore, the national standard implementing prEN 1996-1-1 can have a National Annex containing all Nationally Determined Parameters to be used for the design of building and civil engineering works to be constructed in the relevant country.

National choice is allowed in prEN 1996-1-1 through the following clauses:

— 4.4.4(2) Ultimate limit states;

— 5.2.2(2) Specification of masonry mortar;

— 5.7.1.2(1) Characteristic compressive strength of non-shell bedded masonry;

— 5.7.2.1 (1) and (2), and 5.7.2.2(4) Characteristic shear strength of masonry;

— 5.7.4(4) Characteristic flexural strength of masonry;

— 5.8.2(3) Modulus of elasticity;

— 5.8.4(3) Creep, moisture expansion or shrinkage and thermal expansion;

— 6.3.3 (2) and (3) Reinforcing steel;

— 7.5.1.4(3) Effective thickness of masonry walls;

— 8.3.1(2) In-plane shear resistance;

— 10.1.2(2) Minimum thickness of wall;

— 10.5.2.2(2) Cavity and veneer walls;

— 10.5.2.3(2) Double-leaf and collar jointed walls;

— 10.6.2(1) Vertical chases and recesses;

— 10.6.3(1) Horizontal and inclined chases.

National choice is allowed in prEN 1996-1-1 on the application of the informative annexes.

The National Annex can contain, directly or by reference, non-contradictory complementary information for ease of implementation, provided it does not alter any provisions of the Eurocodes.

1 Scope

1.1 Scope of prEN 1996-1-1

(1) The basis for the design of building and civil engineering works in masonry is given in this Part 1-1 of EN 1996, which deals with unreinforced masonry, reinforced masonry and confined masonry. Principles for the design of prestressed masonry are also given. This Part 1-1 of EN 1996 is not valid for masonry elements with a plan area of less than 0,04 m^2.

(2) Part 1-1 of EN 1996 gives detailed rules which are mainly applicable to ordinary buildings. The applicability of these rules can be limited, for practical reasons or due to simplifications; any limits of applicability are given in the text where necessary.

(3) Execution is covered to the extent that is necessary to indicate the quality of the construction materials and products that to be used and the standard of workmanship on site needed to comply with the assumptions made in the design rules.

(4) For those types of structures not covered entirely, for new structural uses for established materials, for new materials, or where actions and other influences outside normal experience have to be resisted, the provisions given in this Part 1-1 of EN 1996 can be applied, but with possible need for supplements.

(5) Part 1-1 of EN 1996 does not cover:

— resistance to fire (which is dealt with in EN 1996-1-2);

— particular aspects of special types of building (for example, dynamic effects on tall buildings);

— particular aspects of special types of civil engineering works (such as masonry bridges, dams, chimneys or liquid-retaining structures);

— particular aspects of special types of structures (such as arches or domes);

— masonry where gypsum, with or without cement, mortars are used;

— masonry where the units are not laid in a regular pattern of courses (rubble masonry);

— masonry reinforced with other materials than steel.

1.2 Assumptions

(1) The assumptions of EN 1990 apply to prEN 1996-1-1.

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 206, *Concrete. Specification, performance, production and conformity*

EN 771-1, *Specification for masonry units — Part 1: Clay masonry units*

EN 771-2, *Specification for masonry units — Part 2: Calcium silicate masonry units*

EN 771-3, *Specification for masonry units — Part 3: Aggregate concrete masonry units (Dense and lightweight aggregates)*

EN 771-4, *Specification for masonry units — Part 4: Autoclaved aerated concrete masonry units*

EN 771-5, *Specification for masonry units — Part 5: Manufactured stone masonry units*

EN 771-6, *Specification for masonry units — Part 6: Natural stone masonry units*

EN 772-1, *Methods of test for masonry units — Part 1: Determination of compressive strength*

EN 845-1, *Specification for ancillary components for masonry — Part 1: Ties, tension straps, hangers and brackets*

EN 845-2, *Specification for ancillary components for masonry — Part 2: Lintels*

EN 845-3, *Specification for ancillary components for masonry — Part 3: Bed joint reinforcement of steel meshwork*

EN 998-1, *Specification for mortar for masonry - Part 1: Rendering and plastering mortar*

EN 998-2, *Specification for mortar for masonry - Part 2: Masonry mortar*

EN 1015-11, *Methods of test for mortar for masonry - Part 11: Determination of flexural and compressive strength of hardened mortar*

EN 1052-1, *Methods of test for masonry - Part 1: Determination of compressive strength*

EN 1052-2, *Methods of test for masonry - Part 2: Determination of flexural strength*

EN 1052-3, *Methods of test for masonry - Part 3: Determination of initial shear strength*

EN 1052-4, *Methods of test for masonry - Part 4: Determination of shear strength including damp proof course*

EN 1052-5, *Methods of test for masonry - Part 5: Determination of bond strength by the bond wrench method*

EN 1990 series, *Eurocode - Basis of structural design*

EN 1991 series, *Eurocode 1 - Actions on structures*

EN 1992-1-1, *Eurocode 2 - Design of concrete structures - Part 1-1: General rules and rules for buildings*

EN 1992-2, *Eurocode 2 - Design of concrete structures - Concrete bridges - Design and detailing rules*

EN 1996-2, *Eurocode 6 - Design of masonry structures - Part 2: Design considerations, selection of materials and execution of masonry*

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

prEN 10138 series, *Prestressing steels*

3 Terms, definitions and symbols

For the purposes of this document, the terms and definitions given in EN 1990 and the following apply.

3.1 Terms relating to masonry

3.1.1
masonry
assemblage of masonry units joined together with mortar

3.1.2
unreinforced masonry
masonry not containing sufficient reinforcement so as to be considered as reinforced masonry

3.1.3
reinforced masonry
masonry in which bars of reinforcing steel or bed joint reinforcement are embedded in mortar or concrete so that all the materials act together in resisting action effects

3.1.4
prestressed masonry
masonry in which internal compressive stresses have been intentionally induced by tensioned prestressing steel

3.1.5
confined masonry
masonry provided with reinforced concrete or reinforced masonry confining elements in the vertical (tie-column) and horizontal (tie-beam) direction, so that all materials act compositely in resisting action effects

3.1.6
masonry bond
disposition of units in masonry in a regular pattern to achieve common action

3.2 Terms relating to strength of masonry

3.2.1
characteristic strength of masonry
value of the strength of masonry having a prescribed probability of 5 % of not being attained in a hypothetically unlimited test series

Note 1 to entry: This value generally corresponds to a specified fractile of the assumed statistical distribution of the particular property of the material or product in a test series.

3.2.2
compressive strength of masonry
strength of masonry in compression without the effects of platen restraint, slenderness or eccentricity of loading

3.2.3
shear strength of masonry
strength of masonry in shear

3.2.4
flexural strength of masonry
out-of-plane strength of masonry in bending