



SLOVENSKI STANDARD

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Evrokod 6 - Projektiranje zidanih konstrukcij - 2. del: Projektiranje z upoštevanjem izbire materialov in izvedbe zidovja

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

Eurocode 6 - Bemessung und Konstruktion von Mauerwerksbauten - Teil 2: Planung, Auswahl der Baustoffe und Ausführung von Mauerwerk

Eurocode 6 - Calcul des ouvrages en maçonnerie - Partie 2: Conception, choix des matériaux et mise en oeuvre des maçonneries

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

Eurocode 6 - Calcul des ouvrages en maçonnerie -
Partie 2: Conception, choix des matériaux et mise en
oeuvre des maçonneries

Eurocode 6 - Bemessung und Konstruktion von
Mauerwerksbauten - Teil 2: Planung, Auswahl der
Baustoffe und Ausführung von Mauerwerk

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.

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.

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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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Contents

Page

European foreword.....	4
0 Introduction	5
1 Scope	7
1.1 Scope of prEN 1996-2.....	7
1.2 Assumptions.....	7
2 Normative references.....	7
3 Terms, definitions and symbols.....	8
3.1 Terms and definitions	8
3.1.1 Terms relating to the communication of the design of masonry.....	8
3.1.2 Terms relating to climatic factors and exposure conditions.....	8
3.1.3 Other Terms	8
3.2 Symbols.....	9
4 Design considerations	9
4.1 Factors affecting the durability of masonry	9
4.1.1 General.....	9
4.1.2 Classification of environmental conditions	9
4.1.3 Aggressive chemical environments.....	10
4.2 Selection of materials	10
4.2.1 General.....	10
4.2.2 Masonry units.....	11
4.2.3 Masonry mortar and concrete infill	11
4.2.4 Ancillary components and reinforcement	12
4.3 Masonry	12
4.3.1 Detailing	12
4.3.2 Joint finishes	12
4.3.3 Masonry movement.....	13
4.3.4 Movement joints.....	13
4.3.5 Permissible deviations.....	15
4.3.6 Resistance to moisture penetration through external walls	15
5 Execution.....	16
5.1 General.....	16
5.2 Acceptance, handling and storage of materials	16
5.2.1 General.....	16
5.2.2 Reinforcement and prestressing materials.....	16
5.3 Preparation of materials	16
5.3.1 Site-made mortars and concrete infill.....	16
5.3.2 Factory made masonry mortars, pre-batched masonry mortars, pre-mixed lime sand masonry mortars and ready mixed concrete infill	18
5.4 Permissible deviations.....	18
5.5 Execution of masonry	21
5.5.1 Adhesion.....	21
5.5.2 Laying masonry units	21
5.5.3 Pointing and jointing for masonry other than thin layer masonry.....	21
5.5.4 Incorporation of damp proof course membranes.....	21
5.5.5 Movement joints.....	22
5.5.6 Incorporation of thermal insulation materials.....	22
5.5.7 Cleaning facing masonry.....	22
5.6 Curing and protective procedures during execution.....	22

5.6.1	General	22
5.6.2	Protection against rain	22
5.6.3	Protection against freeze/thaw cycling.....	22
5.6.4	Protection against effects of low humidity	22
5.6.5	Protection against mechanical damage.....	23
5.6.6	Construction height of masonry	23
Annex A (informative) Classification of micro conditions of exposure of completed masonry....		24
A.1	Use of this Informative Annex.....	24
A.2	Scope and field of application	24
A.3	Classification	25
A.4	Exposure to wetting.....	26
Annex B (informative) Acceptable specifications of masonry units and mortar for durable masonry in various exposure conditions.....		28
B.1	Use of this Informative Annex.....	28
B.2	Scope and field of application	28
B.3	Selection of masonry units and mortar	28
Annex C (informative) Selection of material and corrosion protection specifications for ancillary components according to exposure class.....		31
C.1	Use of this Informative Annex.....	31
C.2	Scope and field of application	31
C.3	Exposure classes	31
C.4	Selection of materials.....	31
Bibliography		35

prEN 1996-2:2022 (E)**European foreword**

This document (prEN 1996-2:2022) 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 CEN Enquiry.

This document will supersede EN 1996-2:2006.

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.

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0 Introduction

0.1 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 are under development, e.g. Eurocode for design of structural glass

The Eurocodes are intended for use by designers, clients, manufacturers, constructors, relevant authorities (in exercising their duties in accordance with national or international regulations), educators, soft-ware developers, and committees drafting standards for related product, testing and execution standards.

NOTE Some aspects of design are most appropriately specified by relevant authorities or, where not specified, can be agreed on a project-specific basis between relevant parties such as designers and clients. The Eurocodes identify such aspects making explicit reference to relevant authorities and relevant parties.

0.2 Introduction to EN 1996 (all parts)

EN 1996 (all parts) apply to the design of building and civil engineering works, or parts thereof, in unreinforced, reinforced, prestressed and confined masonry.

EN 1996 (all parts) deal 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 (all parts) do 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 (all parts) do 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 (all parts).

0.3 Introduction to prEN 1996-2

This document describes the rules for design considerations, selection of materials and execution of masonry structures.

prEN 1996-2:2022 (E)**0.4 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.

0.5 National annex for prEN 1996-2

National choice is allowed in this standard where explicitly stated within notes. National choice includes the selection of values for Nationally Determined Parameters (NDPs).

The national standard implementing this document can have a National Annex containing all national choices to be used for the design of buildings and civil engineering works to be constructed in the relevant country.

When no national choice is given, the default choice given in this standard is to be used.

When no national choice is made and no default is given in this standard, the choice can be specified by a relevant authority or, where not specified, agreed for a specific project by appropriate parties.

National choice is allowed in prEN 1996-2 through a note to the following clause:

4.3.4.2 (7)

National choice is allowed in prEN 1996-2 on the application of the following informative annexes

Annex A

Annex B

Annex C

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 1996-2

(1) This document gives basic rules for the selection of materials and execution of masonry to enable it to comply with the design assumptions of the other parts of Eurocode 6.

(2) This document deals with ordinary aspects of masonry design and execution including:

- selection of masonry materials;
- factors affecting the performance and durability of masonry;
- masonry detailing, joint finishes, movement joints, resistance of buildings to moisture penetration;
- storage, preparation and use of materials on site;
- execution of masonry;
- masonry protection during execution;

(3) This document does not cover the following items:

- aesthetic aspects;
- applied finishes;

1.2 Assumptions

(1) The assumptions of EN 1990 apply to this document.

(2) This document is intended to be used together with EN 1990, EN 1991, EN 1996-1-1, EN 1996-1-2 and EN 1996-3.

(3) The design of masonry is carried out in accordance with EN 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.

NOTE See the Bibliography for a list of other documents cited that are not normative references, including those referenced as recommendations (i.e. in 'should' clauses), permissions ('may' clauses), possibilities ('can' clauses), and in notes.

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*

prEN 1996-2:2022 (E)

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

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 1015-17, *Methods of test for mortar for masonry — Part 17: Determination of water-soluble chloride content of fresh mortars*

EN 1990, *Basis of structural and geotechnical design*

EN 1996-1-1, *Eurocode 6 — Design of masonry structures — Part 1-1: General rules for reinforced and unreinforced masonry structures*

3 Terms, definitions and symbols**3.1 Terms and definitions**

For the purposes of this document, the terms and definitions given in EN 1990, EN 1996-1-1 and the following apply.

3.1.1 Terms relating to the communication of the design of masonry**3.1.1.1****design specification**

documents describing the designer's requirements for the construction, including drawings, schedules, test reports, references to parts of other documents and written instructions

3.1.2 Terms relating to climatic factors and exposure conditions**3.1.2.1****macro conditions**

climatic factors depending on the general climate of the region in which a structure is built, modified by the effects of local topography and/or other aspects of the site

3.1.2.2**micro conditions**

localized climatic and environmental factors depending on the position of a masonry element within the overall structure and taking into account the effect of protection, or lack of protection, by constructional details or finishes

3.1.3 Other Terms**3.1.3.1****applied finish**

covering of material bonded to the surface of the masonry

3.1.3.2**cavity width**

distance perpendicular to the plane of the wall between the cavity faces of the masonry leaves of a cavity wall or that between the cavity face of a veneer wall and the masonry backing structure

3.1.3.3 cladding

covering of material(s) fastened or anchored in front of the masonry and not in general bonded to it

3.2 Symbols

For the purposes of this document, the material-independent symbols given in EN 1990, the material-dependent symbols given in EN 1996-1-1 and the following material-dependent symbols apply.

Latin lower case letters

d_p minimum depth for pointing;

l_m maximum horizontal distance between vertical movement joints in external non-loadbearing walls.

4 Design considerations

4.1 Factors affecting the durability of masonry

4.1.1 General

(1) Masonry shall be designed to have the performance required for its intended use.

4.1.2 Classification of environmental conditions

4.1.2.1 Micro conditions of exposure

(1) The micro conditions to which the masonry is expected to be exposed shall be taken into account in the design.

(2) When deciding the micro conditions of exposure of the masonry, the effect of applied finishes, protective claddings and details should be taken into account.

(3) Micro conditions of exposure of completed masonry should be categorized into classes, as follows:

- MX1 - In a dry environment;
- MX2 - Exposed to moisture or wetting;
- MX3 - Exposed to moisture or wetting plus freeze/thaw cycling;
- MX4 - Exposed to saturated salt air, seawater or de-icing salts;
- MX5 - In an aggressive chemical environment.

NOTE 1 For a structure more than one exposure class can apply.

NOTE 2 When necessary, more closely defined conditions within these classes can be specified using the sub-classes in Annex A (e.g. MX2.1 or MX2.2 and M X 3.1 or M X 3.2).

(4) To produce masonry that meets specified performance criteria and withstands the environmental conditions to which it is exposed, the determination of the exposure class should take into account:

- climatic factors;
- severity of exposure to moisture or wetting;

prEN 1996-2:2022 (E)

- exposure to freeze/thaw cycling;
- presence of chemical materials that may lead to damaging reactions.

4.1.2.2 Climatic factors (macro conditions of exposure)

(1) The effect of the macro conditions on the micro conditions shall be taken into account when determining the wetting of masonry and its exposure to freeze/thaw cycling.

(2) Concerning the macro conditions, the following should be taken into account:

- rain and snow;
- combination of wind and rain;
- temperature variation;
- relative humidity variation.

NOTE It is acknowledged that climates (macro conditions) vary considerably throughout Europe and that certain aspects of climate can influence the risk of exposure of masonry to wetting and/or freeze/thaw cycling. However, it is the classification of the micro conditions that is relevant for determining the durability of masonry rather than the ranking of the macro conditions. Examples of relative exposure to wetting of masonry elements in a typical building are shown in Annex A.

4.1.3 Aggressive chemical environments

(1) In coastal areas, the exposure of masonry to airborne chlorides or seawater should be taken into account.

(2) Possible sources of sulphates include the following:

- natural soils; <https://standards.iteh.ai/catalog/standards/sist/f50e6f8d-109f-4bb2-8175-ea3226a332b3/osist-pren-1996-2-2022>
- groundwater;
- waste deposits and filled ground;
- construction materials;
- airborne pollutants.

(3) Where the presence of aggressive chemicals in the environment, other than airborne chlorides or seawater, can affect masonry, class MX5 should be assumed. Where salts can be transported by water moving through the masonry, the potential for increased concentrations and quantities of available chemicals should be taken into account.

4.2 Selection of materials**4.2.1 General**

(1) Materials, where incorporated in the works, shall be able to resist the actions to which they are expected to be exposed, including environmental actions.

(2) Only materials, products, and systems with established suitability shall be used.

NOTE Acceptable masonry unit specifications and mortar can be selected from Annex B, Table B.1 and B.2, in relation to durability.