



SLOVENSKI STANDARD

SIST EN 13225:2004

01-oktober-2004

Montažni betonski izdelki - Linijski konstrukcijski elementi

Precast concrete products - Linear structural elements

Betonfertigteile - Stabförmige Betonbauteile

Produits préfabriqués en béton - Éléments de structure linéaires

Ta slovenski standard je istoveten z: **EN 13225:2004**

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ICS:

91.100.30	Beton in betonski izdelki	Concrete and concrete products
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ICS 91.100.30

English version

Precast concrete products - Linear structural elements

Produits préfabriqués en béton - Éléments de structure
linéaires

Betonfertigteile - Stabförmige Bauteile

This European Standard was approved by CEN on 24 June 2004.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists 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 Central Secretariat has the same status as the official versions.

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Contents

The numbering of clauses is strictly related to EN 13369, *Common rules for precast concrete products*, at least for the first three digits. When a clause of EN 13369 is not relevant or included in a more general reference of this standard, its number is omitted and this may result in a gap on numbering

	page
Foreword.....	4
Introduction	6
1 Scope	7
2 Normative references	7
3 Terms and definitions	7
4 Requirements	8
4.1 Material requirements	8
4.2 Production requirements	8
4.3 Finished product requirements	8
4.3.1 Geometrical properties	8
4.3.2 Surface characteristics	10
4.3.3 Mechanical resistance	10
4.3.4 Resistance and reaction to fire	11
4.3.7 Durability	11
4.3.8 Other requirements	11
5 Test methods.....	11
5.1 Tests on concrete	11
5.2 Measuring of dimensions	11
5.3 Weight of the products.....	11
6 Evaluation of conformity.....	12
6.1 General.....	12
6.2 Type testing.....	12
6.3 Factory production control.....	12
7 Marking and labelling	12
8 Technical documentation	13
Annex A (informative) Precautions about lateral buckling of beams	14
Annex Y (informative) Choice of CE marking method.....	16
Y.1 General.....	16
Y.2 Method 1	16
Y.3 Method 2	16
Y.4 Method 3	16
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive	17
ZA.1 Scope and relevant characteristics	17
ZA.2 Procedure for attestation of conformity of linear precast concrete structural elements	19
ZA.2.1 System of attestation of conformity.....	19
ZA.2.2 EC Certificate and Declaration of conformity.....	21
ZA.3 CE marking and labelling.....	21

ZA.3.1 General	21
ZA.3.2 Declaration of geometrical data and material properties	23
ZA.3.3 Declaration of product properties	26
ZA.3.4 Declaration of compliance with a given design specification	29
Bibliography	32

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 13225:2004](#)

<https://standards.iteh.ai/catalog/standards/sist/43d0201a-4744-42ff-b35f-72578b524519/sist-en-13225-2004>

Foreword

This document (EN 13225:2004) has been prepared by Technical Committee CEN/TC 229 "Precast concrete products", the secretariat of which is held by AFNOR, and was examined by and agreed with a joint working party appointed by the Liaison Group CEN/TC 229-TC250, particularly for its compatibility with structural Eurocodes.

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 March 2005, and conflicting national standards shall be withdrawn at the latest by March 2007.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of Construction Products Directive (89/106/EEC) of the European Union (EU).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

This standard is one of a series of product standards for precast concrete products.

For common aspects reference is made to EN 13369 : *Common rules for precast products*, from which also the relevant requirements of the EN 206-1 *Concrete - Part 1: Specification, performances, production and conformity* are taken.

The references to EN 13369 by CEN/TC229 product standards are intended to make them homogeneous and to avoid repetitions of similar requirements.

Eurocodes are taken as a common reference for design aspects. The installation of some structural precast concrete products is dealt with by ENV 13670-1 *Execution of concrete structures – Part 1: Common rules*, which has at the moment the status of an European Prestandard. In all countries it can be accompanied by alternatives for national application and it shall not be treated as a European Standard.

The programme of standards for structural precast concrete products comprises the following standards, in some cases consisting of several parts :

- EN 1168, *Precast concrete products – Hollow core slabs*
- prEN 12794, *Precast concrete products – Foundation piles*
- EN 12843, *Precast concrete products – Masts and poles*
- EN 13224, *Precast concrete products – Ribbed floor elements*
- EN 13225, *Precast concrete products – Linear structural elements*
- EN 13693, *Precast concrete products – Special roof elements*
- prEN 13747, *Precast concrete products – Floor plates for floor systems*
- prEN 13978, *Precast concrete products – Precast concrete garages*
- prEN 14843, *Precast concrete products – Stairs*
- prEN 14844, *Precast concrete products – Box culverts*

- prEN 14991, *Precast concrete products – Foundation elements*
- prEN 14992, *Precast concrete products – Wall elements: Products properties and performances*
- prEN 15037, *Precast concrete products – Beams for beam-and-block floor systems*

This standard defines in Annex ZA the application methods of CE marking to products designed using the relevant EN Eurocodes (EN 1992-1-1, EN 1992-1-2 and EN 1998-1). Where, in default of applicability conditions of EN Eurocodes to the works of destination, design provisions other than EN Eurocodes are used for mechanical strength and/or fire resistance, the conditions to affix CE marking to the product are described in ZA.3.4.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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[SIST EN 13225:2004](#)

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Introduction

The evaluation of conformity given in this document refers to the completed precast elements which are supplied to the market and covers all the production operations carried out in the factory.

For design rules and resistance to fire reference is made to EN 1992-1-1 and EN 1992-1-2. Additional complementary rules are provided where necessary.

In Clauses 4.3.3 and 4.3.4 this document includes specific provisions resulting from the application of EN 1992-1-1, EN 1998-1-1 and EN 1992-1-2 rules made specific for the concerned product. The use of these provisions is consistent with a design of works made with EN 1992-1-1 and EN 1992-1-2.

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<https://standards.iteh.ai/catalog/standards/sist/43d0201a-4744-42ff-b35f-72578b524519/sist-en-13225-2004>

1 Scope

This document identifies the requirements, the basic performance criteria and evaluation of conformity for precast linear elements (such as columns, beams and frame elements) made of reinforced or prestressed normal weight concrete, used for the construction of the structures of buildings and other civil engineering works, except bridges.

This document covers terminology, performance criteria, tolerances, relevant physical properties, test methods, and aspects of transport and erection.

This document does not cover load bearing capacity determined by testing.

2 Normative references

The following referenced documents are indispensable for the application 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 1990:2002, *Eurocode: Basis of structural design*.

EN 1992-1-1:2004, *Eurocode 2: Design of concrete structures — Part 1-1: General rules and rules for buildings*.

EN 1992-1-2:2004, *Eurocode 2: Design of concrete structures — Part 1-2: General rules - Structural fire design*.

EN 1998-1:2004, *Eurocode 8: Design of structures for earthquake resistance — Part 1: General rules, seismic actions and rules for buildings*. [SIST EN 13225:2004](https://standards.iteh.ai/catalog/standards/sist/43d0201a-4744-42ff-b35f-72578b524519/sis-pr-13225-2004)

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3 Terms and definitions

For the purposes of this document, the terms and definitions given in 13369:2004 and the following apply.

NOTE In general the term “product” refers to an element which is produced in large numbers.

3.1

Linear structural elements

3.1.1

beam

element, usually horizontal, for carrying loads primarily by flexure

3.1.2

column

a vertical bearing element subject mainly to compression

3.2

Structural systems

3.2.1

frame

structure composed of two or more linear elements joined together to be stable

4 Requirements

4.1 Material requirements

For general aspects, constituent materials of concrete, reinforcing and prestressing steel, inserts and connectors, the relevant clauses of EN 13369:2004 Clause 4.1 shall apply. In particular the ultimate tensile and tensile yield strength of steel shall be considered.

4.2 Production requirements

For concrete production, hardened concrete and structural reinforcement, the relevant clauses of EN 13369:2004 Clause 4.2 shall apply. In particular the compressive strength of concrete shall be considered.

4.3 Finished product requirements

NOTE The missing numbers correspond to the clauses of EN 13369 which are not relevant for the purposes of this document.

4.3.1 Geometrical properties

4.3.1.1 Production tolerances

4.3.1.1.1 General

Clause 4.3.1.1 of EN 13369:2004 and the following tolerances specific to linear elements shall apply.

The values refer to measurements taken according to 5.2 of EN 13369:2004.

4.3.1.1.2 Principal dimensions

SIST EN 13225:2004
<https://standards.iteh.ai/catalog/standards/sist/43d0201a-4744-42ff-b35f-72578b524519/sist-en-13225-2004>

For linear elements the following tolerances are given.

Measurement	Permitted deviation	Values
— Angle deviation "δ" of end- or cross-sections	$\pm \delta$	$h/100 \geq 5 \text{ mm}$
— Bow misalignment "ε" in any principal plane	$\pm \varepsilon$	$L/700$

For cross-section dimensions, length and reinforcement placing, the corresponding permitted deviations Δh , ΔL and Δc are given in 4.3.1.1 of EN 13369:2004.

For the size of holes and openings 1,5 time the values of Δh and δ tolerances may be assumed. For the overall positioning of holes and inserts 1,5 time the values of ΔL and Δh tolerances may be assumed. Other values may be given in project specifications.

In case of prestressed elements 1,5 time the value of ε tolerance may be assumed; this includes the effects of prestressing tolerances.

4.3.1.1.3 Columns

For columns, tolerances of 4.3.1.1.2 are described in Figure 1.

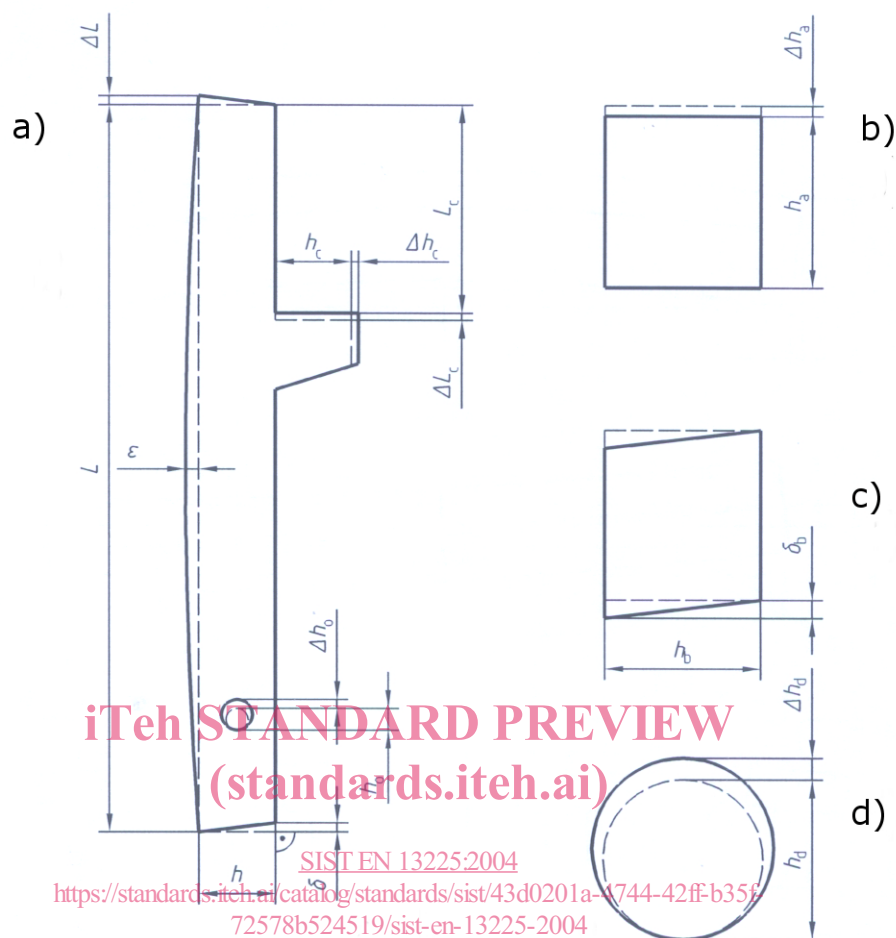


Figure 1 — Tolerances for columns

4.3.1.1.4 Beams

For beams, the following tolerances, additional to those of 4.3.1.1.2, are given (see Figure 2).

Measurement	Tolerance	Values
— Skew " θ " of the vertical central plane	$\pm \theta$	$L/700$
— Camber " v " in vertical plane	$\pm \Delta v$	$L/700$

For prestressed elements 1,5 times the value of Δv tolerance may be assumed; this includes the effects of prestressing tolerance.

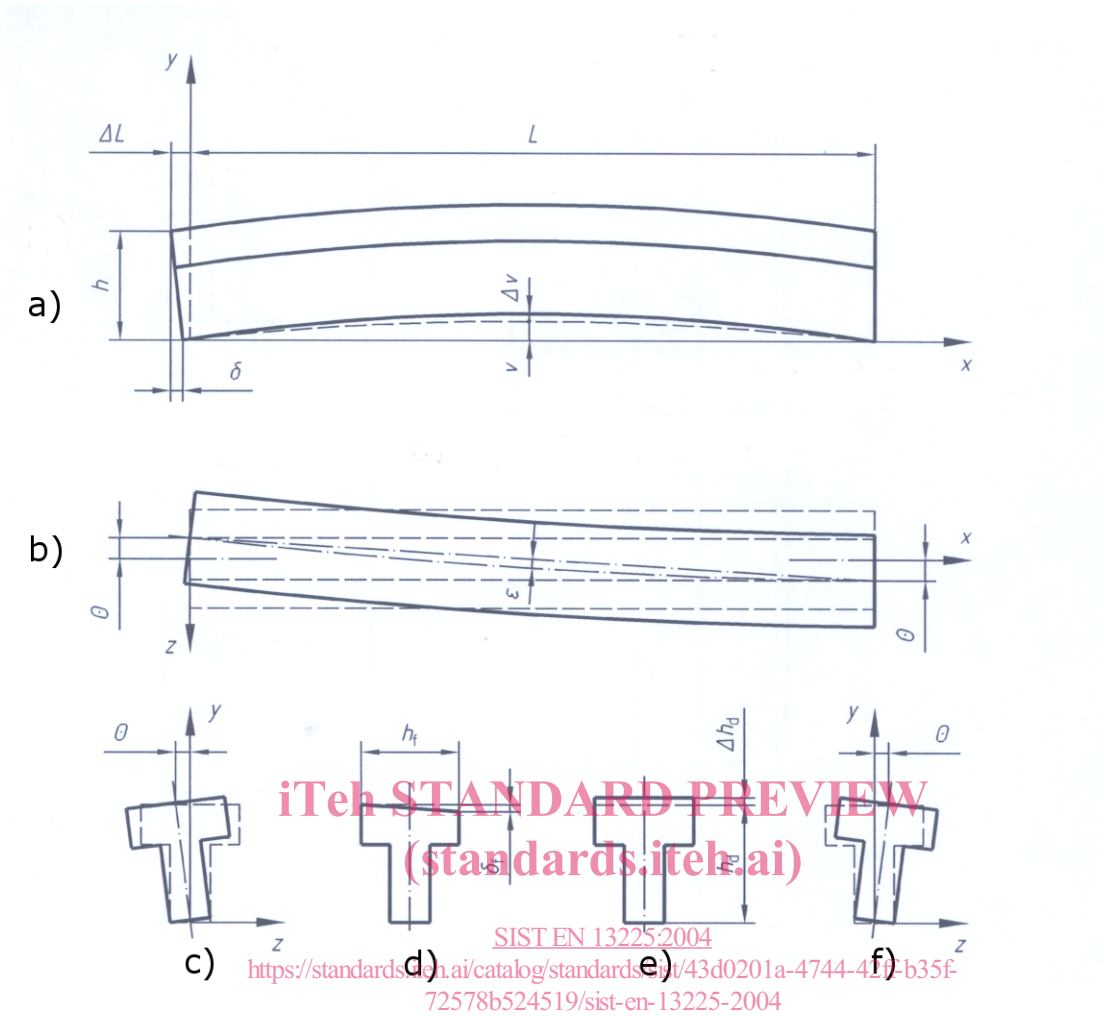


Figure 2 — Tolerances for beams

4.3.1.1.5 Other elements

For other types of linear precast structural elements, such as frame elements, all the production tolerances and the method for checking shall be defined in the project specifications, in a similar manner to that given in this document. The permitted deviations of cross sections shall be in accordance with Table 4 of EN 13369:2004.

4.3.1.2 Minimum dimensions

Clause 4.3.1.2 of EN 13369:2004 shall apply.

4.3.2 Surface characteristics

Clause 4.3.2 of EN 13369:2004 shall apply.

4.3.3 Mechanical resistance

4.3.3.1 General

For requirements on mechanical strength, Clause 4.3.3 of EN 13369:2004 (referring to EN 1990:2002, EN 1992-1-1:2004 and EN 1992-1-2:2004) shall apply, except 4.3.3.4 dealing with verification by testing.