

## **Betoonvalmistooted. Varraselemendid**

Precast concrete products - Linear structural elements

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 13225:2006 sisaldab Euroopa standardi EN 13225:2004 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 23.11.2004 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 02.09.2004.

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN 13225:2006 consists of the English text of the European standard EN 13225:2004.

This standard is ratified with the order of Estonian Centre for Standardisation dated 23.11.2004 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

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ICS 91.100.30

**Võtmesõnad:** betoonvalmistooted, ehitusmaterjalid, varraselemendid

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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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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

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## 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.

## 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.



## 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*.

EN 13369:2004, *Common rules for precast concrete products*.

## 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