BETOONVALMISTOOTED. VAHELAESÜSTEEMIDES KASUTATAVAD VAHELAEPLAADID

Precast concrete products - Floor plates for floor systems CONSOLIDATE TEXT

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 13747:2005+A2:2010 sisaldab Euroopa standardi EN 13747:2005+A2:2010 ingliskeelset teksti.	This Estonian standard EVS-EN 13747:2005+A2:2010 consists of the English text of the European standard EN 13747:2005+A2:2010.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 24.03.2010.	Date of Availability of the European standard is 24.03.2010.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

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EUROPEAN STANDARD

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English Version

Precast concrete products - Floor plates for floor systems

Produits préfabriqués en béton - Prédalles pour systèmes de planchers

Betonfertigteile - Deckenplatten mit Ortbetonergänzung

This European Standard was approved by CEN on 17 February 2005 and includes Corrigendum 1 issued by CEN on 6 December 2006, Amendment 1 approved by CEN on 14 September 2008 and Amendment 2 approved by CEN on 14 February 2010.

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 CEN Management Centre 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 CEN Management Centre has the same status as the official versions.

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The numbering of clauses is strictly related to EN 13369:2004 Common rules for precast concrete products, at least for the first three digits. When a clause of EN 13369:2004 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.

Foreword

This document (EN 13747:2005+A2:2010) 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-CEN/TC 250, 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 September 2010, and conflicting national standards shall be withdrawn at the latest by September 2010.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This European Standard includes Corrigendum 1 issued by CEN on 2006-12-06, Amendment 1 approved by CEN on 2008-09-14 and Amendment 2 approved by CEN on 2010-02-14.

This document supersedes ⟦A2⟩ EN 13747:2005+A1:2008 ⟨A2⟧.

The start and finish of text introduced or altered by amendment is indicated in the text by tags ⟦A1⟩ ⟨A1⟧ and ⟦A2⟩ ⟨A2⟧.

The modifications of the related CEN Corrigendum have been implemented at the appropriate places in the text and are indicated by the tags ⟦AC⟩ ⟨AC⟧.

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 EU Directive 89/106/EEC.

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/TC 229 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 a 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 on several parts:

— EN 1168, *Precast concrete products — Hollow core slabs*

— EN 12794, *Precast concrete products — Foundation piles*

— EN 12843, *Precast concrete products — Masts and poles*

— EN 13747, *Precast concrete products — Floor plates for floor systems*

— [AC] prEN 15037, *Precast concrete products — Beam-and-block floor systems* [AC]

— EN 13224, *Precast concrete products — Ribbed floor elements*

— EN 13225, *Precast concrete products — Linear structural elements*

— EN 14992, *Precast concrete products — Wall elements*

— EN 13693, *Precast concrete products — Special roof elements*

— EN 14844, *Precast concrete products — Box culverts*

— EN 13978, *Precast concrete products — Precast concrete garages*

— EN 14991, *Precast concrete products — Foundation elements*

— EN 15050, *Precast concrete products — Bridge elements*

— EN 14843, *Precast concrete products — Stairs*

This standard defines in Annex ZA the application methods of CE marking to products designed using the relevant EN Eurocodes (EN 1992-1-1:2004 and EN 1992-1-2:2004). 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, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

The evaluation of conformity given in this standard 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 reference is made to EN 1992-1-1:2004. Additional complementary rules are provided where necessary.

In clauses 4.3.3 and 4.3.4, the present standard includes specific provisions resulting from the application of EN 1992-1-1:2004 and EN 1992-1-2:2004 rules made specific for the concerned product. The use of these provisions is consistent with a design of works made with EN 1992-1-1:2004 and EN 1992-1-2:2004.

1 Scope

This European standard deals with the requirements, the basic performance criteria and evaluation of conformity for precast floor plates made of reinforced or prestressed normal weight concrete according to EN 1992-1-1:2004, used in conjunction with cast-in-situ concrete (topping) for the construction of composite floor slabs. Annex B gives different types of composite slabs made with floor plates.

These floor plates, with or without void formers, can include lattice girders or stiffening ribs incorporated during the precasting.

They shall be manufactured in factories by casting, slip forming or extrusion.

[A2] If major part of mechanical resistance is taken up by the precast stiffening ribs, the product belongs to EN 1168 or to EN 13224, according to the section. [A2]

The products covered by this standard are intended to be used as part of structural floors in applications such as:

— floors and roofs of buildings (including industrial and storage buildings, public buildings as schools, hospitals, etc.);

— parking/circulation areas;

— cover for culverts;

— etc.

[A2] Floor plates for bridge decks belong to the scope of EN 15050 and are not covered by this European Standard. [A2]

The products may be used in seismic areas provided they fulfil the requirements specific to this use.

This standard does not cover:

— reinforced [A1] and prestressed [A1] floor plates with a nominal thickness less than 40 mm;

— prestressed floor plates with a nominal thickness less than 50 mm [A1] without stiffening ribs or lattice girder [A1];

— floor plates with a very smooth upper face, such as defined in 6.2.5 of EN 1992-1-1:2004.

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

[AC] EN 10080:2005 [AC], *Steel for the reinforcement of concrete — Weldable reinforcing steel — General*

EN 12390-4, *Testing hardened concrete — Part 4: Compressive strength — Specification for testing machines*

EN 12390-6, *Testing hardened concrete — Part 6: Tensile splitting strength of test specimens*

EN 1991-1-1:2002, *Eurocode 1: Actions on structures — Part 1-1: General actions — Densities, self-weight, imposed loads for buildings*

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*

3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply. For general terms EN 13369:2004 shall apply.

3.1 Floor plates

3.1.1
floor plate
reinforced or prestressed concrete plates generally used as a permanent formwork for cast-in-situ concrete, which, when hardened, forms a structurally composite slab with the floor plate

NOTE Some floor plates may be used as formwork for cast-in-situ concrete, with no contribution to the strength of the finished floor.

3.1.2
reinforced floor plate
floor plate in which reinforcing steel constitutes the main reinforcement of the composite slab

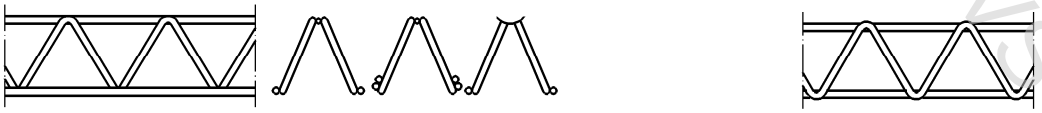
3.1.3
prestressed floor plate
floor plate in which the prestressing steel constitutes all or part of the main reinforcement of the composite slab

3.1.4
floor plate with lattice girders
floor plate in which continuous lattice girders are incorporated generally in the longitudinal direction (i.e. parallel to the span) to provide strength and rigidity for transient situations

3.1.5
floor plate with ribs
floor plate in which continuous stiffening ribs are positioned generally in the longitudinal direction (i.e. parallel to the span) to provide strength and rigidity for transient situations

3.2
lattice girders
two dimensional or three dimensional metallic structure comprising an upper chord, one or more lower chords and continuous or discontinuous diagonals which are welded or mechanically connected to the chords

Figure 1 gives some examples of lattice girders.



a) continuous diagonals