



SLOVENSKI STANDARD
oSIST prEN 13369:2017
01-junij-2017

Skupna pravila za montažne betonske izdelke

Common rules for precast concrete products

Allgemeine Regeln für Betonfertigteile

Règles communes pour les produits préfabriqués en béton

Ta slovenski standard je istoveten z: prEN 13369

ICS:

91.100.30 Beton in betonski izdelki: Concrete and concrete products

oSIST prEN 13369:2017

en,fr,de

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 13369

April 2017

ICS 91.100.30

Will supersede EN 13369:2013

English Version

Common rules for precast concrete products

Règles communes pour les produits préfabriqués en
béton

Gemeinsame Regeln für Betongfertigteile

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 229.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (prEN 13369:2017) has been prepared by Technical Committee CEN/TC 229 “Precast concrete products”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 13369:2013.

The main technical changes that have been made in this new edition are the following ones:

- a) normative references have been updated taking into account the new version of EN 206;
- b) terms and definitions have been reviewed according to Construction Product Regulation, term and definition of “Product type” are added;
- c) clause for reclaimed crushed aggregates and recycled coarse aggregates is reviewed;
- d) new clause on Dangerous substances;
- e) clause of Assessment and verification of constancy of performance is revised according to the wording of Construction Product Regulation;

EN 13369 is a common reference for the following group of specific product standards prepared by Technical Committee CEN/TC 229:

- EN 1168, *Precast concrete products — Hollow core slabs*;
- EN 12737, *Precast concrete products — Floor slats for livestock*;
- EN 12794, *Precast concrete products — Foundation piles*;
- EN 12839, *Precast concrete products — Elements for fences*;
- EN 12843, *Precast concrete products — Masts and poles*;
- EN 13198, *Precast concrete products — Street furniture and garden products*;
- EN 13224, *Precast concrete products — Ribbed floor elements*;
- EN 13225, *Precast concrete products — Linear structural elements*;
- EN 13693, *Precast concrete products — Special roof elements*;
- EN 13747, *Precast concrete products — Floor plates for floor systems*;
- EN 13748-1, *Terrazzo tiles — Part 1: Terrazzo tiles for internal use*;
- EN 13748-2, *Terrazzo tiles — Part 2: Terrazzo tiles for external use*;
- EN 13978-1, *Precast concrete products — Precast concrete garages — Part 1: Requirements for reinforced garages monolithic or consisting of single sections with room dimensions*;

- EN 14843, *Precast concrete products — Stairs*;
- EN 14844, *Precast concrete products — Box culverts*;
- EN 14991, *Precast concrete products — Foundation elements*;
- EN 14992, *Precast concrete products — Wall elements*;
- EN 15037-1, *Precast concrete products — Beam-and-block floor systems — Part 1: Beams*;
- EN 15037-2, *Precast concrete products — Beam-and-block floor systems — Part 2: Concrete blocks*;
- EN 15037-3, *Precast concrete products — Beam-and-block floor systems — Part 3: Clay blocks*;
- EN 15037-4, *Precast concrete products — Beam-and-block floor systems — Part 4: Expanded polystyrene blocks*;
- EN 15037-5, *Precast concrete products — Beam-and-block floor systems — Part 5: Lightweight blocks for simple formwork*;
- EN 15050, *Precast concrete products — Bridge elements*;
- EN 15258, *Precast concrete products — Retaining wall elements*;
- EN 15435, *Precast concrete products — Normal weight and lightweight concrete shuttering blocks — Product properties and performances*;
- EN 15498, *Precast concrete products — Wood-chip concrete shuttering blocks — Product properties and performances*.

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Introduction

This document is intended to outline the general common requirements applicable to a large variety of precast concrete products manufactured in a factory environment. It acts as a reference standard for other standards to enable a more consistent approach to standardization in the field of precast concrete products and to reduce the variations brought about by a large number of standards produced in parallel by different groups of experts. At the same time, it allows those experts the flexibility to include variations in specific product standards where they are required.

This standard has been produced as part of the total CEN programme for construction and refers to the relevant specifications of associated standards EN 206 for concrete and EN 1992 for the design of concrete structures. The installation of some precast concrete products is dealt with by EN 13670.

As it is not a harmonized standard, it may not be used on its own for the purpose of CE marking of precast concrete products.

The design of precast concrete products should be verified to ensure the fitness of their properties for the particular application, particular attention being paid to design co-ordination with other parts of the construction.

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1 Scope

This European Standard specifies the requirements, the basic performance criteria and the evaluation of conformity for unreinforced, reinforced and prestressed precast concrete products made of compact light-, normal- and heavyweight concrete according to EN 206 with no appreciable amount of entrapped air other than entrained air. Concrete containing fibres for other than mechanical properties steel, polymer or other fibres is also covered. It does not cover prefabricated reinforced components of lightweight aggregate concrete with open structure.

It may also be used to specify products for which there is no standard. Not all of the requirements (Clause 4) of this standard are relevant to all precast concrete products.

If a specific product standard exists, it takes precedence over this standard.

The precast concrete products dealt with in this standard are factory produced for building and civil engineering works. This standard can also be applied to products manufactured in temporary plants on site if the production is protected against adverse weather conditions and controlled following Clause 6 provisions.

The analysis and design of precast concrete products is not within the scope of this standard but it does offer, for non-seismic zones, information about:

- the choice of partial safety factors defined by the pertinent Eurocode;
- the definition of some requirements for prestressed concrete products.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 934-2, *Admixtures for concrete, mortar and grout — Part 2: Concrete admixtures — Definitions, requirements, conformity, marking and labelling*

EN 1008, *Mixing water for concrete - Specification for sampling, testing and assessing the suitability of water, including water recovered from processes in the concrete industry, as mixing water for concrete*

EN 1097-6, *Tests for mechanical and physical properties of aggregates - Part 6: Determination of particle density and water absorption*

EN 1992-1-1:2004¹, *Eurocode 2: Design of concrete structures - Part 1-1: General rules and rules for buildings*

EN 1992-1-2:2004², *Eurocode 2: Design of concrete structures - Part 1-2: General rules - Structural fire design*

EN 10080:2005, *Steel for the reinforcement of concrete - Weldable reinforcing steel - General*

¹ As impacted by EN 1992-1-1:2004/AC:2010 and EN 1992-1-1:2004/A1:2014.

² As impacted by EN 1992-1-2:2004/AC:2008.

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prEN 10138-1, *Prestressing steels — Part 1: General requirements*

prEN 10138-2, *Prestressing steels — Part 2: Wire*

prEN 10138-3, *Prestressing steels — Part 3: Strand*

prEN 10138-4, *Prestressing steels — Part 4: Bar*

EN 12350-7, *Testing fresh concrete - Part 7: Air content - Pressure methods*

EN 12390-1, *Testing hardened concrete - Part 1: Shape, dimensions and other requirements for specimens and moulds*

EN 12390-2, *Testing hardened concrete - Part 2: Making and curing specimens for strength tests*

EN 12390-3, *Testing hardened concrete - Part 3: Compressive strength of test specimens*

EN 12390-7, *Testing hardened concrete - Part 7: Density of hardened concrete*

EN 12504-1, *Testing concrete in structures - Part 1: Cored specimens - Taking, examining and testing in compression*

EN 13501-1, *Fire classification of construction products and building elements — Part 1: Classification using data from reaction to fire tests*

EN ISO 717-1, *Acoustics - Rating of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation (ISO 717-1)*

EN ISO 717-2, *Acoustics - Rating of sound insulation in buildings and of building elements - Part 2: Impact sound insulation (ISO 717-2)*

EN ISO 10456, *Building materials and products - Hygrothermal properties - Tabulated design values and procedures for determining declared and design thermal values (ISO 10456)*

ASTM C173/C173M - 10b, *Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 General

3.1.1

precast concrete product

product which is made of concrete and is manufactured in accordance with this standard or a specific product standard in a place different from the final destination of use, protected from adverse weather conditions during production and which is the result of an industrial process under a factory production control system and with the possibility of sorting before delivery

Note 1 to entry: In relevant European Standards, the shorter term “Precast product” is often used.

3.1.2**(concrete) cover**

distance between the surface of the reinforcement closest to the nearest concrete surface (including links and stirrups and surface reinforcement where relevant) and the nearest concrete surface

3.1.3**concrete family**

group of concrete compositions for which a reliable relationship between relevant properties is established and documented

3.1.4**tendon**

prestressing unit (wire, strand or bar) subjected to pre- or post-tensioning

3.1.5**lightweight concrete**

concrete with a closed structure and with an oven-dry density of 800 kg/m³ to 2 000 kg/m³

3.1.6**normal weight concrete**

concrete with an oven-dry density of 2 000 kg/m³ to 2 600 kg/m³

3.1.7**heavyweight concrete**

concrete with an oven-dry density of more than 2 600 kg/m³

3.1.8**product type**

set of representative performance levels or classes of construction product, in relation to its characteristics, produced using a given combination of raw materials or other elements in a specific production process

3.2 Dimensions

[SIST EN 13369:2018](https://standards.iteh.ai/SIST-EN-13369-2018)

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3.2.1**principal dimensions**

length, width, depth or thickness

3.2.2**nominal dimension**

dimension declared in the technical documentation and targeted at manufacture

3.3 Tolerances**3.3.1****tolerance**

sum of the absolute values of the upper and the lower permitted deviation

3.3.2**deviation**

difference between an actual measure and the corresponding nominal dimension

3.4 Durability

prEN 13369:2017 (E)**3.4.1****durability**

ability of a precast concrete product to satisfy, with anticipated maintenance, the design performance requirements during its design working life under the influence of the expected environmental actions

3.4.2**design working life**

assumed period for which a structure or part of it is to be used for its intended purpose with anticipated maintenance but without major repair being necessary

3.4.3**environmental conditions**

physical or chemical impacts to which the precast concrete product is exposed and which result in effects on the concrete or reinforcement or embedded metal that are not considered as loads in structural design

3.4.4**ambient conditions**

hygrothermic conditions in the factory which result in effects on the hardening process of the concrete

3.5 Mechanical properties**3.5.1****potential strength**

compressive concrete strength derived from tests on cubes or cylinders moulded and cured in laboratory conditions in accordance with EN 12390-2

3.5.2**structural strength**

compressive concrete strength derived from tests on specimens (drilled cores or cut prisms) taken from the precast concrete product (direct structural strength) or derived from tests on moulded specimens cured in the same ambient conditions as the product itself (indirect structural strength)

3.5.3**characteristic strength**

value of strength below which 5 % of the population of all possible strength determinations of the volume of concrete under consideration are expected to fall

4 Requirements**4.1 Material requirements****4.1.1 General**

Only materials with established suitability shall be used.

For a particular material, the establishment of suitability may be based on a European Standard which refers specifically to the use of this material in concrete or in precast concrete products; in absence of a European Standard, it may also result, under the same conditions, from an ISO Standard.

Where this material is not covered by a European or ISO Standard, or if it deviates from the requirements of these standards, the establishment of suitability may be based on:

- the provisions valid in the place of use of the precast concrete product which refer specifically to the use of this material in concrete or in precast concrete products; or