

English Version

Precast concrete products - Ribbed floor elements - Part 1 : Essential characteristics

Produits préfabriqués en béton - Eléments de
planchers nervurés - Partie 1 : Caractéristiques
essentielles

Betonfertigteile - Deckenplatten mit Stegen - Teil 1:
Wesentliche Merkmale

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (prEN 13224-1:2020) 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 13224:2011.

The main changes are the splitting in two parts, with for the present part 1 identifying the essential characteristics of ribbed floor elements:

- clarification of the scope;
- updating of the AVCP clause;
- removal of clauses related to production;
- removal of informative annexes.

Normative references were updated. No technical change was made.

This document has been prepared under a standardization request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with Regulation (EU) No 305/2011 for construction products (CPR), see informative Annex ZA, which is an integral part of this document.

1 Scope

This document identifies the essential characteristics of ribbed floor elements. These elements are precast elements made of reinforced or prestressed normal weight or light weight concrete, used in floors or roofs. They consist of a top and/or bottom slab and one or more (usually two) ribs; transverse ribs may also be present. The concrete does not contain more than 1 % of homogeneously distributed organic material, by mass or by volume (whichever is the most onerous).

When used in roofs, these elements are used in the same way as for a floor, the difference being in the type of covering and the loads they support.

This document specifies procedures for assessment and verification of constancy (AVCP) of performance of characteristics of the ribbed floor elements as well as marking and labelling of these elements.

NOTE 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 13369:2018, *Common rules for precast concrete products*

EN 12390-7:2019, *Testing hardened concrete — Part 7: Density of hardened concrete*

EN 13501-2:2018, *Fire classification of construction products and building elements — Part 2: Classification using data from fire resistance tests, excluding ventilation services*

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

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

NOTE References to EN 1992-1-1 and EN 1992-1-2 imply in return references to the whole Eurocode standards series and their National Annexes when and where required for their application.

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 and EN 1992-1-2:2004/A1:2019.

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1992-1-1:2004¹ and EN 13369 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

(precast) ribbed floor element

(precast) unit consisting in a slab stiffened by one or more ribs

3.2

declaration method (for mechanical strength and resistance to fire)

method chosen to declare the product performance for mechanical strength and resistance to fire. These methods do not apply to other essential characteristics. The allowed methods are:

- a) Method 1: declaration of detailing and material properties
- b) Method 2: declaration of geometry, material properties and product properties determined following this standard and EN Eurocodes;
- c) Method 3a: declaration of product compliance with a given design specification provided by the client;
- d) Method 3b: declaration of product compliance with a given design specification provided by the manufacturer according to the client's order

3.3

design specifications

set of documents related to the design of the product containing relevant information (e.g. calculation sheets, drawings ...) taking into account the applicable declaration method with the objective of declaring its characteristics

3.4

detailing

positioning of the reinforcement and geometrical data

4 Product characteristics

4.1 Compressive strength of concrete

When declared, the characteristic value of the compressive strength of concrete shall be determined according to 5.1 of this document and shall be expressed in MPa.

4.2 Ultimate tensile and tensile yield strength of steel

4.2.1 Reinforcing steel

When declared, the following values shall be based on the values declared by the reinforcing steel provider:

- ultimate tensile strength: characteristic value in MPa;

- tensile yield strength: characteristic value in MPa.

4.2.2 Prestressing steel

When declared, the following values shall be based on the values declared by the reinforcing steel provider:

- ultimate tensile strength: characteristic value in MPa;
- tensile 0,1 % proof-stress: characteristic value in MPa.

4.3 Dry density of lightweight concrete

For lightweight concrete, when declared the dry density shall be determined according to EN 13369:2018, 4.2.2.5 and expressed in kg/m³.

4.4 Mechanical strength

4.4.1 Method 1

When declared according to Method 1, the mechanical strength of the product is established through the following set of characteristics:

- compressive strength of concrete: see 4.1;
- ultimate tensile and tensile yield strength of steel: see 4.2;
- detailing: see 4.7.

4.4.2 Method 2

When declared according to Method 2, the relevant mechanical characteristics of the product are established by the manufacturer through:

- compressive strength of concrete: see 4.1;
- ultimate tensile and tensile yield strength of steel: see 4.2;
- reference to the documented design specification.

4.4.3 Method 3a

When declared according to Method 3a, the relevant mechanical characteristics of the product are established by the client through:

- compressive strength of concrete: see 4.1;
- ultimate tensile and tensile yield strength of steel: see 4.2;
- reference to the design specification provided by the client.

4.4.4 Method 3b

When declared according to Method 3b, the relevant mechanical characteristics of the product are established by the manufacturer through:

- compressive strength of concrete: see 4.1;