



# SLOVENSKI STANDARD

## SIST EN 15037-3:2009

01-julij-2009

---

### Montažni betonski izdelki - Stropni sistemi iz nosilcev in polnil - 3. del: Keramična polnila

Precast concrete products - Beam-and-block floor systems - Part 3: Clay blocks

Betonfertigteile - Balkendecken mit Zwischenbauteilen - Teil 3: Keramische Zwischenbauteile

iTeh STANDARD PREVIEW

Produits préfabriqués en béton - Systèmes de planchers à poutrelles et entrevous - Partie 3: Entrevous en terre cuite

SIST EN 15037-3:2009

Ta slovenski standard je istoveten z: EN 15037-3:2009

<https://standards.itih.ai/catalog/standards/sist/7dee74a9-2d1e-4b16-9184-6db8cc05fbfe/sist-en-15037-3-2009>

---

#### ICS:

91.060.30	Stropi. Tla. Stopnice	Ceilings. Floors. Stairs
91.100.30	Beton in betonski izdelki	Concrete and concrete products

SIST EN 15037-3:2009

en,de

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 15037-3:2009

<https://standards.iteh.ai/catalog/standards/sist/7dee74a9-2d1e-4b16-9184-6db86c05fbfe/sist-en-15037-3-2009>

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 15037-3**

April 2009

ICS 91.100.30

English Version

## Precast concrete products - Beam-and-block floor systems - Part 3: Clay blocks

Produits préfabriqués en béton - Systèmes de planchers à  
poutrelles et entrevous - Partie 3: Entrevous en terre cuite

Betonfertigteile - Balkendecken mit Zwischenbauteilen -  
Teil 3: Keramische Zwischenbauteile

This European Standard was approved by CEN on 25 January 2009.

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.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, 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 United Kingdom.

[SIST EN 15037-3:2009](https://standards.iteh.ai/catalog/standards/sist/7dee74a9-2d1e-4b16-9184-6db86c05fbfe/sist-en-15037-3-2009)

<https://standards.iteh.ai/catalog/standards/sist/7dee74a9-2d1e-4b16-9184-6db86c05fbfe/sist-en-15037-3-2009>



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

Management Centre: Avenue Marnix 17, B-1000 Brussels

## Contents

Page

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.....	4
Introduction .....	6
1 Scope .....	7
2 Normative references .....	7
3 Terms and definitions .....	8
4 Requirements .....	11
4.1 Material requirements .....	11
4.2 Production requirements .....	11
4.3 Finished product requirements .....	11
4.3.1 Geometrical properties .....	11
4.3.2 Surface characteristics .....	14
4.3.3 Mechanical resistance .....	14
4.3.4 Resistance and reaction to fire .....	16
4.3.5 Acoustic properties .....	16
4.3.6 Thermal properties .....	17
4.3.7 Durability .....	17
4.3.8 Other requirements .....	17
5 Test methods .....	18
5.1 Measuring of dimensions and surface characteristics .....	18
5.1.1 Block dimensions .....	18
5.1.2 Width and depth of the nib .....	19
5.1.3 Thickness of the top flange of resisting and semi-resisting blocks .....	20
5.1.4 Percentage of voids of the top flange of resisting blocks .....	20
5.1.5 Flatness of the underside .....	20
5.1.6 Straightness of the nib edges .....	20
5.1.7 Surface characteristics .....	20
5.2 Mechanical strength .....	20
5.2.1 Resistance to concentrated loads .....	20
5.2.2 Bending strength .....	22
5.2.3 Longitudinal compression test for resisting and semi-resisting clay blocks .....	24
5.2.4 Transverse testing of resisting and semi-resisting clay blocks .....	26
6 Evaluation of conformity .....	27
6.1 General .....	27
6.2 Initial type tests .....	27
6.3 Factory production control .....	28
6.3.1 General .....	28
6.3.2 Finished product test .....	28
7 Marking .....	28
8 Technical documentation .....	28
Annex A (normative) Sampling for initial type testing and for independent testing of consignments .....	29
A.1 General .....	29
A.2 Sampling procedure .....	29

<b>A.2.1</b>	<b>Random sampling .....</b>	<b>29</b>
<b>A.2.2</b>	<b>Representative sampling .....</b>	<b>29</b>
<b>A.2.3</b>	<b>Dividing the sample.....</b>	<b>30</b>
<b>A.2.4</b>	<b>Number of blocks required per test.....</b>	<b>30</b>
<b>Annex B</b>	<b>(normative) Inspection schemes for clay blocks .....</b>	<b>31</b>
<b>Annex ZA</b>	<b>(informative) Clauses of this European Standard addressing the provisions of the EU Construction Products Directive .....</b>	<b>33</b>
<b>ZA.1</b>	<b>Scope and relevant characteristics .....</b>	<b>33</b>
<b>ZA.2</b>	<b>Procedure for attestation of conformity of clay blocks for beam-and-block floor systems .....</b>	<b>35</b>
<b>ZA.2.1</b>	<b>System of attestation of conformity .....</b>	<b>35</b>
<b>ZA.2.2</b>	<b>EC Certificate and Declaration of conformity.....</b>	<b>35</b>
<b>ZA.3</b>	<b>CE marking and labelling.....</b>	<b>36</b>
<b>ZA.3.1</b>	<b>General .....</b>	<b>36</b>
<b>ZA.3.2</b>	<b>Simplified label .....</b>	<b>37</b>
<b>ZA.3.3</b>	<b>Information to be provided with the CE marking .....</b>	<b>38</b>
<b>Bibliography</b>	<b>.....</b>	<b>40</b>

## iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 15037-3:2009](https://standards.iteh.ai/catalog/standards/sist/7dee74a9-2d1e-4b16-9184-6db86c05fbfe/sist-en-15037-3-2009)

<https://standards.iteh.ai/catalog/standards/sist/7dee74a9-2d1e-4b16-9184-6db86c05fbfe/sist-en-15037-3-2009>

**EN 15037-3:2009 (E)****Foreword**

This document (EN 15037-3:2009) has been prepared by Technical Committee CEN/TC 229 "Precast concrete products", the secretariat of which is held by AFNOR. This document 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 October 2009, and conflicting national standards shall be withdrawn at the latest by April 2012.

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 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 EC Directive(s).

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

European standard for beam-and-block floor system is made of 5 parts:

- 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;*
- prEN 15037-4, *Precast concrete products — Beam-and-block floor systems — Part 4: Polystyrene blocks;*
- prEN 15037-5, *Precast concrete products — Beam-and-block floor systems — Part 5: Lightweight blocks.*

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

For common aspects of concrete products, reference is made to EN 13369, from which also the relevant requirements of the EN 206-1 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, 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 should not be treated as a European Standard.

The program 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 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 13978, *Precast concrete products — Precast concrete garages*
- 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 15050, *Precast concrete products — Bridge elements*
- EN 15258, *Precast concrete products — Retaining wall elements*

This European 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.

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, 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 refers to the clay blocks 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.

## iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 15037-3:2009

<https://standards.iteh.ai/catalog/standards/sist/7dee74a9-2d1e-4b16-9184-6db86c05fbfe/sist-en-15037-3-2009>



## 1 Scope

This European Standard deals with the requirements and the basic performance criteria for blocks made in clay, used in conjunction with precast concrete beams in compliance with EN 15037-1, with or without cast-in-situ concrete for the construction of beam-and-block floor and roof systems.

Examples of typology of floor and roof systems are given in Annex B of EN 15037-1:2008.

## 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 771-1:2003, *Specification for masonry units — Part 1: Clay masonry units*

EN 772-3, *Methods of test for masonry units — Part 3: Determination of net volume and percentage of voids of clay masonry units by hydrostatic weighing*

EN 772-9, *Methods of test for masonry units — Part 9: Determination of volume and percentage of voids and net volume of clay calcium silicate masonry units by sand filling*

EN 772-13, *Methods of test for masonry units — Part 13: Determination of net and gross dry density of masonry units (except for natural stone)*

EN 772-19, *Methods of test for masonry units — Part 19: Determination of moisture expansion of large horizontally perforated clay masonry units*

EN 1745, *Masonry and masonry products — Methods for determining design thermal values*

EN 12390-4:2000, *Testing hardened concrete — Part 4: Compressive strength — Specification for testing machines*

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

EN 13501-1:2007, *Fire classification of construction products and building elements — Part 1: Classification using test data from reaction to fire tests*

EN 15037-1:2008, *Precast concrete products — Beam-and-block floor systems — Part 1: Beams*

EN ISO 140-3, *Acoustics — Measurement of sound insulation in buildings and of building elements — Part 3: Laboratory measurements of airborne sound insulation of building elements (ISO 140-3:1995)*

EN ISO 140-6, *Acoustics — Measurement of sound insulation in buildings and of building elements — Part 6: Laboratory measurements of impact sound insulation of floors (ISO 140-6:1998)*

EN ISO 717-1, *Acoustics — Rating of sound insulation in buildings and of building elements — Part 1: Airborne sound insulation (ISO 717-1:1996)*

EN ISO 717-2, *Acoustics — Rating of sound insulation in buildings and of building elements — Part 2: Impact sound insulation (ISO 717-2:1996)*

### 3 Terms and definitions

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

#### 3.1

##### **low non-resisting or non-resisting block**

block with no mechanical function in the final floor system (designated LNR or NR)

NOTE Its only mechanical function is that of formwork during the construction of the floor system. Floor systems built with non-resisting blocks always have a cast-in-situ structural topping.

#### 3.2

##### **semi-resisting block**

block participating in the transfer of loads to the beams (designated SR)

NOTE In conjunction with a cast-in-situ concrete, it may contribute to the final strength of the system. However, its top flange alone cannot act as a compression slab in the final floor system.



SIST EN 15037-3:2009  
 Figure 1 — Examples of semi-resisting clay blocks  
<https://standards.iteh.ai/catalog/standards/sist-en-15037-3-2009/6-9184-6db86c05fbfe/sist-en-15037-3-2009>

#### 3.3

##### **resisting block**

block with the same functions as semi-resisting blocks but whose top flange can, under certain conditions, play a role as compression slab in the final floor system (designated RR)

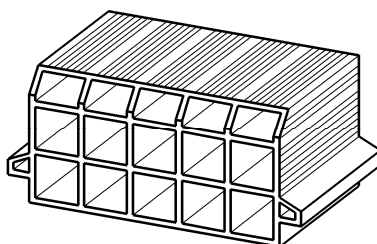


Figure 2 — Example of resisting clay blocks

#### 3.4

##### **nib**

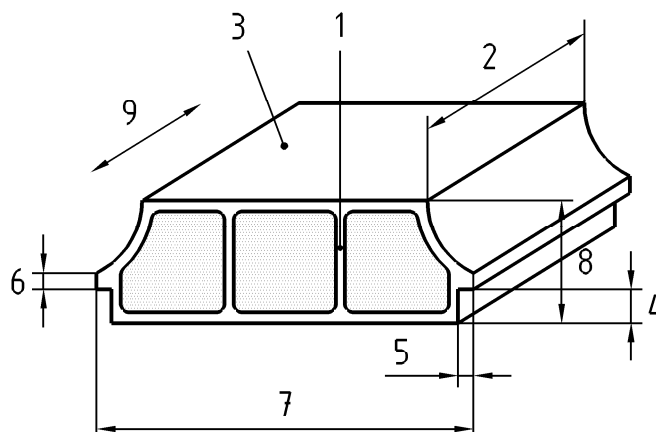
shape given to the block so that it will bear on the beam

#### 3.5

##### **longitudinal block**

block where the axis of the perforations are parallel to the beam

NOTE An example of a longitudinal block is given in Figure 3.



### Key

1	web	6	depth of the nib
2	overall length	7	overall width
3	flange (top part of the block)	8	overall height
4	height to nib	9	direction of the beam
5	width of the nib		

iTeh STANDARD PREVIEW

Figure 3 — Example of a longitudinal block

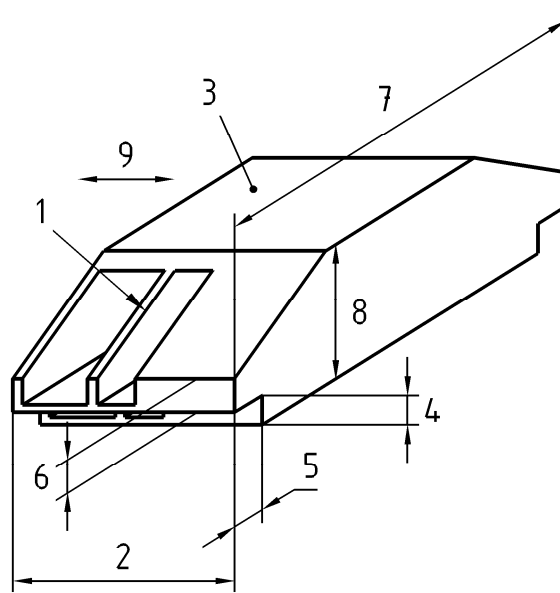
NOTE The flange in the top part of the block may be partially opened.

[SIST EN 15037-3:2009](https://standards.iteh.ai/catalog/standards/sist/7dec74a9-2d1e-4b16-9184-6db86c05fbfe/sist-en-15037-3-2009)

**3.6 transverse block** <https://standards.iteh.ai/catalog/standards/sist/7dec74a9-2d1e-4b16-9184-6db86c05fbfe/sist-en-15037-3-2009>

block where the axis of the perforations are perpendicular to the beam

NOTE An example of a transverse block is given in Figure 4.

**Key**

- |   |                                |   |                       |
|---|--------------------------------|---|-----------------------|
| 1 | web                            | 6 | depth of the nib      |
| 2 | overall length                 | 7 | overall width         |
| 3 | flange (top part of the block) | 8 | overall height        |
| 4 | height to nib                  | 9 | direction of the beam |
| 5 | width of the nib               |   |                       |

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

SIST EN 15037-3:2009

<https://standards.iteh.ai/catalog/standards/sist/7dee74a9-2d1e-4b16-9184-6db86c051b1e/sist-en-15037-3-2009>

Figure 4 — Example of a transverse block

NOTE The flange may be partially opened.

**3.7****open block**

non-resisting or semi-resisting block without top flange

NOTE An example of an open block is given in Figure 5.

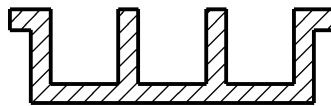


Figure 5 — Example of open block

**3.8****gross dry density**

mass per unit gross volume after drying to constant mass

**3.9****complementary block**

block of shorter length, width or height designed to aid the construction of floors having dimensions which are not multiples of the dimensions of blocks

### 3.10 family

group of products for which the test results for one or more characteristics from any one product within the family are valid for all other products within the family

## 4 Requirements

### 4.1 Material requirements

Clause 4 of EN 771-1:2003 shall apply.

Only materials with established suitability shall be used.

For a particular material, the establishment of suitability may result from a European Standard which refers specifically to the use of this material in products; in absence of a European Standard it may also result, under the same conditions, from an International Standard.

Where this material is not covered by a European or an International Standard, or if it deviates from the requirements of these standards, the establishment of suitability may result from:

— the relevant national standards or provisions valid in the place of use of the product which refer specifically to the use of this material in clay or in clay products;

or

— a European Technical Approval specifically for the use of this material in clay or clay products.

Clay blocks should be considered as low-non-resisting blocks, or non-resisting blocks, or semi-resisting blocks or resisting blocks.

<https://standards.iteh.ai/catalog/standards/sist/7dee74a9-2d1e-4b16-9184-6db86c05fbfe/sist-en-15037-3-2009>

### 4.2 Production requirements

Only the materials described in 4.1 shall be used in the production of clay blocks.

### 4.3 Finished product requirements

#### 4.3.1 Geometrical properties

##### 4.3.1.1 General

For technical documentation see Clause 8.

##### 4.3.1.2 Production tolerances

###### 4.3.1.2.1 Dimensional tolerances

The manufacturer shall declare which of the following tolerance classes the clay blocks fulfil.

a) General for the three classes:

—  $\pm 3$  mm for the width of the nib;

—  $\pm 5$  mm for all the other dimensions (except width, length and height);

b) Class T1: