



SLOVENSKI STANDARD
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Specification for masonry units - Part 4: Autoclaved aerated concrete masonry units

Festlegungen für Mauersteine - Teil 4: Porenbetonsteine

Spécifications pour éléments de maçonnerie - Partie 4. Eléments de maçonnerie en béton cellulaire autoclavé

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English version

Specification for masonry units - Part 4: Autoclaved aerated
concrete masonry units

Spécifications pour éléments de maçonnerie - Partie 4:
Eléments de maçonnerie en béton cellulaire autoclave

Festlegungen für Mauersteine - Teil 4: Porenbetonsteine

This European Standard was approved by CEN on 9 April 2003.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.

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

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Foreword

This document (EN 771-4:2003) has been prepared by Technical Committee CEN/TC 125 "Masonry", the secretariat of which is held by BSI.

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of an identical text or by endorsement, at the latest by January 2004, and conflicting national standards shall be withdrawn at the latest by April 2005.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association and supports the essential requirements of the EU Construction Products Directive (89/106/EEC).

For relationship with EU Directive(89/106/EEC), see informative Annex ZA which is an integral part of this standard.

It also takes into account the general rules for unreinforced and reinforced masonry in Eurocode 6.

The Annexes A and B of this European Standard are normative.

This European Standard replaces EN 771-4:2000.

EN 771, *Specification for masonry units* consists of:

- Part 1: *Clay masonry units.*
- Part 2: *Calcium silicate masonry units.*
- Part 3: *Aggregate concrete masonry units (Dense and light-weight aggregates).*
- Part 4: *Autoclaved aerated concrete masonry units.*
- Part 5: *Manufactured stone masonry units.*
- Part 6: *Natural stone masonry units.*

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard specifies the characteristics and performance requirements of autoclaved aerated concrete (AAC) masonry units for which the main intended uses are different types of load bearing and non-load bearing applications in all forms of walling including single leaf, cavity, partitions, retaining, basement and general use below ground level, including walling for fire protection, thermal insulation, sound insulation and the fabric of chimneys (excluding chimney flue units).

It defines the performance related to e.g. strength, density, dimensional accuracy etc. and provides for the evaluation of conformity of the product to this European Standard.

The marking requirement for products covered by this European Standard is included.

This European Standard does not cover the requirements for storey height panels, flue linings and masonry units with an incorporated thermal insulation material bonded to the faces of the unit susceptible to be exposed to fire. It does not specify standard sizes for autoclaved aerated concrete units nor standard work dimensions and angles of specially shaped and accessory units. It does not give permissible deviations for specially shaped and accessory units. It does not cover products intended for use as a damp proof course or the lining of a chimney.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 680, *Determination of the drying shrinkage of autoclaved aerated concrete*

EN 772-1:2000, *Methods of test for masonry units — Part 1: Determination of compressive strength*

EN 772-10, *Methods of test for masonry units — Part 10: Determination of moisture content of calcium silicate and autoclaved aerated concrete units*

EN 772-11, *Methods of test for masonry units — Part 11: Determination of water absorption of aggregate concrete, manufactured stone and natural stone masonry units due to capillary action and the initial rate of water absorption of clay masonry units*

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 772-16, *Methods of test for masonry units — Part 16: Determination of dimensions*

EN 998-2:2001, *Specification for mortar for masonry — Part 2: Masonry mortar*

EN 1052-3, *Methods of test for masonry — Part 3: Determination of initial shear strength*

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

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

EN ISO 12572, *Hygrothermal performance of building materials and products -Determination of water vapour transmission properties (ISO 12572:2001)*

3 Terms and definitions

For the purpose of this European standard, the following definitions apply.

3.1

masonry unit

preformed component intended for use in masonry construction

3.2

autoclaved aerated concrete (AAC) masonry unit

masonry unit manufactured from hydraulic binders such as cement and/or lime, combined with siliceous based fine material, cell generating material and water

NOTE AAC masonry units may be provided with recesses, tongued and grooved jointing systems and other interlocking features.

3.3

co-ordinating size

size of the co-ordinating space allocated to a masonry unit including allowances for joints and tolerances

3.4

work size

size of masonry unit specified for its manufacture, to which the actual size conforms within permissible deviations

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3.5

actual size

size of a masonry unit as measured

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3.6

regular shaped masonry unit

masonry unit with an overall rectangular parallelepiped shape

3.7

specially shaped masonry unit

masonry unit which is not a rectangular parallelepiped

3.8

accessory unit

masonry unit which is shaped to provide a particular function

3.9

interlocking features

shaped matched projections and indentations on masonry units, e.g. tongue and groove systems

3.10

hole

formed void which may or may not pass completely through a masonry unit

3.11

vertical perforation

formed void which passes completely through a masonry unit perpendicular to the bed face

3.12**horizontal perforation**

formed void which passes completely through a masonry unit parallel to the bed faces

3.13**cell**

formed void which does not pass through a masonry unit

3.14**recess**

depression or indentation in one or more surfaces of a masonry unit (e.g. mortar pocket, rendering keyway, grip hole)

3.15**declared value**

value that a manufacturer is confident of achieving, bearing in mind the precision of test and variability of the manufacturing process

3.16**Category I masonry units**

units with a declared compressive strength with a probability of failure to reach it not exceeding 5 %. This may be determined via the mean or characteristic value

3.17**Category II masonry units**

units not intended to comply with the level of confidence of Category I units

3.18**normalised compressive strength of masonry units**

compressive strength of masonry units converted to the air dry compressive strength of an equivalent 100 mm wide by 100 mm high masonry unit

NOTE See procedure given in Annex A of EN 772-1:2000

3.19**mean compressive strength of masonry units**

arithmetic mean of the compressive strengths of masonry units

3.20**characteristic compressive strength of masonry units**

compressive strength corresponding to a 5 % fractile of the compressive strength

4 Materials and manufacture**4.1 General**

AAC masonry units shall be manufactured using hydraulic binders such as cement and/or lime combined with fine siliceous based material, cell-generating material and water and cured with high pressure steam in autoclaves.

NOTE The raw materials are mixed together and cast into moulds where the mix is allowed to rise and set into cakes. After this part of the process, the cake is cut into the required sizes of masonry units and cured.

4.2 Materials of manufacture

The following materials of manufacture combined with additives and agents where appropriate, may be used in the manufacturing process:

- Siliceous based material;
- Cement;
- Lime;
- Water;
- Cell-generating material.

Other materials may also be included in the manufacturing process.

5 Requirements for AAC masonry units

5.1 General

The requirements and properties specified in this standard shall be defined in terms of test methods and other procedures referred to in this European Standard.

It should be noted that the test methods are not always applicable to specially shaped and accessory units (see 3.7 and 3.8).

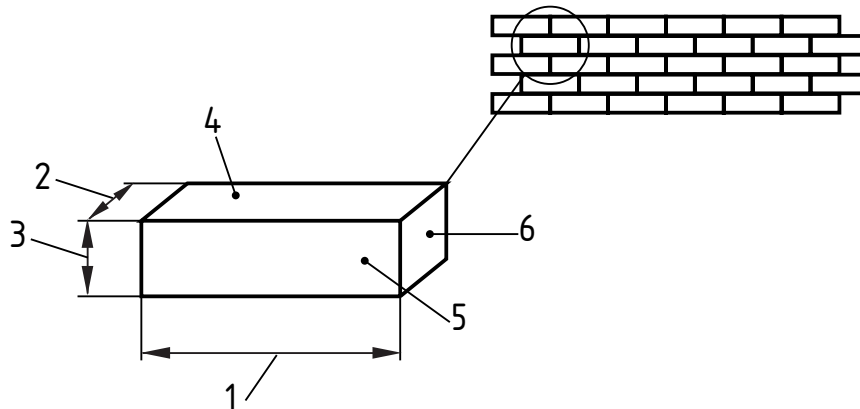
The conformity criteria given in the following sub-clauses relates to initial type testing (see 8.2) and, when relevant, to consignment testing (see Annex A). For the compressive strength of Category I units use a 50 % fractile ($p = 0,50$) for mean values or 5 % fractile ($p = 0,05$) for characteristic values and a confidence level of 95 %.

For production evaluation the manufacturer shall define the conformity criteria in the factory production control documentation, see 8.3.

5.2 Dimensions and tolerances

5.2.1 Dimensions

The manufactured dimensions of an AAC masonry unit shall be declared in mm for length, width and height, in that order.



Key

| | | |
|----------|---------|----------|
| 1 Length | 2 Width | 3 Height |
| 4 Bed | 5 Face | 6 Header |

NOTE This relates to the normal use of the masonry unit in the wall.

Figure 1 — Dimensions and surfaces

They shall be given in terms of work size.

NOTE In addition the co-ordinating size may be given.

AAC masonry units shall be sampled in accordance with Annex A and tested in accordance with EN 772-16.

The deviation of the measured dimensions from the declared dimensions shall not exceed the value given in Table 2. The declared dimensions shall not exceed the value given in Table 1.

Table 1 — Maximum dimensions for AAC masonry units

| | Dimensions in millimetres |
|--------|---------------------------|
| Length | 1500 |
| Width | 600 |
| Height | 1000 |

5.2.2 Tolerances

5.2.2.1 Permissible deviations for regular shaped units

The permissible deviations for individual masonry units shall be as given in Table 2 for mortar specified in accordance with EN 998-2.

Table 2 — Limit deviations for regular shaped units in millimetres

| Dimensions | AAC units for erection with joints made of: | | |
|------------|---------------------------------------------|-------------------|------|
| | General purpose and lightweight mortar | Thin layer mortar | |
| | | TLMA | TLMB |
| Length | +3 | ± 3 | ± 3 |
| | -5 | | |
| Height | +3 | ±2 | ± 1 |
| | -5 | | |
| Width | ± 3 | ± 2 | ± 2 |

NOTE Closer tolerances may be declared by the manufacturer for one or more dimensions.

5.2.2.2 Permissible deviations for other shaped units

The permissible deviations for non-regular units are not specified in this standard.

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5.3 Configuration

For plain regular shaped units it is not necessary to specify the shape. For other units, the geometry of the unit and the volume, direction and shape of perforation and holes shall be declared using definitions in clause 3 or by reference to a drawing.

NOTE 1 AAC masonry units are generally used in conjunction with general purpose, thin layer and lightweight mortars. The following are commonly employed:

- Mortar joints between plain rectangular shaped AAC masonry units;
- Tongued and grooved jointing systems using tongued and grooved AAC masonry units;
- Mortar joints between profiled AAC masonry units where the profile is designed to accommodate mortar.

NOTE 2 The manufacturer may also declare, whether the units comply with the limits for one or another of the groups specified in relevant parts of Eurocode 6.

5.4 Density

5.4.1 Gross dry density

The gross dry density of an AAC masonry unit shall be declared in kg/m³. For all plain regular shaped masonry units, the mean gross dry density of AAC masonry units shall be determined in accordance with EN 772-13 from units sampled in accordance with Annex A. When not using whole masonry units, these shall be prepared in accordance with Annex B.

NOTE This declaration may be made for the evaluation of