

Specification for masonry units —

Part 4: Autoclaved aerated concrete masonry units

The European Standard EN 771-4:2003, with the incorporation of amendment A1:2005, has the status of a British Standard

ICS 91.100.30

National foreword

This British Standard is the official English language version of EN 771-4:2003, including amendment A1:2005. It supersedes BS EN 771-4:2001 which is withdrawn.

The start and finish of text introduced or altered by CEN amendment is indicated in the text by tags $\boxed{A_1}$ $\langle A_1 \rangle$. Tags indicating changes to CEN text carry the number of the CEN amendment. For example, text altered by CEN amendment A1 is indicated by $\boxed{A_1}$ $\langle A_1 \rangle$.

EN 771-4:2003 is a candidate “harmonized” European Standard and fully takes into account the requirements of the European Commission mandate M116, *Masonry and related products*, given under the EU Construction Products Directive (89/106/EEC), and is intended to lead to CE marking. The date of applicability of EN 771-4:2003 as a “harmonized” European Standard, i.e. the date after which this standard may be used for CE marking purposes, is subject to an announcement in the *Official Journal of the European Communities*.

The Commission in consultation with Member States has agreed a transition period for the co-existence of “harmonized” European Standards and their corresponding national standard(s). It is intended that this period will comprise a period, usually nine months, after the date of availability of the European Standard, during which any required changes to national regulations are to be made, followed by a further period, usually of 12 months, for the implementation of CE marking. At the end of this co-existence period, the national standard(s) will be withdrawn.

EN 771-4:2003 is the subject of transitional arrangements agreed under the Commission mandate. In the UK, the corresponding national standard is:

- BS 6073-1:1981, *Precast concrete masonry units — Part 1: Specification for precast concrete masonry units*;

and based on this transition period of twenty-one months, the above mentioned national standards will be withdrawn in April 2006.

NOTE This date is approximate. Users of this standard should contact BSI Customer Services for confirmation of withdrawal.

The UK participation in its preparation was entrusted by Technical Committee B/519, Masonry and associated testing, to Subcommittee B/519/1, Masonry units, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

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16000	21 November 2005	Incorporation of CEN amendment A1:2005 and revision of national annex NA and national foreword

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

EN 771-4 specifies the characteristics and performance requirements for autoclaved aerated concrete masonry units available throughout the CEN member countries. It aims to do so in product performance terms, avoiding as far as possible prescriptive requirements and all the traditional designations of autoclaved aerated concrete units available throughout Europe. Current products, however, will continue to be manufactured, traded and used, even though they are not referred to by name in this European Standard. The concept of the declared value has been introduced and is the value for the various properties referred to in this standard that the manufacturer claims for the product. There are other notable differences to which the national annex will refer, in particular the supporting test methods are different and in respect of compressive strength, AAC masonry units are designated either Category 1 or Category 2.

The UK National Annex NA attached to this standard provides an informative commentary on the differences between EN 771-4 and BS 6073-1. Nothing in this annex should be construed as specifying requirements other than those contained in the normative parts of this European Standard.

If CE marking is performed, the procedures in Annex ZA will apply. The significance of the CE marking is that the product manufacturer claims compliance with the “harmonized” requirements given in the normative text of the product standard. These relate to the essential requirements of the EU Construction Products Directive. Not all product characteristics need necessarily be given on the CE marking, but those product characteristics covered by regulations in force in each EU Member State, where the manufacturer intends that the product will be used, do need to be stated.

It cannot be assumed that the declared value of a performance characteristic given for a masonry unit conforming to one part of EN 771 can be directly compared with the same performance characteristic for a masonry unit conforming to another part of EN 771.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the *BSI Catalogue* under the section entitled “International Standards Correspondence Index”, or by using the “Search” facility of the *BSI Electronic Catalogue* or of British Standards Online.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 35 and a back cover.

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English version

**Specification for masonry units - Part 4: Autoclaved aerated
concrete masonry units**
(includes amendment A1:2005)

Spécifications pour éléments de maçonnerie - Partie 4:
Éléments de maçonnerie en béton cellulaire autoclave
(inclut l'amendement A1:2005)

Festlegungen für Mauersteine - Teil 4: Porenbetonsteine
(enthält Änderung A1:2005)

This European Standard was approved by CEN on 9 April 2003; amendment A1:2005 was approved by CEN on 29 December 2004.

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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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.

Foreword to amendment A1

This document (EN 771-4:2003/A1:2005) has been prepared by Technical Committee CEN/TC 125 “*Masonry*”, the Secretariat of which is held by BSI.

This Amendment to the European Standard EN 771-4:2003 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2005, and conflicting national standards shall be withdrawn at the latest by August 2005.

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(s).

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

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Slovakia, Slovenia, Spain, Sweden, Switzerland and 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, *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 772-20, *Methods of test for masonry units — Part 20: Determination of flatness of faces of masonry units*

EN 998-2, *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 1996-1-1, *Eurocode 6: Design of masonry structures — Part 1-1: Common rules for reinforced and unreinforced masonry structures* ^(A1)

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

3.5

actual size

size of a masonry unit as measured

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.