

## **Müürikivide spetsifikatsioon. Osa 3: Betoonmüürikivid (tiheda ja kergtäitematerjaliga)**

Specification for masonry units - Part 3: Aggregate concrete masonry units (Dense and light weight aggregates)

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 771-3:2011 sisaldab Euroopa standardi EN 771-3:2011 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 31.05.2011 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 04.05.2011.

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN 771-3:2011 consists of the English text of the European standard EN 771-3:2011.

This standard is ratified with the order of Estonian Centre for Standardisation dated 31.05.2011 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

Date of Availability of the European standard text 04.05.2011.

The standard is available from Estonian standardisation organisation.

ICS 91.100.30

### Standardite reprodutseerimis- ja levitamiseõigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonilisse süsteemi või edastamine ükskõik millises vormis või millisel teel on keelatud ilma Eesti Standardikeskuse poolt antud kirjaliku loata.

Kui Teil on küsimusi standardite autorikaitse kohta, palun võtke ühendust Eesti Standardikeskusega:  
Aru 10 Tallinn 10317 Eesti; [www.evs.ee](http://www.evs.ee); Telefon: 605 5050; E-post: [info@evs.ee](mailto:info@evs.ee)

### Right to reproduce and distribute belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without permission in writing from Estonian Centre for Standardisation.

If you have any questions about standards copyright, please contact Estonian Centre for Standardisation:  
Aru str 10 Tallinn 10317 Estonia; [www.evs.ee](http://www.evs.ee); Phone: 605 5050; E-mail: [info@evs.ee](mailto:info@evs.ee)

English Version

## Specification for masonry units - Part 3: Aggregate concrete masonry units (Dense and lightweight aggregates)

Spécifications pour éléments de maçonnerie - Partie 3:  
Éléments de maçonnerie en béton de granulats (granulats  
courants et légers)

Festlegungen für Mauersteine - Teil 3: Mauersteine aus  
Beton (mit dichten und porigen Zuschlägen)

This European Standard was approved by CEN on 10 March 2011.

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-CENELEC 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-CENELEC Management Centre has the same status as the official versions.

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



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

Management Centre: Avenue Marnix 17, B-1000 Brussels

## Contents

Page

Foreword.....	4
<b>1</b> <b>Scope</b> .....	<b>5</b>
<b>2</b> <b>Normative references</b> .....	<b>5</b>
<b>3</b> <b>Terms, definitions and symbols</b> .....	<b>6</b>
3.1 <b>Terms and definitions</b> .....	<b>6</b>
3.2 <b>Symbols</b> .....	<b>8</b>
<b>4</b> <b>Materials</b> .....	<b>8</b>
<b>5</b> <b>Requirements for aggregate concrete masonry units</b> .....	<b>9</b>
5.1 <b>General</b> .....	<b>9</b>
5.2 <b>Dimensions and tolerances</b> .....	<b>9</b>
5.2.1 <b>Dimensions</b> .....	<b>9</b>
5.2.2 <b>Dimensional tolerances</b> .....	<b>10</b>
5.3 <b>Configuration and appearance</b> .....	<b>10</b>
5.3.1 <b>Configuration</b> .....	<b>10</b>
5.3.2 <b>Appearance</b> .....	<b>11</b>
5.4 <b>Density</b> .....	<b>11</b>
5.4.1 <b>Gross dry density of the units</b> .....	<b>11</b>
5.4.2 <b>Net dry density of the concrete</b> .....	<b>12</b>
5.4.3 <b>Tolerances</b> .....	<b>12</b>
5.5 <b>Mechanical strength</b> .....	<b>12</b>
5.5.1 <b>Compressive strength</b> .....	<b>12</b>
5.5.2 <b>Bending tensile strength</b> .....	<b>13</b>
5.6 <b>Thermal properties</b> .....	<b>13</b>
5.7 <b>Durability</b> .....	<b>13</b>
5.8 <b>Water absorption by capillarity</b> .....	<b>13</b>
5.9 <b>Moisture movement</b> .....	<b>14</b>
5.10 <b>Water vapour permeability</b> .....	<b>14</b>
5.11 <b>Reaction to fire</b> .....	<b>14</b>
5.12 <b>Shear bond strength</b> .....	<b>14</b>
5.12.1 <b>General</b> .....	<b>14</b>
5.12.2 <b>Declaration based on fixed values</b> .....	<b>14</b>
5.12.3 <b>Declaration based on tests</b> .....	<b>15</b>
5.13 <b>Flexural bond strength</b> .....	<b>15</b>
<b>6</b> <b>Description, designation and classification of aggregate concrete masonry units</b> .....	<b>15</b>
6.1 <b>Description and designation of units</b> .....	<b>15</b>
6.2 <b>Classification</b> .....	<b>16</b>
<b>7</b> <b>Marking</b> .....	<b>16</b>
<b>8</b> <b>Evaluation of conformity</b> .....	<b>16</b>
8.1 <b>General</b> .....	<b>16</b>
8.2 <b>Initial type testing</b> .....	<b>16</b>
8.3 <b>Factory production control</b> .....	<b>17</b>
8.3.1 <b>General</b> .....	<b>17</b>
8.3.2 <b>Testing and measuring equipment</b> .....	<b>18</b>
8.3.3 <b>Production equipment</b> .....	<b>18</b>
8.3.4 <b>Raw materials</b> .....	<b>18</b>
8.3.5 <b>Production process</b> .....	<b>18</b>
8.3.6 <b>Finished product testing</b> .....	<b>18</b>
8.3.7 <b>Statistical techniques</b> .....	<b>19</b>

8.3.8	Marking and stock control of products .....	19
8.3.9	Traceability .....	19
8.3.10	Nonconforming products .....	19
<b>Annex A (normative)</b>	<b>Sampling for initial type testing and for independent testing of consignments .....</b>	<b>20</b>
A.1	General .....	20
A.2	Sampling procedure .....	20
A.2.1	General .....	20
A.2.2	Random sampling .....	20
A.2.3	Representative sampling .....	20
A.2.4	Dividing the sample .....	21
A.2.5	Number of units required for testing .....	21
A.3	Place and dates of inspection and testing .....	22
<b>Annex B (normative)</b>	<b>Compliance criteria for initial type testing and for independent testing of consignments .....</b>	<b>23</b>
B.1	Dimensions and tolerances (see 5.2) .....	23
B.2	Configuration and appearance (see 5.3) .....	23
B.3	Density (see 5.4) .....	23
B.4	Mechanical strength (see 5.5) .....	23
B.4.1	Characteristic strength .....	23
B.4.2	Mean strength .....	23
B.5	Moisture movement and water absorption by capillarity (see 5.9 and 5.8) .....	23
<b>Annex C (informative)</b>	<b>Examples of different shapes of aggregate concrete masonry units .....</b>	<b>27</b>
<b>Annex D (informative)</b>	<b>Guidance for test frequencies for designing a FPC system to demonstrate conformity of finished products with the requirements of the standard and the declaration of the manufacturer .....</b>	<b>28</b>
<b>Annex ZA (informative)</b>	<b>Clauses of this European Standard addressing the provisions of the EU Construction Products Directive .....</b>	<b>30</b>
ZA.1	Scope and relevant characteristics .....	30
ZA.2	Procedure(s) for attestation of conformity of aggregate concrete masonry units .....	32
ZA.2.1	System(s) of attestation of conformity .....	32
ZA.2.2	EC Certificate and Declaration of Conformity .....	33
ZA.3	CE marking and labelling .....	34
	<b>Bibliography .....</b>	<b>38</b>

## Foreword

This document (EN 771-3:2011) 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 November 2011, and conflicting national standards shall be withdrawn at the latest by November 2011.

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 supersedes EN 771-3:2003.

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(s), see informative Annex ZA, which is an integral part of this document.

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

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, Bulgaria, Croatia, 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.

## 1 Scope

This European Standard specifies the characteristics and performance requirements of aggregate concrete masonry units made from dense and lightweight aggregates or a combination of both for which the main intended uses are common, facing or exposed masonry in load bearing or non-load bearing building and civil engineering applications. The units are suitable for all forms of walling, including single leaf, external leaf to chimneys, cavity wall, partitions, retaining, and basement. They can provide fire protection, thermal insulation, sound insulation and sound absorption.

This European Standard includes aggregate concrete masonry units of an overall non-rectangular parallelepiped shape, especially shaped and accessory units.

It defines the performance related to e.g. strength, density, dimensional accuracy, and provides for the evaluation of conformity of the product to this European Standard. The marking requirements for products covered by this European Standard are also included.

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

## 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 772-1:2011, *Methods of test for masonry units — Part 1: Determination of compressive strength*

EN 772-2, *Methods of test for masonry units — Part 2: Determination of percentage area of voids in aggregate concrete masonry units (by paper indentation)*

EN 772-6, *Methods of test for masonry units — Part 6: Determination of bending tensile strength of aggregate concrete masonry units*

EN 772-11, *Methods of test for masonry units — Part 11: Determination of water absorption of aggregate concrete, autoclaved aerated 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 772-14, *Methods of test for masonry units — Part 14: Determination of moisture movement of aggregate concrete and manufactured stone masonry units*

EN 772-16:2011, *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 aggregate concrete, manufactured stone and natural stone masonry units*

EN 1052-2, *Methods of test for masonry — Part 2: Determination of flexural strength*

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

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

EN 13501-1, *Fire classification of construction products and building elements — Part 1: Classification using 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, definitions and symbols

#### 3.1 Terms and definitions

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

##### 3.1.1

##### **masonry unit**

prefabricated component intended for use in masonry construction

##### 3.1.2

##### **common masonry unit**

masonry unit normally intended for use with no faces left visible

##### 3.1.3

##### **facing masonry unit**

masonry unit intended for use with one or more faces left visible and which may or may not be exposed to external climatic conditions

##### 3.1.4

##### **exposed masonry unit**

facing masonry unit exposed to external climatic conditions without render or other equivalent protection

##### 3.1.5

##### **aggregate concrete masonry unit**

masonry unit manufactured from, cementitious binder, aggregates and water and which may contain admixtures and additions and colouring pigments and other materials incorporated or applied during or subsequent to unit manufacture

##### 3.1.6

##### **co-ordinating size**

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

##### 3.1.7

##### **work size**

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

##### 3.1.8

##### **actual size**

size of a unit as measured

##### 3.1.9

##### **regular shaped masonry unit**

masonry unit with an overall rectangular parallelepiped shape

NOTE Examples of different shapes of concrete masonry units are shown in Annex C.

##### 3.1.10

##### **specially shaped masonry unit**

masonry unit which is not a rectangular parallelepiped