Müürimörtide katsemeetodid. Osa 10: Kivistunud mördi kuiva näivtiheduse määramine KONSOLIDEERITUD TEKST

Methods of test for mortar for masonry - Part 10: Determination of dry bulk density of hardened mortar CONSOLIDATED TEXT

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 1015-10:2005+A1:2007 sisaldab Euroopa standardi EN 1015-10:1999+A1:2006 ingliskeelset teksti.	This Estonian standard EVS-EN 1015-10:2005+A1:2007 consists of the English text of the European standard EN 1015-10:1999+A1:2006.
Standard on kinnitatud Eesti Standardikeskuse 06.05.2009 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.	This standard is ratified with the order of Estonian Centre for Standardisation dated 06.05.2009 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.
Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 06.12.2006.	Date of Availability of the European standard text 06.12.2006.
Standard on kättesaadav Eesti standardiorganisatsioonist.	The standard is available from Estonian standardisation organisation.

ICS 91.100.10

Võtmesõnad: katsed, määramine, mördid

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 1015-10

August 1999

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English version

Methods of test for mortar for masonry

Part 10: Determination of dry bulk density of hardened mortar

Méthodes d'essai des mortiers pour maçonnerie – Partie 10: Détermination de la masse volumique apparente sèche du mortier durci

Prüfverfahren für Mörtel für Mauerwerk – Teil 10: Bestimmung der Trockenrohdichte von Festmörtel

This European Standard was approved by CEN on 1999-07-08.

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 Central Secretariat or to any CEN member.

The European Standards exist 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 Central Secretariat has the same status as the official versions.

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

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Ref. No. EN 1015-10 : 1999 E

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Foreword

This European Standard 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 February 2000, and conflicting national standards shall be withdrawn at the latest by December 2001.

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, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard specifies a method for determining the dry bulk density of hardened mortars. It is applicable to lightweight and general purpose and thin layer mortars using specimens of regular shape.

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.

prEN 998-1	Specification for mortar for masonry - Part 1 : Rendering and plastering mortar with inorganic binding agents
prEN 998-2	Specification for mortar for masonry - Part 2 : Masonry mortar
EN 1015-2	Methods of test for mortar for masonry - Part 2 : Bulk sampling of mortars and preparation of test mortars
EN 1015-3	Methods of test for mortar for masonry - Part 3 : Determination of consistence of fresh mortar (by flow table)
EN 1015-11	Methods of test for mortar for masonry- Part 11 : Determination of flexural and compressive strength of hardened mortar

3 Principle

The dry bulk density of a given specimen of hardened mortar is determined as the quotient of its mass in oven dried condition, and the volume which it occupies when submerged in water in a saturated condition.

4 Symbols

$m_{s,dry}$	is the oven dry mass of specimen of hardened mortar, in kilograms (kg)
$m_{s,sat}$	is the mass of saturated specimen of hardened mortar, in kilograms (kg)
$m_{s,i}$	is the apparent mass of saturated specimen of hardened mortar immersed in water, in kilograms (kg)
ρ_w	is the density of water in kilograms per cubic metre (kg/m^3)
V_s	is the volume of specimen of hardened mortar, in cubic metres (m^3)

5 Apparatus

5.1. A **weighing instrument** accurate to 0,1 % of the total mass of the specimen and equipped with a specimen-bearing stirrup for weighing the specimen submerged in water;

5.2. A **ventilated oven**, capable of maintaining a temperature of
70 °C ± 5 °C or 60 °C ± 5 °C;

5.3. Moulds as described in EN 1015-11.

6 Sampling, preparation and storage of test samples

The fresh mortar for this test shall have a volume of not less than 50 times the maximum aggregate particle size, and in no case less than 50 ml or 1,5 times the quantity needed to perform the test, whichever is the greater. It shall be obtained either by reduction of the bulk test sample (see EN 1015-2) using a sample divider or by quartering or by preparation from dry constituents and water in the laboratory. The flow value of the mortar in the bulk test sample shall be determined in accordance with EN 1015-3 and reported.

Laboratory mixed samples shall, before testing, be brought to a defined flow value as specified in EN 1015-2

Ready to use mortars (factory-made wet mortars which are retarded), and pre-batched air-lime/sand wet mortars when not gauged with hydraulic binders, shall be tested within their specified workable life.

The length of mixing period shall be measured from the moment all constituents are introduced into the mixer.

Before testing, the batch shall be gently stirred by hand using a trowel or palette knife in 5 s to 10 s to counteract any false setting etc., but without any additional mixing of the batch.

Any deviation from the mixing procedure shall be noted.

A test sample shall comprise three specimens prepared in moulds, their shape, preparation and storage being in accordance with EN 1015-11.

7 Procedure

7.1 Drying to constant mass

Dry the specimen in the oven at a temperature of 70 °C ± 5°C until the constant mass is reached. For samples with organic constituents, e.g. expanded polystyrene aggregate, use a drying temperature of 60 °C ± 5 °C. The specimen is considered to have reached constant mass if two consecutive weighings 2 h apart during the drying, do not differ by more than 0,2 % of the mass of the dry specimen. Record the mass of the specimen, $m_{s,dry}$ in kg to the nearest 0,1 %.

7.2 Determination of the volume of the specimen by means of displacement

Immerse the specimen in water at 20 °C ± 2 °C until no further increase in apparent mass is observed. This is considered reached when two consecutive weighings, 15 min apart during the immersion, do not differ by more than 0,2 % by mass. Weigh the wet specimen after the removal of any surplus water, using a moist cloth, and record its mass, $m_{s,sat}$ in kg to the nearest 0,1 %.

The volume of the specimen may now be determined by weighing in water.

Allow the weighing instrument to reach equilibrium, ensuring that the empty stirrup, hanging from it, is completely immersed in the water tank. Immerse the stirrup to the same depth when making weighings with or without the specimen. Place the wet specimen on the stirrup. Avoid trapping air bubbles on the sides of the specimen and record the mass of the specimen, $m_{s,i}$, in kg in this immersed position.

The volume of the specimen in m^3 is given by the formula :

$$V_s = \frac{m_{s,sat} - m_{s,i}}{\rho_w}$$

8 Calculation and expression of results

Calculate the dry bulk density of each mortar specimen as the ratio of the recorded mass, $m_{s,dry}$, to the volume V_s.

Calculate the mean value from the individual values of each mortar specimen, all values rounded to the nearest 10 kg/m^3.

9 Test report

The test report shall include the following information :

a) the number, title and date of issue of this European Standard;

b) the place, date and time of taking the bulk test sample[1]);

Note: This is the sample taken from the bulk supply that is to be used for all of the tests in EN 1015

c) the method used for taking the bulk test sample (if known) and the name of the organization that took it;

d) the type, origin and designation of the mortar by reference to the relevant part of prEN 998;

e) the date of testing;

f) the date and time of preparing test samples for test (i.e. date and time of any mixing, casting, moulding, or demoulding procedure, if appropriate);

g) flow value of test mortar determined in accordance with EN 1015-3;

h) details of test specimens including number, dimensions, mass etc., if appropriate;

i) test results (individual and mean values of dry bulk density rounded to the nearest 10 kg/m^3);

j) remarks, if any;

[1]) This information is contained on the certificate of sampling (see EN 1015-2).

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 1015-10:1999/A1

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English Version

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Méthodes d'essai des mortiers pour maçonnerie - Partie 10: Détermination de la masse volumique apparente sèche du mortier durci

Prüfverfahren für Mörtel für Mauerwerk - Teil 10: Bestimmung der Trockenrohdichte von Festmörtel

This amendment A1 modifies the European Standard EN 1015-10:1999; it was approved by CEN on 26 October 2006.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This amendment 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 Central Secretariat 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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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

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Ref. No. EN 1015-10:1999/A1:2006: E

Foreword

This document (EN 1015-10:1999/A1:2006) 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 1015-10:1999 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2007, and conflicting national standards shall be withdrawn at the latest by June 2007.

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, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

2 Normative references

Delete the explanatory text "This European Standard incorporates . . . . referred to applies."

and substitute "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."

Delete all occurrences of "pr" *preceding EN references throughout the document.*

3 Principle

Delete "when submerged in water in a saturated condition".

4 Symbols

Delete the following three symbols:
$m_{s,sat}$ (mass of saturated specimen)
$m_{s,i}$ (apparent mass of saturated specimen)
ρ_w (density of water)

5 Apparatus

*Delete "*and equipped with a specimen-bearing stirrup for weighing the specimen submerged in water" *in 5.1.*

7.1 Drying to constant mass

Delete the heading "7.1 Drying to constant mass"

Delete "70 °C ± 5 °C" *and substitute* "105 °C ± 5 °C".

7.2 Determination of the volume of the specimen by means of displacement

Delete 7.2 in its entirety.

8 Calculation and expression of results

Add a new 1st paragraph "V_s is taken as the volume of the mould, which is 256×10^{-6} m^3."