



SLOVENSKI STANDARD
SIST EN 1015-1:1999

01-januar-1999

Metode preskušanja zidarskih malt - 1. del: Ugotavljanje porazdelitve zrn po velikosti (s sejanjem)

Methods of test for mortar for masonry - Part 1: Determination of particle size distribution (by sieve analysis)

Prüfverfahren für Mörtel für Mauerwerk - Teil 1: Bestimmung der Korngrößenverteilung (durch Siebanalyse)

Méthodes d'essai des mortiers pour maçonnerie - Partie 1: Détermination de la répartition granulométrique (par tamisage)

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Ta slovenski standard je istoveten z: EN 1015-1:1998

ICS:

91.100.10 Cement. Mavec. Apno. Malta Cement. Gypsum. Lime.
Mortar

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en

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 1015-1

October 1998

ICS 91.100.10

Descriptors: masonry work, mortars: materials, tests, determination, particle size, grain structure, sieving

English version

Methods of test for mortar for masonry - Part 1: Determination of particle size distribution (by sieve analysis)

Méthodes d'essai des mortiers pour maçonnerie - Partie 1:
Détermination de la répartition granulométrique (par
tamisage)

Prüfverfahren für Mörtel für Mauerwerk - Teil 1:
Bestimmung der Korngrößenverteilung (durch Siebanalyse)

This European Standard was approved by CEN on 4 September 1998.

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.

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 Central Secretariat has the same status as the official versions.

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

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

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

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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 April 1999, and conflicting national standards shall be withdrawn at the latest by September 2000.

This European standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association and includes the performance requirements referred to in the Eurocode for masonry Structures.

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.

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1 Scope

This European Standard specifies two methods of determining the particle size distribution of dry mixed or non hardened wet mixed mortars. The method of wet sieving is applicable to mortars containing normal weight aggregates and the method of dry sieving to mortars containing lightweight aggregates.

This European standard does not cover particle size distribution of separate aggregates which should be determined in accordance with the test method described in European Standard EN 933, nor does it cover mixes containing fibres which cannot be removed before sieving.

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.

3 Principle

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A series of test sieves (5.2) with increasing aperture size are nested on top of one another on a bottom pan. The sample is placed on the top sieve and the stack of sieves is then agitated until further agitation causes no change in the mass retained on each sieve, which is weighed.

Note: For samples with particles of different densities the sieve analysis will only give the particle size distribution in % of total mass.

4 Symbols

m_r is the mass of the fraction retained on the sieve, (g);

A is the area of the sieve (mm^2);

d is the nominal aperture size of the sieve, (mm);

d_{max} is the maximum aggregate size of the sample, in (mm).

5 Apparatus

5.1 **Weighing instrument** with a capacity of 1 kg capable of weighing to an accuracy of 0,1 g .

5.2 **Test sieves**, with square apertures, conforming with table 1.

NOTE : For aperture sizes of 4,00 mm and above, perforated plate sieves are recommended.

5.3 Mechanical sieve shaker

Table 1 : Test sieve aperture sizes

Aperture sizes	mm
8,00	
4,00	
2,00	
1,00	
0,500	
0,250	
0,125	
0,063	

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5.4 **Well fitting pan and lid**, for the sieves.

5.5 **Shallow trays**, made of corrosion-resistant metal, approximately 200 mm in diameter and 50 mm in height.

5.6 **Containers**, suitable for holding fresh mortar samples to which water can be added for creation of a suspension.

5.7 **A ventilated oven**, capable of maintaining a temperatures of $105\text{ °C} \pm 5\text{ °C}$ and $60\text{ °C} \pm 5\text{ °C}$ respectively.

6 Preparation and storage of test samples from the bulk test sample

The bulk test sample taken in accordance with EN 1015-2 shall be reduced using a sample divider or by quartering, and shall yield a test sample of mass larger than the minimum, but not of an exact predetermined value. The minimum dry mass of the test sample shall be as follows:

0,2 kg for $d_{max} \leq 4$ mm

0,6 kg for $d_{max} > 4$ mm

Mortars containing particles passing aperture size 0,125 mm, may be wetted before reduction to minimize segregation and loss of dust. If the sample contains hydraulic binders, the following preparation under wet condition shall be executed as quickly as possible. If dry sieving is required, the wetting of mortars containing hydraulic binders shall be omitted. If the material to be sieved contains fibres, these shall be removed prior to sieving and be considered as not belonging to the material to be sieved. Their proportion and type shall be recorded and described. If removal is not possible, then sieving in accordance with this European standard is not applicable.

7 Procedure

7.1 General

Mortars containing lightweight aggregates shall be tested by dry sieving. Otherwise mortars shall be tested by wet sieving.

Note: Mortars containing lightweight or organic aggregates may become statically charged by the motion of the material on the sieve, resulting in agglomeration, or sticking to the sieve base. Should such a phenomenon occur, suitable measures should be taken.

7.2 Wet sieving

Place the test sample in a container (5.6) and cover it with water. Mix the suspension up quickly, and pour it with the wash water on the nested sieves (5.2). Carry out sieving with the aid of a water jet until the wash water remains clean. Remove the fraction retained on each sieve and from the pan and spread each fraction in a thin layer into separate shallow trays (5.5). Dry each in the oven at a temperature of $105\text{ °C} \pm 5\text{ °C}$. Continue the drying process until two consecutive weighings of each fraction at 2 h intervals do not differ by more than 0,2 g.

7.3 Dry sieving

Spread the sample in a thin layer in shallow trays (5.5) and dry in the oven (5.7) at a temperature of $105\text{ °C} \pm 5\text{ °C}$. For samples with organic constituents, e.g. expanded polystyrene aggregate or exfoliated vermiculite, use a drying temperature of $60\text{ °C} \pm 5\text{ °C}$. Continue the drying process until two consecutive weighings of the sample at 2 h intervals do not differ by more than 0,2 g.

Place the dried sample on the nested sieves and carry out sieving until it is ascertained that less than 0,2 % of the total sample mass will pass any individual sieve during continuous hand sieving for 1 min. Do not force any material through the sieve.

7.4 Weighing

Determine the mass of each fraction (m_r) retained on the individual sieves and sum them to give the mass of the total sample. The difference between the total and the sample weight is the amount of fine particles.

On sieves with apertures smaller than 4,00 mm, the mass of each fraction retained at the end of the sieving operation shall not exceed :

$$m_r = A \frac{\sqrt{d}}{200}$$

If any of the mass fractions retained exceeds this amount, use one of the two following procedures :

- a) divide the fraction into portions smaller than the specified maximum and sieve these one after the other ;
- or
- b) divide the portion of the sample passing the 4,00 mm sieve with the aid of a sample divider or by quartering, and continue the sieve analysis on the reduced sample.

8 Calculation and expression of results

Calculate the individual fractions, as percentages of the total mass of the sample, and calculate the total percentage of material passing each sieve. If a dividing operation as described in 7.4 was performed, take this into account in the calculation.

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 sample¹;

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 date and time of testing;
- e) the type, origin and designation of the mortar by reference to the relevant part of prEN 998;
- f) the total mass of each individual test sample;
- g) the method of sieving (dry or wet);

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