

Metode preskušanja za opredeljevanje absorpcije vode pri kapilarni delovanju in za določitev začetne hitrosti absorpcije vode pri kapilarni delovanju pri preskušanju agregatnega betona, izdelanih kamnov in naravnih kamnov za gradnjo zidov in stenskih delov, ter pri preskušanju opeke in keramike.

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

STANDARD PREVIEW

Prüfverfahren für Mauersteine - Teil 11: Bestimmung der kapillaren Wasseraufnahme von Mauersteinen aus Beton, Betonwerksteinen und Natursteinen sowie der anfänglichen Wasseraufnahme von Mauerziegeln

[SIST EN 772-11:2000](https://standards.iteh.ai/catalog/standards/sist/50439ef0-607f-400b-9b5e-2000-01-772-11)

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Méthodes d'essai des éléments de maçonnerie - Partie 11: Détermination de l'absorption de l'eau par capillarité des éléments de maçonnerie en béton de granulats, en pierre reconstituée et naturelle et du taux initial d'absorption d'eau des éléments de maçonnerie en terre cuite

Ta slovenski standard je istoveten z: EN 772-11:2000

ICS:

91.100.15	Mineralni materiali in izdelki	Mineral materials and products
91.100.30	Beton in betonski izdelki	Concrete and concrete products

SIST EN 772-11:2000

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 772-11

March 2000

ICS 91.100.15; 91.100.30

English version

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This European Standard was approved by CEN on 26 February 2000.

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 September 2000, and conflicting national standards shall be withdrawn at the latest by September 2000.

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 a method of determining the water absorption coefficient due to capillary action for aggregate concrete, natural stone and manufactured stone masonry units and the initial rate of water absorption for clay masonry units.

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 revision 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 771-1 Specification for masonry units - Part 1 : Clay masonry units
- prEN 771-3 Specification for masonry units - Part 3 : Aggregate concrete masonry units (dense and lightweight aggregates)
- prEN 771-5 Specification for masonry units - Part 5 : Manufactured stone masonry units
- prEN 771-6 Specification for masonry units - Part 6 : Natural stone masonry units
- prEN 772-16 Methods of test for masonry units - Part 16 : Determination of dimensions

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3 Principle

After drying to constant mass, a face of the masonry unit is immersed in water for a specific period of time and the increase in mass is determined.

In the case of clay masonry units the initial rate of absorption of the bed face is measured. In the case of aggregate concrete, natural stone and manufactured stone masonry units the water absorption of face of the unit to be exposed is measured, as described in the relevant product standard.

4 Symbols

$m_{dry,s}$ is the mass of the specimen after drying, (g)

$m_{so,s}$ is the mass of the specimen in grams after soaking for time t , (g)

A_s is the gross area of the face of the specimen immersed in water, (mm^2)

t_{so} is the time of soaking, (s)

Note: Specified in the relevant part of **prEN 771**

$c_{w,s}$ is the coefficient of water absorption due to capillary action for, aggregate concrete, natural stone and manufactured stone masonry units, ($\text{g}/(\text{m}^2 \times \text{s}^{0,5})$)

$c_{wi,s}$ is the initial rate of water absorption for clay masonry units, ($\text{kg}/(\text{m}^2 \times \text{min})$)

5 Apparatus

5.1 Large tray of minimum depth of 20 mm and of plan area larger than the face of the masonry unit to be immersed, fitted with a means of maintaining constant water level.

5.2 Supporting device of 400 mm^2 maximum plan area to keep each specimen clear of the base of the tray.

5.3 Stopwatch graduated in seconds.

5.4 Ventilated oven capable of maintaining a temperature of $70 \text{ }^\circ\text{C} \pm 5 \text{ }^\circ\text{C}$ for aggregate concrete, natural stone and manufactured stone units or $105 \text{ }^\circ\text{C} \pm 5 \text{ }^\circ\text{C}$ for clay and autoclaved aerated concrete units.

5.5 Weighing instrument capable of weighing the specimens to an accuracy of 0,1 % of their mass when dry.

6 Preparation of specimens

6.1 Sampling

The method of sampling shall be in accordance with the relevant part of **prEN 771**. The minimum number of specimens shall be six, but a larger minimum number may be specified in the product specification, in which case that larger number shall be used.

6.2 Drying

Dry the test specimens to constant mass $m_{\text{dry},s}$ in a ventilated oven (5.4) at a temperature of $70 \text{ }^\circ\text{C} \pm 5 \text{ }^\circ\text{C}$ for aggregate concrete, natural stone and manufactured stone masonry units or $105 \text{ }^\circ\text{C} \pm 5 \text{ }^\circ\text{C}$ for clay masonry units. Constant mass is reached, if during the drying process in two subsequent weighings with a 24 h interval, the loss in mass between the two determinations is not more than 0,1 % of the total mass.

7 Test procedure

Allow the specimens to cool at room temperature. When cool, measure the dimensions of the faces to be immersed in accordance with the principle incorporated in **prEN 772-16** and calculate the gross area A_s . Place the specimens with their faces (bed faces in the case of clay units) supported on a supporting device (5.2) so that they are clear of the base of the tray (5.1) and immerse in water to a depth of $5 \text{ mm} \pm 1 \text{ mm}$ for the duration of the test. In the case of masonry units with an extremely irregular face, raise the water-level in such a way that the complete surface just makes contact with the water surface.

Activate the timing device. Maintain the water level constant throughout the test. For aggregate concrete, natural stone and manufactured stone units, cover the tank to avoid evaporation from the wet specimens.

After the immersion time (t_{so}) specified in **prEN 771-1**, **prEN 771-3**, **prEN 771-5** or **prEN 771-6** remove the specimens, wipe off surface water and weigh them ($m_{so,s}$).

For natural stone masonry units, remove the specimens from the water at regular intervals, wipe off the water, weigh them, then re-immerses them. Continue this procedure until no further increase in mass is observed.

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8 Calculation and expression of results standards.iteh.ai

8.1 Coefficient of water absorption due to capillary action of aggregate concrete, natural stone and manufactured stone units.

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Calculate the coefficient of water absorption of the masonry units due to capillary action of each specimen to the nearest $1 \text{ g}/(\text{m}^2 \times \text{s}^{0,5})$ using the following formula:

$$c_{w,s} = \frac{m_{so,s} - m_{dry,s}}{A_s \sqrt{t_{so}}} \times 10^6 (\text{g}/(\text{m}^2 \times \text{s}^{0,5}))$$

In the case of natural stone masonry units, plot a graph of $\frac{m_{so,s} - m_{dry,s}}{A_s}$ against the square root of the time immersed, in seconds. Calculate $c_{w,s}$ as the gradient over the initial linear portion of the graph.

8.2 Initial rate of water absorption of clay masonry units.

Calculate the initial rate of water absorption of each clay masonry unit to the nearest 0,1 kg/(m² x min) using the following formula:

$$c_{wi,s} = \frac{m_{so,s} - m_{dry,s}}{A_s t} \times 10^3 \text{ (kg/(m}^2 \times \text{min))}$$

where $t = 1$ min.

9 Evaluation of results

For aggregate concrete, natural stone and manufactured stone masonry units calculate the mean of the coefficients of water absorption due to capillary action to the nearest 1 g/(m² x s^{0,5}).

For clay masonry units calculate the mean of the initial rates of water absorption to the nearest 0,1 kg/(m² x min).

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