



SLOVENSKI STANDARD

SIST EN 17655:2022

01-september-2022

Ohranjanje kulturne dediščine - Določanje absorpcije vode z metodo kontaktne gobice

Conservation of cultural heritage - Determination of water absorption by contact sponge method

Erhaltung des kulturellen Erbes - Bestimmung der Wasseraufnahme durch Kontaktschwamm-Methode

Conservation du patrimoine culturel - Détermination de l'absorption d'eau par la méthode de l'éponge de contact

Ta slovenski standard je istoveten z: **EN 17655:2022**

ICS:

97.195	Umetniški in obrtniški izdelki.	Items of art and handicrafts.
	Kulturne dobrine in kulturna dediščina	Cultural property and heritage

SIST EN 17655:2022

en,fr,de

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 17655

July 2022

ICS 97.195

English Version

Conservation of cultural heritage - Determination of water
absorption by contact sponge method

Conservation du patrimoine culturel - Détermination
de l'absorption d'eau par la méthode de l'éponge de
contact

Erhaltung des kulturellen Erbes - Bestimmung der
Wasseraufnahme durch Kontaktschwamm-Methode

This European Standard was approved by CEN on 29 May 2022.

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<https://standards.iteh.ai/catalog/standards/sist/8f8f2158-1307-4c35-a0a0-a096774d6253/sist-en-17655-2022>



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

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European foreword

This document (EN 17655:2022) has been prepared by Technical Committee CEN/TC 346 “Conservation of cultural heritage”, the secretariat of which is held by UNI.

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of an identical text or by endorsement, at the latest by January 2023, and conflicting national standards shall be withdrawn at the latest by January 2023.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

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EN 17655:2022 (E)**Introduction**

This test method can be applied if it does not adversely affect any of the values of the object and following ethical codes of conservation practice.

The test measurements are generally used during effective evaluation of conservation treatments; different specific evaluation campaigns can be compared only when the same sponge material is used.

There is another non invasive method, EN 16302, recommended to measure water absorption at low hydrostatic pressure of porous inorganic materials either untreated or subjected to any treatment or ageing applied both in laboratory and *in situ*.

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1 Scope

This document establishes the methodology to measure the quantity of water absorbed by a defined surface of a porous inorganic material used for and constituting cultural property, by contact sponge method.

This test describes the water absorption behaviour of the near-surface zone.

The method can be used on porous inorganic materials, which are untreated or have undergone any treatment or ageing.

The method can be used both in the laboratory and *in situ* on flat vertical and/or horizontal surfaces

NOTE 1 Treated materials are those which have been subjected to cleaning; to the application of water repellent, consolidating and/or biocidal products; to artificial aging tests, etc.

NOTE 2 The test is not intended to be used on surfaces which are severely deteriorated, where application of the sponge is likely to cause material loss. The operator is expected to ensure good contact with the perimeter of the container. The test is not accurate when applied to rough surfaces.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1

porous inorganic material

materials including natural stones e.g. sandstone, limestone, marble, granite, gneiss, gypsum as well as artificial materials, such as mortar, plaster, brick, ceramics, concrete and others

[SOURCE: EN 15801:2009, 3.1 modified]

3.2

water absorption by sponge method

amount of water (mg) transferred from the sponge through a defined test area (cm²) after a fixed time, expressed as mg/cm² min

3.3

test surface area

location where the measurement is carried out

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3.4

specimen

part considered representative of the material constituting an object

Note 1 to entry: The specimen can have different origins and can be taken from:

- materials similar to those constituting the object under study (e.g. stone quarries);
- specifically, prepared comparative materials e.g. reference materials;
- available materials from the object.

Note 2 to entry: The number and dimension of the specimens can be different depending on constraints encountered in sampling the required amount of material.

[SOURCE: EN 16302:2013, 3.3]

4 Symbols and abbreviated terms

W_a = water absorbed per surface unit per minute (mg / cm²·min);

t = contact time (minutes);

m_i = initial weight (mg);

m_f = final weight (mg);

m_e = weight of foreign material (where necessary), (mg);

S = contact surface of the sponge (cm²).

5 Principle

Determination of the amount at which water is absorbed through the test surface that is put in contact with a sponge wet with water at given times.

6 Test equipment

6.1 Deionized water (with max. conductivity of 6 µS/cm).

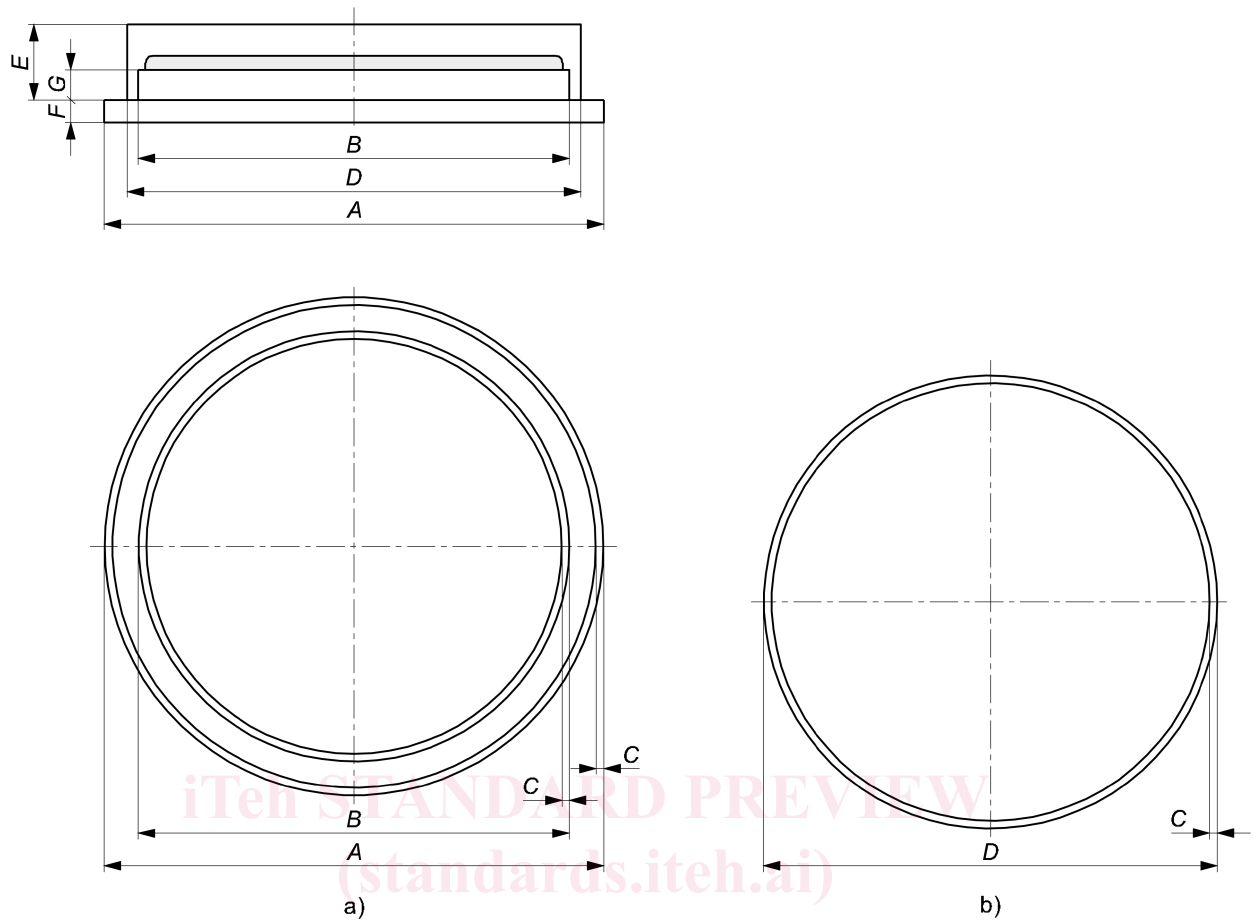
6.2 Chronometer with an accuracy of 1s.

6.3 Container capable of holding the contact sponge

The base and lid of the container should be made of non-corrosive material (such as aluminium, glass, PVC, PMMA) impermeable to liquid water and other forms of moisture. The dimensions of the container should be as shown in Figure 1.

The standard container has a diameter of 60 mm (sponge of 55 mm, see Note). When working on objects where it is difficult to find large flat surfaces, it is possible to use a container with a reduced diameter of 26 mm (sponge of 25 mm, see Note).

NOTE The diameters of 55 mm or 25 mm refer to the dimensions obtained by hollow punch cutting the raw material before wetting.

**Key**

- a) Base <https://standards.iteh.ai/catalog/standards/sist/8f8f2158-1307-4c35-a0a0-a096774d6253/sist-en-17655-2022>
- b) Lid/top

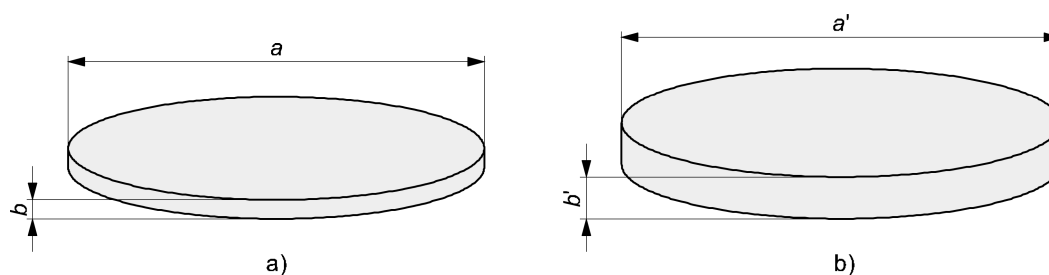
Figure 1 — Size of the lidded container**Table 1 — Size of the lidded container**

Container		
Size (cm)	Standard (mm)	Small (mm)
A	66	33
B	57	26
C	1	1
D	60	29
E	10	10
F	3	3
G	4	4

6.4 Contact sponge

When the comparison of results is needed the tests shall be done with the same sponge.

The contact sponge shall be made of the honeycomb type of inert material (cellulose or polyester) with a dry weight of $420 \pm 50 \text{ g/m}^2$ and have a water absorption capacity equivalent to 10 to 15 times its dry weight. A contact sponge of standard dimensions (diameter 55 mm) or reduced dimensions (diameter 25 mm) can be used. The dimensions of the dry and wet sponge vary and shall be according to the values shown in Figure 2.



Key

- a) Dry sponge
- b) Wet sponge

Figure 2 — Size of the sponge

Table 2 — Size of the standard sponge (left); size of the small sponge (right)

Standard sponge (mm)				Small sponge (mm)			
Dry		Wet		Dry		Wet	
a	55	a'	58	a	25	a'	27
b	2,5	b'	5,5	b	2,5	b'	5,5

6.5 Scale ideally should have an accuracy of 0,1 mg, however taking into account the work conditions in field, scales with accuracy of 1 mg could be acceptable for on-site measurements.

6.6 Syringe or pipette maximum capacity 5 ml graduated.

7 Procedure

7.1 General

The tested surface areas shall be representative of the material under investigation. In order to avoid discrepancies in water absorption, the test surface area should ideally be flat and continuous.

The number and dimensions of test surface area are dependent on the heterogeneity of the material and shall be adapted to obtain statistically representative values.

Each series shall consist of at least three measurements. In case of anisotropy, each series shall always be tested according to the same orientation, if any. In case of non-homogeneous materials, such as mortars, containing coarse aggregates, the diameter of the measurements area shall be at least three times (and preferably five times) the largest grain size.