



SLOVENSKI STANDARD
oSIST prEN 17655:2021
01-junij-2021

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

ITEH STANDARD PREVIEW
(standards.iteh.ai)
<https://standards.iteh.ai/catalog/standards/sist/8f8f2158-1307-4c35-a0a0-a096774d6253/osist-pr-en-17655-2021>

Ta slovenski standard je istoveten z: prEN 17655

ICS:

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

oSIST prEN 17655:2021

en,fr,de

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[oSIST prEN 17655:2021](https://standards.iteh.ai/catalog/standards/sist/8f8f2158-1307-4c35-a0a0-a096774d6253/osist-pren-17655-2021)

<https://standards.iteh.ai/catalog/standards/sist/8f8f2158-1307-4c35-a0a0-a096774d6253/osist-pren-17655-2021>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 17655

April 2021

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 draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 346.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents		Page
European foreword.....		3
Introduction		4
1	Scope.....	5
2	Normative references.....	5
3	Terms and definitions	5
4	Principle	6
5	Symbols and abbreviations	6
6	Test equipment.....	6
7	Procedure.....	8
7.1	General.....	8
7.2	Methodology A - in the laboratory	8
7.3	Methodology B - <i>In situ</i>	9
7.3.1	With weighing.....	9
7.3.2	Without weighing.....	9
8	Expression of results.....	10
8.1	Calculation of the amount of water absorbed.....	10
9	Test report.....	10
10	Warning.....	10
11	Guidelines for comparative evaluation.....	10
Bibliography.....		12

iTech STANDARD PREVIEW

(standards.iteh.ai)

[oSIST prEN 17655:2021](https://standards.iteh.ai/catalog/standards/sist/882158-1307-4e35-a0a0-a096774d6253/osist-pren-17655-2021)

[https://standards.iteh.ai/catalog/standards/sist/882158-1307-4e35-a0a0-](https://standards.iteh.ai/catalog/standards/sist/882158-1307-4e35-a0a0-a096774d6253/osist-pren-17655-2021)

[a096774d6253/osist-pren-17655-2021](https://standards.iteh.ai/catalog/standards/sist/882158-1307-4e35-a0a0-a096774d6253/osist-pren-17655-2021)

European foreword

This document (prEN 17655:2021) has been prepared by Technical Committee CEN/TC 346 “Conservation of cultural heritage”, the secretariat of which is held by UNI.

This document is currently submitted to the CEN Enquiry.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[oSIST prEN 17655:2021](https://standards.iteh.ai/catalog/standards/sist/8f8f2158-1307-4c35-a0a0-a096774d6253/osist-pren-17655-2021)

<https://standards.iteh.ai/catalog/standards/sist/8f8f2158-1307-4c35-a0a0-a096774d6253/osist-pren-17655-2021>

prEN 17655:2021 (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.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[oSIST prEN 17655:2021](https://standards.iteh.ai/catalog/standards/sist/8f8f2158-1307-4c35-a0a0-a096774d6253/osist-pren-17655-2021)

<https://standards.iteh.ai/catalog/standards/sist/8f8f2158-1307-4c35-a0a0-a096774d6253/osist-pren-17655-2021>

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.

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 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 <http://www.electropedia.org/>

— ISO Online browsing platform: available at <https://www.iso.org/obp>
<https://standards.iteh.ai/catalog/standards/sist/8f8f2158-1307-4c35-a0a0-a096774d6253/osist-pren-17655-2021>

3.1

porous inorganic material

material 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 17138:2018, 3.1]

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

prEN 17655:2021 (E)**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

[oSIST prEN 17655:2021](https://standards.iteh.ai/catalog/standards/sist/8f82158-1307-4c35-a0a0-016718d4509e/iso-17655-2021)

[https://standards.iteh.ai/catalog/standards/sist/8f82158-1307-4c35-a0a0-](https://standards.iteh.ai/catalog/standards/sist/8f82158-1307-4c35-a0a0-016718d4509e/iso-17655-2021)

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

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.

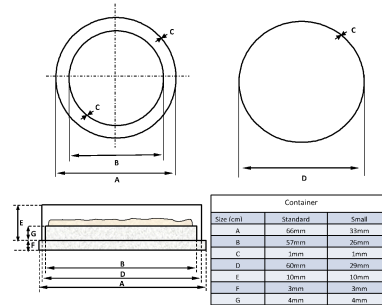
The standard container has a diameter of 60 mm (sponge of 55 mm, Note 1). When working on objects where it is difficult to find large flat surfaces, it is possible to use a container with a reduced diameter of 26 mm (sponge of 25 mm, Note 1).

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

6.4 Contact sponge

The contact sponge shall be made of the honeycomb type of inert material (cellulose or polyester) with a dry weight of 420 ± 50 g/m² 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

left: base
right: lid/top

Figure 1 — Size of the lidded container



Standard sponge			Small sponge		
	Dry	Wet		Dry	Wet
a	55mm	58mm	a	25mm	27mm
b	2.5mm	5.5mm	b	2.5mm	5.5mm

Figure 2 — Size of the sponge

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.

prEN 17655:2021 (E)**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 3 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.

In the case of surfaces which are heavily deteriorated it is necessary to evaluate the possibility of loss of material due to the contact with sponge which would entail both a problem to the surface itself and to the reliability of the test.

In the laboratory the test shall be performed at temperature between 20 to 25 °C. Field temperatures should be noted, and it is recommended the test should not be carried out within 24 hrs after rainfall, in periods of high humidity or where the surface is wet.

In order to obtain comparative measurements, the environmental conditions at successive measurement points in the field should be similar. Extremes of surface temperature should be avoided.

Any powdery or loose material on the surface of the substrate should be removed prior to test.

7.2 Methodology A - in the laboratory

a. The dry sponge is soaked with deionized water by immersion. It is then removed from the water and squeezed to a condition where it is barely moist. It should then be placed in the container.

A measured volume of deionized water shall be uniformly distributed on the sponge surface by using a syringe or a pipette. Five ml of deionized water is added to the standard sponge (55 mm), while 2 ml is used for the smaller one (26 mm). Successively, the container, including its lid and the damp, taking care that the edges of the container are in full contact with the test area. The chronometer is started as soon as this is achieved. Care should be taken in the application of the sponge and container on the test area in order to prevent any localized pressure on the rear of the container which could deform the face of the sponge.

In order to determine contact time, three preliminary tests shall be undertaken at intervals of 30 s, 1 min, 2 min and 3 min. Shorter contact times are required for highly absorbent surfaces in order to avoid complete loss of moisture from the sponge during the test.

If, during the contact, drips from the sponge are observed which could affect the reliability of the measurement, it is necessary to repeat the experiment with a reduced amount of water added to the sponge.

b. The container is closed and weighed again (m_f - final weight)

c. On each specimen (or test surface) it is necessary to carry out three measurements to obtain an average value of the amount of water absorbed.

d. The sponge measurements, time of application and amount of water absorbed shall all be recorded

If the test is carried out on specimens of regular shape (cubes, parallelepipeds, cylinders with sides or base diameter between 3 cm and 5 cm and height of 2 cm, 3 cm, 5 cm with a tolerance of ± 1 mm on all the size), the surface chosen for the test shall be flat and wet or dry polished with sand paper. After polishing, the specimens shall be washed with water, gently brushed with a soft brush and immersed in