

Conservation of Cultural Heritage - Artificial ageing by simulated solar radiation of the surface of untreated or treated porous inorganic materials

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN 17036:2018 sisaldab Euroopa standardi EN 17036:2018 ingliskeelset teksti.	This Estonian standard EVS-EN 17036:2018 consists of the English text of the European standard EN 17036:2018.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 20.06.2018.	Date of Availability of the European standard is 20.06.2018.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile [standardiosakond@evs.ee](mailto:standardiosakond@evs.ee).

ICS 97.195

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:  
Koduleht [www.evs.ee](http://www.evs.ee); telefon 605 5050; e-post [info@evs.ee](mailto:info@evs.ee)

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Homepage [www.evs.ee](http://www.evs.ee); phone +372 605 5050; e-mail [info@evs.ee](mailto:info@evs.ee)

English Version

**Conservation of Cultural Heritage - Artificial ageing by  
simulated solar radiation of the surface of untreated or  
treated porous inorganic materials**

Conservation du patrimoine culturel - Vieillessement  
artificiel par rayonnement solaire simulé de la surface  
de matériaux inorganiques poreux traités ou non  
traités

Erhaltung des kulturellen Erbes - Künstliche Alterung  
von unbehandelten oder behandelten porösen  
anorganischen Materialoberflächen mit simulierter  
Sonnenstrahlung

This European Standard was approved by CEN on 15 February 2018.

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 CEN-CENELEC Management Centre 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 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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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

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

<b>Contents</b>		<b>Page</b>
<b>European foreword .....</b>		<b>3</b>
<b>Introduction .....</b>		<b>4</b>
<b>1</b>	<b>Scope.....</b>	<b>5</b>
<b>2</b>	<b>Normative references.....</b>	<b>5</b>
<b>3</b>	<b>Terms and definitions .....</b>	<b>5</b>
<b>4</b>	<b>Symbols and abbreviations .....</b>	<b>7</b>
<b>5</b>	<b>Principle .....</b>	<b>7</b>
<b>6</b>	<b>Test equipment.....</b>	<b>8</b>
<b>7</b>	<b>Test procedure.....</b>	<b>9</b>
<b>8</b>	<b>Expression of results .....</b>	<b>9</b>
<b>9</b>	<b>Test report.....</b>	<b>9</b>
<b>Bibliography.....</b>		<b>11</b>

## European foreword

This document (EN 17036:2018) 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 December 2018, and conflicting national standards shall be withdrawn at the latest by December 2018.

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.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## Introduction

In contrast to natural weathering, artificial ageing using simulated solar radiation involves a limited number of variables which can be controlled more readily and which are intensified to evaluate in a short way the stability of porous inorganic materials and the durability of conservation treatments.

The ageing processes which occur during artificial and natural weathering cannot be expected to correlate exactly with each other because of the large number of factors influencing these processes. Definite relationships can only be expected if the important parameters (distribution of the irradiance over the photochemical relevant part of the spectrum, temperature of the specimen, type of wetting and wetting cycle, and relative humidity) are the same in each case or if their effect on the coatings is known.

No direct correlation can be made between artificial ageing duration and actual exposure duration. However, performance comparisons under the controlled conditions of artificial weathering can be compared to documented performance of materials and coatings that have experienced extended periods of end use exposure.

This methodology is intended to be used on new materials. In all cases, the risk of potential damage to irreplaceable objects during irradiation should be considered.

## 1 Scope

This document assesses the long-term susceptibility to light of materials and treatments used in conservation of porous inorganic materials. Examples may include materials which have been treated in the course of conservation (e.g. cleaning, consolidation, water repellents, coatings or biocides) or materials which may exhibit colour changes following exposure (e.g. mortars and small number of stones). The procedure can be used to evaluate the impact and longevity/durability of treatments against untreated materials or unexposed materials.

NOTE 1 Porous inorganic materials are both natural stones (rocks) and artificial stone materials (mortars, stuccoes, bricks, ceramic materials, etc.).

NOTE 2 Treated materials are those on which one of the following treatments has been applied: cleaning, application of water repellent, consolidating materials, coatings or biocides and artificial ageing.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

EN 13373, *Natural stone test methods — Determination of geometric characteristics on units*

EN 16085, *Conservation of Cultural property — Methodology for sampling from materials of cultural property — General rules*

## 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 <http://www.iso.org/obp>

### 3.1

#### **black standard thermometer**

temperature measuring device consisting of a stainless-steel plate, having a black coating which absorbs at least 90 % of the incident radiation flux below  $\lambda = 2\,500\text{ nm}$

### 3.2

#### **daylight**

visible part of global solar radiation

Note 1 to entry: When dealing with actinic effects of optical radiation, this term is commonly used for radiations extending beyond the visible region of the spectrum.

[SOURCE: CEN/TS 16163:2014, 3.9]

### 3.3

#### **exposure**

in weathering the act of subjecting the specimen to the action of artificial conditions