
Ohranjanje kulturne dediščine - Smernice za načrtovanje vitrin za razstavljanje in hrambo predmetov - 2. del: Tehnični vidiki

Conservation of cultural heritage - Guidelines for design of showcases for exhibition and preservation of objects - Part 2: Technical aspects

Erhaltung des kulturellen Erbes - Leitfaden für die Konstruktion von Schauvitrienen zur Ausstellung und Erhaltung von Objekten - Teil 2: Technische Aspekte

Conservation du patrimoine culturel - Lignes directrices pour la conception de vitrines destinées à exposer et préserver des biens culturels - Partie 2 : Aspects techniques

Ta slovenski standard je istoveten z: EN 15999-2:2025

[SIST EN 15999-2:2025](https://standards.slovenski-standard.si/standards/sist/15999-2:2025)

<https://standards.slovenski-standard.si/standards/sist/15999-2:2025>

ICS:

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

SIST EN 15999-2:2025**en,fr,de**

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 15999-2

June 2025

ICS 97.195

English Version

Conservation of cultural heritage - Guidelines for design of
showcases for exhibition and preservation of objects - Part
2: Technical aspects

Conservation du patrimoine culturel - Lignes
directrices pour la conception de vitrines destinées à
exposer et préserver des biens culturels - Partie 2 :
Aspects techniques

Erhaltung des kulturellen Erbes - Leitfaden für die
Konstruktion von Schauvittrinen zur Ausstellung und
Erhaltung von Objekten - Teil 2: Technische Aspekte

This European Standard was approved by CEN on 21 April 2025.

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, 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, Türkiye and United Kingdom.

<https://standards.iteh.ai/catalog/standards/sist/346c5815-7223-484c-b210-c95ce3d5debb/sist-en-15999-2-2025>



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	6
4 Symbols and abbreviated terms	7
5 Specification of properties of a showcase	7
5.1 Environmental factors	7
5.1.1 General.....	7
5.1.2 Airtightness and air exchange rate	7
5.1.3 Air exchange rate measurements	10
5.1.4 Protection against adverse climate.....	11
5.1.5 Protection against pollution	15
5.1.6 Protection against UV radiation	15
5.2 Security and safety	16
5.2.1 General.....	16
5.2.2 Resistance against theft.....	16
5.2.3 Electronic security.....	16
5.2.4 Structural stability	16
5.2.5 Fire resistance.....	17
5.2.6 Resistance against splashing water	17
5.3 Showcase relocations	18
5.3.1 General.....	18
5.3.2 Disassembly of showcase.....	18
5.3.3 Transport of showcase.....	18
5.4 Marking	18
Annex A (informative) Assessment procedure for showcases from non-serial production	19
Annex B (normative) Test method for certified safety showcases	21
Annex C (informative) Physics of showcase air exchange.....	27
Annex D (informative) Leak detection	31
Annex E (informative) Example of air exchange rate measurement procedure by tracer gas decay.....	33
Annex F (informative) Example of air exchange rate measurement procedure by constant air pressure difference	36
Annex G (informative) Protection against pollution.....	39
Annex H (informative) Emission- and impact-testing of showcase materials	41
Annex I (informative) Examples for the calculated approximation of the hygrometric half-time	42
Annex J (informative) Numerically calculating hygrometric half-time from internal and environmental relative humidity data.....	46
Bibliography	47

European foreword

This document (EN 15999-2:2025) 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 2025, and conflicting national standards shall be withdrawn at the latest by December 2025.

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.

EN 15999 consists of the following parts, under the general title “*Conservation of cultural heritage — Guidelines for design of showcases for exhibition and preservation of objects*”:

— *Part 1: General requirements*

— *Part 2: Technical aspects*

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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, 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, Türkiye and the United Kingdom.

Document Preview

[SIST EN 15999-2:2025](https://standards.iteh.ai/catalog/standards/sist/346c5815-7223-484c-b210-c95ce3d5debb/sist-en-15999-2-2025)

<https://standards.iteh.ai/catalog/standards/sist/346c5815-7223-484c-b210-c95ce3d5debb/sist-en-15999-2-2025>

EN 15999-2:2025 (E)**Introduction**

A key objective of a showcase is to display objects of cultural heritage while acceptably reducing their conservation risks. Conservation risks include total loss, physical damage, chemical and biological deterioration (e.g. by accidents, theft, vandalism, natural disasters, humidity, temperature, dust, pollutants, light, pests).

This document addresses stakeholders who are engaged in projects that involve showcases and who are expected to understand the properties of a showcase, such as end-users, designers, manufacturers, and contracting authorities who are in charge of the cultural institutions.

The proposed categories and classifying of technical aspects of the showcases for conservation, safety and security, use and management of the showcase should facilitate the dialogue between the stakeholder and can be used in the procurement phase or in the operating phase; e.g. to define showcase properties for objects on loan.

While recognizing that aesthetics of showcases are very important, the present document emphasizes functional design of the showcase, the practical needs of the user and the requirements of the objects for better preservation.

iTeh Standards
(<https://standards.itih.ai>)
Document Preview

[SIST EN 15999-2:2025](https://standards.itih.ai/catalog/standards/sist/346c5815-7223-484c-b210-c95ce3d5debb/sist-en-15999-2-2025)

<https://standards.itih.ai/catalog/standards/sist/346c5815-7223-484c-b210-c95ce3d5debb/sist-en-15999-2-2025>

1 Scope

This document classifies properties of passive showcases of cultural heritage objects for better preservation. It applies to most uses of the showcase: showcases for so called permanent or temporary exhibitions, historical or modular showcases, showcases in uncontrolled ambient environment, etc. It specifies how the performance of the showcase for the safe and secure display - as derived from needs identified during the risk assessment approach described in EN 15999-1:2025 - can be technically assessed by using classified properties.

Aspects of active showcases (those using electricity to directly condition their microclimates) and anoxic showcases (those containing inert atmospheres instead of air) are mentioned in this document, but their properties are not defined, nor classified.

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 410, *Glass in building — Determination of luminous and solar characteristics of glazing*

EN 1023-3, *Office furniture — Screens — Part 3: Test methods*

EN 1630:2021, *Pedestrian doorsets, windows, curtain walling, grilles and shutters — Burglar resistance — Test method for the determination of resistance to manual burglary attempts*

EN 15898:2019, *Conservation of cultural heritage — Main general terms and definitions*

EN 50131 (all parts), *Alarm systems — Intrusion and hold-up systems*

EN 60529, *Degrees of protection provided by enclosures (IP Code)*

EN ISO/IEC 17025:2017, *General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025:2017)*

EN IEC 60332-1-2, *Tests on electric and optical fibre cables under fire conditions — Part 1-2: Test for vertical flame propagation for a single insulated wire or cable — Procedure for 1 kW pre-mixed flame (IEC 60332-1-2)*

EN IEC 60332-3-24, *Tests on electric and optical fibre cables under fire conditions — Part 3-24: Test for vertical flame spread of vertically-mounted bunched wires or cables — Category C (IEC 60332-3-24)*

ISO 20653:2023, *Road vehicles — Degrees of protection (IP code) — Protection of electrical equipment against foreign objects, water and access*

ISO 21348:2007, *Space environment (natural and artificial) — Process for determining solar irradiances*

EN 15999-1:2025, *Conservation of cultural heritage — Guidelines for design of showcases for exhibition and preservation of objects — Part 1: General requirements*