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Bevarande av kulturarv – Specifikationer för styrning av inomhusklimat – Del 2: Ventilation för att skydda historiska byggnader och samlingar

Conservation of cultural heritage – Indoor climate – Part 2: Ventilation management for the protection of cultural heritage buildings and collections

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EUROPEAN STANDARD

EN 15759-2

NORME EUROPÉENNE

EUROPÄISCHE NORM

January 2018

ICS 97.195

English Version

Conservation of cultural heritage - Indoor climate - Part 2: Ventilation management for the protection of cultural heritage buildings and collections

Conservation du patrimoine culturel - Climat intérieur
- Partie 2 : Ventilation destinée à protéger les
bâtiments et les collections appartenant au patrimoine

Erhaltung des kulturellen Erbes - Raumklima - Teil 2:
Lüftung für den Schutz von Gebäuden und
Sammlungen des kulturellen Erbes

This European Standard was approved by CEN on 20 November 2017.

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COMITÉ EUROPÉEN DE NORMALISATION
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SS-EN 15759-2:2018 (E)

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SS-EN 15759-2:2018 (E)

European foreword

This document (EN 15759-2:2018) 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of an identical text or by endorsement, at the latest by July 2018, and conflicting national standards shall be withdrawn at the latest by July 2018.

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

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Introduction

The aim of the ventilation management is to ensure the optimum preservation of cultural heritage buildings and collections, and to provide human comfort.

Indoor climate is influenced by the variations of outdoor climate and the properties of the building envelope: air tightness, insulation and hygrothermal buffering. An inadequate indoor climate may result to significant damage on buildings and their collections. Building operations such as opening of doors or windows, presence of visitors, heating or cooling to ensure human comfort, or lighting with incandescence lamps, also affect the indoor climate. Controlling the level of pollutants generated both externally and internally could further improve indoor air quality.

Air exchange, in the form of active ventilation, natural ventilation and infiltration as well as internal air circulation are only two of many factors whose complex interaction determines indoor climate; however, they are fundamental for providing a conservation safe indoor environment. The aim of this standard is to describe procedures for the ventilation management for the protection of cultural heritage. However, environmentally induced risks can only be mitigated with an integrated risk management plan of which ventilation is one element.

This standard is addressed to building owners, authorities and professionals involved in preservation, conservation and refurbishment of cultural heritage buildings and their content, or modern buildings housing collections. It aims at facilitating the sustainable management of these buildings by integrating measures for energy performance and reduction of greenhouse gas emissions.

SS-EN 15759-2:2018 (E)

1 Scope

This European Standard gives guidelines for ventilation management in order to improve the preservation conditions of cultural heritage buildings and their collections. At the same time, it is aimed to create an indoor environment for a sustainable use of these buildings and their collections. This standard is a complement to existing general standards for ventilation that are focused on human comfort.

This European Standard is the second part of a standard on indoor climate in cultural heritage buildings, i.e. EN 15759-1:2011. It should be used together with the first part when considering selection of heating strategies and heating systems for cultural heritage buildings, or buildings housing collections. It may be also used when considering other issues, e.g. assessment of buildings, interiors and contents, or improvements for the energy performance.

This European Standard deals with indoor climate conditions, ventilation strategies and generic technical solutions for their implementation but not with the technical equipment itself.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 15757:2010, *Conservation of Cultural Property — Specifications for temperature and relative humidity to limit climate-induced mechanical damage in organic hygroscopic materials*

EN 15758:2010, *Conservation of Cultural Property — Procedures and instruments for measuring temperatures of the air and the surfaces of objects*

EN 15759-1:2011, *Conservation of cultural property — Indoor climate — Part 1: Guidelines for heating churches, chapels and other places of worship*

EN 15898:2011, *Conservation of cultural property — Main general terms and definitions*

EN 16095, *Conservation of cultural property — Condition recording for movable cultural heritage*

EN 16096, *Conservation of cultural property — Condition survey and report of built cultural heritage*

EN 16242:2012, *Conservation of cultural heritage — Procedures and instruments for measuring humidity in the air and moisture exchanges between air and cultural property*

EN ISO 12569, *Thermal performance of buildings and materials — Determination of specific airflow rate in buildings — Tracer gas dilution method (ISO 12569)*

EN ISO 16000-1, *Indoor air — Part 1: General aspects of sampling strategy (ISO 16000-1)*

ISO 16000-8, *Indoor air — Part 8: Determination of local mean ages of air in buildings for characterizing ventilation conditions*

3 Terms and definitions

For the purposes of this document, general terms and definitions concerning conservation of cultural heritage given in EN 15898:2011 and the following apply.

3.1

air circulation

motion of air in a given space or through an opening

3.2

air exchange

air volume added to or removed from a space

Note 1 to entry: It can be due to ventilation or infiltration.

Note 2 to entry: This is expressed in m^3 .

3.3

air exchange rate

rate at which air enters or leaves the building

Note 1 to entry: This is expressed as the volume of outdoor air passing an indoor space per hour, divided by the volume of the space, in air changes per hour, h^{-1} .

3.4

air pollutant

material emitted into the atmosphere either by human activity or natural processes and adversely affecting humans or the environment

[SOURCE: ISO 18158:2016, 2.1.2.1]

Note 1 to entry: In this standard, the adverse effects on cultural heritage are particularly relevant.

3.5

air temperature

T

temperature read on a thermometer which is exposed to air in a position sheltered from direct solar radiation or other energy sources

Note 1 to entry: This is expressed in degrees Celsius ($^{\circ}\text{C}$)

[SOURCE: EN 15758:2010, 3.1]

3.6

airborne particles

fine matter in solid or liquid form dispersed in air

[SOURCE: ISO 18158:2016, 2.1.2.3]

3.7

building fabric

basic structure of a building

3.8

conservation

measures and actions aimed at safeguarding cultural heritage while respecting its significance, including its accessibility to present and future generations

Note 1 to entry: Conservation includes “preventive conservation”*, “remedial conservation”* and “restoration”*.