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Bevarande av kulturarv – Riktlinjer och processer för ljussättning av utställningar

Conservation of Cultural Heritage – Guidelines and procedures for choosing appropriate lighting for indoor exhibitions

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This Technical Specification is not a Swedish Standard. This document contains the English version of CEN/TS 16163:2014.

Dokumentet är framtaget av kommittén för Bevarande av kulturarv, SIS/TK 479.

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TECHNICAL SPECIFICATION

SPÉCIFICATION TECHNIQUE

TECHNISCHE SPEZIFIKATION

CEN/TS 16163

April 2014

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English Version

Conservation of Cultural Heritage - Guidelines and procedures for choosing appropriate lighting for indoor exhibitions

Conservation du patrimoine culturel - Lignes directrices et procédures concernant le choix d'un éclairage adapté pour les expositions en intérieur

Erhaltung des kulturellen Erbes - Leitlinien und Verfahren für die Auswahl geeigneter Beleuchtung für Innenausstellungen

This Technical Specification (CEN/TS) was approved by CEN on 14 October 2013 for provisional application.

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

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Foreword

This document (CEN/TS 16163:2014) has been prepared by Technical Committee CEN/TC 346 “Conservation of Cultural Heritage”, the secretariat of which is held by UNI.

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

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Introduction

Lighting is needed for many specific functions in museums and other cultural heritage buildings, for example, for research, conservation and permanent or temporary exhibitions. Lighting is one of the most important factors enabling visitors to fully enjoy works of art and other cultural property. In fact, lighting is a key medium in which visitors interpret and appreciate cultural heritage. Enough light is needed to see well but this may present a challenge when what is being viewed will deteriorate in the presence of light. Where cultural heritage is judged to be worth preserving for future generations it is essential to consider the controlled use of light. Indeed, light is an environmental factor, which is a threat to many objects. Alone or in combination with other environmental factors (temperature, humidity, pollution, etc.) light causes fading, discoloration and embrittlement of a wide range of materials. This damage is cumulative and irreversible: no conservation treatment can restore change of colour or loss in strength of materials damaged by light. Therefore, the challenge of museum exhibition lighting is to find an appropriate compromise between the long term preservation of the exhibit and the needs of visitors to view them within a suitable exhibition design. As an integral part of exhibition lighting, the following aspects should be considered:

— the conservation aspect, related to the sensitivity of the exhibit at different wavelengths of the incident radiant energy, the spectral composition of the light source and the total luminous exposure,

— the visual aspect, related to the impact of lighting on the visitor experience: lighting has to allow visitors to see exhibits on display, with the correct colour perceptions without glare, reflections or insufficient illumination,

— the design aspect related to the concept and position of the exhibition architecture, the point of view of the curator and all others involved in the scenographic and/or didactic objectives of the exhibition.

Due to its non-technical nature the last mentioned aspect cannot be dealt with in this Technical Specification.

This Technical Specification uses terms defined in European (EN 12665 and EN 15898) and International (CIE International lighting vocabulary) terminology standards, but their definitions have been adapted to the intended users of this specification.

1 Scope

This Technical Specification defines the procedures as well as the means to implement adequate lighting, with regard to the conservation policy. It takes visual, exhibition and conservation aspects into account and it also discusses the implications of the lighting design on the safeguarding of cultural property. This Technical Specification gives recommendations on values of minimum and maximum illumination levels. It aims to provide a tool for setting up a common European policy and a guide to help curators, conservators and project managers to assess the correct lighting that can assure the safeguarding of the exhibits. This Technical Specification covers lighting for heritage objects on exhibition in both public and private sites and does not consider lighting in other cultural heritage contexts such as open-air collections, etc.

2 Normative references

Not relevant.

3 Terms and definitions

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

3.1
accent lighting
lighting focused on an exhibit or a group of exhibits to emphasize them

[SOURCE: CIE S 017/E:2011]

3.2
annual luminous exposure
H_m
total luminous exposure per year (unit: lux hours per years, lx h / a)

Note 1 to entry: One year of museum display is approximately 3 000 h. See also 3.35.

3.3
blue wool test: test for light fastness
certified set of eight pieces of wool each dyed with a different specific blue dye graded to fade after a set exposure to light

[SOURCE: ISO 105-B08:1995]

Note 1 to entry: This system is usually referred as Blue Wool Standard (BWS) and it is used in museums to assess the radiation exposure of materials. The eight wool pieces are numbered #1 to #8, each about 2 to 3 times as sensitive as the next. High sensitivity is defined as materials rated #1, #2, or #3; medium as #4, #5, or #6; and low as #7, #8. A panel of selected blue wool samples is left at the measurement point and after a period it can be seen which samples have faded and the dose of light received determined.

3.4
colour rendering
effect of an illuminant on the colour appearance of exhibits by conscious or subconscious comparison with their colour appearance under a reference illuminant

[SOURCE: CIE S 017/E:2011 or IEC-IEV:1987, 845-02-059]

3.5
colour rendering index
R_a
derived from the colour rendering indices for a specified set of 8 test colour samples

Note 1 to entry: *Ra* has a maximum of 100, which generally occurs when the spectral distributions of the light source and the reference light source are substantially identical.

[SOURCE: CIE S 017/E:2011 or IEC-IEV:1987-845-02-61 and CIE 015:2004]

3.6
colour temperature
T_c
temperature of a Planckian radiator whose radiation has the same chromaticity as that of a given stimulus (unit: kelvin, K)

[SOURCE: CIE S 017/E:2011 or IEC-IEV:1987, 845-03-049; see also CIE 015:2004]

3.7
cultural heritage
tangible and intangible entities of significance to present and future generations

Note 1 to entry: The term “exhibit” is used in this standard for cultural heritage. In specific professional contexts, other terms are used: e.g. "artefact", “cultural property", “item”.

[SOURCE: EN 15898]

3.8
damage potential
Pdm
ratio of effective damaging irradiance and the illuminance at a point on the surface for a specific light source (unit : W/lm)

3.9
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: IEC-IEV:1987, 845-09-84]

3.10
daylighting
lighting for which daylight is the light source

[SOURCE: CIE S 017/E:2011]

3.11
daylight factor
D
ratio of the illuminance at a point on a given plane due to the light received directly or indirectly from a sky of assumed or known luminance distribution, to the illuminance on a horizontal plane due to an unobstructed hemisphere of this sky, excluding the contribution of direct sunlight to both illuminances

Note 1 to entry: Glazing, dirt effects, etc. are included.

Note 2 to entry: When evaluating the lighting of interiors, the contribution of direct sunlight needs to be considered separately.

[SOURCE: CIE S 017/E:2011 and IEC-IEV, 1987, 845-09-087]