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LIGHT AND LIGHTING - BASIC TERMS AND CRITERIA FOR SPECIFYING LIGHTING REQUIREMENTS

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Light and lighting - Basic terms and criteria for specifying lighting requirements

Lumière et éclairage - Termes de base et critères pour la spécification des exigences en éclairage

Licht und Beleuchtung - Grundlegende Begriffe und Kriterien für die Festlegung von Anforderungen an die Beleuchtung

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Foreword

This document EN 12665:2002 has been prepared by Technical Committee CEN/TC 169 "Light and lighting", the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by November 2002, and conflicting national standards shall be withdrawn at the latest by November 2002.

Annexes A, B and C are informative.

This standard includes a Bibliography.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

This European Standard sets out a basic framework to be used for the specification of lighting requirements.

Terms common to many applications are defined here. Additional terms specific to particular applications are defined in the relevant standard setting out the requirements for that application.

Where a term is contained in CIE Publication 17.4/1987 International Lighting Vocabulary (IEC Publication 50 International Electrotechnical Vocabulary, Chapter 845 Lighting), the term given in this standard is identical. For some terms additional explanation is given in Annex A.

The lighting requirements for a space are determined by the need to provide:

- adequate illumination for safety and movement;
- conditions which will facilitate visual performance and colour perception,
- acceptable visual comfort for the occupants in the space.

The relative importance of these factors will vary for different applications The lighting requirements for visual comfort and satisfaction of the occupants, will often exceed the requirements for visual performance alone. For example, the visual task may simply require the discrimination of black symbols on a white background; the colour rendering of the lighting is irrelevant to this task but it is important in making the appearance of the room and occupants acceptable. Variations of the lighting in space and time may also be important for visual satisfaction and can help to meet the interpersonal differences found within groups of people.

Considerations should also be given to the energy used by lighting and to maintenance.

The parameters which need to be specified to ensure good visual conditions and an efficient lighting installation are common to many applications. These are dealt with in clause 4 of this standard.

1 Scope

This standard defines basic terms for use in all lighting applications; specialist terms with limited applications are given in individual standards. This standard also sets out a framework for the specification of lighting requirements, giving details of aspects which shall be considered when setting those requirements.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

CIE 17.4:1987	International Lighting Vocabulary - Chapter 845: Lighting
ISO/CIE 10527	CIE standard colorimetric observers

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3 Terms and definitions

For the purposes of this European Standard the following terms and definitions apply.

3.1 Eye and Vision

3.1.1
adaptation
process by which the state of the visual system is modified by previous and present exposure to stimuli that may have various luminances, spectral distributions and angular subtanses

NOTE 1 The terms *light adaptation* and *dark adaptation* are also used, the former when the luminances of the stimuli are of at least several candelas per square metre, and the latter when the luminances are of less than some hundredths of a candela per square metre.

NOTE 2 Adaptation to specific spatial frequencies, orientations, sizes, etc. are recognized as being included in this definition

[IEC 50 (845)/CIE 17.4:1987; 845-02-07]

3.1.2
accommodation
adjustment of the dioptric power of the crystalline lens by which the image of an object, at a given distance, is focused on the retina [IEC 50 (845)/CIE 17.4:1987; 845-02-44]

3.1.3
visual acuity
1. Qualitatively: Capacity for seeing distinctly fine details that have very small angular separation
2. Quantitatively: Any of a number of measures of spatial discrimination such as the reciprocal of the value of the angular separation in minutes of arc of two neighbouring objects (points or lines or other specified stimuli) which the observer can just perceive to be separate [IEC 50 (845)/CIE 17 4.1987; 845-02-43]

3.1.4
brightness: luminosity (obsolete)
attribute of a visual sensation according to which an area appears to emit more or less light. [IEC 50 (845)/CIE 17.4:1987; 845-02-28]

3.1.5
contrast
1. In the perceptual sense: Assessment of the difference in appearance of two or more parts of a field seen simultaneously or successively (hence: brightness contrast, lightness contrast, colour contrast, simultaneous contrast, successive contrast, etc.) .
2. In the physical sense: Quantity intended to correlate with the perceived brightness contrast, usually defined by one of a number of formulae which involve the luminances of the stimuli considered, for example: $\Delta L/L$ near the luminance threshold, or L_1/L_2 for much higher luminances.
[IEC 50 (845)/CIE 17.4:1987; 845-02-47]

3.1.6
brightness contrast
subjective assessment of the difference in brightness between two or more surfaces seen simultaneously or successively

3.1.7
colour contrast
subjective assessment of the difference in colour between two or more surfaces seen simultaneously or successively

3.1.8
glare
condition of vision in which there is discomfort or a reduction in the ability to see details or objects, caused by an unsuitable distribution or range of luminance, or to extreme contrasts [IEC 50 (845)/CIE 17.4:1987; 845-02-52]

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