SLOVENSKI STANDARD
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Kolorimetrija - 1. del: Standardizirani barvnometrični opazovalec CIE (ISO/CIE 11664-1:2019)

Colorimetry - Part 1: CIE standard colorimetric observers (ISO/CIE 11664-1:2019)

Farbmetrik - Teil 1: CIE farbmetrische Normalbeobachter (ISO/CIE 11664-1:2019)

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17.180.20	Barve in merjenje svetlobe	Colours and measurement of light

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European foreword

This document (EN ISO/CIE 11664-1:2019) has been prepared by Technical Committee CEI "International Commission on Illumination" in collaboration with Technical Committee CEN/TC 139 “Paints and varnishes” the secretariat of which is held by DIN.

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INTERNATIONAL STANDARD

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Colorimetry —

Part 1: CIE standard colorimetric observers

Colorimétrie —

Partie 1: Observateurs CIE de référence pour la colorimétrie

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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A list of all parts in the ISO 11664 and ISO/CIE 11664 series can be found on the ISO website.

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Introduction

Colours with different spectral compositions can look alike. An important function of colorimetry is to determine whether a pair of such metameric colour stimuli will look alike. The use of visual colorimeters for this purpose is handicapped by variations in the colour matches made among observers classified as having normal colour vision. Visual colorimetry also tends to be time-consuming. For these reasons, it has long been the practice in colorimetry to make use of sets of colour-matching functions to calculate tristimulus values for colours: equality of tristimulus values for a pair of colours indicates that the colour appearances of the two colours match, when they are viewed in the same conditions by an observer for whom the colour-matching functions apply. The use of standard sets of colour-matching functions makes the comparison of tristimulus values obtained at different times and locations possible.

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Colorimetry —

Part 1: CIE standard colorimetric observers

1 Scope

This document specifies colour-matching functions for use in colorimetry. Two sets of colour-matching functions are specified.

a) Colour-matching functions for the CIE 1931 standard colorimetric observer.

This set of colour-matching functions is representative of the colour-matching properties of observers with normal colour vision for visual field sizes of angular subtense from about 1° to about 4°, for vision at photopic levels of adaptation.

b) Colour-matching functions for the CIE 1964 standard colorimetric observer.

This set of colour-matching functions is representative of the colour-matching properties of observers with normal colour vision for visual field sizes of angular subtense greater than about 4°, for vision at sufficiently high photopic levels and with spectral power distributions such that no participation of the rod receptors of the retina is to be expected.

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2 Normative references

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CIE S 017:—,[1] *ILV: International Lighting Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in CIE S 017 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
colour stimulus function
$\varphi_\lambda(\lambda)$
function describing the spectral distribution of the colour stimulus

Note 1 to entry: The colour stimulus function is generated by the spectral distribution of a radiometric quantity, such as radiance or radiant flux.

Note 2 to entry: For object colours the colour stimulus function, $\varphi_\lambda(\lambda)$, is equal to the product of the relative spectral distribution, $S(\lambda)$, and either the spectral reflectance, $\rho(\lambda)$, or the spectral radiance factor, $\beta(\lambda)$, or the spectral transmittance, $\tau(\lambda)$, depending on the application.

1) Under preparation. Stage at the time of publication: CIE DIS 017:2016.

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