Colorimetry - Part 6: CIEDE2000 Colour-difference formula (ISO/CIE 11664-6:2014)

EESTI STANDARDIKESKUS
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NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 11664-6:2016 sisaldab Euroopa standardi EN ISO 11664-6:2016 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 11664-6:2016 consists of the English text of the European standard EN ISO 11664-6:2016.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 10.08.2016.	Date of Availability of the European standard is 10.08.2016.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

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English Version

Colorimetry - Part 6: CIEDE2000 Colour-difference formula (ISO/CIE 11664-6:2014)

Colorimétrie - Partie 6: Formule d'écart de couleur CIEDE2000 (ISO/CIE 11664-6:2014)

Farbmetrik - Teil 6: CIEDE2000 Formel für den Farbabstand (ISO/CIE 11664-6:2014)

This European Standard was approved by CEN on 15 July 2016.

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.

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

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European foreword

The text of ISO 11664-6:2014 has been prepared by Technical Committee ISO/TC 274 “Light and lighting” of the International Organization for Standardization (ISO) and has been taken over as EN ISO 11664-6:2016 by Technical Committee CEN/TC 139 “Paints and varnishes” 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 February 2017, and conflicting national standards shall be withdrawn at the latest by February 2017.

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.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 11664-6:2014 has been approved by CEN as EN ISO 11664-6:2016 without any modification.

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Introduction

The three-dimensional colour space produced by plotting CIE tristimulus values (X, Y, Z) in rectangular coordinates is not visually uniform, nor is the (x, y, Y) space nor the two-dimensional CIE (x, y) chromaticity diagram. Equal distances in these spaces and diagrams do not represent equally perceptible differences between colour stimuli. For this reason the CIE has standardized two more-nearly uniform colour spaces (known as CIELAB and CIELUV) whose coordinates are non-linear functions of X, Y and Z. Numerical values representing approximately the relative magnitude of colour differences can be described by simple Euclidean distances in these spaces or by more sophisticated colour-difference formulae that improve the correlation with the relative perceived size of differences. The purpose of this CIE International Standard is to define one such formula, the CIEDE2000 formula. The Standard is based on CIE Technical Report 142-2001.

The formula is an extension of the CIE 1976 $L^*a^*b^*$ colour-difference formula (ISO 11664-4:2008(E)/CIE S 014-4/E:2007) with corrections for variation in colour-difference perception dependent on lightness, chroma, hue and chroma-hue interaction. Reference conditions define material and viewing environment characteristics to which the formula applies.

1 Scope

This CIE International Standard specifies the method of calculating colour differences according to the CIEDE2000 formula.

The Standard is applicable to input values of CIELAB L^*, a^*, b^* coordinates calculated according to ISO 11664-4:2008(E)/CIE S 014-4/E:2007. The Standard may be used for the specification of the colour difference between two colour stimuli perceived as belonging to reflecting or transmitting objects. This includes displays, if they are being used to simulate reflecting or transmitting objects and if the tristimulus values representing the stimuli are appropriately normalized. The Standard does not apply to colour stimuli perceived as belonging to areas that appear to be emitting light as primary light sources, or that appear to be specularly reflecting such light.

2 Normative References

The following referenced documents are indispensable for the application 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.

CIE 142-2001. *Improvement to industrial colour-difference evaluation*, 2001.

CIE S 017/E:2011. *ILV: International Lighting Vocabulary*, 2011.

ISO 11664-4:2008(E)/CIE S 014-4/ E:2007. Joint ISO/CIE Standard: *Colorimetry – Part 4: 1976 L*a*b* Colour Space*, 2008.

3 Definitions, Symbols and Abbreviations

For the purposes of this International Standard, the terms and definitions given in CIE S 017/E:2011 (International Lighting Vocabulary), and the following symbols and abbreviations apply.