

# SLOVENSKI STANDARD

## SIST EN ISO 11664-5:2016

01-december-2016

Nadomešča:

SIST EN ISO 11664-5:2011

---

**Kolorimetrija - 5. del: Barvni prostor  $L^*u^*v^*$  in diagram enakomerne barvnosti  $u'$ ,  $v'$  po CIE 1976 (ISO/CIE 11664-5:2016)**

Colorimetry - Part 5: CIE 1976  $L^*u^*v^*$  Colour space and  $u'$ ,  $v'$  uniform chromaticity scale diagram (ISO/CIE 11664-5:2016)

Farbmetrik - Teil 5: CIE 1976  $L^*u^*v^*$  Farbenraum und gleichabständige  $u'$ ,  $v'$  Farbtafel (ISO/CIE 11664-5:2016)

Colorimétrie - Partie 5: Espace chromatique  $L^*u^*v^*$  et diagramme de chromaticité uniforme  $u'$ ,  $v'$  CIE 1976 (ISO/CIE 11664-5:2016)

[standards.iteh.ai](https://standards.iteh.ai/)

**Ta slovenski standard je istoveten z: EN ISO 11664-5:2016**

---

**ICS:**

17.180.20 Barve in merjenje svetlobe Colours and measurement of light

**SIST EN ISO 11664-5:2016**

**en,fr,de**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN ISO 11664-5:2016](#)

<https://standards.iteh.ai/catalog/standards/sist/4cece1b-0393-4de2-b8af-83b216da3201/sist-en-iso-11664-5-2016>

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN ISO 11664-5**

September 2016

ICS 17.180.20

Supersedes EN ISO 11664-5:2011

English Version

**Colorimetry - Part 5: CIE 1976  $L^*u^*v^*$  Colour space and  $u'$ ,  
 $v'$  uniform chromaticity scale diagram (ISO/CIE 11664-  
5:2016)**

Colorimétrie - Partie 5: Espace chromatique  $L^*u^*v^*$  et  
diagramme de chromaticité uniforme  $u'$ ,  $v'$  CIE 1976  
(ISO/CIE 11664-5:2016)

Farbmetrik - Teil 5: CIE 1976  $L^*u^*v^*$  Farbenraum und  
gleichabständige  $u'$ ,  $v'$  Farbtafel (ISO/CIE 11664-  
5:2016)

This European Standard was approved by CEN on 1 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.

**iTeh STANDARD PREVIEW**

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.

CEN members are the national standards bodies of 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 United Kingdom.



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

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

<b>Contents</b>	<b>Page</b>
<b>European foreword.....</b>	<b>3</b>

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN ISO 11664-5:2016](https://standards.iteh.ai/catalog/standards/sist/4cece1b-0393-4de2-b8af-83b216da3201/sist-en-iso-11664-5-2016)  
<https://standards.iteh.ai/catalog/standards/sist/4cece1b-0393-4de2-b8af-83b216da3201/sist-en-iso-11664-5-2016>

## European foreword

This document (EN ISO 11664-5:2016) has been prepared by Technical Committee ISO/TC 274 "Light and lighting" in collaboration with 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 March 2017, and conflicting national standards shall be withdrawn at the latest by March 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.

This document supersedes EN ISO 11664-5:2011.

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.

**PREVIEW**  
(standards.iteh.ai)

### Endorsement notice

The text of ISO/CIE 11664-5:2016 has been approved by CEN as EN ISO 11664-5:2016 without any modification.

SIST EN ISO 11664-5:2016  
<https://standards.iteh.ai/catalog/standards/sist/4cece1b-0393-4de2-b8af-83b216da3201/sist-en-iso-11664-5-2016>

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN ISO 11664-5:2016](#)

<https://standards.iteh.ai/catalog/standards/sist/4cece1b-0393-4de2-b8af-83b216da3201/sist-en-iso-11664-5-2016>

INTERNATIONAL  
STANDARD

ISO/CIE  
11664-5

First edition  
2016-09-01

---

---

Colorimetry —

Part 5:

**CIE 1976  $L^*u^*v^*$  colour space and  $u', v'$   
uniform chromaticity scale diagram**

*Colorimétrie —*

*Partie 5: Espace chromatique  $L^*u^*v^*$  et diagramme de chromaticité  
uniforme  $u', v'$  CIE 1976*  
**(standards.iteh.ai)**

[SIST EN ISO 11664-5:2016](https://standards.iteh.ai/catalog/standards/sist/4cece1b-0393-4de2-b8af-83b216da3201/sist-en-iso-11664-5-2016)

<https://standards.iteh.ai/catalog/standards/sist/4cece1b-0393-4de2-b8af-83b216da3201/sist-en-iso-11664-5-2016>

---

---

Reference number  
ISO/CIE 11664-5:2016(E)



© ISO/CIE 2016

## iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN ISO 11664-5:2016](https://standards.iteh.ai/catalog/standards/sist/4cece1b-0393-4de2-b8af-83b216da3201/sist-en-iso-11664-5-2016)

<https://standards.iteh.ai/catalog/standards/sist/4cece1b-0393-4de2-b8af-83b216da3201/sist-en-iso-11664-5-2016>



### **COPYRIGHT PROTECTED DOCUMENT**

© ISO/CIE 2016, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Ch. de Blandonnet 8 • CP 401  
CH-1214 Vernier, Geneva, Switzerland  
Tel. +41 22 749 01 11  
Fax +41 22 749 09 47  
copyright@iso.org  
www.iso.org

CIE Central Bureau  
Babenbergerstraße 9/9A  
A-1010 Vienna, Austria  
Tel. +43 1 714 3187

ciecb@cie.co.at  
www.cie.co.at



# Contents

	Page
Foreword.....	iv
Introduction.....	v
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms, definitions, symbols and abbreviated terms</b> .....	<b>1</b>
3.1 Terms and definitions.....	1
3.2 Symbols and abbreviated terms.....	2
<b>4 Calculation method</b> .....	<b>2</b>
4.1 Uniform chromaticity scale diagram (UCS diagram).....	2
4.2 Uniform colour space.....	3
4.3 Correlates of lightness, saturation, chroma and hue.....	4
4.4 Colour differences.....	5
<b>Annex A (informative) Reverse transformation</b> .....	<b>7</b>
<b>Bibliography</b> .....	<b>8</b>

## iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN ISO 11664-5:2016](https://standards.iteh.ai/catalog/standards/sist/4ceece1b-0393-4de2-b8af-83b216da3201/sist-en-iso-11664-5-2016)

<https://standards.iteh.ai/catalog/standards/sist/4ceece1b-0393-4de2-b8af-83b216da3201/sist-en-iso-11664-5-2016>

## ISO/CIE 11664-5:2016(E)

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

The committee responsible for this document is ISO/TC 274, *Light and lighting*.

This first edition of ISO/CIE 11664-5 cancels and replaces ISO 11664-5:2009, of which it constitutes a minor revision. (ISO 11664-5:2009 was prepared by CIE Technical Committee TC-1-57 of Division 1.)

ISO 11664 consists of the following parts, under the general title *Colorimetry*:

- Part 1: CIE standard colorimetric observers
- Part 2: CIE standard illuminants
- Part 3: CIE tristimulus values
- Part 4: CIE 1976  $L^*a^*b^*$  Colour space

ISO/CIE 11664 consists of the following parts, under the general title *Colorimetry*:

- Part 5: CIE 1976  $L^*u^*v^*$  colour space and  $u', v'$  uniform chromaticity scale diagram
- Part 6: CIEDE2000 Colour-difference formula

## 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, in 1976, the CIE introduced and recommended two new spaces (known as CIELAB and CIELUV) whose coordinates are non-linear functions of  $X, Y$  and  $Z$ . The recommendation was put forward in an attempt to unify the then very diverse practice in uniform colour spaces and associated colour difference formulae.<sup>[2]</sup><sup>[8]</sup> Both these more-nearly uniform colour spaces have become well accepted and widely used. Numerical values representing approximately the relative magnitude of colour differences can be described by simple Euclidean distances in the spaces or by more sophisticated formulae that improve the correlation with the relative perceived size of differences. The purpose of this part of ISO/CIE 11664 is to define procedures for calculating the coordinates of the CIE 1976  $L^*u^*v^*$  (CIELUV) colour space and the Euclidean colour difference values based on these coordinates. This part of ISO/CIE 11664 also defines a related chromaticity diagram that is a projection of the CIE  $x, y$  chromaticity diagram maintaining straight lines of dominant and complementary wavelengths. This part of ISO/CIE 11664 does not cover the alternative uniform colour space, CIELAB,<sup>[5]</sup> nor does it cover more sophisticated colour difference formulae based on CIELAB, such as the CMC formula,<sup>[3]</sup> the CIE 94 formula,<sup>[1]</sup> the DIN 99 formula,<sup>[4]</sup> and the CIEDE2000 formula.<sup>[6]</sup>

## iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN ISO 11664-5:2016](https://standards.iteh.ai/catalog/standards/sist/4cece1b-0393-4de2-b8af-83b216da3201/sist-en-iso-11664-5-2016)

<https://standards.iteh.ai/catalog/standards/sist/4cece1b-0393-4de2-b8af-83b216da3201/sist-en-iso-11664-5-2016>