

Second edition
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Colorimetry —

Part 6: CIEDE2000 colour-difference formula

Colorimétrie —

Partie 6: Formule de la différence de couleur CIEDE2000



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Foreword

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This second edition cancels and replaces the first edition (ISO/CIE 11664-6:2014), of which it constitutes a minor revision. The changes are as follows:

- normative references updated;
- previous Clause 3 split into [Clauses 3](#) and [4](#);
- [Clause 6](#): previous NOTE 1 changed to body text;
- minor editorial changes.

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

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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. Neither is the (x, y, Y) space nor the two-dimensional CIE (x, y) chromaticity diagram. Equal distances in these spaces and the respective diagram 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 document is to define one such formula, the CIEDE2000 formula. This document is based on CIE 142-2001.

The formula is an extension of the CIE 1976 $L^*a^*b^*$ colour-difference formula (ISO/CIE 11664-4) 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.