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# Image technology colour management — Black point compensation

*Gestion de couleur en technologie d'image — Compensation du point noir*

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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

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# 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).

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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 WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 130, *Graphic technology*, in cooperation with the International Color Consortium.


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# Introduction

Black point compensation (BPC) is a technique used to address colour conversion problems caused by differences between the darkest level of black achievable on one device and the darkest level of black achievable on another. This procedure was first implemented in Adobe Photoshop in the late 1990s. The International Color Consortium (ICC) and ISO Technical Committee 130 (Graphic technology) have created this document to allow black point compensation to be used in a consistent manner across applications.

The purpose of BPC is to adjust a colour transform between the colour spaces of source and destination ICC profiles, so that it retains shadow details and utilizes available black levels. The procedure depends only on the rendering intent(s) and the source and destination ICC profiles, not on any points in a particular image. Therefore, the colour transform using specific source and destination ICC profiles and rendering intent can be computed once, and then efficiently applied to many images which use the same ICC profile colour transform pair and rendering intent.

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# Image technology colour management — Black point compensation

## 1 Scope

This International Standard specifies a procedure, including computation, by which a transform between ICC profiles can be adjusted (compensated) to take into account differences between the dark end of the source colour space and the dark end of the destination colour space. This is referred to as black point compensation (BPC). The relative colorimetric encoding of ICC profile transforms already provides a mechanism for such adjustment of the light (white) end of the tone scale.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 15076-1, *Image technology colour management — Architecture, profile format and data structure — Part 1: Based on ICC.1:2010*

ICC.1:2001-04, *File Format for Color Profiles*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 15076-1 and the following apply.

**3.1**
**DestinationBlackPoint**
coordinate representing a dark neutral reproducible colour in the destination colour gamut

**3.2**
**DestinationProfile**
ICC profile, containing the transform from profile connection space to the destination device colour space

**3.3**
**SourceBlackPoint**
coordinate representing a dark neutral colour in the source colour gamut

**3.4**
**SourceProfile**
ICC profile, containing the transform from the source device colour space to the profile connection space

**3.5**
**RenderingIntent**
rendering intent of the conversion from a source ICC profile's colour space to a destination ICC profile's colour space

**3.6**
**LabIdentityProfile**
real or virtual ICC profile that contains a bi-directional (identity) transform between CIELAB and PCSLAB

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