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Graphic technology — Use of PDF to associate processing steps and content data —

Part 1: Processing steps for packaging and labels

Technologie graphique — Utilisation du PDF pour associer les étapes de traitement et les données de contenu —

Partie 1: Étapes de traitement 2016

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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 of the voluntary nature of standards, 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 130, *Graphic technology*.

This second edition cancels and replaces the first edition (ISO 19593-1:2018), which has been technically revised.

The main changes are as follows:

— additional processing-step groups and types have been defined;

— allowance for usage of the GTS_Metadata dictionary has been given for OCGs that are not processing-step OCGs;

— processing-step PDF object membership of multiple processing-step OCGs, that have different group and/or type, has been prohibited;

— a recommendation to include PDF objects, that are not processing-step PDF objects, in one or more OCGs has been added.

A list of all parts in the ISO 19593 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

It is common practice in the packaging segment, and other segments of the printing industry, to work with PDF files that contain PDF graphics objects to be used for printing and additional PDF graphics objects and metadata to be used for other steps in the production of the final product. These nonprinting PDF objects and metadata correspond to additional processing steps, for example die cutting or creasing. In this way a PDF file can serve as a container for all production data, printing and nonprinting, of a printed product, such as a package or a label.

These processing-steps data are used in various steps of the production chain:

— a graphic designer may use them to correctly position graphical elements;

— a quality controller may use them to verify correctness of the design before producing the printed element;

— a system performing layout of the printed products on a substrate may use them to determine an optimal layout with minimal waste of substrate;

— they can be used to manufacture tools for production;

— they can be used directly by digitally controlled finishing devices.

In a typical example workflow:

a) all PDF graphics objects are rendered for proofing and viewing purposes;

b) in the final production printing, only PDF graphics objects intended for printing are used and the PDF graphics objects intended to describe additional processing steps are ignored;

c) in a finishing step of the final production workflow the PDF graphics objects intended for printing are ignored while a set of PDF graphics objects corresponding with this processing step are used.

Without an established standard, multiple ad hoc methods are used to store, such data in a PDF file, depending on the application used to generate the PDF file and the preferences of the user. For example, in a PDF file the cut line can be stored in a layer called “CAD” using a contour with a stroke in spot colourant “coupe”, or the cut line can be stored in the same layer as the graphics and represented as a contour with a stroke in spot colourant “cut”.

The use of multiple ad hoc methods leads to problems of interoperability between companies and systems. When a PDF file is sent from one participant in the packaging supply chain to another, the recipient needs to know how processing-steps data are stored in the PDF file and his or her workflow (often automated) must be able to handle the particular mechanisms used by the sender. When the recipient receives files from multiple senders that all use different mechanisms, this becomes complex and error-prone. For example, if a converter has configured RIPs to ignore separations with spot colourant “cut” in incoming PDF files and the recipient subsequently receives a PDF file with a spot colourant “coupe”, he or she risks wasting a printing plate or, even worse, erroneously printing the die line on the package.

This document defines standardized mechanisms to store graphics objects and metadata corresponding to processing steps in a PDF file. These mechanisms are intended to be generic and applicable not only to packaging and label production but also to other segments of the printing industry.

Besides metadata identifying processing steps, requirements are defined describing how objects related to a particular processing step may interact with the content of other processing steps or regular print content. For example, objects related to a cutting processing step should not knock out regular print objects. Additional requirements define which objects can reasonably be part of certain processing steps. For example, halftone images do not make sense for a cutting processing step.

This document defines the syntax for defining processing steps and technical rules for possible interdependencies between certain processing step information and other content.

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This document defines a set of processing groups and types that are applicable to the packaging and label segment of the printing industry. Although defined specifically for packaging and labels, these groups and types may also be applicable to other segments of the printing industry such as sign and display or commercial print.

Subsequent parts of the ISO 19593 series can either extend the list of defined processing groups and types to address the needs of other segments of the printing industry or define new groups and types needed in the packaging and labels segment.

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Graphic technology — Use of PDF to associate processing steps and content data —

Part 1:
Processing steps for packaging and labels

1 Scope

This document describes a method for storing data in a PDF file that correspond to the processing steps of printed products. This method has three parts:

1) metadata identifying processing steps;

2) limitations on the interaction between PDF graphics objects that are part of a processing step and other PDF graphics objects;

3) limitations on PDF graphics objects in processing steps.

This method is intended to be generic, i.e. not specific to packaging and labels.

In addition, this document defines the following packaging- and label-specific groups of processing steps data:

— data corresponding to finishing steps, such as cutting, folding or glueing;

— braille;

— information panels;

— indications of physical dimensions;

— indications of intended positions of graphical elements;

— printed white, for example on transparent or metallic surfaces;

— printed varnish;

— primer;

— printing plate making.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ISO 32000-1:2008, *Document management — Portable document format — Part 1: PDF 1.7*

ISO 32000-2:2020, *Document management — Portable document format — Part 2: PDF 2.0*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

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

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

3.1
processing step
step in production of print products other than regular printing of colour on the print surface

EXAMPLE Cutting, printing of white, varnish or similar.

3.2
contour
path or text PDF graphics object with path-based glyph descriptions

3.3
processing-step PDF object
PDF graphics object that is a member of a processing-step OCG

3.4
processing-step OCG
optional content group grouping PDF objects that are intended to be used for the purpose of performing a processing step

EXAMPLE An OCG with 2 circular paths that are used to define the geometry of circular piece of carton with a hole that will be cut from a sheet.

3.5
surface of the printed product
area of the printed substrate that will be used for the final printed product

Note 1 to entry: Each part of the ISO 19593 series contains a precise definition of the surface of the printed product. For this document this definition can be found in 7.4.1.

3.6
spot colourant
colourant that is not a process colourant

3.7
printing colourant
colourant of a printing device

3.8
station
specific location in cutting die from which an individual packaging or label item will be cut from the roll or sheet of material

3.9
evaluator
software application capable of using processing-step PDF objects in the context of a processing step

EXAMPLE Front-end software of a digital cutting table that can generate cutting instructions for the digital cutting table from cutting processing-step PDF objects.

4 Notations

PDF operators, PDF keywords, the names of keys in PDF dictionaries and other predefined names are written in **bold**; for example, the key **BM**. Operands of PDF operators or values of PDF dictionary keys are written in *italic*; for example, the *multiply* value for the **BM** key.

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