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SWEDISH STANDARDS INSTITUTE

Grafisk teknik – Användning av PDF för koppling av processteg med dokumentdata –
Del 1: Processteg för förpackningar och etiketter
(ISO 19593-1:2018, IDT)

Graphic technology – Use of PDF to associate processing steps and content data –
Part 1: Processing steps for packaging and labels
(ISO 19593-1:2018, IDT)

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Den internationella standarden ISO 19593-1:2018 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av ISO 19593-1:2018.

The International Standard ISO 19593-1:2018 has the status of a Swedish Standard. This document contains the official English version of ISO 19593-1:2018.

Upplysningar om sakinnehållet i standarden lämnas av SIS, Swedish Standards Institute, telefon 08-555 520 00. Standarder kan beställas hos SIS som även lämnar allmänna upplysningar om svensk och utländsk standard.

Information about the content of the standard is available from the Swedish Standards Institute (SIS), telephone +46 8 555 520 00. Standards may be ordered from SIS, who can also provide general information about Swedish and foreign standards.

Denna standard är framtagen av kommittén för Grafisk teknik, SIS/TK 434.

Har du synpunkter på innehållet i den här standarden, vill du delta i ett kommande revideringsarbete eller vara med och ta fram andra standarder inom området? Gå in på www.sis.se - där hittar du mer information.

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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).

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).

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

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*.

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.

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 non-printing 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 non-printing, 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.

This document also defines a first 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 standard might 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.

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.

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, *Document management — Portable document format — Part 1: PDF 1.7*

ISO 32000-2, *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.

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

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

— IEC Electropedia: available at http://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

3.3
processing-step PDF object
PDF graphics object associated with a processing step

3.4
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.

3.5
spot colourant
colourant that is not a process colourant

Note 1 to entry: It is defined in a separation colour space or a DeviceN colour space.

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.

5 Conformance

This document defines the use of processing step PDF graphics objects for the exchange of processing-steps data.

A PDF file conforming to this document shall be one in which processing-steps data are included in the PDF using a method that adheres to this document. Such a PDF file shall conform with the requirements of both Clause 6 and Clause 7. A conforming file may also use additional methods to describe processing-steps data. If used, these alternative methods shall not contradict the data stored using the method described in this document.

A conforming file shall conform to at least one of the following standards: ISO 32000-1 or ISO 32000-2.

A conforming reader is a software application that shall be able to read and appropriately process all files conforming to this document and conforming to at least one of ISO 32000-1 or ISO 32000-2.

NOTE Since a PDF/X-4 file can conform with ISO 32000-1, this document does not exclude the usage of files conforming to ISO 15930-7.

6 Storing processing-steps data in PDF — generic requirements

6.1 Processing-step optional content groups

The use of optional content groups (OCGs) allows labelling graphics objects throughout a PDF file in such a way that they can easily be included or excluded from output. While an OCG can easily be used to

group graphics objects together, there is no standardized mechanism to store identifying information in such an OCG.

A processing-step OCG is an OCG with an additional **GTS_Metadata** key in the OCG dictionary, as described in 6.2. The value of this key is a dictionary containing standardized identifying information for the processing step which this processing-step OCG corresponds to.

A processing-step OCG shall only contain PDF graphics objects whose intended usage is consistent with the processing step defined by **GTS_Metadata**.

NOTE The **Name** key of the OCG cannot be used for identification because it is a) not standardized and b) often used for display in user interface which conflicts with the possibility of standardizing it. Although it might be acceptable for an English user, for example, to work with an OCG called “Die cut” and learn to standardize on it, the same would likely not be true for a Dutch or Chinese user.

6.2 Processing-step OCG metadata

The optional content group dictionary of a processing-step OCG shall contain the **GTS_Metadata** key, the value of which shall be a dictionary, as indicated in Table 1. The **GTS_Metadata** dictionary shall contain the **GTS_ProcStepsGroup** key. For some values of the **GTS_ProcStepsGroup** key, the **GTS_ProcStepsType** key shall also be present. The combination of the value of the **GTS_ProcStepsGroup** and the value of the **GTS_ProcStepsType** key uniquely define the processing step.

A PDF file may contain multiple OCGs with the same combination of values of **GTS_ProcStepsGroup** and **GTS_ProcStepsType**. These OCGs correspond with the same kind of processing step.

Table 1 — Additional GTS_Metadata entry in an optional content group dictionary

Key	Type	Value
GTS_Metadata	dictionary	*(Required for processing-step OCG)* **GTS_Metadata** dictionary containing keys defined in Table 2

It is often necessary to preserve hierarchical information about processing steps. For automated tools, for example, it might not be enough to know that graphics objects are related to a “Structural” processing step; one might need to be able to discern the difference between cut and crease lines. To enable this, the **GTS_Metadata** dictionary contains enough information to preserve such hierarchy.

The **GTS_ProcStepsGroup** defines the group of processing steps the graphics objects in this OCG belong to. **GTS_ProcStepsType** optionally defines the type of processing steps for the graphics objects in the OCG as indicated in Table 2.