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**Graphic technology — Prepress digital  
data exchange using PDF —**

Part 5:

**Partial exchange of printing data using  
PDF 1.4 (PDF/X-2)**

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*Technologie graphique — Échange de données numériques de  
préimpression utilisant le PDF —*

*Partie 5. Échange partiel de données d'impression utilisant le PDF 1.4  
(PDF/X-2)*

ISO 15930-5:2003

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 15930-5 was prepared by Technical Committee ISO/TC 130, *Graphic technology*, with the support of ANSI Committee for Graphic Arts Technologies Standards (CGATS).

ISO 15930 consists of the following parts, under the general title *Graphic technology — Prepress digital data exchange using PDF*:

- Part 1: *Complete exchange using CMYK data (PDF/X-1 and PDF/X-1a)*;  
ISO 15930-5:2003
- Part 3: *Complete exchange suitable for colour-managed workflows (PDF/X-3)*;  
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- Part 4: *Complete exchange of CMYK and spot colour printing data using PDF 1.4 (PDF/X-1a)*;
- Part 5: *Partial exchange of printing data using PDF 1.4 (PDF/X-2)*;
- Part 6: *Complete exchange of printing data suitable for colour-managed workflows using PDF 1.4 (PDF/X-3)*.

## Introduction

ISO 15930 (all parts) defines methods for the exchange of digital data within the graphic arts industry and for the exchange of files between graphic arts establishments. It is a multi-part document where each part is intended to respond to different workflow requirements. These workflows differ in the degree of flexibility required. However, increasing flexibility can lead to the possibility of uncertainty or error. The goal throughout the various parts of ISO 15930 has been to maintain the degree of flexibility required while minimizing the uncertainty.

Many printed documents are assemblies of partial pages and/or pages created at different locations and by different organizations. The merging of these individual elements into the final printing forme and the subsequent printing may take place at different locations. Some of these elements may also be routed to multiple sites for incorporation into other documents. Each of these elements is referred to in ISO 15930 as a compound entity.

A variety of data formats and structures are used for the creation of this type of material, but with two prevalent kinds of underlying data structures. These are vector-based data for the encoding of line art and textual information and raster-based data for the encoding of image information, including previously rasterized line art and textual information.

Both kinds of data structures are required along with page-description information in an open electronic workflow. The exchange of raster-based data using the TIFF/IT file format is defined in ISO 12639. The subject of ISO 15930 is a format for the exchange of object-based data where individual objects may be in either vector or raster data structures.

PDF/X-2 (Part 5 of this International Standard) complements the other parts by defining a data format and its usage to permit the predictable dissemination of a compound entity to one or more locations, as colour-managed data, CMYK data, and/or spot colour data, by transfer of a file with some elements not included, but with provision for unique identification. An exchange identified by this part of this International Standard will often require communication between sender and receiver to select the mechanism by which elements not included may be identified.

These goals are accomplished by defining a specific use of the publicly available *Adobe Portable Document Format*. In order to achieve a level of exchange that avoids any ambiguity in interpretation of the file, a limited set of PDF objects that may be used is identified and restrictions to the use, or form of use, of those objects, and/or keys within those objects are added.

While PDF/X-2 (this part of this International Standard) defines a data format and its usage to permit the predictable dissemination of a compound entity to one or more locations where some or all of the elements may be more logically present at the receiving site, or may be exchanged at a different time, there are circumstances when this is not appropriate. PDF/X-1a (Parts 1 and 4 of this International Standard) and PDF/X-3 (Parts 3 and 6 of this International Standard) specify methods for the exchange of material in which all elements and element resources are present as part of a single exchange and all of the information needed to process the material is either in the file or is specified within the appropriate part of this International Standard and its normative references.

It is anticipated that a variety of products will be developed around PDF/X, such as readers (including viewers) and writers of PDF/X files, and products that offer combinations of these features. Different products will incorporate various capabilities to prepare, interpret and process conforming files based on the application needs as perceived by the suppliers of the products. However, it is important to note that a conforming reader must be able to read and appropriately process all files conforming to a specified conformance level.

An ongoing series of Application Notes<sup>[2]</sup> is maintained for the guidance of developers and users of the PDF/X family of International Standards. These Application Notes, and other documents relevant to PDF/X, are available from NPES The Association for Suppliers of Printing, Publishing and Converting Technologies in the NPES Standards Workroom at <<http://www.npes.org/standards/tools.html>>.

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# Graphic technology — Prepress digital data exchange using PDF —

## Part 5: Partial exchange of printing data using PDF 1.4 (PDF/X-2)

### 1 Scope

This part of ISO 15930 specifies the use of the Portable Document Format (PDF) Version 1.4 for the dissemination of digital data, where all elements necessary for final print reproduction are either included or provision is made for unique identification. Colour-managed, CMYK, and spot colour data are supported in any combination.

### 2 Normative references

The following referenced documents are indispensable for the application 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 15930-1:2001, *Graphic technology — Prepress digital data exchange — Use of PDF — Part 1: Complete exchange using CMYK data (PDF/X-1 and PDF/X-1a)*

ISO 15930-3:2002, *Graphic technology — Prepress digital data exchange — Use of PDF — Part 3: Complete exchange suitable for colour managed workflows (PDF/X-3)*

ISO 15930-4:2003, *Graphic technology — Prepress digital data exchange using PDF — Part 4: Complete exchange of CMYK and spot colour printing data using PDF 1.4 (PDF/X-1a)*

ISO 15930-6:2003, *Graphic technology — Prepress digital data exchange using PDF — Part 6: Complete exchange of printing data suitable for colour managed workflows using PDF 1.4 (PDF/X-3)*

ISO/IEC 11578:1996, *Information technology — Open Systems Interconnection — Remote Procedure Call (RPC)*

DCE 1.1: *Remote Procedure Call*. Open Group Technical Standard Document Number C706, August 1997. <<http://www.opengroup.org/publications/catalog/c706.htm>>

PDF Reference: *Adobe Portable Document Format Version 1.4*, 3rd Ed., Adobe Systems Incorporated (ISBN 0-201-75839-3)

PDF Reference: *Adobe Portable Document Format, Version 1.4 errata dated 2003/06/18*. Available from Internet <<http://partners.adobe.com/asn/acrobat/docs/PDF14errata.txt>>

XMP, *Extensible Metadata Platform, Version 1.5*, September 14, 2001, Adobe Systems Incorporated Available from Internet <<http://www.npes.org/standards/tools.html>>

### 3 Terms, abbreviated terms and definitions

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

**3.1 characterized printing condition**  
printing condition (offset, gravure, flexographic, direct, etc.) for which process control aims are defined and for which the relationship between input data (printing tone values, usually CMYK) and the colorimetry of the printed image is documented

NOTE 1 The relationship between input data (printing tone values) and the colorimetry of the printed image is commonly referred to as characterization.

NOTE 2 It is generally preferred that the process control aims of the printing condition and the associated characterization data be made publicly available via the accredited standards process or industry trade associations.

**3.2 compound entity**  
unit of work with all text, graphics, and page elements prepared for final distribution, representing a single page, a portion of a page, or a combination of pages, whose contents may reside in one or more computer files, uniquely linked together

**3.3 conformance level**  
identified set of restrictions and requirements with which files, readers and writers must comply

**3.4 element**  
substructure of a compound entity relative to the current processing environment, such as a block of text, a contone picture or an outline graphic that, by itself, comprises the smallest logical composed unit of a compound entity

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**3.5 font**  
identified collection of graphics that may be glyphs or other graphic elements

Note ISO/IEC 9541-1 defines glyph as a recognizable abstract graphic symbol that is independent of any specific design.

**3.6 FPO file**  
file containing a low-resolution rendition of, and information about, the full resolution file from which it was derived, used for placement in design applications

**3.7 non-print element**  
element not intended for final print reproduction, including proxies and all annotations of types other than **TrapNet** and **PrinterMark**

**3.8 partial exchange**  
exchange of composite entities in which some elements or element resources are intentionally excluded from the exchange, and are separately available

EXAMPLE High-resolution images.

**3.9 PDF**  
**Portable Document Format**  
file format defined in the *PDF Reference*



**3.10****PDF dictionary**

associative table containing key-value pairs, specifying the name and value of an attribute for objects, which is generally used to collect and tie together the attributes of a complex object

**3.11****PDF/X-1a:2001**

PDF/X-1a conformance level defined in ISO 15930-1:2001

**3.12****PDF/X-1a:2003**

PDF/X-1a conformance level defined in ISO 15930-4:2003

**3.13****PDF/X-2:2003**

PDF/X-2 conformance level defined in this part of ISO 15930

**3.14****PDF/X-3:2002**

PDF/X-3 conformance level defined in ISO 15930-3:2002

**3.15****PDF/X-3:2003**

PDF/X-3 conformance level defined in ISO 15930-6:2003

**3.16****print element**

element intended for final print reproduction including TrapNet or PrinterMark

**3.17****printing tone value**

data value corresponding to the relative area of a printing surface that is intended to transfer ink to the substrate being printed

**NOTE**

See **characterized printing condition** (3.1).

**3.18****proxy**

visible placeholder representing at least the size and shape of the area to be replaced by the referenced object and may be something as basic as a rectangle of the appropriate size containing no image content, or may be a partial or complete representation of the intended content

**3.19****reader**

software application that is able to read and appropriately process files

**3.20****spot colour**

single colorant, identified by name, whose printing tone values are specified independently from colour values specified in a colour coordinate system

**3.21****trapping**

modification of boundaries of colour areas to account for dimensional variations in the printing process by overprinting in selected colours at the boundaries between colours that might inadvertently be left uncoloured due to normal variations of printing press registration

**NOTE**

Trapping is sometimes referred to as chokes and spreads or grips. This is not the same as ink trapping.