PD ISO/TS 32005:2023

BSI Standards Publication

Document management — Portable Document Format — PDF 1.7 and 2.0 structure namespace inclusion in ISO 32000-2

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Full document details: PD ISO/TS 32005:2023

National foreword

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The UK participation in its preparation was entrusted to Technical Committee IDT/1, Document Management Applications.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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Published by BSI Standards Limited 2023

ISBN 978 0 539 17436 6

ICS 35.240.30; 37.100.99

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This Published Document was published under the authority of the Standards Policy and Strategy Committee on 31 July 2023.

Amendments/corrigenda issued since publication

Date	Text affected

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TECHNICAL SPECIFICATION

ISO/TS 32005

First edition
2023-07

Document management — Portable Document Format — PDF 1.7 and 2.0 structure namespace inclusion in ISO 32000-2

Gestion de documents — Format de document portable — Inclusion des espaces de noms de structures PDF 1.7 et 2.0 dans l'ISO 32000-2

Reference number
ISO/TS 32005:2023(E)

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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.

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This document was prepared by Technical Committee ISO/TC 171, *Document management applications*, Subcommittee SC 2, *Document file formats, EDMS systems and authenticity of information*.

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Introduction

ISO 32000-2 introduced the mechanism for defining namespaces within a logically structured PDF document; identified two recognized namespaces for tagged PDF documents; and provided strict hierarchical inclusion rules for the standard structure namespace for PDF 2.0. However, ISO 32000-2 did not specify restrictions and inclusion rules for the standard structure namespace for PDF 1.7. This document extends the hierarchical inclusion rules to address both the standard structure namespace for PDF 2.0 and the standard structure namespace for PDF 1.7.

The primary purpose of this document is to extend the rules already defined within ISO 32000-2 to resolve any ambiguity.

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Document management — Portable Document Format — PDF 1.7 and 2.0 structure namespace inclusion in ISO 32000-2

1 Scope

This document specifies containment requirements for tagged PDF documents that use the PDF 1.7 namespace and the PDF 2.0 namespace. These containment requirements extend, and entirely comply with, the rules and provisions already specified for tagged PDF documents within ISO 32000-2.

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

PDF Declarations, *PDF Association, September 5,* 2019, https://www.pdfa.org/resource/pdf-declarations/

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 32000-2 and the following apply.

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
PDF 1.7 namespace
standard structure namespace for PDF 1.7

3.2
PDF 2.0 namespace
standard structure namespace for PDF 2.0

3.3
PDF 1.7 element
standard structure element type defined in the namespace for PDF 1.7

3.4
PDF 2.0 element
standard structure element type defined in the namespace for PDF 2.0

3.5
unique PDF 1.7 element
standard structure element whose type is defined solely in the *PDF 1.7 namespace* (3.1)

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4 Declaration of conformance

This document defines additional requirements that are fully compliant with ISO 32000-2. As such, a PDF document can conform to all the requirements of ISO 32000-2 and the requirements defined in this document, retaining compliance with both standards. However, not all files which are compliant with ISO 32000-2 will be compliant with this document.

To enable interchange and to identify that a given PDF document conforms to the requirements defined in this document, that PDF document may include a PDF declaration of conformance with this document. When such a PDF declaration is present, it shall conform to the requirements of the PDF Declarations specification. Such claim of conformance shall take the form described in Table 1.

Table 1 — Declaration of conformance to this document

Key	Type
URI identifier	https://pdfa.org/declarations#iso32005
Mandatory field(s)	none
Standard	ISO/TS 32005
Version	1
URI	https://www.pdfa.org/resource/ISO-32005/
Level	N/A
Technology Reliance	ISO 32000-2

EXAMPLE Conformance declaration for a PDF file conforming to this document:

```
<?xml version="1.0" encoding="utf-8"?>
<rdf:RDF xmlns:rdf="https://www.w3.org/1999/02/22-rdf-syntax-ns#">
  <rdf:Description rdf:about="" xmlns:pdfd="https://pdfa.org/declarations/">
    <pdfd:declarations>
      <rdf:Bag>
        <!-- Declaration for conformity with standard “ISO 32005” -- >
        <rdf:li rdf:parseType="Resource">
          <pdfd:conformsTo>https://pdfa.org/declarations#iso32005</pdfd:conformsTo>
        </rdf:li>
      </rdf:Bag>
    </pdfd:declarations>
  </rdf:Description>
</rdf:RDF>
```

5 Using the PDF 1.7 namespace with the PDF 2.0 namespace

5.1 General

ISO 32000-2 permits the use of both the PDF 1.7 namespace and the PDF 2.0 namespace but does not indicate how they are to be used together in the same document. The following clauses clarify this usage.

NOTE ISO 32000-2 does not restrict the interaction of the two namespaces.

PDF documents conforming to this document shall be versioned as PDF 2.0 using either the header or the value of the **Version** entry in the document’s catalog dictionary (see ISO 32000-2:2020, 7.7.2).

5.2 PDF 1.7 as a standalone namespace

If all structure elements used in a given document are PDF 1.7 elements, either explicitly, through the default standard structure namespace or role mapped to an element in the default standard structure namespace, then the requirements of ISO 32000-1 shall be used for their inclusion. In such cases, the use of namespaces shall not be required and those structure elements are exempt from the provisions specified in 5.3, 5.4 and 5.5.

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If any document has structure elements that use a namespace other than the PDF 1.7 namespace or the default standard structure namespace, then that document shall conform to the requirements specified in 5.3, 5.4 and 5.5.

5.3 Elements defined in both the PDF 1.7 and PDF 2.0 namespace

A subset of the PDF 1.7 elements and the PDF 2.0 elements are common between the two namespaces. All structure elements whose type is common to both the PDF 1.7 namespace and the PDF 2.0 namespace shall use the PDF 2.0 namespace and follow the inclusion rules defined in ISO 32000-2:2020, Annex L, and in Clause 5 of this document (except as exempted by 5.2).

5.4 Elements defined solely in the PDF 2.0 namespace

PDF 2.0 elements shall explicitly declare their namespace using the PDF 2.0 namespace and may contain unique PDF 1.7 elements and PDF 2.0 elements, as defined in Clause 5.

NOTE ISO 32000-2:2020, Annex M identifies the new elements that are solely defined for the PDF 2.0 namespace.

5.5 Elements defined solely in the PDF 1.7 namespace

5.5.1 General

Unique PDF 1.7 elements may be included in a document. When such structure elements are included (except as exempted in 5.2), those elements shall conform to the requirements defined in Clause 5 and may be children of PDF 2.0 elements and may include unique PDF 1.7 elements or PDF 2.0 elements.

NOTE ISO 32000-2:2020, Annex M identifies the elements that are solely defined for the PDF 1.7 namespace.

5.5.2 Permitted PDF 1.7 element types

5.5.2.1 General

ISO 32000-2 does not directly define the element types outside of the PDF 2.0 namespace. Instead, it refers to the definition of those elements in ISO 32000-1. To ensure consistency, unique PDF 1.7 elements (except as exempted by 5.2) shall match the descriptions and follow the inclusion rules specified in Clause 5.

5.5.2.2 Grouping structure elements

The unique PDF 1.7 elements that are a grouping element type are defined in Table 2 and shall be the only PDF 1.7 namespace grouping elements permissible in a document (except as exempted by 5.2).

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Table 2 — Standard structure types for unique PDF 1.7 grouping elements

Structure type	Description
Art	(Article) A relatively self-contained body of text constituting a single narrative or exposition. Articles should be disjoint; that is, they should not contain other articles as constituent elements.
BlockQuote	(Block quotation) A portion of content quoted from another source other than the surrounding content. NOTE 1 The **BlockQuote** structure element groups larger units of quoted content, see Quote (4.5.2.3, “”) for inline quotation. NOTE 2 The **BlockQuote** structure element differs from the **DocumentFragment** structure element, in that **DocumentFragment** implies unchanged and contiguous portions of another document, whereas **BlockQuote** often include modification or contextualization. **BlockQuote** is permitted to both contain or be a child of **DocumentFragment** (see 7.2). NOTE 3 The source for a **BlockQuote** can include content from the same document.
TOC	(Table of contents) A list made up of table of contents item entries (structure type **TOCI**) and/or other nested table of contents entries (**TOC**). A **TOC** entry that includes only **TOCI** entries represents a flat hierarchy. A **TOC** entry that includes other nested **TOC** entries (and possibly **TOCI** entries) represents a more complex hierarchy. Ideally, the hierarchy of a top-level **TOC** entry reflects the structure of the main body of the document. NOTE 4 Lists of figures and tables, as well as bibliographies, can be treated as tables of contents for purposes of the standard structure types. When parts of a **TOC** have descriptive text, that text shall use **Caption** to identify its purpose. When multiple parts of the **TOC** have descriptive text at the same level within that **TOC**, then **Part** shall be used to subdivide that **TOC** into the described (captioned) sub-parts, with each **Part** having its own **Caption**.
TOCI	(Table of contents item) An individual entry within a table of contents (**TOC**).
Index	(Index) A sequence of entries containing identifying text accompanied by reference elements (structure type **Reference**; see 5.5.2.3) that point out occurrences of the specified text in the main body of a document.
Private	(Private element) A grouping element containing private content belonging to the application producing it. The structural significance of this element type is unspecified and shall be determined entirely by the writer. Neither the **Private** element nor any of its descendants (including content) have defined semantic significance and may be ignored by processors, both when consuming the content and when exporting to other document formats.
NOTE The definitions in this table are taken from ISO 32000-1, but have been updated.	

5.5.2.3 Inline-level structure elements

The unique PDF 1.7 elements that are an inline-level element type are defined in Table 3 and shall be the only PDF 1.7 namespace inline-level structure elements permissible in a document (except as exempted by Clause 5.2).

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Table 3 — Standard structure types for unique PDF 1.7 inline-level structure elements

Structure type	Description
Quote	(Quotation) An inline portion of content quoted from another source other than the surrounding content. The quoted text should be contained inline within a single block-level unit of content. This differs from the block-level element **BlockQuote** (see 5.5.2.2), which consists of one or more complete paragraphs (or other elements presented as if they were complete paragraphs).
Note	(Note) An item of explanatory text, such as a footnote or an endnote, that is referred to from within the body of the document. It may have a label (structure type **Lbl**; see ISO 32000-2:2020, Table 368) as a child. The note may be included as a child of the structure element in the body text that refers to it, or it may be included elsewhere (such as in an endnotes section) and accessed by means of a reference (structure type **Reference**). Tagged PDF does not prescribe the placement of footnotes in the page content order. They may be either inline or at the end of the page, at the discretion of the conforming writer.
Reference	(Reference) A citation to content elsewhere in the document.
BibEntry	(Bibliography entry) A reference identifying the external source of some cited content. It may contain a label (structure type **Lbl**; see ISO 32000-2:2020, Table 368) as a child. Although a bibliography entry is likely to include component parts identifying the cited content's author, work, publisher, and so forth, no standard structure types are defined at this level of detail.
Code	(Code) A fragment of computer program text.
NOTE The definitions in this table are taken from ISO 32000-1, but have been updated.	

5.6 Role mapping

Custom element types may be present in a document and shall have an explicitly defined namespace except as exempted by 5.2.

6 Attributes

6.1 General

ISO 32000-2 defines a mechanism for applying structure attributes to structure elements (see ISO 32000-2:2020, 14.7.6). While both ISO 32000-2 and ISO 32000-1 defined this mechanism, ISO 32000-2 extended it to additionally make use of namespaces (see ISO 32000-2:2020, Table 360). Clause 6 specifies the requirements for a file containing structure attributes.

6.2 Attribute owners

Attribute owners (see ISO 32000-2:2020, Table 376) identify sets of attributes that are available for use with structure elements. For each attribute, attribute owners also restrict the structure element type with which they may be used.

The attributes defined within the various attribute owners in ISO 32000-2 are a superset of those defined in ISO 32000-1. As such, regardless of whether a given structure element is a unique PDF 1.7 element or a PDF 2.0 element, that structure element may use any structure attribute defined in ISO 32000-2, as restricted by those attributes' definition.

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6.3 Attribute namespaces

As an alternative to attribute owners, ISO 32000-2 defines a mechanism for identifying a namespace for a given set of attributes (see ISO 32000-2:2020, Table 360). Attribute objects identifying their owner as a namespace may occur on any structure element regardless of that structure element's namespace.

7 Parent-child relationships between the standard structure elements in the standard structure namespace for PDF 2.0 and PDF 1.7

7.1 General

ISO 32000-2 defines the standard structure element types within ISO 32000-2:2020, 14.8.4, and identifies the PDF 1.7 namespace and the PDF 2.0 namespace in ISO 32000-2:2020, 14.8.6. ISO 32000-2:2020, Annex L, specifies the requirements for hierarchical inclusion of the PDF 2.0 elements.

7.2 extends the rules for hierarchical inclusion[1] of both the PDF 2.0 elements and PDF 1.7 elements.

NOTE A compact representation of the hierarchical inclusion rules defined in 7.2 can be found in Reference [1].

7.2 Hierarchical inclusion rules

This subclause defines the acceptable children of the standard structure elements defined in the PDF 1.7 namespace and the PDF 2.0 namespace. PDF 1.7 elements and PDF 2.0 elements shall not have child or parent PDF 1.7 elements or PDF 2.0 elements that are not explicitly listed in Table 5.

These containment requirements shall also apply to structure elements that are role mapped into the PDF 2.0 namespace or PDF 1.7 namespace (except as exempted by Clause 5.2). Table 4 provides a legend for use in interpreting Table 5.

NOTE The hierarchical rules included in this subclause extend those found in ISO 32000-2:2020, Annex L, and can be considered complete for all elements permitted by this document. These extensions pertain to unique PDF 1.7 elements and their interaction with other PDF 1.7 elements and PDF 2.0 elements. These requirements fully conform to those found in ISO 32000-2 and associated errata for PDF 2.0 elements.

Table 4 — Legend for valid usage of structure types

Value	Valid usage relative to other standard structure types
ø	shall not occur
ø*	shall not occur unless the parent element is used as a grouping level element
0..n	may be a child element with one or several occurrences, but is not required to be present
1..n	shall be present as a child element with one or several occurrences
0..1	may occur, but not more than once
‡	for containment rules, refer to the respective structure element type's description
[a]	for specific provisions when and how these structure elements or content can be contained inside a **Ruby** structure element, see ISO 32000-2:2020, 14.8.4.7.3
[b]	for specific provisions when and how these structure elements or content can be contained inside a **Warichu** structure element, see ISO 32000-2:2020, 14.8.4.7.3

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Table 5 — Parent-child relationships between the PDF 1.7 elements and PDF 2.0 elements

Structure Type	Children		Parents	
	Occ.	Structure Type	Occ.	Structure Type
StructTreeRoot	1	Document		
Document	0..n	Document	1	StructTreeRoot
	0..n	DocumentFragment	0..n	Document
	0..n	Part	0..n	DocumentFragment
	0..n	Art	‡	Part
	0..n	Div	‡	Div
	0..n	Sect	0..n	Aside
	0..n	TOC	0..n	BlockQuote
	0..n	Aside	‡	NonStruct
	0..n	BlockQuote	0..n	Private
	0..n	NonStruct	0..n	Artifact
	0..n	Private		
	0..n	P		
	0..n	Note		
	0..n	Code		
	0..n	Hn		
	0..1	H		
	0..n	Title		
	0..n	Link		
	0..n	Annot		
	0..n	Form		
	0..n	FENote		
	0..n	Index		
	0..n	L		
	0..n	Table		
	0..n	Figure		
	0..n	Formula		
	0..n	Artifact		
DocumentFragment	0..n	Document	0..n	Document
	0..n	DocumentFragment	0..n	DocumentFragment
	0..n	Part	‡	Part
	0..n	Art	‡	Div
	0..n	Div	0..n	Art
	0..n	Sect	0..n	Sect
	0..n	TOC	0..n	Aside
	0..n	Aside	0..n	BlockQuote
	0..n	BlockQuote	‡	NonStruct
	0..n	NonStruct	0..n	Private
	0..n	Private	Ø*	Note
	0..n	P	Ø*	Code
	0..n	Note	Ø*	Link
	0..n	Code	Ø*	Annot
	0..n	Hn	Ø*	FENote
	0..1	H	Ø*	Caption
	0..n	Title	0..n	Artifact
	0..n	Link		
	0..n	Annot		
	0..n	Form		
	0..n	FENote		
	0..n	Index		
	0..n	L		
	0..n	Table		
	0..n	Figure		
	0..n	Formula		
	0..n	Artifact		

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