
**Information and documentation —
Requirements for binding of books,
periodicals, serials and other paper
documents for archive and library use —
Methods and materials**

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*Information et documentation — Prescriptions relatives à la reliure des
livres, des périodiques, des publications en série et des autres
documents en papier à l'usage des archives et des bibliothèques —
Méthodes et matériaux*

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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 14416 was prepared by Technical Committee ISO/TC 46, *Information and documentation*.

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Introduction

Libraries and archives receive books, periodicals, serials and other paper documents which should remain in good physical condition for as long as their content is worth preserving.

Based on their judgement of the wear and tear of an item and its expected lifetime, the libraries and archives decide how each book, periodical, etc. shall be protected. It is the responsibility of an archive to preserve original documents, which may also involve the task of specifying paper quality for the future archive records.

The binding of library books and archive documents has traditionally been made in a manner complying with each binder's tradition and varying requirements from the customer. This International Standard serves as a tool for libraries and archives in comparing and evaluating quality in relation to price in a world of rapidly changing methods of book production and library use.

This International Standard for binding materials and methods is intended to promote

- appropriate binding qualities,
- to help binderies to rationalize their production including the application of automated systems, and
- to ensure continuity of supply of binding materials.

In order to reduce unit costs, libraries, archives and binderies have a common interest in complying to this International Standard. Binderies will be able to offer lower prices if they receive larger quantities of similar work, and libraries and archives will therefore be able to use binding more extensively as a protection for their books.

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Annex A, normative, provides a description of a number of optional procedures that may be chosen as supplements to the fundamental binding procedures.

Three informative Annexes B, C and D, are included. Annex B provides guidance in choosing a binding method. Annex C gives information on performance tests for double-fan adhesive bound books. Annex D contains illustrations that show some of the requirements of this International Standard.

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Information and documentation — Requirements for binding of books, periodicals, serials and other paper documents for archive and library use — Methods and materials

1 Scope

This International Standard is applicable to the binding of books, periodicals and archive documents which have special requirements for durability and permanence. The use, as well as the wear and tear, of library and archive documents varies. The choice of binding method should therefore relate to the appropriate requirements of a specific library or archive. The quality as well as the price of the binding is dependent on this choice.

It is applicable to the following general procedures:

- first-time hard-cover binding of published and unpublished materials, and any other documents requiring this type of protection;
- rebinding of hard-cover monographs, serials and any other documents.

It is not intended for binding volumes identified by a customer as having high artifactual or historical value, or for any volumes that, because of their physical characteristics, cannot or should not be bound according to this International Standard. Arrangements for special treatments should be made separately.

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 534:1988, *Paper and board — Determination of thickness and apparent bulk density or apparent sheet density*

ISO 536:1995, *Paper and board — Determination of grammage*

ISO 1139:1973, *Textiles — Designation of yarns*

ISO 1974:1990, *Paper — Determination of tearing resistance (Elmendorf method)*

ISO 2062:1993, *Textiles — Yarns from packages — Determination of single-end breaking force and elongation at break*

ISO 6588:1981, *Paper, board and pulps — Determination of pH of aqueous extracts*

ISO 9665:1998, *Adhesives — Animal glues — Methods of sampling and testing*

ISO 9706:1994, *Information and documentation — Paper for documents — Requirements for permanence*

ANSI L29.1:1977 (R 1984), *Fabric for Book Covers*¹⁾

ASTM D 5035-90, *Standard test method for breaking force and elongation of textile fabrics (strip force)*

3 Terms and definitions

For the purposes of this International Standard, the following terms and definitions apply.²⁾

3.1 alkaline buffered paper
paper with a pH equal to or greater than 7,0, and containing a compound (e.g. calcium carbonate) at a level sufficient to neutralize acid generated from degradation of the paper, from adjacent materials, or from atmospheric pollution

3.2 all-along sewing
method of sewing a book where the sewing thread goes from kettle-stitch to kettle-stitch of each successive section, with one complete length of thread for each section

3.3 archive document
record consisting of original documents which are either single units or collected in a series

3.4 binding edge
edge of the gathered leaves or sections that is sewn, adhesive bound or otherwise secured

3.5 binding margin
distance between the binding edge and the printed area

3.6 book block
a gathering of leaves, including printed or written text and all papers added by the bookbinder, that can be or have been bound

See 3.43.

3.7 brittle paper
paper that will break when it is deformed by folding

NOTE The main causes of paper brittleness after long-term ageing are excessive acidity introduced during the manufacturing process, and unsuitable storage conditions which lead to deteriorative chemical and physical changes in the paper structure, especially if the paper is not alkaline buffered.

3.8 Buckram
coated and impregnated fabrics having a heavy base

1) May be obtained from the American National Standards Institute (ANSI) at the following address: ANSI 11 West 42nd Street, 13th Floor, New York, NY 10036 USA.

2) The Figures in Annex D illustrate some of the definitions.

3.9**case**

assembled covering material, boards and inlay ready to be attached to the book block

3.10**collation**

checking for completeness and for putting the leaves, issues or sections of a book or serial publication in the correct order

3.11**double-fan adhesive binding**

method of adhering loose leaves together at the binding edge to create a book block by applying glue to the leaves, first fanned out in one direction and then once again in the opposite direction

3.12**endpaper**

folded sheet of paper attached to the book block, with each sheet facing the inner side of its board, adhesive being applied to the outer page of each endsheet when the book block is cased in

3.13**fanning out**

process of working out the ends of a pile of sheets preparatory for gluing

3.14**flat back**

a book that is not rounded or backed, resulting in a flat spine and fore edge

3.15**foil**

a thin plastic film with a high vacuum deposit of metal or pigment and backed by a pressure and heat sensitive adhesive

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3.16**guard**

a strip of cloth or paper used as a hinge for a map, illustration or a single sheet; also referred to as compensating strips for thick inserts and maps

See also 3.42.

3.17**hard cover**

cover of a book produced from a flexible material, usually cloth or paper supported by rigid boards

3.18**insert**

additional element, such as printed leaf, blank paper or card, laid between the leaves of a book and not secured

3.19**joint**

exterior juncture of spine and covers

3.20**kettle-stitch**

stitch made near the head and tail of a book sewn by hand, and which holds the sections together

3.21

library corner

corner of the binding's cover in which the covering material, instead of being cut and abutted, has the excess taken up in one diagonal fold, and two turn-ins

3.22

machine direction

direction in a paper or a board corresponding to the direction of travel of the web on the paper or board machine

NOTE Machine direction is often, but not necessarily always, identical with "grain direction", the direction in which the majority of fibres lie in a sheet of machine-produced paper or board.

3.23

milling

mechanical process used to roughen the edge of the leaves and/or to separate leaves in the preparation of the book block, usually for adhesive bindings

3.24

notch

grooves cut into the spine across the binding edge, often used to enlarge the contact area between glue and paper in adhesive binding

3.25

overhang

covering material extending beyond the edges of the board before turning-in

3.26

oversewing

method of sewing thin sections (i.e. piles) of leaves, one to another in succession, to create a semi-flexible book block

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NOTE Oversewing can be done by hand or machine, almost always the latter in library binding.

See also Figure D.9.

3.27

paper covers

covers of the book block produced from an unsupported flexible material, usually paper

3.28

periodical

one or more serial issues of a title that may be bound together as a single unit

3.29

preservation

activities undertaken to prolong the life of an item, e.g. better storage conditions, proper handling

3.30

rebinding

process of replacing a binding using either the original or a new method of leaf attachment

3.31

re-casing

process of attaching the undamaged book block to a new case, or attaching an undamaged case to a repaired book block

3.32**rounding and backing**

shaping of a book block by a special machine (or by hand)

NOTE Rounding results in the characteristic convex spine and concave fore-edge of a hard-cover book. Backing causes the edges of the signatures to fan out, producing a hinge for the cover boards to turn against after the book is bound.

3.33**section**

unit of paper which is folded, hinged, sewn or otherwise held together and which with other like units makes up a complete book

3.34**sewing through the fold**

method of attaching separate signatures, with the thread passing through the fold of the sections

3.35**shoulder**

ridge on each side of the book block that is formed by the backing process

3.36**side sewing**

method of securing the leaves of a book with thread near the binding edge, the thread passing through the entire thickness of the book block

See Figure D.12.

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3.37**signature**

each unit of folded leaves combined into a book

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3.38**spine inlay**

strip of card used to stiffen the spine of the case of a binding

3.39**spine lining**

process of, or material used, in reinforcing the spine of a book

3.40**squares**

board edges that extend beyond the book block at the head, tail and fore edges of a book

3.41**storage binding**

type of binding using minimal intervention, applied to material which is little used

3.42**stubbing**

blank papers used as a compensating material to smooth out any unevenness in the book block that would otherwise distort the book shape

See also 3.16.

3.43**text block**

a gathering of printed or written leaves that may be or have been bound, excluding all paper to be added by the bookbinder

See 3.6.

3.44

two-on

method of sewing a book by hand in which two sections are sewn on a single length of thread from kettle-stitch to kettle-stitch

3.45

turn-in

part of the covering material that extends over to the inside surface of the boards and the spine area

3.46

whip-stitch

method of hand-sewing single sheets into sections, similar to overcasting

4 Principles

This International Standard has been developed for libraries and archives to help them preserve and make better use of their collections and records by means of binding.

It is based on specified binding methods and is intended to ensure that the customer gets a satisfactory and uniform binding, regardless of the bindery selected.

Standards that aim to ensure a certain quality level often describe a method, and/or contain requirements on test values, that the finished products shall meet. Today's test methods are, however, not sufficiently conclusive as regards the quality requirements on the finished binding. This International Standard will therefore be subject to continuous revision based on gained experience and changing requirements.

There is no single test method for all types of books. In order to judge the quality of double-fan adhesive-bound books, however, a set of test methods that gives some information about the binding quality are described in Annex C.

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This International Standard is directed to all libraries/archives with a need to bind their books and documents. Institutions have different requirements, which broadly can be identified as four types of use, categories A, B, C and D. This does not, however, exclude that other requirements or combinations of requirements can be specified. All treatments should be applied with concern for the integrity of the item. This is particularly important for category D when the item may demand future treatment intended for long-term storage.

A library or archive wishing to bind its books should first consider a category appropriate to the needs of the institution. According to the grade of permanence or durability required, a suitable book-block treatment will then be chosen. The treatments correspond to different binding techniques. For example, in category A, only one book-block treatment is available but in category B, three treatments are available.

The types of use can be defined as follows, book block treatments being given in Clause 7.

Category A: Permanent retention of material that is acquired with folded sections/signatures intact. Intended for use by libraries and archives for material which is considered to have a permanent value and for which binding is selected as the storage method.

Book-block treatment T1: Sewing through the fold

Category B: Permanent retention of material acquired in single-leaf form and which is loose, stapled or glued together. Intended for use by libraries and archives for material which is considered to have a permanent value and for which binding is selected as the storage method.

Book-block treatments: T2: Oversewing
T3: Double-fan adhesive binding
T4: Side sewing

Category C: Heavy use for short periods of time for material that is acquired with folds intact, in single-sheet form or is an undamaged book block. Intended for use by libraries and archives for material which needs protection because it is expected to be subjected to heavy use over short periods of time but which might not be retained permanently.

Book-block treatments	T1: Sewing through the fold
	T2: Oversewing
	T3: Double-fan adhesive binding
	T4: Side sewing
	T5: Re-casing

Category D. Intermediate use. Intended for use by libraries and archives for protection of material which is expected to receive occasional light use but needs some protection during storage.

Book-block treatments	T4: Side sewing
	T5: Re-casing
	T6: Storage binding

5 Materials

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5.1 General principles

The materials used in binding shall not contain or produce in the future, either in themselves or through interaction with other materials or with the environment, any substances which are liable to cause any damage to the documents.

The specific requirements take precedence over the general requirements which should be seen either

- as additional requirements in conjunction with the specific requirements,
- or as the recommended product where specific requirements are lacking.

Alternative materials may be used provided that they meet or exceed the performance of the specified materials.

5.2 Requirements

5.2.1 Paper and board

5.2.1.1 Endpaper

Specific requirements:

Endpapers shall be made from paper conforming to ISO 9706. They shall have a minimum grammage of 110 g/m² and a maximum grammage of 160 g/m². The tear resistance shall be of a minimum of 1 120 mN as measured by the Elmendorf method, described in ISO 1974. Grammage shall be determined according to ISO 536.