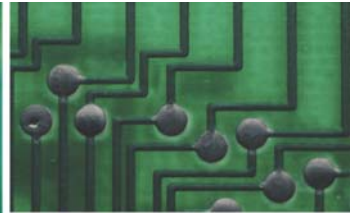


Quality Levels for Binding



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Public Works and
Government Services
Canada

Travaux publics et
Services gouvernementaux
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Canada

Quality Levels for Binding

1. INTRODUCTION

The quality levels for bookbinding stated herein are standards intended to provide a means of communication between the client department and the supplier regarding the quality of binding acceptable for government books and publication.

The selection of a bookbinding method depends upon the nature of the book, the longevity required, its intended use, and budget. There are three basic classifications of bindings:

- Mechanical Binding
- Sewn Binding
- Adhesive Binding

The quality levels expected from the products are outlines in Sections III “The Finished Product”; IV “Materials”; and V “Test”.

Books bound or rebound for library use are subject to the quality requirements outlines in Section VI, in addition to those requirements described herein.

Adequate performance, in use, is the primary consideration of these quality standards. This document avoids overstated and expensive binding and the focus is on adequate performance over the intended life span of the book or the publication.

The data shown were developed following a review of recent Library Binding Institute Standards and of a large number of books and publications produced commercially. All of the requirements can be readily attained and are quite normal in many printing houses.

It is the responsibility of the supplier to ensure that the binding meets these quality requirements regardless of the method of manufacture.

It is incumbent on the supplier to bind in conformance with good workmanship, sound trade practices, satisfactory materials and consistency throughout the job. These requirements apply to all quality attributes. In no case shall any printed image be destroyed by any binding process.

Please direct any comments, proposed revisions or requests for further copies of this publication to:

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2. GUIDE TO THE CATEGORIES

Category	Synonyms	Typical of Category
PRESTIGE	TOP QUALITY	Deluxe bound books
LIBRARY	PROFESSIONAL GRADE	Library books Professional journals
INFORMATIONAL	COMMERCIAL QUALITY PUBLICATION GRADE	Magazines Advertising literature Technical reports with illustrations Catalogues (1 to 4 colours) Departmental annual reports Press releases
OFFICE	STATIONERY GRADE	Departmental stationery Internal publications Management reports Phone directories
UTILITY	BASIC QUALITY DUPLICATOR QUALITY	Circulars

This publication is an extension of *Quality Levels for Printing* and should be used in conjunction with the aforementioned.

Quality Levels for Binding

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3.1 Sewn Binding

The signatures of a sewn book shall not exceed 16 pages (8 leaves) each. If the papers used are 100 M (Basis 25 in. x 38 in.), 75 g/m², or less, 32-page signatures may be used.

3.2 Saddle Glued

The signature of a saddle glued booklet shall not exceed 32 pages. If the papers used are 80 M (Basis 25 in. x 38 in.). 60 g/m², or less, a 64-page signature may be used, dependent on the supplier's equipment capability.

3.3 Saddle Wired (Saddle Stitched) or Side Wired (Side Stitched)

The thickness of a saddle wired book shall not exceed a 6.4 mm (1/4 in.). Any volume larger than 6.4 mm (1/4 in.) shall be bound by other methods.

3.4 Ring or Post Binding

The number of leaves for ring or post binding is limited by the height of the ring or post. The size, number and position of holes shall correspond to the manufactured covers, rings and post supports.

3.5 Gathering and Collating

When gathering and collating, the supplier shall conduct an examination to ensure completeness and proper sequence.

3.6 Tip-in

The line of adhesive for any tipped-in insert shall be 3 mm (1/8 in.) wide and the tip-in shall be secure along the entire bonded surface.

The tipped-in insert shall not extend beyond the specified trim size of the book block.

All tip-in inserts shall be square and parallel to the edges of the book block.

Folded tip-in inserts shall fall within the trimmed size of the book block. Allowance must be made to ensure the fold is not trimmed with the book block. Unless otherwise specified, the fold of a gatefold insert shall be within 3 to 8 mm (1/8 in. – 11/32 in.) of the edge of the completed book.

3.7 Oversewing

The sections of an oversewn book shall not exceed 1.6 mm (1/16 in.) thick; the thickness is variable depending on the nature and condition of the paper.

For all oversewn volumes a minimum binding margin of 15 mm (5/8 in.) after milling is desirable. In no case shall the sewing stitches be closer to the text than 3 mm (1/8 in.).

Oversewing shall be no closer than 6 mm (1/4 in.) and no farther than 2.5 cm (1 in.) from the head and tail after trimming.

3.8 Side Sewing

Stitches shall be approximately 1.25 cm (1/2 in.) long. The sewing shall be no farther from the head and tail than 5 mm (3/16 in.) Staples in side sewn volumes shall be removed.

3.9 Sewing Through-the-fold

Sewing through-the-fold shall come on no closer than 6 mm (1/4 in.) and no farther than 2.5 cm (1 in.) from the head and tail after trimming. This does not apply to saddle sewn books.

3.10 Saddle Sewing

Saddle sewn books shall have sufficient clearance at the head and tail to ensure thread is not cut while trimming. In some instances, passports for example, the saddle sewing must extend from head to tail without a gap.

3.11 Trimming

Unless otherwise specified, all the book blocks shall be cleanly and evenly trimmed and squared on three sides. In no case shall trimming cause rupture, tears or other damage to the spine or the cover.

3.11.1 Case Hard Cover

The trimmed book block of a case hard cover book shall be between 3 mm and 6 mm (1/8 in. – ¼ in.) smaller than the cover.

3.11.2 Soft Flexible Cover

The trimmed book block of a soft flexible cover adhesive bound book shall be the size specified, with no overlap between the cover and the inside pages.

3.11.3 Saddle Glued

The saddle glued book shall be trimmed as specified, within the tolerance levels for trim as specified in *Quality Levels for Printing* .

3.11.4 Saddle Wired

The trimmed saddle wired book shall be the size specified, with no overlap between the cover and the inside pages.

3.11.5 Ring or Post Binding

Trimming shall adhere to the specification and shall be within the tolerance levels for trim as a specified in *Quality Levels for Printing* .

3.12 Adhesive Bound Books

The strength of the adhesive binding edge is evaluated according to test procedures outlined in Section VII.

NOTE:

Lumbacking or double fan gluing is fully acceptable provided it meets the requirements outlined in Section VII

3.13 Roughening

The binding edge shall be sufficiently roughened to ensure the adhesive has a suitable surface to which to adhere.

Roughening shall not interfere with the margins of the pages and shall not be apparent when an adhesive bound book is opened.

All loose fibres, dust and foreign material shall be removed from the roughened spine.

3.14 Punch Perforated Slot Binding

The spine of the book does not need roughening as the slots are channels for glue.

Slots shall cut through each signature and shall not be noticeable when a book is opened. Slots shall not interfere with the printed margin of the book block. Punched perforations shall not be noticeable when a book is opened. Notches shall begin and end within 3 mm (1/8 in.) of the head and tail of the bound volume.

All loose fibres, dust and particles shall be removed from the notched binding edge. All notches shall be completely filled with adhesive. The strength of this type of binding is evaluated according to test procedures outlined in Section V.

3.15 Smashing

The book block shall be uniformly smashed to tighten the folded signatures.

3.16 Rounding

The spines of all case hard cover books, 6 mm (1/4 in.) thick and greater, shall be rounded so the fore-edge is drawn inward in an even arc to a sufficient degree that it is protected within the hard cover. A suitable adhesive shall be used which will allow the rounding process.

Rounding shall be accomplished without splitting sections. Both the inside and outside curves shall be smooth and uniform. The top and bottom edges shall be flat and uniform.

3.17 Backing

After rounding, a symmetrical ridge or shoulder shall be shaped on the front and back of the book block, parallel to the binding edge and uniform from head to tail.

The dimension of the shoulders shall be determined by the thickness of the boards to be used which, in turn, is determined by the size and build of the block book.

3.18 Lining up

A strip of blacklining material (mull) [See section IV: Material] shall be glued to the spine of the book block. It shall extend to within 1.25 cm ($\frac{1}{2}$ in.) of the head and tail and within 2 cm ($\frac{3}{4}$ in.) and 2.5 (1 in.) squarely onto the endpapers on either side of the spine.

Where book blocks are more than 6.4 cm ($2\frac{1}{2}$ in.) in bulk, of excessive weight or if specified in the contract, they shall be reinforced with a strip of lining paper or material glued over the first layer of backlining material. When a reinforced spine is specified in the contract, the reinforcing material shall cover the length and width of the spine and shall be positioned directly over the spine. Reinforcing material may consist of an additional layer of backlining material or of kraft paper.

The backlining material and lining paper shall adhere smoothly and completely along the spine, joints and endpaper surfaces.

3.19 Inlay

The inlay shall be the width and length of the spine and shall be of a size which allows for the correct swing of the covers which places the least strain on the spine. The inlay shall be squared and cleanly cut.

The inlay shall be glued securely to the cover material between the two cover boards.

The grain of the inlay paper shall run parallel to the binding edge.

The inlay shall meet material requirements outlined in Section IV herein.

3.20 Binder's Board (Cover Boards)

The cover boards shall be between 3 mm and 6 mm ($\frac{1}{8}$ in. – $\frac{1}{4}$ in.) larger than the inside pages of the book block. They shall be square, even and cleanly cut.

Cover boards shall meet material requirements outlined in Section IV.

3.21 Cover Material

The cover material shall be square, even and cleanly cut.

The cover material shall be completely glued to the cover boards and the inlay with no noticeable marks, creases, dog ears, bubbles or defects.

The cover material shall be uniformly turned in over the inside edges of the binders' board by at least 1.5 cm (5/8 in.).

The cover material shall meet material requirements outlined in Section IV herein.

3.22 Lettering for Titles

Lettering on the cover material of all case bound books, whether embossed or printed, shall be clean, sharp, legible and sufficiently impressed or embossed to ensure legibility for the expected life of the book.

3.23 Edge Stain

The edges colour shall be consistent in colour and application. There shall be no run-in (feathering) of edge stain. Edge colour shall be consistent from volume to volume, within the run.

3.24 Saddle Wired and Side Wired

Unless otherwise specified, all saddle wired and side wired books shall be bound with two or more staples. Books with a binding edge longer than 30.5 cm (12 in.) shall be bound with three staples.

Staples shall be 12.7 mm (1/2 in.) in length with no greater variance in length than 1.6 mm (1/16 in.).

The distance between staples, on average throughout the shipment, shall not vary more than 12.7 mm (1/2 in.).

After stitching, the points of the folded staple shall lie flat, even and straight. The distance between the points of the folded staple shall not exceed 3 mm (1/8 in.), with a variance allowance of 0.80 mm (1/32 in.).

When two or more staples are used, each shall be positioned an equal distance from the head and tail of the spine, unless otherwise specified in the contract.

The staples shall be uniformly centred lengthwise along the fold of the spine with no positional variance greater than 1.6 mm (1/16 in.).

The cover shall be squarely applied and properly centred. There shall be no overlap between the cover and the pages.

For saddle stitched books, there shall be no evidence of folds, creases or irregularities along the folded spine of the cover. For side wired books, staples shall be lined up along

the binding edge. They shall be placed within 3 mm (1/8 in.) and 12,5 mm (1/2 in.) of the binding edge, and parallel to that edge.

Side wire staples shall not be placed nearer than 6 mm (1/4 in.) of the printed margin.

The maximum angular displacement, horizontal or vertical, of the cover to the book block shall not exceed the following quality level tolerances:

Prestige	Library	Informational	Office	Utility
0.80 mm (1/32 in.)	0.80 mm (1/32 in.)	1,50 mm (1/16 in.)	3.20 mm (1/8 in.)	6.40 mm (1/4 in.)

3.25 Ring, Post and Spiral Binding

Holes or slots, either drilled or punched for binding by rings, posts or spiral type binding materials shall be of the size and placement specified in the contract.

The centre of each hole or slot shall not differ from the specified placement by more than 0.4 mm (1/64 in.).

The size of the drilled or punched holes shall not vary from the specified size by more than 1.6 mm (1/16 in.).

All drilled or punched holes shall be even and shall not damage or obliterate any image. There shall be no extraneous material attached to the book.

3.26 Casing-in Hard Covers

The grain direction of all text papers, inlay papers, endpapers and boards shall be parallel to the spine of the book, unless otherwise specified.

Each endpaper shall have one leaf glued flat against the case cover and one secured to the first or last signature or to the reinforcing fabric attached to the adjoining signature.

The endpapers shall be secured to the first and last signature with 3 mm (1/8 in.) of adhesive along the inside gutter edge.

Each endpaper glued to an inside cover shall be square, centred, reinforced and evenly positioned.

Endpapers shall meet material requirements outlined in Section IV herein.

The backlining material shall be secure and glued uniformly to the spine and the endpaper, unless otherwise specified.

3.27 Drawn-on Adhesive Binding

The grain of the cover stock shall be parallel to the spine of the book. The grain direction of the sheets in the book block shall be parallel to the spine.

The cover shall be scored four times, parallel to the spine of the book from head to tail. The two inner scores shall be positioned so they fall on the outside corners of the spine.

The two outer scores shall be formed 6 mm (1/4 in.) from the inner scores. The two outer scores shall enable the cover to open readily.

The pages of the two outside signatures shall be lap glued to the covers with a strip of adhesive at least 6 mm (1/4 in.) wide and shall not extend beyond the score mark on the cover.

The glue holding the book block to the soft cover shall form a complete bond over the entire area of the spine and the lapped edge as far as the score line. The glue shall be evenly applied with no gaps, bubbles, excessive glue or areas where the glue is missing.

The maximum angular displacement, horizontal or vertical, of the cover to the book block shall not exceed the following quality level tolerances:

Prestige	Library	Informational	Office	Utility
N/A	0.80 mm	1,50 mm	3.20 mm	6.40 mm
N/A	(1/32 in.)	(1/16 in.)	(1/8 in.)	(1/4 in.)

4. MATERIALS

This section outlines specifications for materials used in bookbinding.

4.1 Thread

Thread for sewing shall be cotton, nylon or cotton-covered polyester, of appropriate caliper to control swell. Tensile strength shall be no less than 1.54 kg (3.4 pounds) per linear inch for cotton, 1.81 kg (4 pounds) per linear inch for nylon and 1.91 kg (4.2 pounds) per linear inch for cotton-covered polyester.

The thread shall meet the following Canadian General Standards Board (CGSB) standards:

Cotton	CGSB 4-GP-80 MA
Nylon: Continuous	CGSB 4-GP-85 MA
Multifilament	

4.2 Endpapers

The mechanical characteristics of endpapers shall meet or exceed the following specifications:

Test	Performance	TAPPI Test Number
Bursting Strength (Mullen)	18.1 kg per 2.5 em2 (40 lbs.lin. Z)	TAPPI T-403
Folding Endurance (MIT), with grain	275 double folds	TAPPI T-511
Tear Resistance (Elmendorf), with grain	114 grams	TAPPI T-414

Unless otherwise specified, the two-part endpapers shall consist of No. 1 Offset, 200 M (Basis 25 in. x 38 in.), 148 ~m2.

4.3 Adhesive

The adhesive used for any binding process shall be capable of forming a permanent bond between the surfaces to be joined, without the formation of air bubbles. The cohesion shall be such that the bonded materials will be damaged if separated.

Any adhesive used shall have a low pH value and long-term aging characteristics.

The adhesive used for casing-in shall be compatible with the adhesive used to make the case, so that the case adheres tightly and securely to the book block.

Adhesion of the covering material to the inlay and the endpapers in the joint is critical.

Glued surfaces must meet the test requirements as outlined in Section V herein.

4.4 Stitching Wire

Thickness: The thickness of the wire shall be measured and shall conform to the following specifications.

Breaking Load: When tested on an Instron Tensile Tester (or equivalent instrument), the breaking load of the stitching wire shall conform to the following specifications:

Size (ASWO)	Thickness (mm)	Breaking Load (Newtons)	Stretch (%)
20	0.890 ± 0.02	493 ± 25	4 maximum
21	0.810 ± 0.02	436 ± 25	4 maximum
23	0.660 ± 0.02	347 ± 20	4 maximum
25	0.510 ± 0.02	223 ± 15	4 maximum
26	0.450 ± 0.02	142 ± 10	4 maximum
20-25	0.890 ± 0.02- 0.510 ± 0.02	383 ± 20	4 maximum
20-23	0.890 ± 0.02- 0.660 ± 0.02	423 ± 25	4 maximum

Stretch: When tested on an Instron Tensile Tester (or equivalent instrument), the stretch or elongation of the stitching wire shall not exceed the limits shown above.

Flexibility: (Coated Wire) Lengths of stitching wire (20 cm) wound around a 5 mm diameter steel rod shall show no evidence of peeling or cracking of the coating from the substrate.

No coating failure	Pass
Coating failure	Fail

Corrosion Resistance: Five 10 cm lengths of stitching wire placed in 225 mL of water and observed at 24, 48 and 72 hours shall conform to the following requirements:

No rusting after 72 hours	Pass
No rusting after 48 hours but some rusting after 72 hours	Major Defect
Rusting after 24 hours	Critical Defect

4.5 Backlining Material

The back lining material shall consist of dirt-free cleaned cotton or mull; it may be napped on one side. It will weigh not less than 113 g per 0.9 m² (4 ounces/yd.²), plain weave, single ply yarn.

The breaking strength by the strip method shall be 19 kg per 2.5 cm² (42lbs/in.²) for the warp and 24.5 kg per 2.5 cm² (54lbs/in.) for the filling.

4.5.1 Sewn Books

When the sewn book is 1.25 cm (1/2 in.) thick and less, the thread count of the backlining material shall not be less than 33 per 2.5 cm (1 in.) in the warp and 25 in the felling.

For sewn books thicker than 1.25 cm (1/2 in.), the thread count shall not be less than 45 per 2.5 cm (1 in.) in the warp and 38 in the filling.

4.6 Lining Paper

Lining paper shall have a basis weight of 120 M (Basis 25 in. x 38 in.), 90g/m², with a pH between 6 and 8. (Test method: Pulp and Paper Technical Association of Canada (PAPTAC) G-25P).

4.7 Headbands

Headbands shall be made of strips of cotton cloth about 1.58 cm (5/8 in.) wide with a rolled edge.

They may be a solid colour or coloured threads with a pattern of stripes or checks.

Headbands shall be securely attached to the head and tail of the spine of the book block, under the backlining material.

Headbands shall be colour coordinated to the cover material.

4.8 Binder's Board

Solid binder's board or pasted chip board shall be used as cover boards, as specified in the purchasing contract.

4.8.1 Caliper

The thickness of the board shall be adapted to the size and weight of the volume and shall be between 0.15 cm and 0.32 cm (0.060 in. and 0.125 in.).

4.8.2 pH

The pH level shall be between 6 and 8, according to the PAPTAC G-25P.

4.8.3 Surface

The board surface shall be free from lumps, indentations and mechanical imperfections. It shall be smooth and even.

4.8.4 Trimming

The board shall be trimmed square on all four sides and all edges shall be trimmed smooth.

4.8.5 Curl

The results of a curl test of the boards shall be within the requirements outlined in Section V.

4.9 Inlay

The inlay shall be of flexible boards and on the grain shall run parallel to the binding edge.

Inlays shall be not less than 0.30 mm (0.012 in.) thick and no more than 0.76 mm (0.030 in.) thick.

The inlay shall have a pH level of 6 to 8.

4.10 Cover Material

The cover material shall be as specified in the contract.

4.11 Cord

The cord used to line the cover material in the fold at the head and tail of the spine shall have a minimum basis weight of 3,560 g/m².

It may be made of any of the following materials:

- Cotton, polyester or nylon with a multi-filamented type of construction;
- Kraft paper with a single-filament twist type of construction. The kraft paper used shall have a pH value of 6 to 8. (PAPTAC Test method G25P).

4.12 Lettering

Stamping foil: Stamping foil shall meet the requirements and tests outlined in Section VII.

Preprinted Covers: Preprinted covers shall be legible during the life of the binding, and shall adhere to the applicable quality levels for printing.

4.13 Reinforcing Material

The reinforcing cloth used for endpapers and tipping-in shall have no less than 77 warp threads per 2.5 cm (1 in.) and not less than 72 filling threads per 2.5 cm (1 in.)

The tensile strength (Strip Method) of the warp threads shall be no less than 20.4 kg per 2.5 cm (45 pounds per linear inch) and of the filling threads no less than 9 kg per 2.5 cm (20 pounds per linear inch).

5. TESTS

When evaluating a bound volume, initial examinations are primarily non-destructive and visual. The volume, especially a single-copy volume bound for library use, is visually examined to ensure all general requirements as outlined in this document have been met.

Where an obvious problem exists, measurements are taken to determine the degree of error. In some cases, destructive testing may be performed to further document the problem.

5.1 Adhesion

The following are several indicators of the effectiveness of an adhesive.

5.1.1 Rupture

For bookbinding, the major requirement is that, when separated, the surfaces of the materials joined must show evidence of rupture along the entire glued area.

5.1.2 Appearance

The glued area is examined to ensure there is no warping, creasing or unevenness in the materials glued together.

5.1.3 Flex Test

The flex test is performed to evaluate the strength of adhesion of pages to the spine in an adhesive bound volume. This test does not apply to deteriorated material or material over 30 years old.

5.2 Flex Test Method

The flex test is performed at 21°C on samples which have been conditioned to equilibrium at that temperature.

spine -A leaf is flexed with 2.27 kg (5 lbs.) of pull until the leaf separates from the spine or until it withstands 300 flexes.

- Each book is tested at a minimum of three places: one quarter, one half and three quarters through the book.

-The exact page numbers tested and the number of flexes of each leaf are recorded.

-If a failure occurs in less than 300 flexes (case hard cover books), or in less than 200 flexes (adhesive soft flexible cover books), the tester is moved 10 pages forward or backward and a re-test is performed.

-The average of the two lowest flex results determines the defect class: minor, major or critical.

-A book is assessed "defective" if two critical page failures occur.

Punch perforated slot bound volumes are tested by performing the flex test on the two middle leaves of a signature. If a failure occurs, a re-test is performed on the two middle leaves of the next signature.

6. LEVELS OF DEFECT

6.1 Adhesive Case Hard Cover

Flexes	Defect
251-299	Minor
201-250	Major
200 and less	Critical – Not Acceptable

6.2 Adhesive Soft Flexible Cover (Paperbacks)

Flexes	Defect
151-199	Minor
101-150	Major
100 and less	Critical – Not Acceptable

6.3 Curl

The curl test is performed to evaluate the flatness of the cover boards of a case hard cover book, whether sewn or adhesive bound.

6.3.1 Curl Test Method

- The curl test is carried out at a relative humidity of $50 \pm 2\%$ at $21\text{ }^{\circ}\text{C}$ ($70\text{ }^{\circ}\text{F}$), with the samples in equilibrium with these condition.
- The instrument used for testing curls is made of a micrometer dial gauge mounted above a sheet of plate glass. The gauge is used to measure the maximum height of the case hard cover.
- The warp is the thickness (bulk) of the cover subtracted from the height as measured by the micrometer. The curl measurement is recorded.
- Whether the curl is convex or concave is recorded.

6.3.2 Level of Defect

A curl test warp of 3 mm or greater is a critical defect and is unacceptable for any hard cover book.

6.4 Damaged Pages

The percentage of gusseting-unwanted folds or creases-shall not exceed the tolerances shown below.

The percentage of dog ears-improperly trimmed or folded comers-shall not exceed the tolerances shown below.

The percentage of connected or tom pages shall not exceed the tolerances shown below.

Prestige	Library	informational	Office	Utility
0%	3%	5%	10%	15%

These quality requirements apply to volumes bound or rebound for library use. These apply in addition to the quality requirements for binding described elsewhere in this document.

6.5 Warping Pages or Covers

The maximum deviation perpendicular to the horizontal must not exceed the tolerances shown below.

Prestige	Library	informational	Office	Utility
0 mm (0 in.)	0.8 mm (0.03 in.)	1 mm (0.04 in.)	1.3 mm (0.05 in.)	2.5 mm (0.10 in.)

6.6 Stamping Foil

Foil used for lettering or decorating a case hard bound book is tested to ensure the following standards are met.

Stamping foil shall be legible during the life of the binding and shall perform as follows, when tested in environmental conditions as described in Federal Test Method AA T CC 23-72:

Type of Exposure	Time	Minimum Requirement
70°C (158°F), Dry Heat	10 Days	No change
70°C (158°F), Dry Heat	10 Days	Moderate change
Oxygen	4 Days	Very slight change
Ozone, 50 PPHM, 37.7°C (100°F)	4 Days	No change
Hydrogen Sulfide Gas	2 Hours	No change
Fade-Ometer	40 Hours	Satisfactory
Oxides of Nitrogen	3 Cycles	3

(ANSI/NISO/LBI Z39.78-2000)

7. BINDING FOR LIBRARY USE

These quality requirements apply to volumes bound or rebound for library use. These apply in addition to the quality requirements for binding described elsewhere in this document.

7.1 Gathering and Collating

All periodical volumes shall be examined by the supplier to ensure completeness, correct issue sequences and proper sequence of pagination. Customer instructions shall determine the arrangement of title page, index, inserts, supplements, the inclusion or omission of covers, advertising and similar matters.

All volumes to be rebound for library use shall be carefully inspected by the client to achieve the most appropriate binding method considering longevity and frequency of use. The paper condition, the type and condition of the original binding and the width of the binding margin shall all be examined.

7.2 Tip-in

Maps, illustrations and folded sheets in a volume to be rebound for library use shall not be damaged during the rebinding process.

Refolding of maps or folded inserts shall be avoided wherever possible.

The map or illustration may be set out on a strip of reinforcing cloth or alkaline paper that is compatible with the weight and texture of the insert.

7.3 Stitching

Staples in side sewn volumes shall be removed in books bound for libraries.

7.4 Sewing Tapes

For the best results in both use and longevity, tapes shall be used on all volumes sewn through-the-fold by hand. If agreed to by the client, the binder may substitute sewn-in cords.

In general, book blocks less than 20 cm (8 in.) bulk shall be sewn on two tapes; those between 20 cm (8 in.) and 30 cm (12 in.) on three tapes; and those over 30 cm (12 in.) on four or more tapes.

Sewing tapes shall be cotton or linen, no less than 1.25 cm (1/2 in.) wide and shall have no less than 104 warp threads per inch (41 warp threads per cm) and 32 filling threads per inch (12.6 filling threads per cm). The tensile strength (strip method) of the warp threads shall be no less than 29.5 kg (65 lbs.) and of the filling of threads, no less than 11 kg (24lbs.). (ANSI/NISO/LBI Z39.78-2000)

7.5 Trimming: Case Hard Cover

The trimmed book block of a case bound book intended for library use shall be between 5 mm and 6 mm (3/16 in. and 1/4 in.) smaller than the cover.

7.6 Binder's Boards

The cover boards shall be between 5 mm and 6 mm (3/16 in. and 1/4 in.) larger than the inside pages of the book block. They shall be square, even and cleanly cut. For books less than 21.5 cm x 28 cm (8 1/2 in. x 11 in.) the caliper must be greater than 2 mm (0.080 in.). For books 21.5 cm x 28 cm (8 1/2 in. x 11 in.) and over, the caliper of the binder's board must be greater than 2.5 mm (0.100 in.).

7.7 Lettering and Titles

Suppliers who bind books for library use shall keep records of periodicals and regularly bound material to ensure uniformity of lettering if each series is maintained.

7.8 Reinforcing

A reinforcing cloth strip shall be extended over the endleaves by at least 1.5 cm (5/8 in.).

7.9 Endpapers

Endpapers for books bound for library use shall meet or exceed the performance requirements outlined in Section III.

In addition, the endpapers shall be pre-manufactured and shall contain three leaves and a reinforcing fabric. The endpaper shall have a basis weight of 120 M (Basis 25 in. x 38 in.), 90 g/m². The reinforcing fabric shall have a thread count of 80 x 80.

7.10 Cover Material

Case Hard Cover: Unless otherwise specified, the cover material used shall be a pyroxylinimpregnated fabric such as Columbia Finishing Mills "Ontario Buckram" or full equivalent.

Soft Flexible Cover: Unless otherwise specified, the cover material shall be cover stock with a minimum caliper of 2.5 mm (0.10 In.).