

Specifications for Archival Oversized Map and Plan Folders

October 2015

I. Scope

This specification covers the requirements for oversized map and plan folders.

II. Requirements

Construction

The map and plan folder shall be made from a single piece of paperboard folded along a single central fold line (See Figure 1). The folder shall be folded along the center fold line, perpendicular to the grain direction.

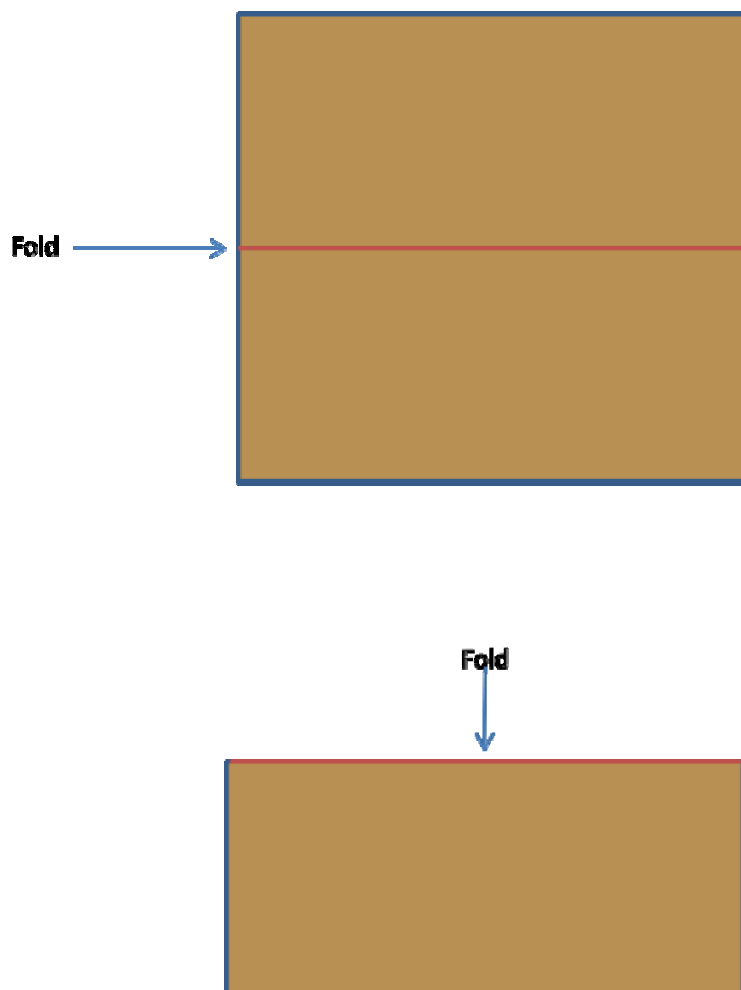


Figure 1. Orientation of center fold line.



Machine Direction

The machine direction of the paperboard shall be perpendicular to the primary fold.

Score Lines

The paperboard shall be scored uniformly and deeply enough to permit easy, precise folding and the retention of maximum strength along the fold line. The stock must not fray, crack or split when folded and/or creased.

Finish

The paperboard shall be plate finished (calendared) on both sides.

The center fold line shall be folded to allow parallel sides of the folder to be straight and even. The fold shall be perpendicular to the machine direction of the paperboard and along the longest side of the folder for maximum strength (See Figure 1). The paperboard shall be folded uniformly to permit easy precise folding to retain maximum strength along the center fold line.

Dimensions

This specification may be used for folders up to but not exceeding 46 inches in height and 74 inches in width. The allowable variation for each dimension shall be $\pm 1/8$ inch. Each folder shall be made to the dimensions specified during procurement.

Paperboard

Composition

It shall be made from new cotton or linen pulp, fully bleached chemical wood pulp, or a mixture of them.

Paperboard shall be free of:

- groundwood:
 - test negative in ASTM D1030 phloroglucinol test with X5 Spot Stains (ASTM has withdrawn this standard in 2011. NARA is following 2007 version)
 - or Kappa # ≤ 5 in TAPPI T-236 test.
- alum rosin sizing (TAPPI T-408 or ASTM D 549).
- reducible sulfur (TAPPI T-406, $< 0.0008\%$).
- particles or other impurities such as:
 - metals,
 - waxes,
 - plasticizers (i.e. wet strength additives),



- plastics,
- residual bleach,
- peroxide,
- any components that will fail the photographic activity test (ISO 18916).

Sizing

Only alkaline sizing shall be used (surface, internal, or both). No alum rosin or rosin sizing shall be used.

Alkaline Reserve

The paperboard shall contain an alkaline reserve of calcium carbonate, magnesium carbonate, or a combination of both, within a range of 3-6% (calculated as CaCO₃) when tested according to TAPPI T-553 or modified by slurring the sample pulp prior to measurement, and shall be evenly distributed throughout all plies and layers. NARA will provide slurry method procedure upon request

Hydrogen Ion Concentration (pH)

The pH value of the paperboard shall be between 8.0 and 9.5 when tested according to cold extraction method TAPPI T-509 or modified by slurring the sample pulp prior to measurement.

Lignin

To demonstrate the adequacy of bleaching or lignin removal, all plies and layers of the paperboard shall be:

- test negative in ASTM D1030 phloroglucinol test with X5 Spot Stains
- or Kappa number ≤5 in TAPPI T-236 test.

Abrasion Resistance

The outer surfaces of the paperboard must show <1.5% total weight-loss (mounting card and sample) when tested according to TAPPI T-476 with a #CS10 wheel and 100 wear cycles.

Surface Smoothness

The paperboard shall reach a smoothness of 175-220 Sheffield units, when tested according to TAPPI T-538.



Thickness

The paperboard shall have an average thickness of 0.0195” – 0.0225” (20 point), when tested according to TAPPI T-411.

Bending Resistance

When tested according to TAPPI T-556 (7.5° deflection), the paperboard shall have an internal stiffness of:

- $\geq 400 \pm 10$ mN (machine direction), and
- $\geq 200 \pm 10$ mN (cross direction)

Folding Endurance

≥ 1500 double folds, when tested in the machine direction according to TAPPI T-511, after conditioning according to TAPPI T-402, using 1kg load.

Color & Dye Bleed/Transfer

Dyes used to color the folder shall show no bleeding or transferring when soaked in deionized water for 48hrs. under ambient temperature, while held in direct contact with white bond paper.

Workmanship

Each folder shall meet the requirements stated in this specification, shall be constructed in accordance with good commercial practice, and shall be free of imperfections that may affect its utility or aesthetic appearance.

- Each folder shall be made to the dimensions specified.
- Surfaces shall be smooth and free of dirt (smudges, fingerprints, abrasive particles and the like) and defects (such as bubbles, knots and shives), and shall not be marred (scuffed, abraded, and the like) in any way.
- All edges shall be cut straight and shall be smooth and even. The side edges shall meet evenly when the folder is folded.
- The paperboard shall be scored and creased uniformly along the fold line.
- Score line shall be deep enough to permit easy, precise folding and the retention of maximum strength along the score line.
- All folds and edges shall be free of fraying, cracks, and breaks.
- The folder shall have straight sides that meet evenly when the folder is folded, with square corners on both the front and back flaps.



Identification Markings (product level)

The following information shall be legibly embossed anywhere except on the corners of each folder: name of manufacturer, year of manufacture, pH range and the words “*low lignin*”. The raised text is to the outside of the folder.

III. Preparation for Delivery

Packaging

The map and plan folders shall be folded along the center fold and shipped flat following standard commercial shipping practices that meet the following requirements: full enclosure (i.e. a box) sealed with tape to provide rigid support and protection from the elements that is non-damaging to the contents (does not bend, crimp, or fold edges or corners) so that the product arrives dry and undamaged.

The number of folders to be packed in each container shall be specified in the purchase order.

Marking (package level)

The outside of each packing container shall be legibly marked with:

- the purchase order number, and
- the type, size, and number of map and plan folders packed in the container, and
- the name of supplier/manufacturer and year of manufacture.

IV. Quality Assurance Provisions

Tests

Test procedures and controls specified in this document shall be used to determine the quality of the product. Other procedures and controls must be approved by the National Archives before test results will be accepted.

To sample for testing, map and plan folders will be sampled according to ANSI/ASQ Z1.4, inspection level S-2, AQL 2.5% from each lot of material offered.

Unless otherwise indicated, the tests shall be performed at, and the samples be conditioned to, a standard conditions of 73 ± 3.5 °F and $50\pm 2\%$ RH (TAPPI T-402).

Test Methods

The requirements for quality and characteristics shall be tested in accordance with specified test methods of the American Society for Testing and Materials (*ASTM*), the



Technical association of the Pulp and Paper Industry (*TAPPI*), the International Organization for Standardization (*ISO*), and American National Standards Institute (*ANSI*). Publications describing these tests may be ordered directly from the technical associations.

Responsibility for Tests

The Contractor is responsible for quality control to ensure the specifications of this contract are met. The Contractor shall provide test results to the Contract Specialist (CS) and/or Contracting Officer (CO), **for each production lot** used to provide supplies under this contract. The test results shall display, at a minimum, the characteristics listed below and shall be provided at least 30 days prior to shipping any items from the production lot under this contract. The Contractor may use his or her own facilities or any commercial laboratory certified to run quality assurance test methods listed below. The National Archives and Records Administration (NARA) reserves the right to perform quality assurance at any time during the contract where such tests are deemed necessary to assure that supplies and services conform to the specifications. Therefore, the test results [pH, alkaline reserve, lignin, sizing, sulfur, abrasion and bending resistances, surface smoothness, thickness, fold endurance, bleeding and PAT], two samples of each item purchased, and a sample of at least 12" x 12" of the material used to make the item (for example boxboard), shall be sent together to the CS within 14 days after award of the contract. Additionally, the Contractor shall provide a sample of at least 12" x 12" of the material from a new production lot at any time, upon request of the Government.

Table of QC Test Items and Specifications

Test Items	Spec. Targets	Notes (test methods, test conditions, etc.)
Alum-rosin sizing	Negative	TAPPI T 408 or ASTM D 549
Lignin	Negative, or Kappa number ≤ 5	Phloroglucinol test, ASTM D1030 (X5 Spot Stains) TAPPI T-236
Reducible Sulfur	<0.0008%	TAPPI T-406
Alkaline reserve	3 - 6% (calculated as CaCO ₃)	TAPPI T-553 (or slurry method)
pH	8.0 – 9.5	TAPPI T-509 (or slurry method)
Abrasion Resistance	<1.5% (total weight-loss)	TAPPI T-476 (#CS10 wheel, 100 wear cycles, on outer surfaces)
Surface Smoothness	175-220 Sheffield units.	TAPPI T 538
Thickness	0.0195" - 0.0225"	TAPPI T-411
Bending Resistance	$\geq 400 \pm 10$ mN (machine direction) $\geq 200 \pm 10$ mN (cross direction)	TAPPI T-556 (7.5° deflection)
Folding Endurance	≥ 1500 double folds (machine direction)	TAPPI T-511 (after conditioning according to TAPPI T-402, with 1kg load)
Color & Dye Bleed/ Transfer	No visible transferring	See text for detailed test method and conditions
Photographic Activity	Pass	ISO 18916, for both paperboard and any adhesive used (see note below)

Note: For Photographic Activity, the vendor may wish to send samples to the Image Permanence Institute (Rochester Institute of Technology/IPI, 70 Lomb Memorial Drive, Rochester, NY 14623-5604; Tel: 585-475-5199), or other testing laboratory, to determine conformance prior to submission.

V. Inspection

Examination Criteria

An examination shall be made to determine whether the completed map and plan folder complies with the Requirements section of this specification (see section II). The qualities and characteristics that shall be regarded as unacceptable in the completed folder are listed below.

Completed folders are:

- Not style specified
- Not dimensions specified
- Not materials (qualities or characteristics) specified
- Not color specified
- Not construction specified
- Not identification markings specified

Workmanship

- Edges are not cut straight, not smooth and even
- Corners are not even and smooth
- Surfaces are not clean or smooth, have oozed adhesive, smudges, fingerprints or dirt
- Surfaces have blisters, knots, or shives
- Surfaces have scuffs and abrasions
- Fraying, cracks, or breaks along any folded or scored edges
- Side edges are not meeting evenly when the folder is folded to any width.

Packaging for Delivery

An examination shall be made to determine whether the packaging of the boxes for delivery complies with the requirements of "Preparation for Delivery Section" of this specification (see section III). The characteristics that shall be regarded as unacceptable in the packaging are listed below:

- The number of folders per container is not as specified in contract
- Container is not sealed with tape
- Container is not legibly marked with the purchase order number
- Container is not legibly marked with size of map and plan folder within



Responsibility for Inspection

Unless otherwise specified in the purchase order, the supplier is responsible for the performance of all inspection requirements specified herein. The National Archives reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure that supplies and services conform to the prescribed requirements.

Sampling for Examination

Sampling Method

The sampling of map and plan folders in each shipment for examination shall be carried out according to methods specified in ANSI/ASQ Z1.4, inspection level S-2.

Acceptable quality levels

- For construction and workmanship at product level, the acceptable quality level shall be $\leq 4.0\%$ defective from each lot of material delivered.
- For QC testing at product level, the acceptable quality level shall be $\leq 2.5\%$ defective from each lot of material delivered.
- For compliance with packaging and marking requirements at package level, the acceptable quality level shall be $\leq 4.0\%$ defective from each lot of material delivered.

Required Ordering Information

The following information shall be included in the purchase order.

- Title and date of the specification
 - Map and plan folder dimensions
 - Number of map and plan folders required
 - Purchase order number
 - Number of map and plan folders per shipping container
 - Special delivery conditions
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Revision note:

This is a revision from May 2014 version.