

Specifications for Letter and Legal Size Archives Box Spacer Boards

October 2015

I. Scope

This specification covers the requirements for letter and legal size archives box spacer boards made from corrugated paperboard (see Figure 1 and Figure 2 below).

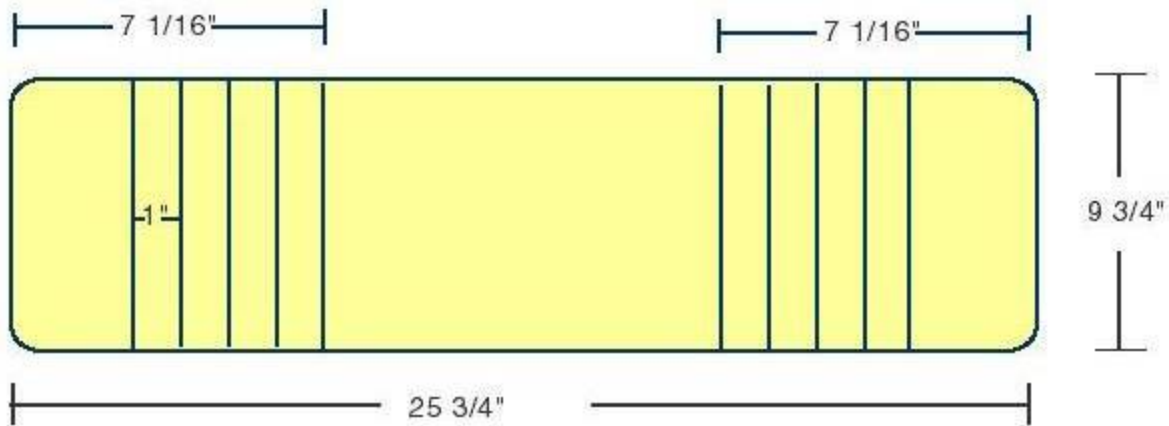


Figure 1. Letter size archives box spacer boards

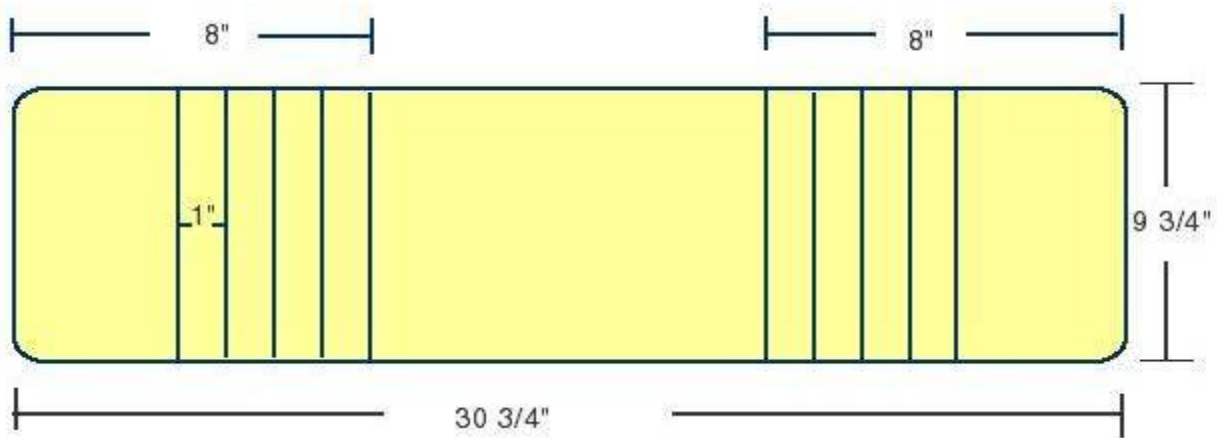


Figure 2. Legal size archives box spacer boards

II. Requirements

Construction

The spacer boards shall be made from one B-flute single wall (double-faced) corrugated paperboard, with the flute running parallel with the length of the board. Each spacer board shall have 5 score lines at each end, running perpendicular to the length of the board. The corners shall be rounded. The edges shall be serrated (see Figure 1 and Figure 2 above).

Dimensions

Letter Size Spacer Board

A letter size spacer board shall measure 9 3/4 inches in height and 25 3/4 inches in width. The allowable variation for each dimension shall be $\pm 1/16$ inch.

Legal Size Spacer Board

A legal size spacer board shall measure 9 3/4 inches in height and 30 3/4 inches in width. The allowable variation for each dimension shall be $\pm 1/16$ inch.

Score Lines

Each spacer board shall have 5 score lines at each end, running perpendicular to the length of the board. The score lines shall be spaced at 1 inch intervals. For the letter size spacer board, the innermost score line shall begin 7 1/16 inches from each end. For the legal size spacer board, the innermost score line shall begin 8 inches from each end (see Figure 1 and Figure 2 above). All lines are to be scored with no perforations.

Paperboard

Composition

All layers of the corrugated paperboard laminate shall be made from cotton or linen pulp, fully bleached chemical wood pulp, or a mixture that meets the following specifications:

- 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 - test negative in ASTM D1030 phloroglucinol test with X5 Spot Stains (ASTM has withdrawn this standard in 2011.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.
- Free of alum-rosin sizing (ASTM D 549 or TAPPI T-408)
- Contain $< 0.0008\%$ reducible sulfur (TAPPI T-406).
- Free of optical whitening agent and fire retardant.

- Free of particles or other impurities such as:
 - metals,
 - waxes,
 - plasticizers (i.e. wet strength additives),
 - plastics,
 - residual bleach,
 - peroxide

Sizing

Alkaline sizing shall be used (both surface and/or internal).

Alkaline Reserve

The corrugated 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 corrugated 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 layers of the corrugated paperboard shall have a negative reading in the phloroglucinol test when tested according to ASTM D1030, or shall have a KAPPA number ≤ 5 when tested according to TAPPI T-236.

Color & Dye Bleed/Transfer

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

Adhesive Used in Laminating the Corrugated Board

A stable adhesive shall be used when adhering the two paperboard facings to each side of the fluted inner paperboard sheet. More specifically:

- Water resistant adhesive shall be used.
- When aging in a humidity chamber of 50°C and 87% RH for 4 hrs., the adhesive shall hold the components of the corrugated paperboard firmly together, not soften or run.
- The addition of adhesive shall not negatively impact the specification of the paperboard, such as reduce the pH or alkaline reserve, increase the sulfur content, decrease the stiffness, etc.
- If it is necessary to buffer the adhesive, the same buffer shall be used as those in the paperboard (calcium or magnesium carbonate, or a combination of both).
- The adhesive shall be invisible through and not alter the color of the paperboard.
- The adhesive shall not contain sulfur, iron, copper or other ingredients that may be detrimental to archival records.
- The adhesive shall not contain or generate oxidants.
- When used, the adhesive must not extend beyond the joined area.

Workmanship

The corrugated paperboard shall be assembled in accordance with good commercial practice, and shall be free of visible imperfections that may affect its utility or aesthetic appearance.

- The smoothest side (felt side) of the liners should be the outer surfaces of the board.
- The wire side of the liners should be next to the corrugated medium, to promote maximum adhesion.
- The flutes must be adhered to each liner all along their tips.
- The pin punch or embossing method used for identification shall not affect the smoothness of the board by passing through the board from the opposite side.
- The adhesive shall be uniformly applied to all surfaces to provide a firm, even attachment of all components.
- Each spacer board shall be made to the dimensions specified.
- The plane shall be flat and show no warping, twisting, buckling, or other distortion.
- The fluted inner paperboard sheet shall not be compressed on the surface or at the edges.

- The spacer boards shall contain no surface dirt (smudges, fingerprints, and the like), no oozed adhesive and shall not be marred (dents, bumps, and the like) in any way.
- Scores shall be uniform and deep enough to permit easy, precise folding and the retention of maximum strength along the score line.
- All lines are to be scored with no perforations, and shall be free of fraying, cracks, and breaks.
- All edges shall be serrated uniformly and free of untrimmed paper fragments.
- The corners of the spacer boards shall be evenly rounded and smooth.

Identification Markings (product level)

The following information shall be legibly pin punched or embossed on the center bottom of each spacer board: name of manufacturer, pH range, year of manufacture, and the word letter for spacer boards intended for letter size archives boxes or legal for spacer boards intended for legal size archives boxes. The pin punch or embossing method used for identification shall not affect the smoothness of the board by passing through the board from the opposite side.

III. Preparation for Delivery

Packaging

The spacer boards shall be 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 spacer boards 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 and/or contract number, and
- the size and number of spacer boards 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.

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).

Sampling for Tests

Sampling Method

The sampling of corrugated boards 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.

Test Methods

The requirements for quality and characteristics shall be tested in accordance with specified methods from the American Society for Testing and Materials (*ASTM*), the Technical Association of the Pulp and Paper Industry (*TAPPI*) and the American National Standards Institute (ANSI). Publications describing these tests may be ordered directly from these 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, bleeding and adhesive], 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)
Color & Dye Bleed / Transfer	No visible transferring	See page 3 for detailed test method and conditions

Revision note:

This is a revision from May 2014 version.