

Library of Congress Preservation Directorate

Specification Number 300-361 – 09

Specifications for Photographic Storage Box

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1. Composition and Chemical Requirements

1.1 Fiber

The stock must be made from rag or other high alpha-cellulose content pulp, minimum of 87%, as defined in ISO 18902. It must not contain any post consumer waste recycled pulp.

1.2 Lignin

The stock must give a negative reading for lignin as determined by the phloroglucinol test when tested according to ASTM D 1030, X5 spot stains, and shall have a Kappa number of 5 or less when tested according to TAPPI T 236.

1.3 Impurities

The stock must be free of metal particles, waxes, plasticizers, residual bleach, peroxide, sulfur (which will be less than 0.0008% reducible sulfur as determined by TAPPI T 406), and other components that could lead to the degradation of the box itself, or the artifacts stored therein.

1.4 Metallic Impurities

Iron must not exceed 150 ppm and copper shall not exceed 6 ppm when tested according to TAPPI T 266.

1.5 Optical Brighteners

The stock must be free of optical brightening agents.

1.6 pH

The stock must have a pH value within a range of 8.0 - 9.5 as determined by TAPPI T 509, cold extraction (modified by slurring sample pulp before measurement).

1.7 Alkaline Reserve

The stock must contain an alkaline reserve with a minimum of 2% and a maximum of 5% calculated as CaCO₃ when tested according to TAPPI T 553 (modified by slurring sample pulp before measurement).

1.8 Sizing

Only neutral or alkaline sizing shall be used. No alum rosin or rosin sizing should be used, as determined by TAPPI T 408.

2. Physical and Performance Requirements

2.1 Thickness and Basis Weight

The stock must meet the following minimum requirements for basis weight as determined by TAPPI T 410.

2.1.1 40 pt. Board

The minimum basis weight should be 550 lbs/ 3,000 ft²

2.2 Color

The color of the stock should be tan, cream, or buff, or will be specified on the purchase order. The color must not be so dark that it obscures color-dependent test evaluations, e.g., spot stain tests.

2.3 Color Bleeding

The color must show no bleeding when soaked in distilled water for 48 hours while held under suitable weight in contact with white bond paper. The color must not rub off.

2.4 Color Retention

The color of the stock must not change more than 5 points of brightness as measured by directional reflectance at 457 nm (TAPPI T 452), when exposed 24 hours to a Xenon arc lamp in an Atlas Weatherometer under the following conditions: Irradiance Level: 1.0 watts/m² at 420 nm. Inner filter: Borosilicate glass. Outer filter: clear soda lime glass. Black panel temperature: 50°C. Wet bulb depression: 8.5°C.

2.5 Surfaces

The surfaces of the stock must be free of fingerprints, dirt, bubbles, knots, shives and other imperfections.

2.6 Creases and Folds

The stock must not fray, crack or split when folded and/or creased.

2.7 Abrasion

The outer surfaces of the stock must show a loss of less than 2% in weight when tested with a #CS10 wheel and 100 wear cycles according to TAPPI T 476.

2.8 Stiffness

The stock must meet the following minimum requirements for stiffness. Test will be conducted according to TAPPI T 489, after conditioning by TAPPI method T 402.

2.8.1 40 pt. Board

The minimum internal stiffness must be not less than 2,800 Taber units in the machine direction and 800 in the cross direction.

2.9 Adhesive

If an adhesive is required, it must not soften or run. The adhesive must not cause the stock to become transparent or alter the color of the stock. The adhesive must not yellow, discolor, or fail (causing delamination) over time. The adhesive should not contain sulfur, iron, copper or other ingredients that may be detrimental to photographic materials. The adhesive should not contain or generate oxidants. Pressure-sensitive or rubber-based adhesives are not acceptable. When used, the adhesive must not extend beyond the joined area.

2.10 Durability

The boxes must be sturdy enough to withstand normal wear and tear during use. The lid must be able to withstand repeated opening without cracking, splitting, fraying or otherwise losing strength along the hinge.

3. Product Requirements

3.1 Construction

The boxes must consist of one blank of 40 pt. board stock constructed as a single unit comprising a base with a hinged flap panel with a tab closure. (Illustration below)

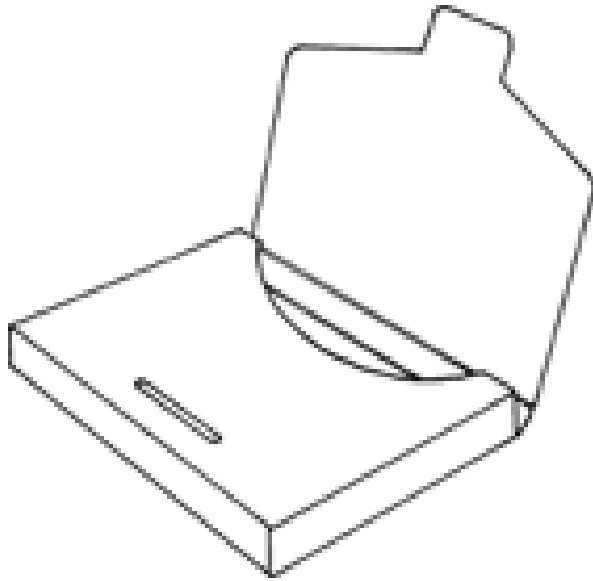
3.1.1 Base

The grain direction of the board stock should run parallel to the long dimension of the box. A slot for inserting the tab on the hinged flap panel should be cut out of the outer front panel of the base, parallel to the bottom of the box. The slot should be a little over 3 inches long, with rounded ends, and be positioned 1 1/2 inches from the bottom edge of the box. The front panels of the base should be adhered to each other except in the area adjacent to the slot to allow for easy insertion of the tab. The front panels should be cut away at the upper edge to allow access to file folders stored inside. This rounded, circular cut-out should begin one inch away from the side edges and slope down until it is 2 1/4 inches lower at the center than the full sized panel. The outer, lower corner of the doubled side of the box should be rounded.

3.1.2 Front Flap Panel

The flap should be hinged along the long side and taper down from rounded corners along the sides of the front panel to form a tab in the bottom center of the flap. The tab should be approximately 3 inches long, with rounded edges, and be easily inserted into and removed

from the slot. The tab should not be creased. The front panel should remain shut when closed, but not bind.



Photographic storage box

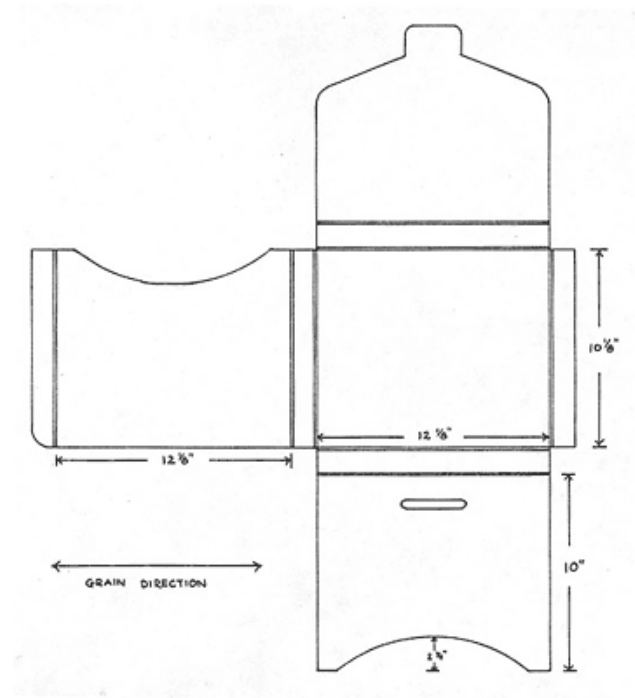


Diagram of blank showing grain direction

3.2 Workmanship

The boxes must have clean cut edges and properly aligned panels with no unnecessary scores or cuts. All dimensions of the box maker's blank must be accurately cut, scored and slotted so that the assembled parts fit closely without binding. The edges must be straight, corner joints must meet exactly, and corners must be squared to 90 degrees.

3.3 Dimensions

The size of the boxes will be stated on the purchase order. The inner dimensions for boxes of different sizes are shown in the table below. Standard letter size folders must fit inside the box without binding.

Inner Dimensions	Length	Width	Height
1/2 inch box	12 in.	10 in.	1/2 in.
1 inch box	12 in.	10 in.	1 in.

3.4 Thickness

The boxes should be constructed of 40 pt. board stock.

3.5 Marking

Each box must be marked with the name of the manufacturer, year of manufacture, and the actual pH.

3.5.1 Placement and Size

The identifying information must not be larger than 2 1/2 inches long and 1 1/2 inches high. It should be centered on the bottom of the box, legible from the outside.

3.5.2 Marking Method

The information can be stamped in ink or embossed.

3.5.2.1 Ink Stamping

The stamping must be done on the outside of the box. The ink must not smear, fade, or rub off after drying. The ink must not run, bleed through, or transfer to other materials if it becomes wet. There must be no ink on the interior of the box.

3.5.2.2 Embossing

The embossing must be done from the outside of the box. The impression must be legible from the outside only, with no penetration to the interior of the box.

4. Packaging and Identification

4.1 Packages

The items must be packed in standard commercial containers that are constructed to ensure that they arrive at the Library of Congress in dry, undamaged condition. The outside of each container must be identified by type, size and number of items within; manufacturing run or batch number; LC Purchase Order / Contract number and line number.

5. Compliance with Specification

5.1 Quality Assurance Testing

The Library of Congress has the right to perform any of the tests set forth in the specification where such tests are deemed necessary to ensure that supplies conform to prescribed requirements.

5.2 Sampling

To sample for testing, shipments will be sampled according to ANSI/ASQ Z1.4, inspection level S-2, AQL 2.5%.

5.3 Methods

Tests will be conducted in accordance with specified test methods of the American National Standards Institute (ANSI), the American Society for Testing and Materials (ASTM), the Technical Association of the Pulp and Paper Industry (TAPPI), and the International Organization for

Standardization (ISO). Publications describing these tests may be ordered directly from the technical associations, their websites, or other on-line standards vendors.

5.4 Acceptance

Materials will be accepted when the Library of Congress has ascertained that the products comply with all parts of the specification. A quick reference table of the physical and chemical requirements and test methods used to ascertain compliance is provided in section 5.5.

FAILURE TO MEET ANY PART OF THE SPECIFICATION WILL BE CAUSE FOR REJECTION

5.5 Table of Physical and Chemical Requirements and Test Methods

Property	Requirement	Test Method
Lignin	Negative / Kappa 5	ASTM D 1030, X5 or TAPPI 236
Reducible Sulfur	< 0.0008%	TAPPI T 406
Iron	≤ 150 ppm	TAPPI T 266
Copper	≤ 6 ppm	TAPPI T 266
pH	8.0 – 9.5	TAPPI T 509, cold extraction, slurried pulp
Alkaline Reserve	2 – 5%	TAPPI T 553, slurried pulp
Alum Rosin Sizing	Negative	TAPPI T 408
Basis Weight	40 pt: 550 lbs./3,000 ft ²	TAPPI T 410
Color Bleeding	No bleed in 48 hours	See section 2.3
Color Retention	≤ 5 pts	TAPPI T 452
Abrasion	≤ 2%	TAPPI T 476
Stiffness	40 pt: 2800 MD, 800 CD	TAPPI T 489

Configuration Management

Date	Revision History
23-Aug-2002	Initial release of document on website, html format.
14-Dec-2009	Revised and reformatted for release as PDF document.