

**Library of Congress Preservation Directorate
Specification Number 400-403 – 11
Specifications for Mat/Mounting Board, Un-Buffered**

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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 board 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 of approximately 7.0 as determined by TAPPI T 509, cold extraction (modified by slurring sample pulp before measurement).

1.7 Alkaline Reserve

There must be no alkaline reserve added to the paper. This requirement will be verified by testing the stock according to TAPPI T 553 (modified by slurring sample pulp before measurement).

1.8 Sizing

Only neutral 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

The thickness of the stock should be 28 ± 2 pts for 2 ply board, 54 ± 2 pts for 4 ply board, and 85 ± 2 pts for 6 ply board.

2.2 Color

The color of the stock will be specified with a sample included with the purchase order. The color must be continuous throughout the thickness of the stock.

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 Photographic Activity Test

The stock must pass the Photographic Activity Test (P.A.T.), meeting the criteria stipulated in sections 5.3, 6.3, and 7.2 of ISO 18916. Vendors may wish to confirm that their products pass the P.A.T. before submitting them to the Library of Congress for evaluation. 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.

2.6 Surfaces

The surface of the stock will be specified with a sample included with the purchase order. There must be a smooth to moderate texture with no repetitive pattern, such as simulated textile patterns, unless otherwise specified on the purchase order. The surfaces of the stock must be free of fingerprints, dirt, bubbles, knots, shives and other imperfections.

2.7 Grain

The grain of the outer plies of the board must run in the long direction.

2.8 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. When used, the adhesive must not extend beyond the joined area.

2.9 Moisture Range

To prevent warping, waving, or curling the equilibrium moisture range should be between 4 – 7% at the time of manufacture.

3. Product Requirements

3.1 Construction

The boards in any order must come from the same batch or run number.

3.2 Workmanship

Edges must be cut square and clean, and sizes accurate. The board must be free of bent corners and delamination of plies.

3.3 Dimensions

Dimensions will be specified on the purchase order. The allowable tolerance for each dimension is $\pm 1/16$ inch.

3.4 Thickness

The thickness of the board will be specified on the purchase order.

3.5 Marking

There must be no identification marks on the board.

4. Packaging and Identification

4.1 Inner Packages

Each package must plainly identify the type, size and number of items within, the name of the supplier or manufacturer, year of manufacture, and manufacturing run or batch number.

4.2 Outer Package

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	7.0	TAPPI T 509, cold extraction, slurried pulp
Alkaline Reserve	0%	TAPPI T 553, slurried pulp
Alum Rosin Sizing	Negative	TAPPI T 408
P.A.T.	Pass	ISO 18916
Color Bleeding	No bleed in 48 hours	See section 2.3
Color Retention	≤ 5 pts	TAPPI T 452
Thickness	2 ply: 28 ± 2 pts 4 ply: 54 ± 2 pts 6 ply: 84 ± 2 pts	TAPPI T 411

Configuration Management

Date	Revision History
14-Dec-2009	Initial release of document, PDF format.
21-Mar-2011	Removed section 2.10.