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%. 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 TAPPI T 401, Appendix F, 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 sleeve 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  
Sleeves for 7 inch discs must be made using 10 pt card stock. Sleeves for 10, 12, and 16 inch discs must be made using 20 pt card stock. The stock must meet the following minimum requirements for basis weight as determined by TAPPI T 410.

2.1.1 10 pt. Card  
The minimum basis weight should be 145 lbs/ 3,000 ft²

2.1.2 20 pt. Card  
The minimum basis weight should be 250 lbs/ 3,000 ft²

2.2 Color  
The color of the stock should be tan, unless otherwise 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 and Smoothness  
The surfaces of the stock must be free of fingerprints, dirt, bubbles, knots, shives and other imperfections. The stock should be smooth, e.g., calendered, hot-rolled, and/or water polished.

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

2.7 Folding Endurance  
The stock must meet the following minimum requirements for fold endurance in the machine direction. Tests will be conducted according to TAPPI T 511, after conditioning according to TAPPI T 402, using a 1 kg load.
2.7.1 10 pt Card
The minimum fold endurance must be not less than 750 double folds.

2.7.2 20 pt Card
The minimum fold endurance must be not less than 1000 double folds.

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 10 pt. Card
The minimum internal stiffness must be not less than 80 Taber units in the machine direction and 30 in the cross direction.

2.8.2 20 pt. Card
The minimum internal stiffness must be not less than 380 Taber units in the machine direction and 160 in the cross direction.

2.9 Adhesive
The adhesive 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. The adhesive should not contain sulfur, iron, copper or other ingredients that may be detrimental to audio discs. The adhesive should not contain or generate oxidants. Pressure-sensitive or rubber-based adhesives are not acceptable.

2.10 Durability
The sleeves must be sturdy enough to withstand normal wear and tear during use. The seams must remain adhered and not fail during use or over the lifetime of the sleeve.

3. Product Requirements

3.1 Construction
The sleeves must be constructed from a single piece of card stock, with seams of folded flaps 3/4 inch wide adhered to the outer side. The seams must be on two opposite sides of the sleeve. Center or L-seams are not acceptable. The seams must be sealed along the complete length of the seam by an adhesive that is at least 1/8 inch away from the fold edge, with no opening at the bottom corners that could allow dust to enter. The gap between the fold of the seam flaps and the back of the sheet of the sleeve must not be more than 1/8 inch on the inside. Corners of seams should be rounded. The "leading edge" (on right when facing the side with the seams) should be tapered, beginning 2 1/2 inches from the outer right edge, ending 1/4 inch lower than if square.
There must be no drop between the front and back sides of the sleeve along the cut edge. A circular cutout should be centered and aligned on the front and back of the sleeve. The grain (machine direction) of the sleeve must run parallel to the fold. (Illustration below)

3.2 Workmanship

The sleeves must be cut straight with squared sides and aligned exactly. All edges, including the circular cutout, must be cut smooth and even. The sizes must be accurate. The seams must be smooth and flat with no puckering. The adhesive must not extend beyond the seams on either the inside or outside of the sleeve. The sleeves must lie flat without curling or gaping.

3.3 Dimensions

The card sleeves must meet the dimension requirements shown in the table below, allowing the insertion of phonograph discs without binding or gaping. These sleeves are intended to be used in a two-part preservation housing system consisting of a card sleeve with a polyester jacket that fits over the sleeve. The sleeves and jackets must meet dimension requirements precisely so that the polyester jacket fits easily but not loosely over the card sleeve. The dimensions in the following table are minimum outer dimensions. The vendor must ensure that the card sleeves fit inside the polyester jackets for the corresponding disc size. The dimensions of the polyester jackets, (LC Specification 500-533) are provided here in a separate table, as a reference.

<table>
<thead>
<tr>
<th>Outer Dimensions</th>
<th>7” Disc</th>
<th>10” Disc</th>
<th>12” Disc</th>
<th>16” Disc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bottom fold to open top:</td>
<td>7 1/8 in.</td>
<td>10 5/16 in.</td>
<td>12 1/4 in.</td>
<td>16 1/4 in.</td>
</tr>
<tr>
<td>Side to side (seam fold)</td>
<td>7 1/4 in.</td>
<td>10 15/32 in.</td>
<td>12 3/8 in.</td>
<td>16 1/4 in.</td>
</tr>
<tr>
<td>Center hole diameter:</td>
<td>3 1/4 in.</td>
<td>4 in.</td>
<td>4 in.</td>
<td>4 in.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>7” Disc</th>
<th>10” Disc</th>
<th>12” Disc</th>
<th>16” Disc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyester Jacket</td>
<td>7 7/16 x 7 7/16”</td>
<td>10 13/16 x 10 13/16”</td>
<td>12 3/4 x 12 3/4”</td>
<td>16 5/8 x 16 5/8”</td>
</tr>
</tbody>
</table>
3.4 Thickness
Sleeves for 7 inch discs must be made using 10 pt card stock. Sleeves for 10, 12, and 16 inch discs must be made using 20 pt card stock.

3.5 Marking
Each card sleeve must be marked with a line of identification on the outside of the sleeve on both seams. The seam on the tapered side of the sleeve should read: The Library of Congress. The other seam should have the name of the manufacturer, year of manufacture, and the actual pH.

3.5.1 Placement, Size, and Font
"The Library of Congress" should be in 36 pt type, upper and lower case, in a font with serifs, such as Baskerville or Palatino. The information identifying the manufacturer, year, and pH should be in 10 pt type, and does not require a font with serifs. The information on each seam should be centered on the flaps.

3.5.2 Marking Method
The information must be stamped in ink. 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 inside of the sleeve.

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

<table>
<thead>
<tr>
<th>Property</th>
<th>Requirement</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lignin</td>
<td>Negative / Kappa 5</td>
<td>TAPPI T 401, Appendix F or TAPPI T 236</td>
</tr>
<tr>
<td>Reducible Sulfur</td>
<td>&lt; 0.0008%</td>
<td>TAPPI T 406</td>
</tr>
<tr>
<td>Iron</td>
<td>≤ 150 ppm</td>
<td>TAPPI T 266</td>
</tr>
<tr>
<td>Copper</td>
<td>≤ 6 ppm</td>
<td>TAPPI T 266</td>
</tr>
<tr>
<td>pH</td>
<td>8.0 – 9.5</td>
<td>TAPPI T 509, cold extraction, slurried pulp</td>
</tr>
<tr>
<td>Alkaline Reserve</td>
<td>2 – 5%</td>
<td>TAPPI T 553, slurried pulp</td>
</tr>
<tr>
<td>Alum Rosin Sizing</td>
<td>Negative</td>
<td>TAPPI T 408</td>
</tr>
<tr>
<td>P.A.T.</td>
<td>Pass</td>
<td>ISO 18916</td>
</tr>
<tr>
<td>Basis Weight</td>
<td>10 pt: 145 lbs./3,000 ft² 20 pt: 250 lbs./3,000 ft²</td>
<td>TAPPI T 410</td>
</tr>
<tr>
<td>Folding Endurance</td>
<td>10 pt: 750 MD 20 pt: 1,000 MD</td>
<td>TAPPI T 511</td>
</tr>
<tr>
<td>Color Bleeding</td>
<td>No bleed in 48 hours</td>
<td>See section 2.3</td>
</tr>
<tr>
<td>Color Retention</td>
<td>≤ 5 pts</td>
<td>TAPPI T 452</td>
</tr>
<tr>
<td>Stiffness</td>
<td>10 pt: 80 MD, 30 CD 20 pt: 380 MD, 160 CD</td>
<td>TAPPI T 489</td>
</tr>
</tbody>
</table>
## Configuration Management

<table>
<thead>
<tr>
<th>Date</th>
<th>Revision History</th>
</tr>
</thead>
<tbody>
<tr>
<td>19-Jun-2002</td>
<td>Initial release of document on website, html format.</td>
</tr>
<tr>
<td>14-Dec-2009</td>
<td>Revised and reformatted for release as PDF document.</td>
</tr>
<tr>
<td>30-Sept-2016</td>
<td>Revised Sections 1.1, 1.2, 2.2 2.5, 5.5. Deleted 2.8. Editorial update to footer.</td>
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