

**Library of Congress Preservation Directorate**  
**Specification Number 200-233 – 09**  
**Specifications for Card Sleeves for 7", 10", 12", and 16" Audio Discs**

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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 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 CaCO<sub>3</sub> 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 ft<sup>2</sup>

#### **2.1.2 20 pt. Card**

The minimum basis weight should be 250 lbs/ 3,000 ft<sup>2</sup>

### **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/m<sup>2</sup> 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. The smoothness of the stock must be within the range of 175 to 220 Sheffield units, when tested according to TAPPI T 538.

### **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 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.

## **2.9 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.

### **2.9.1 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.

### **2.9.2 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.

## **2.10 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.

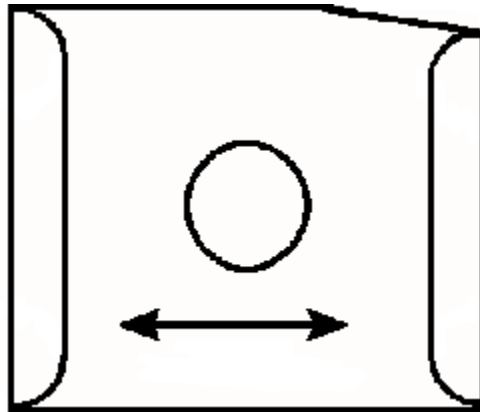
## **2.11 Durability**

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)



Arrow indicates grain direction

#### 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 1: Dimensions for Card Sleeves for Audio Discs

Outer Dimensions	7" Disc	10" Disc	12" Disc	16" Disc
Bottom fold to open top:	7 1/8 in.	10 5/16 in.	12 1/4 in.	16 1/4 in.
Side to side (seam fold)	7 1/4 in.	10 15/32 in.	12 3/8 in.	16 1/4 in.
Center hole diameter:	3 1/4 in.	4 in.	4 in.	4 in.

Table 2: Reference Table of Polyester Jacket Dimensions

Dimensions	7" Disc	10" Disc	12" Disc	16" Disc
Polyester Jacket	7 7/16 x 7 7/16"	10 13/16 x 10 13/16"	12 3/4 x 12 3/4"	16 5/8 x 16 5/8"

### 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

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
P.A.T.	Pass	ISO 18916
Basis Weight	10 pt: 145 lbs./3,000 ft <sup>2</sup> 20 pt: 250 lbs./3,000 ft <sup>2</sup>	TAPPI T 410
Folding Endurance	10 pt: 750 MD 20 pt: 1,000 MD	TAPPI T 511
Color Bleeding	No bleed in 48 hours	See section 2.3
Color Retention	≤ 5 pts	TAPPI T 452
Smoothness	175-220 Sheffield	TAPPI T 538
Abrasion	≤ 2%	TAPPI T 476
Stiffness	10 pt: 80 MD, 30 CD 20 pt: 380 MD, 160 CD	TAPPI T 489

## Configuration Management

Date	Revision History
19-Jun-2002	Initial release of document on website, html format.
14-Dec-2009	Revised and reformatted for release as PDF document. Revised as combined specification to include requirements for sleeves for 7" audio discs, originally appearing as LC Specification 200-232.