

**DEPARTMENT OF THE TREASURY  
BUREAU OF ENGRAVING AND PRINTING  
WASHINGTON, D.C. 20228-0001**

**BEP SPECIFICATION  
FOR  
FILMS: CURRENCY PACKAGING**

**1.0 SCOPE AND CLASSIFICATION**

**1.1 Scope.** This specification establishes performance and acceptance requirements for plastic films used to package United States currency in the Bureau of Engraving and Printing, hereinafter referred to as the BEP. BEP packaging processing equipment includes COPE presses Super Numerota No. 2, Large Examining and Printing Equipment (LEPE); and Cash Pak Equipment.

**1.2 Classification.** This specification covers plastic packaging films for bundle, brick, and cash-pak as identified in Table I.

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**TABLE I**

BEP Stock No.	Film Use	Width	Roll winding	Color	Equipment
1L001936	Currency Bundle	53.98 cm (21.25 in)	single wound	transparent, colorless	COPE
1L002038	Centerfolded Bundle	24.5 cm (9.65 in)	centerfolded	transparent, colorless	LEPE
1L001937	Currency Brick	56.5 cm (22.25 in)	single wound	transparent, colorless	COPE
1L002037	Centerfolded Brick	28.25 cm (11.13 in)	centerfolded	transparent, colorless	LEPE
1L001938	Cash-Pak	101.6 cm (40 in)	single wound	transparent, colorless with blue opaque bands	CASH PAK AND LEPE
1L001939	Cash-Pak	101.6 cm (40 in)	single wound	transparent, colorless with red opaque bands	CASH PAK AND LEPE
1L001970	Cash-Pak	101.6 cm (40 in)	single wound	transparent, colorless with green opaque bands	CASH PAK AND LEPE
1L001973	Cash-Pak	101.6 cm (40 in)	single wound	transparent, colorless with black opaque bands	CASH PAK AND LEPE
1L002022	Cash-Pak	101.6 cm (40 in)	single wound	transparent, colorless with purple opaque bands	CASH PAK AND LEPE
1L002023	Cash-Pak	101.6 cm (40 in)	single wound	transparent, colorless with gold opaque bands	CASH PAK AND LEPE
1L002024	Cash-Pak	101.6 cm (40 in)	single wound	transparent, colorless without opaque bands	CASH PAK AND LEPE
1L002042	Centerfolded Bundle	24.5 cm (9.65 in)	centerfolded	transparent, colorless	LEPE

## 2.0 APPLICABLE DOCUMENTS

The issues of the documents are those in effect on the date of the solicitation.

### 2.1 Government Documents.

#### 2.1.1 Specifications, Standards, and Handbooks.

#### Bureau of Engraving and Printing Specification:

**L: VAB-1A** Specification for Vendor Affixed Bar Code Labels for the Bureau of Engraving and Printing's Materials.

**75D-07.0-05** EHS Requirements for Purchased Materials

**Bureau of Engraving and Printing Drawing:**

**BEP Drawing No. 30083 - Currency-Brick Shrink Wrap Equipment "Brick Pak"**

**2.1.2 Other Government Documents, Drawings, and Publications.** The following other Government documents, drawings, and publications form a part of this document to the extent specified herein.

**The Code of Federal Regulations (CFR), U.S. Code, and Acts**

**16 CFR Part 1500.3** Definitions of Toxic and Hazardous Materials

**29 CFR 1910, Part 1200** Hazard Communication Standard (Occupational Safety and Health Administration, OSHA). See also Federal Register Vol. 48, No. 228, November 25, 1983.

**40 CFR 247** Comprehensive Procurement Guideline For Products Containing Recovered Materials.

**40 CFR 261** Identification and Listing of Hazardous Waste. See also Federal Register, Vol. 55, No. 61, March 29, 1990.

**40 CFR 720** Premanufacture Notification; Premanufacture Notice Requirements and Review Procedures

**40 CFR 761** Polychlorinated Biphenyls (PCBs), Manufacturing, Processing, Distribution in Commerce and Use Prohibitions.

**42 United States Code 6901 et seq., and 6962** - See also General Provisions for USC 6901 and Federal Procurement for USC 6962.

**Clean Air Act Amendments of 1990, Section 112, Air Toxics.**

(The Code of Federal Regulations (CFR) and the Federal Register (FR) are for sale on a subscription basis by the Superintendent of Documents; U.S. Government Printing Office (GPO); Washington, D.C. 20402 or by visiting their website at [www.access.gpo.gov/nara/cfr/cfr-retrieve.html](http://www.access.gpo.gov/nara/cfr/cfr-retrieve.html).)

**California's "Safe Drinking Water and Toxic Enforcement Act" of 1986  
(Proposition 65)**

(Request for copies should be addressed to the State of California Health and Welfare Agency; 1600 Ninth Street, Room 450; Sacramento, California 95814.)

**2.2 Non-Government Publications.** The following documents form a part of this specification to the extent specified herein.

**American National Standards Institute/American Society for Quality  
(ANSI/ASQ):**

**ISO 9001-2015      Quality Management Systems - Requirements**

(Requests for copies should be addressed to the American Society for Quality; 611 East Wisconsin Avenue; PO Box 3005; Milwaukee, Wisconsin, 53202-3005 or by visiting their website at [www.asq.org](http://www.asq.org).)

**American Society for Testing and Materials (ASTM) Methods:**

**D 618 Standard Practice for Conditioning Plastics for Testing**

**D 882      Standard Test Method for Tensile Properties of Thin Plastic Sheeting**

**D 1004      Standard Test Method for Tear Resistance (Graves Tear) of Plastic Film and Sheeting**

**D 1894      Standard Test Method for Static and Kinetic Coefficients of Friction of Plastic Film and Sheeting**

**D 1938      Standard Test Method for Tear-Propagation Resistance (Trouser Tear) of Plastic Film and Thin Sheeting by a Single-Tear Method**

**D 6988      Standard Guide for Determination of Thickness of Plastic Film Test Specimens**

(Requests for copies should be addressed to the American Society for Testing and Materials; 100 Barr Harbor Drive; West Conshohocken, PA 19428-2959 or by visiting their website at [www.astm.org](http://www.astm.org).)

**Pantone Matching System® Color Formula Guide**

(Requests for copies should be addressed to Pantone, Inc., 590 Commerce Boulevard; Carlstadt, New Jersey, 07027-3098. Telephone (201) 935-5500; FAX No. (201) 896-0242).

**National Motor Freight Classification Rules and Container Specifications**

(Requests for copies should be addressed to the American Trucking Association, Inc.; 2200 Mill Street; Alexandria, Virginia 22314-4677.)

**2.3 Order of Precedence.** In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. However, nothing in this document supersedes applicable laws and regulations unless a specific exemption has been obtained.

**2.4 Internal References.** All paragraph and table references will be to paragraphs and tables of this specification unless stated otherwise.

### **3.0 REQUIREMENTS**

**3.1 Material.** These materials shall be plastic films. The composition of the films is left to the discretion of the supplier provided that all the requirements as stated in this specification are met.

**3.1.1 Recovered Materials.** In accordance with the requirements of 42 United States Code 6901, *et. seq.*, and 6962, the BEP encourages the use of the highest percentage of recovered materials practicable in the manufacture and delivery of the finished material as specified herein, as long as all specification requirements are fulfilled. The EPA defines recovered material in 40 CFR 247.

**3.2 Performance in Processing.** The plastic films shall be suitable for use on the BEP's packaging equipment. There are four packages formed using this equipment as described below.

**3.2.1 Bundle Film.** The bundle film shrink-wraps a bundle of 1000 currency notes. A bundle consists of ten straps shrink-wrapped together with 1L001936 film, 1L002038 centerfolded film (LEPE), or 1L002042 centerfolded film (LEPE). A strap consists of one hundred notes.

The wrapping machine forms the package with the ends sealed and cut by a seal bar. The bottom overlapped lateral edges of the film are sealed together by the heat in the shrink tunnel or hot air oven. Sealing bar temperature and oven temperature are adjustable up to 200°C. Sealing bar dwell-time is adjustable from 0.1 second to 4 seconds and the oven dwell-time is adjustable from 5 seconds to 20 seconds. The package size is approximately 16 cm x 11 cm x 7 cm (w x l x h). The currency bundle shall stay intact during normal handling, including being dropped when part of the larger Cash-Pak (see Paragraph 3.3.11).

**3.2.2 Brick Film.** Four currency bundles (4000 notes) are wrapped together in this film to form a currency brick, which is approximately 16 cm x 46 cm x 7 cm (w x l x h). The brick-forming equipment punches air holes into the unwinding film and forms a package with the ends sealed and cut by a seal bar. The bottom overlapped lateral edges of the film are sealed together by the heat in the shrink tunnel or hot air oven. Sealing bar temperature and oven temperature are adjustable up to 200°C. Sealing bar dwell-time is adjustable from 0.1 second to 4 seconds and the oven dwell-time is adjustable from 5 seconds to 20 seconds. The currency brick shall stay intact during normal handling, including being dropped when part of the larger Cash-Pak (see Paragraph 3.3.11).

**3.2.3 Cash-Pak Film.** Four currency bricks (16,000 notes) are wrapped together in a transparent, laminated film with opaque-colored or transparent lateral bands. The Cash-

Pak equipment wraps the group of four currency bricks in a formed package with the ends of the film sealed together by a seal bar. The Cash-Pak machine is equipped with a longitudinal sealing bar to apply heat and pressure to the overlapped edges of the film. Sealing bar temperature and oven temperature are adjustable up to 300°C. Sealing bar dwell-time is adjustable from 0.1 second to 4 seconds and the oven dwell-time is adjustable from 5 seconds to 20 seconds. The package is approximately 32 cm x 46 cm x 14 cm (w x l x h). The Cash-Pak equipment punches air holes into the unwinding film. The Cash-Pak shall withstand rough handling without tearing and damage to the package or its contents. (See paragraph 3.3.11)

**3.3 Film Characteristics.** The films shall unwind, seal, cut and shrink satisfactorily on BEP equipment. The films shall each exhibit the following performance characteristics or qualities.

**3.3.1 Unwind.** The films shall not telescope when unwinding. The films should unwind smoothly and evenly.

**3.3.2 Slip.** The slip of each film shall be such that it will not interfere with the automatic packaging process and with the handling and storage of the finished package. Example: All films shall move smoothly through the machine former. The currency bundles shall slide easily into the brick film for wrapping and the currency bricks shall slide easily into the final overwrap film to form the Cash-Pak. The currency bricks and Cash-Paks, stacked on pallets, shall not block and shall be stable (e.g., slide off). The currency bricks may be tightly strapped and stored for several days before the final Cash-Pak wrapping takes place. The bricks shall slide easily over each other after being strapped without destruction to the overlap seal or any other part of the package.

**3.3.3 Cutting and Sealing.** The film shall cut cleanly and easily, and shall not build-up on the hot knife and/or seal bar. Packages will be heat sealed at the specified parameters listed in paragraphs 3.2.1, 3.2.2, 3.2.3, and 3.2.4 for each package. The wrapping equipment fabricates three types of seals. A wrapping seal is formed by the cutting action of the seal bar. An end seal is formed by the cutting action of the seal bar. An overlap seam or seal is formed by the lateral edges of the film overlapping each other on the underside of the package. This seam extends between the two end seals. There shall be no holes in the end seals and no gaps in the overlap seal.

**3.3.4 Shrinkage.** All films shall shrink to conform to the shape of the package and shall remain taut after being cooled. The films shall shrink with sufficient tension to remove wrinkles and shall maintain its impact and tear resistance.

**3.3.5 Odor.** The films shall not emit offensive odors during sealing, shrinking, cooling, and storage of packaged United States currency.

**3.3.6 Opacity.** After processing, the opaque-colored section of the Cash-Pak film shall maintain its opacity so the underlying contents are not visible through the opaque section of the finished package. This does not apply to the transparent, colorless Cash-Pak film

(BEP Stock Item 1L002024).

**3.3.7 Transparency.** The films shall be transparent with the exception of the opaque section of the colored Cash-Pak film. Transparency shall be sufficient to allow labels of the currency bundles to be readable through the transparent portion of the Cash-Pak under normal viewing conditions. The currency straps shall also be visible through all layers of film.

**3.3.8 Tamper Evidence.** The finished packages shall be such that any tampering to remove contents shall result in readily evident destruction to the film. This shall include, but is not limited to, the removal of the labels and the breaking of the end seals and overlap seals.

**3.3.9 Package Defects.** Other than the air-escape holes fabricated by the manufacturer for the bundle wrap or punched by the currency brick and Cash-Pak equipment, there shall be no tears, burn holes, or other imperfections in the films.

**3.3.10 Fusion.** There shall be no fusion between any of the films after final processing. When the Cash-Pak is opened, each package shall be easily separated from each other with no adhesion of one film to another.

**3.3.11 Impact and Tear Resistance.** The films for currency bundles, bricks and Cash-Paks shall each have sufficient strength to withstand normal handling without incurring damage. Normal handling entails shipping via armored truck to the destination bank, or to the airport; air transport to the destination city; and truck transport to the destination bank. The handling, especially at the airport, is often rough. Rough handling may include, but is not limited to: drops from 8-12 feet; skidding across the uneven surfaces of an armored car; being tossed into the cargo hold of an airplane where it may be dragged or pushed across raised steel plates or rivets. The films shall have sufficient impact and tear resistance to sustain repeated drops without breaking or tearing. Only air escape holes that have been fabricated by the film manufacturer or punched by BEP packaging equipment are allowed in the films. The Cash-Paks shall withstand three free-fall drops from a distance of three feet without a tear of more than one inch and/or without multiple tears of more than ½ inch each. The Cash-Paks shall also withstand drops from three feet onto two corners, one drop on each end of the package, without sustaining a tear of one inch or more. In addition, the Cash-Paks shall withstand a drop from a distance of three feet onto a corner of a pallet or table with a tear of one inch or less. The final drop will be from a distance of eight feet. If a tear occurs at any time during this test, there shall be no tear propagation of the initial tear. If one layer of film sustains a tear, the other films should remain intact. See Attachment 1, Free Fall Drop Test. This test forms a part of this specification.

**3.4 Physical Requirements.** The plastic films shall conform to the requirements in TABLES II and III of this specification. The rolls and films shall also meet the requirements listed below.

**3.4.1 Color.** The contractor shall maintain a consistency in the color of the opaque bands. The color shall not change when exposed to heat of the seal bar and shrink oven. The color shall be visually comparable from roll to roll of the same color. The method used to impart the color is to be determined by the contractor as long as the color does not chip, flake, rub off, or peel off and all other requirements of this specification are met. The PMS color is for reference only.

**3.4.1.1** 1L001938 shall be transparent with two blue opaque bands running the length of the package. (See BEP drawing No. 30083.) The opaque bands of 1L001938 should approximate Pantone 307u.

**3.4.1.2** 1L001939 shall be transparent with two red opaque bands running the length of the package. (See BEP drawing No. 30083.) The opaque bands of 1L001939 should approximate PMS 187u.

**3.4.1.3** 1L001970 shall be transparent with two green opaque bands running the length of the package. (See BEP drawing No. 30083.) The opaque bands of 1L001970 should approximate Pantone 349c.

**3.4.1.4** 1L001973 shall be transparent with two black opaque bands running the length of the package. (See BEP drawing No. 30083.)

**3.4.1.5** 1L002022 shall be transparent with two purple opaque bands running the length of the package. (See BEP drawing No. 30083.) The opaque bands of 1L002022 should approximate Pantone 269c.

**3.4.1.6** 1L002023 shall be transparent with two gold colored opaque bands running the length of the package. (See BEP drawing No. 30083.) The opaque bands of 1L002023 should approximate Pantone 126c.

**3.4.1.7** 1L002024 shall be transparent, clear and colorless with no colored opaque bands running the length of the package.

**3.4.2 Roll Defects.** The rolls of film shall be clean and free from scraps, slitting residue, dirt, and other visible extraneous materials. There should be no telescoping of ends nor ridges or uneven edges.

**3.4.3 Film Defects.** The films shall be free from pinholes, tears, cracks, creases, wrinkles, pits, warpage, checks, blisters, and other defects that would affect the appearance and/or performance. The edges of the film shall be linear, cleanly slit and free from nicks. The films shall be free of extraneous materials.

**3.4.4 Thickness.** The thickness of each film has been left to the discretion of the supplier. However, the films shall meet all the performance requirements stated in this specification. Once the contractor has identified a thickness that meets or exceeds all the requirements of this specification, the thickness shall not vary more than  $\pm 10\%$ .

**3.4.5 Splices.** Splices, if any, shall maintain their integrity in normal use. Splices shall be tagged. There shall be no more than one splice per roll of film.

**3.4.6 Opaque Bands.** The currency shall not be visible through the opaque bands. The Cash-Pak film shall meet the requirements of BEP Drawing No. 30083 and the following requirements in TABLE II (note this does not apply to 1L002024):

**TABLE II  
 DIMENSIONS OF OPAQUE BANDS**

<b>Location and Width of Opaque and Clear Bands after Shrinkage</b>	<b>Minimum cm (inches)</b>	<b>Maximum cm (inches)</b>
Distance of Opaque Band from Lateral Edge	8.25 (3.25)	8.9 (3.5)
Width of Opaque Band	36.2 (14.25)	36.8 (14.5)
Width of Clear Window	11.43 (4.5)	12.1 (4.75)

**3.4.7 Rolls.** The film shall be wound on paperboard cores. The cores of all the films shall be of a thickness sufficient to support the film and shall not collapse during shipment, storage, or use on the wrapping equipment. The construction of rolls shall meet the requirements of Table III.

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**TABLE III  
 REQUIREMENTS OF ROLLS**

<b>Property</b>	<b>1L001936</b>	<b>1L002038 1L002042</b>	<b>1L001937</b>	<b>1L002037</b>	<b>1L001938, 1L001939, 1L001970, 1L001973, 1L002022, 1L002023 1L002024</b>
<b>Width of Roll, cm (in)</b>					
<b>Minimum</b>	54.0 (21.25)	24.50 (9.65)	56.5 (22.25)	27.64 (10.88)	101.6 (40.0)
<b>Maximum</b>	54.6 (21.50)	25.15 (9.90)	57.2 (22.50)	28.91 (11.38)	102.1 (40.2)

Weight of Roll, kg (lb) Minimum Maximum	18 (40) 23 (50)	9 (20) 11 (25)	18 (40) 23 (50)	9 (20) 11 (25)	N/A 68.2 (150)
Length of Core, cm (in) Minimum Maximum	54.0 (21.25) 55.9 (22.00)	24.50 (9.65) 25.78 (10.15)	56.5 (22.25) 58.5 (23.00)	27.00 (10.63) 29.54 (11.63)	102.9 (40.5) 104.1 (41.0)
No. of LF/roll	3,100	1,550	3,500	1,750	900
Splices, Maximum	1	1	1	1	1
Core extension on each side of film mm (in) Minimum Maximum	N/A	N/A	N/A	N/A	6.35 (0.25) 12.7 (0.50)

**3.4.8 Stability.** The films shall not block within the rolls and shall show no evidence of deterioration or change in properties that would render them unfit for their specified use when stored for periods not exceeding twelve months (365 days) from the date of shipment under normal atmospheric conditions where the temperature does not exceed 27°C (85°F). The finished packages shall show no deterioration or excessive relaxation in storage. Storage after processing can be for extended periods of time, often more than one year.

**3.4.9 Air Holes.** Films 1L001936 and 1L002042 shall have air holes incorporated into the film at 6.35 mm (0.25 inch) in diameter on 10.2 cm (4 inch) from center of hole to center of the next hole.

### 3.5 Safety and Health in Handling, Printing, and Processing.

**3.5.1 Safety Data Sheet (SDS).** The contractor shall comply with the Occupational Safety and Health Administration (OSHA) requirements as listed in 29 CFR 1910, Part 1200, the Hazard Communication (HazComm) Standard, including the preparation of Safety Data Sheets (SDSs). MSDSs that do not meet the provision of this Standard will not be accepted. No product that is defined as "hazardous chemicals" under the HazComm Standard shall be used without a SDS.

**3.5.2 Safety and Health.** The BEP retains the right to reject any material that causes an adverse effect upon its employees. Adverse effects include, but are not limited to headaches; eye, dermal, nasal, or throat irritation; nausea, dizziness; or sensitization.

**3.5.3 OSHA Emission Requirements.** During storage, wrapping, cutting and shrinking, and storage of packages after wrapping, the films shall not emit substances that are established as hazardous. The Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (29 CFR 1910.1200) and its appendices define health hazards [Part 1200 (c)] and list sources to be used in establishing that certain substances at or above certain concentration levels are hazardous [Part 1200 (d)(3)].

**3.5.4 Lead.** Lead and lead components shall not be used as ingredients in the plastic

films.

**3.5.5 Carcinogens.** The plastic films shall not contain a chemical as ingredient that is known to cause cancer in humans. A chemical is considered to be a known carcinogen if:

- (1) It has been evaluated by the International Agency for Research on Cancer (IARC) and was found to be a Group I carcinogen.
- (2) It is listed as a known carcinogen in the Annual Report on Carcinogens published by the National Toxicological Program (NTP) (latest edition).
- (3) OSHA regulates it as a carcinogen. Other chemicals listed by IARC or NTP are suspect carcinogens. The use of suspect carcinogens is undesirable and is strongly discouraged.

**3.5.6 Cyanide.** The plastic films shall not contain cyanide or any materials that may release cyanide while in use or during storage.

### **3.6 Environmental Requirements**

**3.6.1 Premanufacture Notification.** The contractor shall comply with the regulations set forth in 40 CFR Part 720, Premanufacture Notification. 40 CFR Part 720 establishes premanufacture notification requirements under Section 5 of the Toxic Substances Control Act (TSCA).

**3.6.2 Proposition 65.** The plastic films shall not contain any of the chemicals listed by California's "Safe Drinking Water and Toxic Enforcement Act" (Proposition 65), nor shall it contain any ingredient known to cause cancer or known to be a reproductive toxicant as recognized by the EPA, OSHA, or any state.

**3.6.3 Air Toxics.** The plastic films shall not contain, as an ingredient, any of the chemicals regulated as Air Toxics by the Clean Air Act Amendments of 1990, Section 112.

**3.6.4 Superfund Amendments and Reauthorization Act (SARA), Title III.** The contractor shall prepare a list of the chemicals and their quantities in the films that are reportable under SARA, Title III of 1986.

**3.6.5 Polychlorinated Biphenyls (PCBs).** The films shall not contain PCBs in excess of 2 parts per million. The contractor may qualify as an excluded manufacturing process under 40 CFR 761.1 (f)(1) if copies of the certification required by the Environmental Protection Agency (EPA) are provided.

## 4.0 QUALITY ASSURANCE PROVISIONS

**4.1 Contractor Quality Assurance.** The BEP will rely on the contractors' existing quality assurance system prior to delivery of the material. The BEP reserves the right to perform any inspections and tests that the BEP deems necessary upon receipt of the material to assure conformance to requirements. The BEP may conduct periodic site visits and quality audits of the facilities of the manufacturer or major first-tier subcontractors in cases where the contractor is a "broker" or "regular dealer". Upon request by the BEP, the contractor shall provide a copy of their current quality assurance system documentation, e.g., quality assurance plan and its associated quality system documents to the BEP. If the contractor is a "broker" or a "regular dealer" and not the manufacturer of supplies to be delivered under the terms of the contract, the BEP may request that the contractor provide a copy of the current quality assurance system documentation of its major first-tier subcontractors. The quality assurance system documentation will be used by the BEP as the basis for conducting the quality audit.

### 4.2 Inspection and Testing.

**4.2.1 Responsibility for Inspection and Testing.** Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection and testing as specified herein. Except as otherwise specified, the supplier may utilize his own facilities or any commercial laboratory acceptable to the BEP. The contractor shall furnish complete inspection and testing results for each production lot of packaging film. The BEP reserves the right to perform any of the inspections and tests set forth in the specification.

**4.2.2 BEP Testing.** The BEP will evaluate the physical properties of the packaging films for compliance with this specification. The material shall be evaluated on BEP equipment for compliance with the performance requirements of paragraph **3.2 Performance in Processing**. Inspections and tests by the BEP do not relieve the contractor of responsibilities for defects or other failures to meet specification requirements discovered before acceptance of delivered materials.

**4.2.3 Sampling.** Sampling for inspection and testing shall be conducted in accordance with ANSI/ASQ Z1.4-2003. Inspection Level (IL) and Acceptable Quality Level (AQL) shall be as follows:

**TABLE IV  
SAMPLING FOR INSPECTION AND TESTING**

Description	Inspection Level	Acceptable Quality Level
Testing and Inspection	S-1	1.5
Defects in Preparation for Delivery	S-2	2.5

The lot size for the purpose of determining the sample size shall be expressed as 'delivery

size' rolls.

**4.2.4 Roll (Film) Samples.** The contractor shall provide, with each shipment, two - 8 inch by 11 inch representative samples of each lot of film in that shipment. The package containing the samples shall be sealed and labeled identifying the contractor's name, manufacturer's name if different from the contractor, contract number, P.O. number, product description, stock item number, lot number, date of manufacture, and warranty end date. The package containing the samples shall be addressed and sent to the COR. The lot samples shall be delivered before or on the day that the rolls are delivered to the BEP.

**4.3 Testing.** Tests shall be conducted in accordance with the following methods listed in **Table V**. Reference to specific instruments is for informational use only; use of a company and/or product name in this document does not imply approval or recommendation of the product in preference to others that may also be suitable. The BEP will work with the contractor to establish correlations between various instruments when required.

**TABLE V**  
**Summary of Analytical Test Methods**

Property	ASTM Method	BEP STM	Paragraph
<b>Caliper (Thickness)</b>	D 374	-	-
<b>Tensile Strength</b>	D 882, Method A	-	-
<b>Opacity</b>	-	-	4.3.4
<b>Coefficient of Friction</b>	D 1894	-	-
<b>Impact Resistance</b>	-	-	3.3.11

**4.3.1 Test Conditions.** Plastic film samples shall be conditioned and tested under environmental conditions that meet the requirements of ASTM Method D 618.

**4.3.2 Caliper (Thickness).** The caliper of the plastic film shall be determined according to ASTM Method D 374.

**4.3.3 Tensile Strength.** The tensile strength of the plastic film shall be determined according to ASTM Method D 882, Method A. The sample size shall be 25.4 mm (1 inch) in width.

**4.3.4 Opacity.** The opacity of the Cash Pak plastic film shall be determined by placing currency behind the opaque bands and visually determining if the currency is visible through the bands.

**4.3.5 Coefficient of Friction.** The Coefficient of Friction shall be determined according to ASTM Method D 1894.

**4.3.6 Impact and Tear Resistance.** The impact and tear resistance shall be determined according to the drop test described in Attachment 1 of this specification.

**4.4 Contractor Documentation.** The contractor shall provide the following documentation for the plastic film supplied:

**4.4.1 Reports.** The contractor shall furnish to the COR a report showing the results of inspections and tests for each BEP purchase order and for each production lot of plastic film. The reports shall be received before or at the time of shipment.

**4.4.2 Certifications.** The contractor shall certify that all plastic films supplied under this specification meet all of the requirements of this specification. The certification shall include a statement of the recovered material content. Signed certification for each purchase order for plastic film supplied to BEP shall accompany the reports of inspections and tests. The certificate shall be received before or at the time of shipment.

**4.5 Inspection.** Inspection shall be conducted in accordance with the following methods in **Table VI**.

**TABLE VI**

**INSPECTION METHODS**

Paragraph/Requirement(s)	Inspection Method
3.4 Physical Requirements	Visual evaluation, Measurement
Section 5.0 Preparation for Delivery	Visual evaluation

**5.0 PREPARATION FOR DELIVERY**

**5.1 Packaging and Packing.** The packaging and packing shall comply with any applicable Department of Transportation Rules and Regulations and shall comply with the applicable requirements of the National Motor Freight Classification Rules and Container Specifications.

**5.1.1 Packaging.** Each roll shall have wooden, metal, or plastic plugs inserted in each end of the core prior to shipment that will prevent collapse of the core during shipping and handling in the BEP. Each roll of film shall be either boxed or wrapped in plastic or paper in such a manner that will prevent exposure to dirt and damage to the sides, edges, and ends of the rolls.

**5.1.2 Packing.** The contractor shall deliver all rolls on wooden, four-way entry pallets. The bundle and brick films, if boxed, may be stacked three high. Shrink-wrap or stretch wrap film shall be applied to the pallet load. The rolls of Cash-Pak film shall be arranged on end in a single layer with each row staggered. Fiberboard caps or equivalent, with one over the load and one under the load, shall be used in pairs. No shifting of or damage to

the rolls shall occur during transit or during subsequent BEP storage and handling. The films shall be packed and packaged in accordance with best commercial practice to protect the films from moisture, dirt and debris, give adequate protection against shifting and damage in transit and handling, and prevent any change to the rolls of film (e.g., deformation of the roll and film) that could affect the packaging of currency notes.

**5.1.3 Alternate Methods.** The contractor may recommend and request written authorization for alternate methods of packaging from the Contracting Officer prior to the shipment of any rolls of plastic film.

## **5.2 Labeling.**

**5.2.1 Roll and Box Labels.** Each roll shall have a label affixed within the core. The core label shall be legible, not less than 5 mm (0.2 inch) high and of a color contrasting to that of their backgrounds. If the roll is boxed, it shall also have a label affixed on the outside of each box. The same information shall be on both the core label and box label. Information on the labels shall include the following:

- Manufacturer's name
- BEP stock number
- Roll net weight (given in both kilograms and pounds)
- Roll length (given in both meters and feet)
- Roll Lot Number
- Warranty End Date
- Any information necessary for the manufacturer to identify the roll

**5.2.2 Pallet Labels.** Each pallet load shall be legibly labeled on two fork entry sides opposite of each other on the upper 1/3rd of the pallet with the following:

- Contractor's name
- BEP stock number
- Bundle Film, Center folded Bundle Film, Brick Film, Center folded Brick Film, or Cash-Pak Film as applicable
- Contract Number
- BEP purchase order number
- Gross weight of loaded pallet (given in both kilograms and pounds)
- Total length of rolls (given in both meters and feet)
- Quantity (Number of Rolls)
- Roll Lot Number(s)
- Warranty End Date

The pallet load markings shall be legible, not be less than 25 mm (1 inch) high and of a color

contrasting to that of their background. The warranty end date shall be in red font on the pallet label, contrasting to that of the background. In addition, each pallet shall be labeled in accordance with applicable Department of Transportation Rules and Regulations and with the information required by the Occupational Safety and Health Administration Hazard Communication Standard.

**5.2.3 Packing Slip.** Each shipment shall have a packing slip enclosed in a self-adhesive pack list envelope affixed to the outside of the box or pallet. Information on the packing slip shall at a minimum include the following:

- BEP Purchase Order Number
- Contractor Name, Address and Telephone Number
- Contract Number
- Bundle Film, Center folded Bundle Film, Brick Film, Center folded Brick Film, or Cash-Pak Film as applicable
- BEP Stock Item Number
- Total length of rolls (given in both meters and feet)
- Gross weight of loaded pallet (given in both kilograms and pounds)
- Quantity (Number of Rolls)
- Roll Lot Number(s)
- Warranty End Date

**5.2.4 Barcode Labeling.** Barcode labels shall be placed on the top and two opposite sides of the wrapper of each pallet of film. The labels shall conform to the BEP document L: **VAB-1A, Specification for Vendor Affixed Barcode Labels for the Bureau of Engraving and Printing.** Table VII lists the human-readable text that shall identify the required barcode data items.

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**TABLE VII**

**HUMAN-READABLE TEXT INFORMATION FOR BARCODE LABELS**

<b>Specification Category</b>	<b>Label Information</b>
Product Description	Bundle Film - 54.0 cm (21.25 in.) Centerfolded Bundle Film – 24.5 cm (9.65 in.) Brick Film - 56.5 cm (22.25 in.) Centerfolded Brick Film – 28.25 cm (11.13 in.)

	Cash-Pak Film 101.6 cm (40 in.) (Blue/Red/Black/Green/Purple/Gold/Clear)
Contract #	Contract Number
PO #	BEP Purchase Order Number
Stock Item No. #	1L001936, 1L002038, 1L001937, 1L002037, 1L001938, 1L001939, 1L001970, 1L001973, 1L002022, 1L002023, 1L002024, or 1L002042
Quantity	Number of rolls of film on the pallet
Weight	Net weight of the pallet
Serial/Lot #	A Manufacturer assigned lot number
Warranty	Warranty end date

## 6.0 NOTES.

**6.1 Definitions.** Certain words and phrases are frequently used in a specification. The following rules shall apply:

**6.1.1 "Shall."** The emphatic form of the verb is used whenever a requirement is intended to express a provision that is binding.

**6.1.2 "Should."** It is used whenever a non-mandatory requirement is judged to be the best characteristic for the material or product. As such, this requirement will be graded during the evaluation of the material in order to assist in the selection of the best-qualified material.

**6.1.3 "May."** It is used to express non-mandatory provisions.

**6.1.4 "Will."** It is intended to express a declaration of purpose on the part of the Government. It may also be used to indicate simple futurity.

**6.2 Coefficient of Friction.** It has been found that Cash-Pak films need to have a coefficient of friction (COF) between 0.15 and 0.30 in order to function satisfactorily on BEP equipment. Films with a lower COF tend to create unstable pallets. Films with a higher COF will not run smoothly through the machine former.

## ATTACHMENTS:

Attachment 1- Free Fall Drop Test  
Attachment 2- Drawing No. 30083 (Cash-Pak)

(End)