

Specifications for Legal Size Envelopes: Expansion and Plain

October 2015

I. Scope

This specification covers the requirements for legal size expansion and plain envelopes.

II. Requirements

Construction

A. Expansion Envelope:

The expansion envelope shall have the fold in the longer of the two dimensions and the grain (machine direction) must run perpendicular to the fold. The expansion envelope must have an accordion expansion pleat on the bottom and sides and an overlaying flap that is un-gummed extending from the back panel that folds down over the front. The overlaying flap must be scored to fold down over the front and must lay flat when creased. The expansion envelope must be constructed with seams of folded flaps adhered to the outer side and corners of flaps and seams must be rounded.

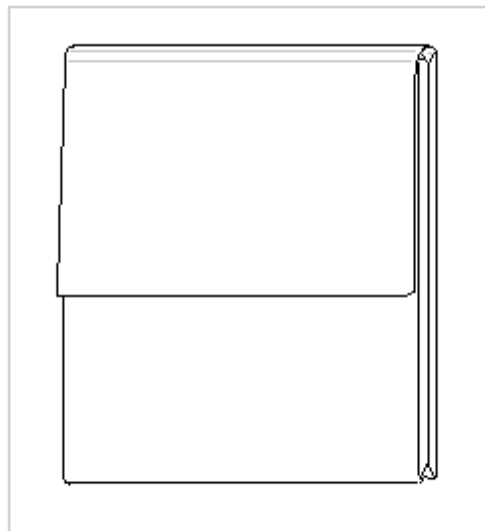


Figure 1: Expansion Envelope (Diagram not to scale)

B. Plain Envelope:

The plain envelope shall have the fold in the longer of the two dimensions and the grain (machine direction) must run perpendicular to the fold. The envelope must have an overlaying flap that is un-gummed extending from the back panel that folds down over the front. The overlaying flap must be scored to fold down over the front and must lay flat when creased. The envelope must be constructed with seams of folded flaps adhered to the outer side and corners of flaps and seams must be rounded.

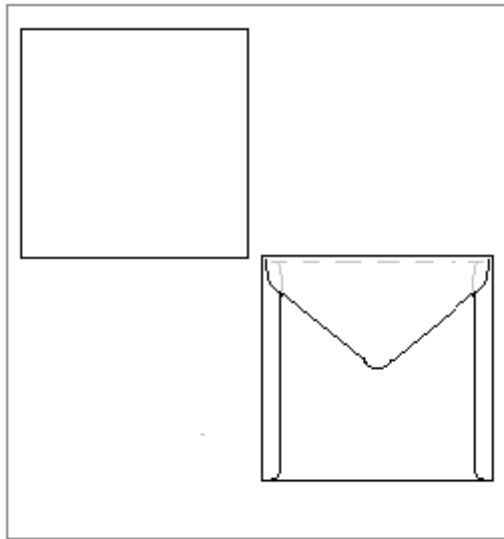


Figure 2: Plain Envelope (Diagram not to scale)

Dimensions

A. Expansion Envelopes:

A legal size expansion envelope with accordion folds on bottom and sides shall measure $14\frac{3}{4}$ in by $9\frac{7}{8}$ in when folded. The expansion pleat on the bottom and sides should be $1\frac{1}{2}$ in. The front overlaying flap extending from the back panel should be $6\frac{1}{2}$ in overall in length. The first of the score lines on the overlaying flap should be at the top of the back panel then at $\frac{1}{2}$ and 1 in. The allowable variation for each dimension shall be $\pm 1/16$ in.

B. Plain Envelope:

A legal size envelope shall measure $14\frac{3}{4}$ in by $9\frac{7}{8}$ in. The front overlaying flap extending from the back panel should be $6\frac{1}{2}$ in overall in length. The score line on the overlaying flap should be at the top of the back panel. The allowable variation for each dimension shall be $\pm 1/16$ in.

Paperboard

Composition

It shall be made from new cotton or linen pulp, fully bleached chemical wood pulp, or a mixture of them.

Paperboard shall be free of:

- groundwood:
 - test negative in ASTM D1030 phloroglucinol test with X5 Spot Stains (ASTM has withdrawn this standard in 2011. NARA is following 2007 version)
 - or Kappa # ≤ 5 in TAPPI T-236 test.
- alum rosin sizing (TAPPI T-408 or ASTM D 549).
- reducible sulfur (TAPPI T-406, $<0.0008\%$).
- Free of optical whitening agent and fire retardant.
- particles or other impurities such as:
 - metals,
 - waxes,
 - plasticizers (i.e. wet strength additives),
 - plastics,
 - residual bleach,
 - peroxide,
 - any components that will fail the photographic activity test (ISO 18916).

Sizing

Only alkaline sizing shall be used (surface, internal, or both). No alum rosin or rosin sizing shall be used (tested by TAPPI T 408 or ASTM D 549).

Alkaline Reserve

The paperboard shall contain an alkaline reserve of calcium carbonate, magnesium carbonate, or a combination of both, within a range of 3-6% (calculated as CaCO_3) when tested according to TAPPI T-553 or modified by slurring the sample pulp prior to measurement, and shall be evenly distributed throughout all plies and layers. NARA will provide slurry method procedure upon request.



Hydrogen Ion Concentration (pH)

The pH value of the paperboard shall be between 8.0 and 9.5 when tested according to cold extraction method TAPPI T-509 or modified by slurring the sample pulp prior to measurement.

Lignin

To demonstrate the adequacy of bleaching or lignin removal, all plies and layers of the paperboard shall be:

- test negative in ASTM D1030 phloroglucinol test with X5 Spot Stains
- or Kappa number ≤ 5 in TAPPI T-236 test.

Abrasion Resistance

The outer surfaces of the paperboard must show $<2\%$ total weight-loss (mounting card and sample) when tested according to TAPPI T-476 with a #CS10 wheel and 100 wear cycles.

Surface Smoothness

The paperboard shall reach a smoothness of 175-220 Sheffield units, when tested according to TAPPI T-538.

Thickness

The paperboard shall have an average thickness of 0.0095"–0.015" (10 point), when tested according to TAPPI T-411.

Bending Resistance

When tested according to TAPPI T-556 (7.5° deflection), the paperboard shall have an internal stiffness of:

- ≥ 80 mN (machine direction), and
- ≥ 40 mN (cross direction)

Machine Direction

The machine direction of the paperboard shall be perpendicular to the primary fold.

Score Lines

The paperboard shall be scored uniformly and deeply enough to permit easy, precise folding and the retention of maximum strength along the fold line. The stock must not fray, crack or split when folded and/or creased.



Folding Endurance:

≥750 double folds, when tested in the machine direction according to TAPPI T-511, after conditioning according to TAPPI T-402, using 1kg load.

Finish

The paperboard shall be plate finished (calendered) on both sides.

Color & Dye Bleed/Transfer

Dyes used to color the paperboard shall show no bleeding or transferring when soaked in distilled water for 48hrs. under ambient temperature, while held in direct contact with white bond paper.

Adhesive

- Water resistant adhesive shall be used to adhere the side flaps to the back.
- When aging in a humidity chamber of 50°C and 87% RH for 4 hrs., the adhesive shall firmly and evenly adhere the side flaps to the back, not soften or run.
- The properties of the adhesive shall not negatively impact the specification of the paperboard, such as reduce the pH or alkaline reserve, increase the sulfur content, decrease the folding endurance, or cause the paperboard to fail the photographic activity test (ISO 18916).
- The adhesive shall not contain sulfur, iron, copper or other ingredients that may be detrimental to archival records.
- If it is necessary to buffer the adhesive, the same buffer shall be used as those in the paperboard (calcium or magnesium carbonate, or a combination of both).
- The adhesive shall be invisible and shall not alter the color of the paperboard.
- The adhesive must not yellow, discolor, or fail (causing delamination) over time.
- The adhesive shall 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.

Workmanship

Each envelope shall meet the requirements stated in this specification, shall be constructed in accordance with good commercial practice, and shall be free of imperfections that may affect its utility or aesthetic appearance.

- Each envelope shall be made to the dimensions specified.
- The front overlaying flap must be un-gummed.



- All surfaces shall be smooth with no blisters, knots, or shives. Surfaces shall be free of bubbles and abrasive particles. The envelope shall contain no surface dirt (smudges, fingerprints, and the like) and no oozed adhesive and shall not be marred (scuffed, abraded, and the like) in any way.
- All edges shall be cut straight and shall be smooth and even.
- The corners on both the front and back flaps shall be evenly rounded and smooth.
- The paperboard shall be scored and creased uniformly along all folds as well as the accordion pleats in the expansion envelope.
- All folded edges and score lines shall be free of fraying, cracks, and breaks.

Identification Markings (product level)

The following information shall be legibly embossed on the back of each envelope: name of manufacturer, year of manufacture, pH range and the words “*low lignin*”. The raised text is to the outside of the folder

III. Preparation for Delivery

Packaging

The envelope shall be packed in standard commercial container and sealed with tape to ensure that they arrive dry and undamaged. The number of envelopes to be packed in each container shall be specified in the purchase order.

Marking (package level)

The outside of each packing container shall be legibly marked with:

- the purchase order number, and
- the type, size, and number of envelopes packed in the container, and
- the name of supplier/manufacturer and year of manufacture.

IV. Quality Assurance Provisions

Tests

Test procedures and controls specified in this document shall be used to determine the quality of the product. Other procedures and controls must be approved by the National Archives before test results will be accepted.

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



Unless otherwise indicated, the tests shall be performed at, and the samples be conditioned to, a standard conditions of 73 ± 3.5 °F and $50\pm 2\%$ RH (TAPPI T-402).

Test Methods

The requirements for paperboard quality and characteristics shall be tested in accordance with specified test methods of the American Society for Testing and Materials (*ASTM*), the Technical association of the Pulp and Paper Industry (*TAPPI*), the International Organization for Standardization (ISO) and the American National Standards Institute (*ANSI*). Publications describing these tests may be ordered directly from the technical associations.

Responsibility for Tests

The Contractor is responsible for quality control to ensure the specifications of this contract are met. The Contractor shall provide test results to the Contract Specialist (CS) and/or Contracting Officer (CO), **for each production lot** used to provide supplies under this contract. The test results shall display, at a minimum, the characteristics listed below and shall be provided at least 30 days prior to shipping any items from the production lot under this contract. The Contractor may use his or her own facilities or any commercial laboratory certified to run quality assurance test methods listed below. The National Archives and Records Administration (NARA) reserves the right to perform quality assurance at any time during the contract where such tests are deemed necessary to assure that supplies and services conform to the specifications. Therefore, the test results [pH, alkaline reserve, lignin, sizing, sulfur, abrasion and bending resistances, surface smoothness, thickness, fold endurance, bleeding and PAT], two samples of each item purchased, and a sample of at least 12" x 12" of the material used to make the item (for example boxboard), shall be sent together to the CS within 14 days after award of the contract. Additionally, the Contractor shall provide a sample of at least 12" x 12" of the material from a new production lot at any time, upon request of the Government.

Table of QC Test Items and Specifications

Test Items	Spec. Targets	Notes (test methods, test conditions, etc.)
Alum-rosin sizing	Negative	TAPPI T 408 or ASTM D 549
Lignin	Negative, or Kappa number ≤5	Phloroglucinol test, ASTM D1030 (X5 Spot Stains) TAPPI T-236
Reducible Sulfur	<0.0008%	TAPPI T-406
Alkaline reserve	3 - 6% (calculated as CaCO ₃)	TAPPI T-553 (or slurry method)
pH	8.0 – 9.5	TAPPI T-509 (or slurry method)
Abrasion Resistance	<2% (total weight-loss)	TAPPI T-476 (#CS10 wheel, 100 wear cycles, on outer surfaces)
Surface Smoothness	175 – 220 Sheffield units.	TAPPI T 538
Thickness	0.0095" – 0.015"	TAPPI T-411
Bending Resistance	≥80 ±10mN (machine direction) ≥40 ±10mN (cross direction)	TAPPI T-556 (7.5° deflection)
Folding Endurance	≥750 double folds (machine direction)	TAPPI T-511 (after conditioning according to TAPPI T-402, with 1kg load)
Color & Dye Bleed/ Transfer	No visible transferring	See page 5 for detailed test method and conditions
Photographic Activity	Pass	ISO 18916, for both paperboard and adhesive used (see note below)

Note: For Photographic Activity, 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.



V. Inspection

Examination Criteria

An examination shall be made to determine whether the completed envelope complies with the Requirements section of this specification (see pages 1-5). The qualities and characteristics that shall be regarded as unacceptable in the completed folder are listed below.

Completed envelopes are:

- Not style specified
- Not dimensions specified
- Not materials (qualities or characteristics) specified
- Not color specified
- Not construction specified
- Not identification markings specified

Workmanship

- Edges are not cut straight, not smooth and even
- Corners are not evenly rounded and smooth
- Surfaces are not clean or smooth, have oozed adhesive, smudges, fingerprints or dirt
- Surfaces have blisters, knots, or shives
- Surfaces have scuffs and abrasions
- Fraying, cracks, or breaks along any folded or scored edges

Packaging for Delivery

An examination shall be made to determine whether the packaging of the boxes for delivery complies with the requirements of "Preparation for Delivery Section" of this specification. The characteristics that shall be regarded as unacceptable in the packaging are listed below:

- The number of boxes per container is not as specified in contract
- Container is not sealed with tape
- Container is not legibly marked with the purchase order number
- Container is not legibly marked with the type of envelope within
- Container is not legibly marked with size of envelope within
- Container is not legibly marked with number of envelope within



Responsibility for Inspection

Unless otherwise specified in the purchase order, the supplier is responsible for the performance of all inspection requirements specified herein. The National Archives reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure that supplies and services conform to the prescribed requirements.

Sampling for Examination

Sampling Method

The sampling of envelope in each shipment for examination shall be carried out according to methods specified in ANSI/ASQ Z1.4, inspection level S-2.

Acceptable quality levels

- For construction and workmanship at product level, the acceptable quality level shall be $\leq 4.0\%$ defective from each lot of material delivered.
- For QC testing at product level, the acceptable quality level shall be $\leq 2.5\%$ defective from each lot of material delivered.
- For compliance with packaging and marking requirements at package level, the acceptable quality level shall be $\leq 4.0\%$ defective from each lot of material delivered.

Required Ordering Information

The following information shall be included in the purchase order.

- Title and date of the specification
 - Envelope type and dimensions
 - Number of envelopes required
 - Purchase order number
 - Number of envelopes per shipping container
 - Special delivery conditions
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Revision note:

This is a revision of May 2014 version.