

INCH-POUND

L-P-377C

March 23, 1994

SUPERSEDING

L-P-377B

February 28, 1966

FEDERAL SPECIFICATION

PLASTIC SHEET AND STRIP, POLYESTER

This specification is approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers polyester-type plastic film.

1.2 Classification.

1.2.1 Types. Polyester film shall be of the following types, as specified (see 6.2):

- | | |
|----------|---|
| Type I | - General Purpose Film |
| Type II | - Highly Transparent Film |
| Type III | - Highly Transparent Film with Good Dimensional Stability |
| Type IV | - High Tensile-Strength Film with the Greatest Strength in the Longitudinal Direction |
| Type V | - Weatherable Film Possessing Good Transparency and Resistance to Outdoor Aging |
| Type VI | - Heat Shrinkable Film |

2. APPLICABLE DOCUMENTS

2.1 Government documents. The following documents, of the issue in effect on date of invitation for bids or request for proposal, form a part of this document to the extent specified herein.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be used in improving this document should be addressed to: U.S. Army Natick Research, Development, and Engineering Center, Natick, MA 01760-5019 by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

WASC N/A

FAC 115

0. DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

L-P-377C

Federal Specifications:

- A-A-203 - Paper, Kraft, Wrapping
- A-A-2601 - Clip, Paper, Wire
- PPP-B-576 - Boxes, Wood-Cleated Panelboard
- PPP-B-601 - Boxes, Wood, Cleated-Plywood

Federal Standards:

- FED-STD-123 - Marking for Shipment (Civil Agencies)

(Activities outside the Federal Government may obtain copies of Federal Specifications, Standards, and Commercial Item Descriptions as outlined under General Information in the Index of Federal Specifications, Standards, and Commercial Item Descriptions. The Index, which includes cumulative monthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.)

(Single copies of this specification, and other Federal specifications and Commercial Item Descriptions required by activities outside the Federal Government for bidding purposes are available without charge from the General Services Administration Business Service Centers in Boston, MA; New York, NY; Philadelphia, PA; Washington, DC; Atlanta, GA; Chicago, IL; Kansas City, MO; Fort Worth, TX; Houston, TX; Denver, CO; San Francisco, CA; Los Angeles, CA; and Seattle, WA.)

(Federal Government activities may obtain copies of Federal Standardization documents and the Index of Federal Specifications, Standards, and Commercial Item Descriptions from established distribution points in their agencies.)

Military Specification:

- MIL-L-10547 - Liners, Case and Sheet, Overwrap; Water-Vaporproof or Waterproof, Flexible

Military Standards:

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes
- MIL-STD-129 - Marking for Shipment and Storage

(Copies of military specifications and standards required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this document to the extent specified herein. Unless a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply:

American Society for Testing and Materials (ASTM)

- ASTM D 374 - Thickness of Solid Electrical Insulation
- ASTM D 882 - Tensile Properties of Thin Plastic Sheeting
- ASTM D 1003 - Haze and Luminous Transmittance of Transparent Plastics
- ASTM D 3951 - Packaging, Commercial

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103-1187.)

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

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. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Material. The film covered by this specification shall be manufactured from a polyester-type polymer. It is encouraged that recycled material be used when practical as long as it meets the requirements of this specification.

3.2 Dimensions and tolerances.

3.2.1 Thickness. The film thickness shall be as specified in table I when tested as specified in 4.2.6.

TABLE I. Thickness and tolerances

| Thickness, nominal, inch | Thickness, inch | | Type availability |
|--------------------------------|-----------------|---------|----------------------|
| | Minimum | Maximum | |
| 0.00015 | 0.00012 | 0.00018 | II |
| 0.00025 | 0.00017 | 0.00033 | II, III |

L-P-377C

TABLE I. Thickness and tolerances (cont'd)

| Thickness, nominal, inch | Thickness, inch | | Type availability |
|--------------------------------|-----------------|---------|----------------------|
| | Minimum | Maximum | |
| 0.00035 | 0.00023 | 0.00046 | II, III |
| 0.00050 | 0.00035 | 0.00064 | I, II, III, IV |
| 0.00065 | 0.00052 | 0.00078 | VI |
| 0.00075 | 0.00052 | 0.00097 | II, III, IV |
| 0.00100 | 0.0007 | 0.0012 | I, II, III, IV |
| 0.00150 | 0.0011 | 0.0017 | I, III, IV |
| 0.00200 | 0.0016 | 0.0024 | I, III, V |
| 0.00300 | 0.0027 | 0.0033 | I, III, V |
| 0.00500 | 0.0040 | 0.0059 | I, III, V |
| 0.00750 | 0.0061 | 0.0089 | I, III |
| 0.01000 | 0.0083 | 0.0115 | I, III |
| 0.01400 | 0.0118 | 0.0162 | I |

3.2.2 Roll sizes. The film shall be furnished in rolls conforming to the requirements in tables II, III, and IV. Tolerance shall be $\pm 1/16$ inch. For roll cores of 1-1/8 inch outside diameter (O.D.), a plastic tube may be used in lieu of a paperboard tube, for durability.

TABLE II. Roll cores 1/

| Film thickness, nominal, inch | Film type | | | | | |
|-------------------------------------|-----------|---------|---------|---------|------|---------|
| | I | II | III | IV | V | VI |
| 0.00025 | - | A, B, C | - | - | - | - |
| 0.00035 | - | A, B, C | - | - | - | - |
| 0.00050 | A, B, C | A, B, C | - | A, B, C | - | - |
| 0.00065 | - | - | - | - | - | A, B, C |
| 0.00075 | - | A, B, C | - | A, B, C | - | - |
| 0.00100 | A, B, C | A, B, C | - | A, B, C | - | - |
| 0.00150 | A, B, C | - | A, B, C | - | - | - |
| 0.00200 | A, B, C | - | A, B, C | - | A, B | - |
| 0.00300 | A, B, C | - | A, B, C | - | B, C | - |
| 0.00500 | B, C | - | B, C | - | B, C | - |
| 0.00750 | B, C | - | B, C | - | - | - |
| 0.01000 | B, C | - | - | - | - | - |
| 0.01400 | B, C | - | - | - | - | - |

1/ Roll core inside diameters (I.D.): A = 1-1/8 inches, B = 3 inches, and C = 6 inches.

TABLE III. Roll dimensions and tolerances

| Roll core I.D., inches | Film thickness, nominal, inch | Roll O.D., inches $\frac{1}{2}$ | Roll width, inches | | |
|------------------------------|----------------------------------|------------------------------------|--------------------|------------------|-----------|
| | | | Minimum | Maximum | Tolerance |
| 1-1/8 | 0.0005 & below | 6 | 1/2 | 18 | 1/32 |
| 3 | 0.0005 & below | 9-1/2 | 1/2 | 18 | 1/32 |
| 6 | 0.0005 & below | 11 & 14 | 1/2 | 18 | 1/32 |
| 3 | 0.0005 & below | 9-1/2 | 18-1/16 | 60 $\frac{2}{2}$ | 1/16 |
| 6 | 0.0005 & below | 11 & 14 | 18-1/16 | 60 $\frac{2}{2}$ | 1/16 |
| 3 | 0.00075 & over | 9-1/2 | 1/2 | 60 $\frac{2}{2}$ | 1/32 |
| 6 | 0.00075 & over | 11 & 14 | 1 $\frac{3}{3}$ | 60 $\frac{2}{2}$ | 1/32 |

$\frac{1}{2}$ Roll O.D. tolerances are $\pm 1/4$ inch.

$\frac{2}{2}$ Maximum width: Type IV = 52 inches; type III, 0.0015 inch and 0.002 inch = 57 inches.

$\frac{3}{2}$ Below 0.001 inch thickness, the minimum roll width is 1-1/2 inches.

TABLE IV. Roll splices

| Film thickness, nominal, inch | Roll core I.D., inches | | | |
|-------------------------------------|------------------------|---|-------------------------------------|-------------------------------------|
| | 1-1/8 | 3 | 6 (11 inches O.D.) $\frac{1}{2}$ | 6 (14 inches O.D.) $\frac{1}{2}$ |
| Maximum splices per roll | | | | |
| 0.00035 & below | 4 | 6 | 6 | 8 |
| 0.0005 through 0.001 | 3 | 4 | 4 | 6 |
| 0.0015 & over | 1 | 2 | 2 | 4 |

$\frac{1}{2}$ O.D. of roll in conjunction with 6 inch roll core I.D.

3.2.3 Flat cuts. The film shall be furnished in flat cuts conforming to the requirements in table V.

TABLE V. Flat cut requirements

| Film type and film thickness, nominal, inch | Flat cut size $\frac{1}{2}$ | |
|---|--|--|
| | Minimum | Maximum |
| I, II, III, VI 0.0005 through 0.010 | One dimension equal to 2 inches and/or the sum of two dimensions equal to 12 inches | 43 inches in length by 43 inches in width |

$\frac{1}{2}$ Any size between these limits may be obtained.
Tolerances are $\pm 1/16$ inch.

L-P-377C

3.3 Property values.

3.3.1 Tensile strength and elongation. The tensile strength and elongation of the film shall conform to the requirements in table VI when tested as specified in 4.2.6.

TABLE VI. Tensile strength and elongation

| Film thickness, nominal, inch | Type | Tensile strength, pounds per square inch, minimum | | Elongation, percent, minimum | |
|----------------------------------|--------------|--|----|------------------------------------|----|
| | | | | | |
| 0.00015 | II | 17,000 | | 45 | |
| 0.00025, 0.00035 | II, III | 18,000 | | 55 | |
| 0.00050 | I, II, III | 20,000 | | 75 | |
| 0.00050 | IV | 34,000 | 1/ | 15 | 1/ |
| 0.00065 | VI | 18,000 | | 70 | |
| 0.00075 | II, III | 20,000 | | 75 | |
| 0.00075 | IV | 34,000 | 1/ | 15 | 1/ |
| 0.00100 | I, II, III | 20,000 | | 80 | |
| 0.00100 | IV | 34,000 | 1/ | 15 | |
| 0.00150 | I, III | 20,000 | | 90 | |
| 0.00150 | IV | 34,000 | 1/ | 15 | 1/ |
| 0.00200, 0.00300 | I, III, V 2/ | 20,000 | | 90 | |
| 0.00500, 0.00750 | I, III, V | 20,000 | | 90 | |
| 0.01000 | I, III | 20,000 | | 100 | |
| 0.01400 | I | 16,000 | | 100 | |

1/ This requirement applies only to the longitudinal direction (machine direction) of the film.

2/ Not available in type V at 0.00200-inch thickness.

3.3.2 Dimensional stability, types I through V films. The dimensional stability of the film shall conform to the requirements in table VII when tested as specified in 4.2.6.

TABLE VII. Dimensional stability, types I through V films

| Film thickness, nominal, inch | Type | Shrinkage, percent, maximum | |
|----------------------------------|--------|-----------------------------|----------|
| | | At 150°C | At 200°C |
| 0.00015 through 0.001 | II | 4.0 | --- |
| 0.00025, 0.00035 | III | --- | 7.0 |
| 0.0005, 0.00075 | I, III | --- | 9.0 |
| 0.0005, 0.00075, 0.001 | IV | 13.0 1/ | --- |
| 0.001 | I, III | --- | 8.0 |

TABLE VII. Dimensional stability, types I through V films (cont'd)

| Film thickness, nominal, inch | Type | Shrinkage, percent, maximum | |
|----------------------------------|-----------|-----------------------------|----------|
| | | At 150°C | At 200°C |
| 0.0015 through 0.010 | I, III, V | --- | 7.0 |
| 0.014 | I | --- | 10.0 |

1/ This requirement applies only to the longitudinal direction (machine direction) of the film.

3.3.2.1 Dimensional stability, type VI film only. The shrinkage of type VI film shall be 35 percent minimum and 60 percent maximum when tested as specified in 4.2.6.

3.3.3 Haze, types I, II, and III films only. The haze of the film shall conform to the requirements in table VIII when tested as specified in 4.2.6.

TABLE VIII. Haze, types I, II, and III films only

| Film thickness, nominal, inch | Type | Haze, percent light scattered, maximum |
|----------------------------------|---------|---|
| 0.00025 | II, III | 5.0 |
| 0.00035 | II, III | 5.0 |
| 0.0005 | I | 12.3 |
| 0.0005 | II, III | 4.0 |
| 0.00075 | II, III | 4.2 |
| 0.001 | I | 18.1 |
| 0.001 | II, III | 4.3 |
| 0.00015 | I | 28.0 |
| 0.00015 | III | 4.3 |
| 0.002 | I | 37.5 |
| 0.002 | III | 4.0 |
| 0.003 | I | 60.0 |
| 0.003 | III | 6.0 |
| 0.005 | I | 76.0 |
| 0.005 | III | 6.0 |
| 0.0075 | I | 87.0 |
| 0.0075 | III | 9.2 |
| 0.0100 | I | 100.0 |
| 0.0100 | III | 20.0 |

3.3.4 Optical transmittance, type V film only. The optical transmittance of light through type V film shall be not greater than 50 percent when tested as specified in 4.2.6.

L-P-377C

3.4 Workmanship. The finished film shall be clean, well finished, and shall conform to the quality and grade of product established by this specification. The occurrence of defects shall not exceed the applicable acceptable quality levels (AQL) established herein.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements (examinations and tests) as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in this specification where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

4.2 Quality conformance inspection. Unless otherwise specified, sampling for inspection shall be performed in accordance with MIL-STD-105.

4.2.1 Component and material inspection. In accordance with 4.1, components and materials shall be inspected in accordance with all the requirements of referenced documents unless otherwise excluded, amended, modified, or qualified in this specification or applicable purchase document.

4.2.2 End item visual examination. The end items shall be examined for the defects listed in table IX. The lot size shall be expressed in units of rolls or flat cuts of plastic sheet. The sample unit shall be one yard full width for rolls or one sheet full size for flat cuts. The inspection level shall be I and the finding of any defect shall be cause for rejection of the lot.

TABLE IX. End item visual defects

| Examine | Defect |
|-------------|--|
| Workmanship | Any dirt, oil, or foreign matter affecting appearance or usability Any deep gouge or scratch Any holes including pinholes Any rough or sharp edge Any cut, blister, bubble, tear, scuff, crack, or crease Any pimple or pit Any chipping Any spot, stain, or other discoloration affecting appearance or usability Not clear or clarity not uniform Not uniformly transparent |

4.2.3 End item dimensional examination. The end items shall be examined for the defects listed below. The lot size shall be expressed in units of rolls or flat cuts of plastic sheet. The sample unit shall be one yard full width for rolls or one sheet full size for flat cuts. The inspection level shall be S-2 and the finding of any defect shall be cause for rejection of the lot.

| Examine | Defect |
|----------------|--|
| Size of sheets | Any variation greater than tolerances specified in the contract or order |
| Width of roll | Any width deviation greater than specified in table III |

4.2.4 End item packaging examination of rolls and sheets. The end item shall be examined for the defects listed below. The lot size shall be expressed in units of rolls or flat cuts of plastic sheet. The sample unit shall be one complete roll or one package of flat cut sheets. The inspection level shall be S-2 and the finding of any defect shall be cause for rejection of the lot.

| Examine | Defect |
|--------------------|--|
| Unrolling of rolls | Not suitably restrained from unwinding Material blocks to the extent that uncoiling causes damage or tearing rendering material unserviceable |

L-P-377C

| Examine | Defect |
|--------------------------------|--|
| Unrolling of rolls (cont'd) | Any splice beyond specified limits Roll weight exceeds specified limits Diameter less than specified Diameter more than specified |
| Separation of sheets | Flat cut sheets not slip sheeted Sheets block to the extent that separation causes damage or tearing rendering material unserviceable |

4.2.5 End item average content examination. The lot size shall be expressed in units of rolls or flat cuts of plastic sheet. The sample unit shall be one roll or one package of flat cut sheets. The inspection level shall be S-2. Any average length per roll or average count per package for sheets (flat cuts) less than specified or indicated shall be cause for rejection of the lot.

4.2.6 End item testing. The end item shall be tested for the characteristics listed in table X. The lot size shall be expressed in units of rolls or flat cuts of plastic sheet. The sample unit shall be one roll or one package of flat cut sheets. A sample quantity of 21 square feet of material shall be taken from the sample unit. Discard a minimum of three turns of film from a roll before selecting a sample. In cutting the test specimens, no portion of the sample shall be taken closer than 10 percent of the width of the film from either edge. The inspection level shall be S-2. All requirements are applicable to the lot average. The lot shall be unacceptable if one or more sample units fail to meet any test requirement.

TABLE X. End item tests

| Characteristic | Reference to requirement | Reference to test | Number of determina- tions per sample unit | Results reported as numerically to nearest 2/ |
|--------------------------|--------------------------------|--------------------------------|---|--|
| Thickness | 3.2.1 | 4.3.2 | 10 | 0.00001 inch |
| Tensile strength | 3.3.1 | ASTM D 882 1/ | 5 | 500 pounds per square inch |
| Elongation | 3.3.1 | ASTM D 882 | 5 | 5 percent |
| Dimensional stability | 3.3.2 | 4.3.3, 4.3.3.1, and 4.3.3.2 | 5 | 0.1 percent |

TABLE X. End Item Tests (cont'd)

| Characteristic | Reference to requirement | Reference to test | Number of determinations per sample unit | Results reported as numerically to nearest 2/ |
|-------------------------------------|--------------------------|----------------------------|--|---|
| Haze (types I, II, & III only) | 3.3.3 | Procedure A of ASTM D 1003 | 1 | 0.1 percent |
| Optical transmittance (type V only) | 3.3.4 | 4.3.4 | 1 | 1 percent |

- 1/ (a) Specimen size shall be 1 inch by 5 inches.
 (b) Separation between jaws shall be 2 inches.
 (c) Thickness of specimens shall be determined before testing.

- 2/ All test reports shall contain the individual values utilized in expressing the final result.

4.2.7 Packaging examination. The fully packaged end items shall be examined for the defects listed below. The lot size shall be expressed in units of shipping containers. The sample unit shall be one shipping container fully packaged. The inspection level shall be S-2 and the finding of any defect shall be cause for rejection of the lot.

| <u>Examine</u> | <u>Defect</u> |
|----------------|---|
| Marking | Omitted; incorrect; illegible; of improper size, location, sequence, or method of application |
| Materials | Any component missing, damaged, or not as specified |
| Workmanship | Inadequate application of component, such as: incomplete sealing or closure of flap, improper taping, loose strapping, or inadequate stapling |
| Content | Number per container is more or less than required |

4.2.8 Palletization examination. The fully packaged and palletized end items shall be examined for the defects listed below. The lot size shall be expressed in units of palletized unit loads. The sample unit shall be one palletized unit load, fully packaged. The inspection level shall be S-1 and the finding of any defect shall be cause for rejection of the lot.

Q P-377C

| <u>Examine</u> | <u>Defect</u> |
|---------------------|---|
| Finished dimensions | Length, width, or height exceeds specified maximum requirement |
| Palletization | Pallet pattern not as specified Load not bonded as specified |
| Weight | Exceeds maximum load limits |
| Marking | Omitted; incorrect; illegible; of improper size, location, sequence, or method of application |

4.3 Methods of inspection.

4.3.1 Standard conditioning. Unless otherwise specified herein, or applicable test method, samples for test shall be conditioned at a temperature of $73.5^{\circ}\text{F} \pm 2^{\circ}\text{F}$ ($23^{\circ}\text{C} \pm 1^{\circ}\text{C}$) and a relative humidity of 50 percent \pm 4 percent for a period of not less than 16 hours.

4.3.2 Thickness. Thickness of the film shall be determined in accordance with ASTM D 374, method A or C. For films with a nominal thickness of 0.00015, 0.00025, and 0.00035-inch, the thickness shall be measured by the above method; however, the film shall be built up by using the number of plies specified below and dividing the readings by the number of plies used.

| Thickness (nominal), inch | Number of plies used to determine thickness |
|---------------------------|---|
| 0.00015 | 4 |
| 0.00025 | 2 |
| 0.00035 | 2 |

Measure at 10 randomly selected points from a minimum area of 12 square inches. The average of the 10 readings shall fall within the specified limits.

4.3.3 Dimensional stability, type I, II, III, and V films. The film shrinkage shall be determined on five specimens conditioned according to 4.3.1 before and after test. The specimens shall be 10 inches by 10 inches by width of slit roll if this dimension is less than 10 inches. Three measurements shall be made in the longitudinal direction (machine direction) and in the transverse direction. All measurements shall be accurate to 1/32 inch. Specimens shall be tested by freely suspending them in an oven controlled to $150^{\circ}\text{C} \pm 1^{\circ}\text{C}$ for type II and V film and $200^{\circ}\text{C} \pm 1^{\circ}\text{C}$ for type I and III film. The test period shall be 30 minutes. Specimens are to be cooled and conditioned in accordance with 4.3.1 before measurements are made. The percent shrinkage shall be computed from the 3 measurement average before and after test.

4.3.3.1 Dimensional stability, type IV film only. Type IV film shrinkage shall be determined on five specimens conditioned in accordance with 4.3.1. Before testing, the specimens shall be 1/4 inch by 15 inches and cut so that the long dimension is parallel to the longitudinal direction (machine direction) of the film. Mark a pair of lines 12 inches apart on each sample. Measure the distance between the lines on specimens conditioned according to 4.3.1 to the nearest 0.01 inch before and after test. Specimens shall be tested by placing a paper clip conforming to Gem pattern, type I, A-A-2601, capacity 1/16 inch at each end and freely suspending the assembly in an oven controlled to $150^{\circ}\text{C} \pm 1^{\circ}\text{C}$. The test period shall be five minutes. The percent shrinkage shall be computed from the 5 measurement average before and after test.

4.3.3.2 Dimensional stability, type VI film only. Five specimens 5 inches by 5 inches shall be measured to the nearest 0.1 inch and then immersed in boiling water (100°C) for 30 seconds. Remove, cool, lay flat, and smooth out wrinkles. Measure the samples to the nearest 0.1 inch. The percent shrinkage shall be calculated as follows:

$$\frac{(\text{Original dimension} - \text{Final dimension})}{\text{Original dimension}} \times 100 = \text{percent shrinkage}$$

4.3.4 Optical transmittance, type V film only. The optical transmittance shall be determined in accordance with the following procedure. The test equipment shall be a Bausch & Lomb Spectronic "20" Colorimeter or equivalent. Five test specimens, randomly selected from the roll, shall be cut to 3/4 inch by 2 inches. The procedure is to allow the instrument to warm up. The wavelength control shall be set to 400 millimicrons. Adjust the instrument to read zero transmittance. Insert an empty specimen holder into the 1 inch test tube adapter and adjust the needle to read 100 percent transmittance. Place a specimen between the holder halves and read percent transmittance.

5. PACKAGING

5.1 Preservation. Preservation shall be level A or Commercial, as specified (see 6.2).

5.1.1 Level A.

5.1.1.1 Rolls. Plastic shall be rolled on a convolute or spiral-wound chipboard or plastic tube. Each roll shall be wrapped with 30 pound minimum basis weight kraft paper conforming to A-A-203, or plastic film 0.002 inch minimum thickness. The roll shall be wrapped so that the wrap completely encircles the roll at least once with a minimum overlap of 3 inches, and the width of the wrap shall be sufficient to fold over and protect the ends of the roll. The wrapping shall be secured with tape.

L-P-377C

5.1.1.2 Flat rolls. Five hundred sheets, of one type, thickness and size, shall be stacked on a fiberboard pad. The bundle shall be wrapped in 30 pound minimum basis weight kraft paper conforming to A-A-203, or plastic film 0.002 inch minimum thickness. Wrapping shall be secured with tape.

5.1.2 Commercial preservation. Plastic shall be preserved in accordance with ASTM D 3951.

5.2 Packing. Packing shall be level A, B or Commercial, as specified (see 6.2).

5.2.1 Level A. Plastic, preserved as specified, shall be packed in a wood-created plywood box conforming to overseas type, grade A, type 3 load of PPP-B-601, wood-created fiberboard box conforming to type III, class 2, style A, type II load of PPP-B-576, or a wood-created veneer box conforming to type I, class 2, style A, type II load of PPP-B-576. Boxes shall be closed and strapped.

5.2.2 Level B. Plastic, preserved as specified, shall be packed in a wood-created plywood box conforming to domestic type, grade A of PPP-B-601, wood-created fiberboard box conforming to type III, class 1, style A, type II load of PPP-B-576, or a wood-created veneer box conforming to type I, class 1, style A, type II load of PPP-B-576. Boxes shall be closed and strapped.

5.2.3 Commercial packing. Plastic, preserved as specified, shall be packed in accordance with ASTM D 3951.

5.3 Palletization. Plastic, packed as specified, shall be palletized on a 4-way entry pallet in accordance with MIL-STD-147. Each prepared load shall be bonded with straps in accordance with bonding means C and D or film bonding F or G.

5.4 Marking. Marking of unit packs, shipping containers and unit loads shall be in accordance with MIL-STD-129 or FED-STD-123.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The polyester film covered by this specification is intended for general usage in packaging and industrial applications.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number, and date of this specification.
- b. Type required (see 1.2.1).

- c. Whether rolls or flat cuts are required (see 3.2).
 - (1) Rolls: Thickness and width required.
 - (2) Flat cuts: Thickness, applicable dimensions, and tolerances.
- d. Roll core size (see 3.2.2).
- e. Roll O.D. (see table I(I)).
- f. Selection of applicable levels of preservation and packing (see 5.1 and 5.2).

6.3 Subject term (key word) listing.

Moisture barrier
Waterproof covering

6.4 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

MILITARY INTERESTS:

Custodians:

Army - GL
Navy - SA
Air Force - 69

Review Activities:

Army - SM, MD

CIVIL AGENCY COORDINATING ACTIVITY:

GSA - FSS

PREPARING ACTIVITY:

Army - GL

(Project 8135-0650)

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

- 1 The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
- 2 The submitter of this form must complete blocks 4, 5, 6, and 7.
- 3 The preparing activity must provide a reply within 30 days from receipt of the form.

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| 1. RECOMMEND A CHANGE: | | 1. DOCUMENT NUMBER L-P-377C | 2. DOCUMENT DATE (YYMMDD) 1994 March 23 |
| 3. DOCUMENT TITLE PLASTIC SHEET AND STRIP, POLYESTER | | | |
| 4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.) | | | |
| 5. REASON FOR RECOMMENDATION | | | |
| 6. SUBMITTER | | | |
| a. NAME (Last, First, Middle Initial) | | b. ORGANIZATION | |
| c. ADDRESS (Include Zip Code) | | d. TELEPHONE (Include Area Code) (1) Commercial (2) AUTOVON (If applicable) | 7. DATE SUBMITTED (YYMMDD) |
| 8. PREPARING ACTIVITY | | | |
| a. NAME U.S. Army Natick RD&E Center | | b. TELEPHONE (Include Area Code) (1) Commercial 508-651-4532 | (2) AUTOVON/DSN 256-4532 |
| c. ADDRESS (Include Zip Code) Commander, U.S. Army Natick RD&E Center ATTN: SATNC-IR Natick, MA 01760-5019 | | IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT Defense Quality and Standardization Office 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3456 Telephone (703) 756-2340 AUTOVON 289-2340 | |