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 April 19, 1973
 SUPERSEDING
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FEDERAL SPECIFICATION

PAPER, ASBESTOS

This specification was 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 asbestos paper.

1.2 Classification. The asbestos paper shall be of the following classes, weights, thicknesses, and forms, as specified (see 6.2):

Class 1. - Single-ply regular paper.

Weight 6 - 6 pounds per 100 square feet.
 8 - 8 pounds per 100 square feet.
 10 - 10 pounds per 100 square feet.
 12 - 12 pounds per 100 square feet.
 14 - 14 pounds per 100 square feet.
 16 - 16 pounds per 100 square feet.

Class 2. - Single-ply or two-ply rollboard paper.

Thickness 1/16. - 1/16-inch thick.
 3/32. - 3/32-inch thick.
 1/8 - 1/8-inch thick.
 1/4 - 1/4-inch thick.

Class 3. - Two-ply corrugated paper.

Form A - Fine corrugations.
 B - Medium corrugations.
 C - Coarse corrugations.

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issues in effect on the date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein:

Federal Specifications:

NN-P-71 - Pallets, Material Handling, Wood, Double Faced, Stringer Construction.
 UU-P-268 - Paper, Kraft, Untreated, Wrapping.
 PPP-B-601 - Boxes, Wood, Cleated-Plywood.
 PPP-B-1055 - Barrier Material, Waterproofed, Flexible.
 PPP-P-1660 - Pallet, Expendable.
 PPP-S-760 - Strapping, Nonmetallic, (and Connectors).

Federal Standards:

Fed. Std. No. 123 - Marking for Domestic Shipments (Civil Agencies).

(Activities outside the Federal Government may obtain copies of Federal Specifications, Standards, and Handbooks as outlined under General Information in the Index of Federal Specifications and Standards and at the prices indicated in the Index. 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.

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(Single copies of this specification and other Federal Specifications required by activities outside the Federal Government for bidding purposes are available without charge from Business Service Centers at the General Services Administration Regional Offices in Boston, New York, Washington, DC, Atlanta, Chicago, Kansas City, MO, Fort Worth, Denver, San Francisco, Los Angeles, and Seattle, WA.

(Federal Government activities may obtain copies of Federal Specifications, Standards, and Handbooks and the Index of Federal Specifications and Standards from established distribution points in their agencies.)

Military Standards:

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-129 - Marking for Shipment and Storage.
- MIL-STD-147 - Palletized and Containerized Unit Loads 40 inch x 48 inch
Pallets, Skids, Runners, or Pallet Type Base.

(Copies of Military Specifications and Standards required by suppliers 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 specification 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.

National Motor Freight Traffic Association, Inc., Agent:

National Motor Freight Classification.

(Application for copies should be addressed to the American Trucking Association, Inc., Tariff Order Section, 1616 P Street, N.W., Washington, DC 20036.)

Uniform Classification Committee, Agent:

Uniform Freight Classification.

(Application for copies should be addressed to the Uniform Classification Committee, Room 1106, 222 South Riverside Plaza, Chicago, IL 60606.)

Technical Association of the Pulp and Paper Industry (TAPPI) Publication:

T410 - Weight Per Unit Area (Basis Weight or Substance) of Paper and Paperboard.

(Application for copies should be addressed to the Technical Association of the Pulp and Paper Industry, One Dunwoody Park, Atlanta, GA 30341.)

3. REQUIREMENTS

3.1 Description. The asbestos paper shall be a single-ply, smoothly surfaced asbestos felting; or 2-ply asbestos lamination.

3.2 Material. The paper shall be composed of not less than 92 percent asbestos fiber, when tested as specified in 4.5.2, and a heat-resisting binder. Cement used to laminate plies shall have the same fire and heat resistance as the paper.

3.3 Fire resistance. The paper shall not carry flame or retain a spark glow when tested as specified in 4.5.3.

3.4 Weight loss. The paper shall not lose more than 5 percent of its oven-dry weight, as defined in 4.5.1, when exposed to the temperature shown in table I for a period of 1 hour (see 4.5.4).

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TABLE I. Exposure temperatures

Class	Temperature Degrees (F)
1	280
2	350
3	280

3.5 Units. The paper shall be furnished in rolls or sheets, as specified (see 6.2).

3.5.1 Rolls. Rolls shall be of the sizes shown in table II, as specified (see 6.2). Tolerance shall be not more than plus or minus 1/8 inch of the width shown. Roll weight shall be within plus or minus 10 percent.

3.5.2 Sheets. Sheets shall be of the length and width specified (see 6.2). Tolerance shall be plus 1/4 inch or minus 1/8 inch for length and plus 1/8 inch or minus 1/16 inch for width.

TABLE II. Roll sizes

Class	Roll width (inches)	Roll weight (pounds)
1	18, 24, or 36	50 or 100
2	18 or 36	50 or 100
3	36 or 37	45 or 50

3.6 Class 1. Class 1 paper shall conform to the requirements specified in table III. The weight per 100 square feet shall be determined in accordance with 4.5.6. The thickness shall be determined in accordance with 4.5.5.

TABLE III. Class 1, weight and thickness

Weight number	Weight of paper per 100 square feet \pm 10% (pounds)	Nominal thickness (inch)
6	6	0.015
8	8	.019
10	10	.022
12	12	.027
14	14	.029
16	16	.032

3.7 Class 2. Class 2 paper shall conform to the requirements specified in table IV. The thickness shall be determined in accordance with 4.5.5. The weight shall be determined in accordance with 4.5.6.

TABLE IV. Thickness, class 2 and weight

Size number (nominal inch thickness)	Maximum thickness (inch)	Minimum thickness (inch)	Weight per 100 sq. ft. (pounds)
1/16 (0.0625)	0.073	0.053	32
3/32 (0.0938)	.114	.074	50
1/8 (0.1250)	.145	.105	70
1/4 (0.2500)	.280	.220	135

3.8 Class 3. Class 3 paper shall conform to the requirements specified in table V. The weight per 100 square feet shall be determined as specified in 4.5.6.

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TABLE V. Corrugation depths, class 3

Form letter	Nominal depth of corrugations (inch)	Weight per 100 sq. ft. (pounds)
A	1/8	20
B	1/6	20
C	1/4	20

3.8.1 Corrugations per yard. There shall be not more than 85 nor less than 60 corrugations per linear yard of class 3 paper.

3.9 Workmanship. The texture of the paper shall be uniform. There shall be no holes or lumps of fiber in the paper. There shall be no foreign substances imbedded in the paper, and surfaces shall be clean and free of stains. Rolls shall be tightly wound and shall contain not more than four splices.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own facilities or any commercial laboratory acceptable to the Government. The Government 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 prescribed requirements.

4.2 Classification of inspection. Inspection shall be classified as follows:

- (a) Quality conformance inspection.
- (b) Inspection of preparation for delivery.

4.3 Quality conformance inspection.

4.3.1 Lot. For purposes of quality conformance inspection, a lot shall consist of all items of the same class and weight, class and thickness, or class and form offered to the government at one time for acceptance.

4.3.2 Units of product. For purposes of quality conformance inspection, each roll or each sheet shall be considered a unit of product.

4.3.3 Sampling. Sampling for examination and tests shall be in accordance with MIL-STD-105.

4.4 Inspection.

4.4.1 End item examination. End item samples selected in accordance with 4.3.3 shall be examined for the defects listed in table VI. The acceptable quality level (AQL) shall be 2.5 percent defective.

TABLE VI. Visual defects

Examine	Defect
Dimensions	Roll width not as specified (3.5.1). Sheet length not as specified (3.5.2). Sheet width not as specified (3.5.2).
Weight	Roll weight not as specified (3.5.1).
Corrugations	Depth not as specified (3.8). Corrugation count per linear yard not as specified (3.8.1).
Workmanship	Texture not uniform (3.9). Holes or fiber lumps in paper (3.9). Foreign substances imbedded in paper (3.9). Surfaces of paper not clean and free of stains (3.9). Rolls not tightly wound (3.9). More than four splices per roll (3.9).

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4.5 Test methods. Two units of product from the sample selected in accordance with 4.3.3 shall be tested as specified. Failure of any test shall be cause for rejection of the lot.

4.5.1 Preparation of specimens. A 9-inch-square specimen shall be cut from the interior area of a sheet or from the interior area of a roll at least 24 inches from the outer roll end, as applicable. The specimen shall then be oven-dried to a constant weight at 220°F., cooled to room temperature, and stored in a desiccator until used.

4.5.2 Asbestos fiber content. Weigh out a 1-gram piece of paper from the prepared specimen on an analytical balance, place in a crucible, and ignite at 1,800°F. in a muffle furnace for 1 hour. Weigh the ash and calculate the percent of asbestos fiber content of the paper as follows:

$$\frac{\text{grams of ash} \times 100}{\text{dry weight of paper, grams}} = \text{percent asbestos fiber.}$$

An asbestos fiber content of less than 92 percent shall constitute failure of this test.

4.5.3 Fire resistance. Cut a strip of paper, 1 inch wide and 5 inches long, from the prepared specimen and place in a fixed clamp. Place a bunsen burner with a 1-inch flame directly under the strip so that the free end of the strip is in the full blue flame. Remove the burner after 5 seconds exposure and immediately examine the strip for evidence of flame or spark glow. Noncompliance with the requirements of 3.3 shall constitute failure of this test.

4.5.4 Weight loss. Cut a piece of paper approximately 4 inches square from the prepared specimen and carefully weigh and record the weight. Place the square of paper in an oven at the temperature specified in table I. After 1 hour exposure to the heat, remove the piece of paper and immediately reweigh. A loss in weight exceeding 5 percent shall constitute failure of this test.

4.5.5 Thickness. Measure the thickness at the approximate midpoints of any three sides of a sheet, or the approximate mid-points of any three sides of a 15-inch-square specimen cut from the interior area of a roll at least 24 inches from the outer roll end. Measure with a standard dead weight paper micrometer. Thickness exceeding the minimum or maximum thicknesses shown in table IV shall constitute failure of this test.

4.5.6 Basis weight. The basic weight of the paper shall be determined in accordance with TAPPI Standards T410, except that the report shall state weights in pounds per 100 square feet.

4.6 Examination of preparation for delivery. An examination shall be made to determine that markings, materials, workmanship, and contents comply with the requirements of section 5. Defects shall be scored in accordance with table VII. The sample unit shall be one shipping container fully packed, selected just prior to the closing operation. Closed shipping containers shall be examined for closure defects. The inspection level shall be S-2 and the AQL shall be 4.0 expressed as defects per 100 units.

TABLE VII. Classification of preparation for delivery defects

Examine	Defects
Marking (interior and exterior containers)	Incorrect; incomplete; illegible; omitted; of improper size, location sequence or method of application.
Materials	Any nonconforming component; component missing, damaged or otherwise defective.
Workmanship	Inadequate application of components such as incomplete closure of container flaps, loose or inadequate sealing, strapping or stapling when required.
Contents	Number of rolls or sheet per shipping container, more or less than required.
Containers	Not as specified, not close-fitting for level A or B.

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5. PREPARATION FOR DELIVERY

5.1 Packaging. Packaging shall be levels A, B or C as specified (see 6.2).

5.1.1 Level A.

5.1.1.1 Sheets. Sheets of asbestos paper of like size and description, in the quantity specified (see 6.2), shall be evenly stacked and each stack wrapped with water-proofed flexible barrier material conforming to PPP-B-1055, class as applicable. All joints, seams and laps of the wrap shall be sealed in accordance with the specification as applicable.

5.1.1.2 Rolls. Each roll of asbestos paper shall be wrapped in waterproofed flexible barrier material conforming to PPP-B-1055, class as applicable, and all joints, seams and laps of the wrap shall be sealed in accordance with the specification as applicable.

5.1.2 Level B (see 6.3).

5.1.2.1 Sheets. Thirty (30) sheets of asbestos paper of like size and description shall be evenly stacked and each stack wrapped in kraft wrapping paper conforming to UU-P-268, grade B, 50 pound basis weight (24 x 36 - 500). The wrap shall be secured with tape or twine.

5.1.2.2 Rolls. Each roll of asbestos paper shall be wrapped in kraft wrapping paper conforming to UU-P-268, grade B, 50-pound basis weight (24 x 36 - 500). The wrap shall be secured with tape or twine.

5.1.3 Level C. The asbestos paper, sheets or rolls shall be packaged to afford adequate protection against deterioration and physical damage during shipment from the supply source to the receiving activity. The supplier may use his standard practice when it meets these requirements.

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

5.2.1 Level A. Unless otherwise specified, sheets or rolls of asbestos paper, of like size and description, packaged as specified in 5.1.1, shall be placed on a pallet conforming to NN-P-71, except that pallet size may be reduced to accommodate the sheet or roll sizes. The palletization shall be accomplished in conformance to MIL-STD-147, load type VI and strapped in compliance with paragraph 5.1.2.2 of MIL-STD-147. When specified (see 6.2), sheets or rolls of asbestos paper, of like size and description, packaged as specified in 5.1, shall be packed in a close fitting box conforming to PPP-B-601, overseas type, style optional, grade B. Rolls shall be packed standing on end. Sheets shall be packed flat. Box closure and strapping shall be in accordance with the appendix to the box specification. Strapping shall be class B, grade 2.

5.2.2 Level B. Unless otherwise specified, sixteen wrapped stacks of sheets or sixteen wrapped rolls of asbestos paper, shall be furnished on an expendable pallet conforming to PPP-P-1660, grade 2, type, style and class as appropriate for the load capacity of the shipment. Rolls of asbestos paper shall stand on end on the pallet. The pallet load shall be secured circumferentially and girthwise with nonmetallic strapping conforming to PPP-S-760, type II or III, with a minimum breaking strength of 680 pounds. The circumferential strap shall be approximately at the center of the roll length, when rolls are furnished. The girthwise strap shall be around the length of the pallet and the center of the load as the center stringer will permit. When specified (see 6.2), sheets or rolls of asbestos paper, of like size shall be packed in a close fitting box conforming to PPP-B-601, domestic type, style optional. Rolls shall be packed standing on end. Sheets shall be packed flat. Box closure and strapping shall be in accordance with the appendix to the box specification.

5.2.3 Level C. The sheets or rolls of asbestos paper, in quantities as specified (see 6.2) shall be packed so that they are acceptable to the carrier and shall insure safe delivery to the receiving activity. Shipping containers or pallets shall be in accordance with the Uniform Freight Classification rules, or the National Motor Freight Classification rules, as applicable.

5.3 Marking. In addition to any other marking specified in the procurement document, the asbestos paper sheets or rolls shall be marked in accordance with Fed. Std. No. 123 for civil agency shipments or MIL-STD-129 for military agency shipments, as applicable.

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6. NOTES

6.1 Intended use. Asbestos paper is intended to be used for wrapping furnaces, ducts, pipes, and vessels. It may be used as a wrap for other items as well where protection of personnel from burn injury, general fireproofing, or, to a limited extent, heat-transfer insulation is required.

6.2 Ordering data. Purchasers should select the preferred options permitted herein and include the following information in procurement documents:

- (a) Title, number, and date of this specification.
- (b) Class of paper, and weight, thickness, or form required (see 1.2).
- (c) Whether rolls or sheets are required (see 3.5).
- (d) Size of roll or sheet required (see 3.5.1 and 3.5.2).
- (e) Level of packaging and packing required (see 5.1 and 5.2).
- (f) Quantity of sheets to be packaged together, as specified (see 5.1.1.1).
- (g) When sheets or rolls shall be packed in boxes (see 5.2.1 and 5.2.2).

6.3 Level B packaging requirements (see 5.1.2) have been developed by GSA for Civil agency procurements. For Navy procurements, details of level B packaging, when required, shall be developed at time of procurement when all conditions are known.

MILITARY INTERESTS:Custodians:

Army - ME
Navy - YD
Air Force - 84

Preparing activity:

GSA-FSS

Civil Agency Coordinating Activity:

GSA-FSS

User activity:

Army - CE

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