

PPP-V-205C
October 13, 1969

SUPERSEDING
Fed. Spec. PPP-V-205B
October 26, 1966

FEDERAL SPECIFICATION

VENEER, PAPER OVERLAID, CONTAINER GRADE

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 two types of container-grade combination wood and paper panel materials (see 6.1).

1.2 Classification.

1.2.1 Types. The paper overlaid veneer covered by this specification shall be of the following types, as specified (see 6.2).

Type I - For normal use (see 6.1).

Type II - For extra protection in shipment and storage.

2. APPLICABLE DOCUMENTS

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

Federal Specifications:

QQ-S-781 - Steel, Strapping, Flat.
QQ-S-790 - Steel Strapping, Round, Bare and Zinc Coated.
PPP-P-1260 - Plywood, Packaging, Packing and Marking of.

(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, D. C. 20402.

PPP-V-205C

(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, D. C., Atlanta, Chicago, Kansas City, Mo., Fort Worth, Denver, San Francisco, Los Angeles, and Seattle, Washington.)

(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 Specification:

MIL-W-6110 - Wood, Determination of Moisture Content of.

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 specification to the extent specified herein. Unless otherwise indicated the issue in effect on date of invitation for bids or request for proposal shall apply.

American Society for Testing and Materials (ASTM) Standard:

D 805 - Methods of Testing Veneer, Plywood and Other Glued Veneer Construction.

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

National Classification Board:

National Motor Freight Classification.

(Application for copies should be addressed to the National Classification Board, 1616 P Street, N.W., Washington, D.C. 20036.)

PPP-V-205C

Uniform Classification Committee:

Uniform Freight Classification.

(Application for copies should be addressed to the Uniform Classification Committee, Room 202 Union Station, 516 W. Jackson Blvd. Chicago, Ill. 60606.)

(Technical society and technical association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

3. REQUIREMENTS

3.1 Materials.

3.1.1 Veneer. The veneer shall consist of any species of wood which will produce a finished product complying with the requirements of this specification.

3.1.1.1 Veneer quality. The veneer shall contain no holes, gaps, knots or defects caused by decay in excess of 15 percent of the total area in any six-inch square of the material. Edge joints or slits parallel to the grain shall abut. Stains, discoloration and seasoning checks are permitted.

3.1.2 Paper. The paper used for the overlays shall be kraft paperboard or liner board. The overlays on opposite faces of the veneer core shall be equal in thickness.

3.1.3 Adhesive. The adhesive for joining the materials of construction may be of any type which will produce a finished product complying with 3.1.3.1.

3.1.3.1 Moisture resistance, types I and II. There shall be no delamination at the glue line in excess of 1/4 inch in depth and more than 2 inches in continuous length, or 6 inches in aggregate length as measured along the edge, when subjected to the wet and dry cycles specified in 4.3.2. Delaminations restricted to knots or other permissible defects shall not be cause for rejection.

3.1.4 Addition of toxic chemicals to glues. Unless otherwise specified (see 6.2) the following amounts of toxic chemicals shall be incorporated in the glue of type II paper overlaid veneer:

(a) Synthetic resin glues. If extended beyond the weight of the resin, there shall be added in the preparation of the glue for each 100 pounds dry weight of the resin and extender, 5 pounds of one of the following: pentachlorophenol, tetrachlorophenol, sodium pentachlorophenate or sodium tetrachlorophenate. No toxic treatment shall be required when the extension does not exceed 100 pounds of filler for each 100 pounds dry weight of resin glue base.

PPP-V-205C

(b) Protein glues. For each 100 pounds of dry protein glue base, there shall be added in the preparation of the glue, 5 pounds of one of the following: pentachlorophenol, tetrachlorophenol, sodium pentachlorophenate or sodium tetrachlorophenol.

3.2 Construction. The paper-overlaid veneer shall consist of a single-ply wood veneer core, faced on each side with uniformly adhered kraft linerboard or paperboard. The total paper shall constitute not less than 10 percent or more than 70 percent of the finished material thickness. The grain of veneer and the machine direction of the paper shall be at right angles. Separations due to uneven areas of butt joints or split openings shall not exceed 1/8 inch as measured at the panel edge and such separation greater than 1/16 inch shall occur not more frequently than once in 24 inches. Cross-breaks or joints in the cross direction shall not be permitted except for tight patches.

3.3 Physical properties.

3.3.1 Stiffness. The material shall be tested in static bending as specified in 4.2.3, for stiffness (D) determination. The square root of the stiffness parallel to the grain of the core (D_1) and perpendicular to the grain of the core (D_2) shall be not less than the requirements specified in table I.

TABLE I. Stiffness requirement

| Average thickness | caliper | $\sqrt{D_1 D_2}$ |
|-------------------|---------|----------------------|
| Minimum | Maximum | Pounds - inch square |
| Inch | Inch | per inch of width |
| --- | 0.100 | 18 |
| 0.101 | 0.120 | 31 |
| 0.121 | 0.140 | 46 |
| 0.141 | 0.160 | 70 |
| 0.161 | 0.180 | 105 |
| 0.181 | 0.200 | 160 |
| 0.201 | 0.220 | 250 |
| 0.221 | 0.240 | 350 |
| 0.241 | --- | 550 |

PPP-V-205C

3.3.2 Moisture content. The moisture content of the paper-overlaid veneer shall not exceed 15 percent of the oven dry weight at the time of preparation for delivery when tested in accordance with 4.2.3.

3.4 Dimensions.

3.4.1 Panel size. Unless otherwise specified, the panel shall be 48 by 96 inches with a tolerance of $-1/8$ and $+3/8$ inch. The panels shall be square to the extent that the difference between the diagonals does not exceed $1/8$ inch.

3.4.2 Panel thickness. The thickness shall not be less than the thickness specified by the procuring activity (see 6.2).

3.5 Identification. Each panel shall be marked on one face with the specification number, type and manufacturer's name or trademark. Markings shall be stenciled or stamped.

3.6 Workmanship. The finished board shall be free from surface breaks and splits and shall conform to the quality levels established herein. Blisters or other delamination area defects shall not be in excess of 15 percent of the total area in any six inch square and there shall be no more than eight such areas in a 48 by 96 inch panel or equivalent area.

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 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 the prescribed requirements.

4.1.1 Certificate of compliance. When certificates of compliance are submitted, the Government reserves the right to check test such items to determine the validity of the certification.

4.2 Inspection. Sampling for inspection shall be performed in accordance with MIL-STD-105, except where otherwise indicated hereinafter.

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

PPP-V-205C

In addition, the supplier shall furnish to the contracting officer a certificate of compliance covering the requirements for glue in 3.1.4.

4.2.2 Inspection of the end item.

4.2.2.1 Examination of the end item. The end item shall be examined for the defects set forth in the applicable subparagraphs at the inspection levels and acceptable quality levels (AQL's) set forth in 4.2.2.1.4. Random samples shall be drawn from each lot of the end items of examination for examination of visual, dimensional and preparation for delivery defects. The lot size, for purposes of determining the sample size in accordance with MIL-STD-105, shall be expressed in units of finished veneer panels of one type, thickness, and size of paper overlaid veneer for examination under 4.2.2.1.1 and 4.2.2.1.2, and in units of shipping bundles for examination in 4.2.2.1.3.

4.2.2.1.1 Examination for visual defects. The sample unit for this examination shall be one panel.

| <u>Examine</u> | <u>Defects</u> |
|----------------|--|
| Appearance | Any hole, gap, knot or defect in excess of 15 percent in any 6 inch square area. Paper overlay not as specified (see 3.1.2). Edge joints or parallel slits do not abut. More than 1/8 inch separation at butt or slit openings; edge joints or slits more than 1/16 inch in width occur more than once in 24 inches; any crossbreak or joint in cross direction. |
| Workmanship | Finished board contains slits, blisters, surface breaks, or delaminated area in excess of 15 percent in any 6 inch square area. Not evenly cut or trimmed. Paper overlay constitutes less than 10 percent or more than 70 percent of finished panel thickness. Veneer and paper grains not at right angles to each other. |
| Identification | Incorrect, incomplete, illegible or omitted. |

4.2.2.1.2 Examination for dimensional defects. The sample unit shall be one panel.

| <u>Examine</u> | <u>Defects</u> |
|-----------------|---|
| Length or width | Varies by more than minus 1/8 inch or plus 3/8 inch from dimension specified. |

PPP-V-205C

| <u>Examine</u> | <u>Defects</u> |
|----------------|---|
| Squareness | Diagonals differ by more than 1/8 inch. |
| Thickness | Less than specified. |

4.2.2.1.3 Examination of preparation for delivery. An examination shall be made to determine that markings, materials, workmanship, contents and weights comply with the requirements of Section 5 of this specification. The sample unit shall be one shipping bundle, fully packed, selected just prior to the banding operation. Banded bundles shall be examined for closure defects.

| <u>Examine</u> | <u>Defects</u> |
|----------------------------------|---|
| Markings (exterior and interior) | 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: waster sheets, battens, girth straps, cement coated staple, loose or inadequate strapping. Bulged or distorted unit loads. |
| Content | Less than specified or indicated number of bundles per shipping bundle. |
| Weight | Gross weight more than weight specified. |

4.2.2.1.4 Inspection levels and acceptable quality level (AQL's) for examinations. The inspection levels, for purposes of determining the sample size, and acceptable quality level (AQL's) expressed in defects per 100 units shall be as follows:

| <u>Examination paragraph</u> | <u>Inspection level</u> | <u>AQL</u> |
|------------------------------|-------------------------|------------|
| 4.2.2.1.1 | S-4 | 2.5 |
| 4.2.2.1.2 | S-3 | 2.5 |
| 4.2.2.1.3 | S-2 | 2.5 |

4.2.3 Testing of the end item. The end item shall be tested for the applicable characteristics in table II. The sample unit shall be the minimum number of panels necessary to perform all tests. The lot size shall be expressed in units of finished veneer panels. The sample size shall be drawn at inspection level S-1 of MIL-STD-105. There shall be no failure to pass the sample unit requirements. Test reports shall include all values upon which results are based.

PPP-V-205C

TABLE II. Testing of the end item

| Characteristic | Specification Reference | Requirements | | Number Determinations Per sample unit | Results Reported As | |
|---------------------|-------------------------|---------------|--------------------|---|---------------------|--|
| | | Applicable To | Individual Unit | | Pass or Fail | Numerically to Nearest |
| Stiffness | 3.3.1 | 4.3.1 | X | Average of 10 (5 in each direction) | | Pounds - inch square per inch of width |
| Moisture resistance | 3.1.3.1 | 4.3.2 | X | 5 <u>1</u> / ₁ | X | |
| Moisture content | 3.3.2 | 4.3.3 | X | 2 | | 0.5 percent |

1/ Of the 5 determinations taken two must fail to constitute failure of the sample unit.

4.3 Test procedures.

4.3.1 Static bending.

4.3.1.1 Preparation of specimens. Two sets of five like specimens free from knot-holes shall be cut from each sample panel. One test specimen for each set shall be cut from each of the four quarters of each selected panel, and one test specimen shall be cut at or near the center from each selected panel. All like specimens from each panel shall be suitably identified as to panel and location. Any specimen containing defects permitted elsewhere in the specification shall be discarded and not considered in this evaluation. Any discarded specimen shall be replaced with a like specimen cut from the same general area of the panel. One set of specimens shall have the grain of the core parallel to the length of the specimen, and one set shall have the grain of the core perpendicular to the length of the specimens. All specimens shall be 2 inches (5 cm.) wide. The length of the span shall be 24 times the nominal thickness of the material. An additional 2 inches shall be allowed in the length of the specimen to permit a one-inch overhang at each end support during the testing.

4.3.1.2 Test procedure. The test specimens shall be conditioned to constant weight and moisture content in an atmosphere maintained at a relative humidity of 65 ± 1 percent and a temperature of $73^{\circ} \pm 3.5^{\circ}\text{F}$. ($23^{\circ} \pm 2^{\circ}\text{C}$.). The supports, loading block, and apparatus shall be as specified in ASTM D 805. The rate of loading shall be not greater than 0.2-inch per minute. Increments of load shall be chosen so that no less than 12 readings of load and deflection are taken to the proportional limit. Load-deflection data shall be used to plot proportional limit curves from which the stiffness (D) for each specimen shall be calculated using the following formula:

$$D = \frac{PL^3}{48by}$$

Where: D = Stiffness per inch of width, pound-inch square.
 P = Load at proportional limits, pounds.
 L = Span, inches.
 b = Width of specimen, inches.
 y = Deflection at proportional limits, inches.

The arithmetic average stiffness of each set of like-specimens shall be determined from each panel. The square root of the product of the average stiffness perpendicular to and parallel to the grain of the core for each panel shall then be calculated using the following formula:

PPP-V-205C

$$\sqrt{D_1 D_2}$$

Where: D_1 = Average stiffness of specimens having grain of core parallel to span.
 D_2 = Average stiffness of specimens having grain of core perpendicular to length of specimen.

4.3.1.3 Paper overlaid veneer shall be tested for the static bending requirement on the first lot and thereafter once in every five lots submitted on the contract.

4.3.2 Moisture resistance. Five test pieces, each 6 inches square, shall be cut from each panel taken for test. A test piece shall be taken from about the middle of each edge and one from the center of the panel. The specimens spaced for complete circulation shall be submerged in water at room temperature for a period of 4 hours, followed by drying at a temperature of $95^{\circ} + 5^{\circ}\text{F}$. for a period of 20 hours. During the drying cycle, free circulation of air shall be provided by spacing the specimens at least $1/4$ inch apart in order to facilitate loss of moisture from all surfaces. This entire wetting and drying cycle shall be repeated two additional times for type I material and nine additional times for type II material. Then measure any delamination which occurs in the glue line.

4.3.3 Moisture content. The moisture content of each sample panel selected for testing shall be determined by the oven-drying method as specified in MIL-W-6110.

5. PREPARATION FOR DELIVERY

5.1 Packaging. Packaging shall be applicable to civil agency procurement only and shall be in accordance with type I of PPP-P-1260.

5.2 Packing.

5.2.1 Civil Agencies. Packing for Civil Agencies shall be in accordance with PPP-P-1260.

5.2.2 Military requirements. Packing shall be level A or C as specified (see 6.2). Paper overlaid veneer shall be shipped in box cars, covered trucks or open conveyance. When open conveyance is used, the paper-overlaid veneer shall be completely protected from the elements with durable covers or shouds.

5.2.2.1 Level A. Paper overlaid veneer of like type, thickness, and size, shall be packed by stacking and strapping a number of sheets together not exceeding 24 inches in height (net). Waster sheets of the same length and width as the veneer sheets shall be placed at the top and bottom of each pack. Sheets under 36 inches in width shall be provided with one strap centered lengthwise.

PPP-V-205C

Sheets 36 inches in width and over shall be provided with two lengthwise straps, one placed six inches from each edge. In addition, each pack shall be provided with girthwise straps. The number of straps shall vary according to the length of the pack as follows: one strap shall be placed six inches from each end and intermediate straps shall be spaced equally, not exceeding 36 inches on center. Girthwise straps shall be applied over nominal 1-by 4-inch lumber battens and secured to the battens with cement coated staples. Spacing of the staples on the battens shall not exceed 12 inches. Longitudinal straps shall pass between the stacked sheets and battens, not over the battens. Corner protectors shall be used at all edges under longitudinal straps. Strapping strength shall conform to type 1 or type 4, class B of QQ-S-781 with a breaking strength of 2,000 pounds or over or 1,700 pounds joint strength; or finish 2 class and size optional of QQ-S-790 with a breaking strength of 1,275 pounds or 1,000 pounds joint strength.

5.2.2.2 Level C. Paper overlaid veneer, packaged as specified in 5.1, shall be packed in a manner to insure carrier acceptance and safe delivery at destination at the lowest transportation rate for such supplies. Shipments shall be in accordance with Uniform Freight Classification Rules or National Motor Freight Classification Rules, as applicable.

5.3 Marking.

5.3.1 Civil agencies. In addition to any special marking required by the contract or order, interior packages and shipping bundles shall be marked in accordance with PPP-P-1260.

5.3.2 Military requirements. In addition to any special marking required by the contract or order, shipping packs shall be marked in accordance with MIL-STD-129.

6. NOTES

6.1 Intended use. Paper overlaid veneer container grade covered by this specification is intended for use as panel material in the fabrication of cleated boxes. Type I is for use under normal handling conditions in shipment and storage. Type II is for use where extra protection against deterioration during shipment and storage and world wide redistribution 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) Type required.
- (c) Quantity (number of panels) required.
- (d) Length, width, and thickness (see 3.4.1 and 3.4.2).
- (e) Addition of toxic chemicals to glue (see 3.1.4).
- (f) Selection of the applicable levels of packing (see 5.2.2).

PPP-V-205C

MILITARY CUSTODIANS:

Army - GL
Navy - SA
Air Force - 84

Review activities:

Army - ME, SM
Navy - YD
Air Force - 84

User activities:

Army - EL
Navy - SH, MC
Air Force - 03

Preparing activity:

Army - GL

CIVIL AGENCY INTEREST:

GSA

Project No. 5530-0024

Orders for this publication are to be placed with General Services Administration, acting as an agent for the Superintendent of Documents. See section 2 of this specification to obtain extra copies and other documents referenced herein. Price 15 cents each.