

MIL-B-3106**22 DECEMBER 1949****SUPERSEDING
Ordnance Department
Specification AXS-1623
26 June 1945****MILITARY SPECIFICATION****BOARD, COMPOSITION, WATER-RESISTANT,
SOLID****(For Filler or Cushioning Pads)**

This specification was approved by the Departments of the Army, the Navy, and the Air Force for use of procurement services of the respective Departments.

1. SCOPE AND CLASSIFICATION

1.1 Scope.—This specification covers solid water-resistant composition board suitable for use as filler or cushioning pads.

1.2 Types.—The water-resistant composition board shall be of the following types, as specified (see 6.2):

Type I—Low moisture absorption.

Type II—Medium moisture absorption.

2. APPLICABLE SPECIFICATIONS.

2.1 Specifications.—The following specifications, of the issue in effect on date of invitation for bids, form a part of this specification.

MILITARY SPECIFICATIONS

JAN-P-105—Packaging and Packing for Overseas Shipment—Boxes, Wood, Cleated, Plywood.

JAN-P-106—Packaging and Packing for Overseas Shipment—Boxes, Wood, Nailed

JAN-P-125—Packaging and Packing for Overseas Shipment — Barrier-Materials, Waterproof, Flexible.

JAN-P-132—Packaging and Packing for Overseas Shipment—Crates; Unsheathed, Wood; Nailed.

JAN-P-139—Packaging and Packing for Overseas Shipment—Plywood, Container Grade.

JAN-P-140—Packaging and Packing for Overseas Shipment—Adhesives, Water-Resistant, Case-Liner.

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U S ARMY SPECIFICATIONS

100-2—Standard Specification for Marking Shipments by Contractors.¹

94-40645—Marking; Exterior, Domestic and Export Shipment by Contractors.²

NAVY DEPARTMENT SPECIFICATION

General Specification for Inspection of Material.³

(Army—Copies of specifications should be obtained from the procuring agency or as directed by that agency. Both the title and identifying number or symbol should be stipulated when requesting copies.)

(Navy—Copies of Military and Navy Department specifications may be obtained upon application to the Bureau of Supplies and Accounts, Department of the Navy, Washington 25, D C, except that activities of the Armed Forces should make application to the Supply Officer in Command, Naval Supply Center, Norfolk 11, Va. Both the title and identifying number or symbol should be stipulated when requesting copies.)

(Air Force—Copies of Military specifications and the applicable U S Army Specifications may be obtained upon application to the Commanding General, Air Materiel Command, Wright-Patterson Air Force Base, Dayton, Ohio. Both the title and identifying number or symbol should be stipulated when requesting copies.)

2.2 Other publications.—The following publication, of the issue in effect on date of invitation for bids, forms a part of this specification:

BUREAU OF SUPPLIES AND ACCOUNTS PUBLICATION

Navy Shipment Marking Handbook.⁴

¹ Applicable only to Army purchases.

² Applicable only to Air Force purchases.

³ Applicable only to Navy purchases.

MIL-B-3106

(Copies of the Navy Shipment Marking Handbook may be obtained upon application to the Bureau of Supplies and Accounts, Department of the Navy, Washington 25, D. C., except that activities of the Armed Forces should make application to the Supply Officer in Command, Naval Supply Center, Norfolk 11, Va.

3. REQUIREMENTS

3.1 Material.—Material shall be such as to produce a finished board meeting the requirements specified hereinafter.

3.2 Absorption.

3.2.1 Type I.—Type I composition board shall have a maximum water absorption of 15 percent when tested as specified in 4.4

3.2.2 Type II.—Type II fiberboard shall have a maximum water absorption of 25 percent when tested as specified in 4.4.

3.3 Stability.—The board shall not delaminate, ooze, or blister at a temperature of 160° F.

3.4 Fracture.—The board shall withstand bending around an arc of a radius equal to 96 times the thickness of the specimen when the temperature of the specimen is -20° F.

3.5 Bursting strength.—Bursting strength shall comply with table I

TABLE I.—Minimum average bursting strength

Nominal caliper	Dry	After 24 hours immersion
	p s i	p s i
0.062	100	75
0.080	130	98
0.100	160	120
0.125	200	150
0.187	300	225
0.250	400	300

3.6 Weight.—The dry weight of the board shall be not in excess of 8 pounds per 100 square feet per 0.010 inch of thickness following a conditioning period of 3 hours in an atmosphere of 50±4 percent relative humidity and a temperature of 73.5±2° F.

3.7 Color.—Any color natural to the component materials shall be permitted.

3.8 Thickness.—The board shall be of the caliper specified in the contract or order

3.9 Size.—Unless otherwise specified in the contract or order, the water-resistant composition board shall be furnished in sheets 4 by 8 feet in size.

3.10 Workmanship.—Workmanship shall be in accordance with the best commercial practice of the industry. Finished board shall be sound and free from imperfections which might impair its usefulness.

4. SAMPLING, INSPECTION, AND TEST PROCEDURES

4.1 Sampling.—Test specimens shall be taken from three finished sheets selected at random from each 5,000 finished sheets.

4.2 Inspection.—The composition board shall be visually inspected for compliance with the requirements for workmanship and thickness.

4.3 Physical tests.

4.3.1 Conditioning composition board for dry bursting strength test.—Cady or Mullen test shall be made after the composition board has been conditioned for not less than 3 hours in an atmosphere of 50±4 percent relative humidity and 73.5±2° F temperature. In case of dispute, specimens for final test shall be conditioned in the same atmosphere for not less than 1 week prior to testing.

4.3.2 Conditioning composition board for wet tests.—

4.3.2.1 Aging specimens.—For all official wet tests, composition board shall be allowed to cure in an atmosphere of 50±4 percent relative humidity and 73.5±2° F. temperature for at least 1 week from time of manufacture to time of submersion and test for final determination of compliance.

4.3.2.2 Water immersion procedure for wet bursting test.—Specimens of composition board properly aged and conditioned as specified in 4.3.2.1 shall be immersed for 24 hours in fresh tap water maintained at a temperature of 73.5±2° F. The water shall have a pH value between 5.8 and 8.0, a degree of hardness within reasonable limits, and shall be drawn fresh for each batch of samples. Specimens to be tested shall be 6 by 10 inches in size, they shall be submerged vertically with the 10-inch edges horizontal, the top edge being 1 inch below the surface of the water, and shall be supported in

such manner that the water has free access to all surfaces and that the ply separation is not restricted. Bursting strength specimens taken from the water after 24-hour immersion period shall have excess surface water removed by suitable means so that the surfaces of samples no longer glisten.

4.3.3 Bursting strength test apparatus (Mullen or Cady type)—In the bursting strength test the composition board is clamped between two surfaces each having a concentric circular aperture approximately 1 square inch in area (1.24 inches in diameter). Hydraulic pressure is then applied through a rubber diaphragm secured to one of the circular apertures so as to burst a hole through the board exposed to the opening. The pressure required to burst the board is recorded by means of a pressure gage calibrated to read in pounds per square inch. Either a hand- or a motor-driven tester may be used. The hydraulic system of the tester shall be filled with glycerin and shall be maintained free from entrapped air while in use.

4.3.4 Bursting strength test method—The bursting strength of the composition board shall be determined as follows:

4.3.4.1 The board specimen shall be clamped firmly in the machine to prevent slipping. Pressure shall be applied by motor-driven action or by a manually operated wheel. The wheel of the manually operated testing apparatus shall be turned at a uniform speed of approximately 2 revolutions per second. Should the board slip during the test, the result shall be disregarded. Six punctures shall be made in each specimen, three from each face of the board. When making wet tests at least six tests shall be made on each specimen immediately after removal of excess surface water. (See 4.3.2.2.) The average of the six tests, whether wet test or dry, shall not fall below the strength requirements listed in table I. If the board fails to pass the test as specified, a retest may be made using four additional specimens. A total of 24 punctures, 12 from each face of the board shall be made. If the average of these tests falls below the strength requirements listed in table I, the board shall then be rejected.

4.4 Absorption—To determine water absorption, specimens shall be conditioned for 24

hours at 80° F and 60 percent relative humidity and then weighed. Immediately thereafter the specimens shall be immersed in water at room temperature for 48 hours, surface-dried and reweighed. The moisture gain shall then be computed as a percentage of the pre-immersion weight.

4.5 Stability test.

4.5.1 Following conditioning for a minimum of 3 hours at a temperature of $73.5 \pm 2^\circ$ F. and relative humidity of 50 ± 4 percent, one specimen of composition board 6 by 10 inches shall be placed in an oven at $160 \pm 2^\circ$ F. for 30 minutes. The specimen shall then be removed from the oven and allowed to stand for 1 hour at a temperature of $73.5 \pm 2^\circ$ F. and relative humidity of 50 ± 4 percent. Examine for visible evidence of delamination, oozing, or blistering.

4.5.2 Retest—A retest using double the number of samples used in the original test may be made if requested by the contractor if the specimen fails to pass the test. There shall be no failures in the retest.

5. PREPARATION FOR DELIVERY

5.1 Packaging—The board shall be packaged in such a manner as to allow a minimum of damage to sides and corners of the sheets, and to prevent shifting within the exterior container.

5.2 Packing

5.2.1 For domestic shipment—Unless otherwise specified, the board shall be delivered in standard commercial containers so constructed as to insure acceptance and safe delivery by common or other carriers, at the lowest rate, to the point of delivery. Containers shall conform to the Consolidated Freight Classification Rules in effect at the time of shipment, except that fiberboard, when used, shall have a minimum dry bursting strength of 275 pounds. The gross weight of the fully packed wood container shall not exceed approximately 200 pounds, of fiberboard and corrugated boxes, shall not exceed approximately 70 pounds.

5.2.2 For overseas shipment—Unless otherwise specified, board, composition, water-resistant, solid shall be delivered in exterior shipping containers conforming to Specifications JAN-P-105, JAN-P-106, or JAN-P-132. Ply-

MIL-B-3106

wood, if used, shall be type A or B, condition I of Specification JAN-P-139. Each exterior shipping container shall be furnished with a sealed case-liner fabricated from barrier-material conforming to Specification JAN-P-125. All seams and closures of the case liner shall be sealed with adhesive conforming to Specification JAN-P-140. The gross weight of the fully packed container shall not exceed 200 pounds.

5.3 Marking.—In addition to any special marking required by the contract or order, marking for the Army shall be in accordance with Specification 100-2, for the Air Force in accordance with Specification 94-40645; for the Navy, in accordance with the Navy Shipment Marking Handbook.

6. NOTES

6.1 Intended use.—Solid water-resistant composition board is designed for cutting into filler and cushioning pads for use where water-resistant material is required and where resistance to dimensional change under compression rather than resiliency is important. The composition board is, for example, intended for use

in exterior shipping containers for ammunition other than small-arms ammunition. It is not intended for use in container construction.

6.2 Ordering data.—Invitations for bids and contracts or orders should specify the following:

a Title, number, and date of this specification.

b Type required. (See 1.2.)

c Thickness required. (See 3.8.)

Notice.—When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

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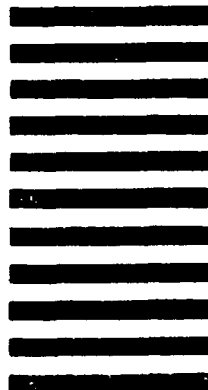
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