

Inch-Pound

MIL-DTL-45449C
w/ Amendment 1
8 June 2012
SUPERSEDING
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DETAIL SPECIFICATION

PALLET, UNITS, WOOD, FOR SHIPMENT OF PROJECTILE METAL PARTS AND PROJECTILE AMMUNITION

This specification is approved for use by all Departments and Agencies of the Department of Defense

1. SCOPE

1.1 Scope. This specification covers requirements and provisions for the manufacturing and assembly of wood pallet units for use in shipment of projectile metal parts and projectile ammunition.

1.2 Classification.

1.2.1 Grade, type and style. This specification covers two grades, two types, and two styles of wood pallet units as follows:

Grade

- Grade A – Pallet units for domestic and overseas shipment of loaded projectile for issue ammunition (see 6.13)
- Grade B – Pallet units for interplant shipment of inert projectiles, and non issue ammunition components.

Comments, suggestions, or questions on this document should be addressed to the Commander, U.S. Army ARDEC, ATTN: RDAR-QES-E, Picatinny Arsenal, NJ 07806-5000 or emailed to ardecdtdzn@conus.army.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <https://assist.dla.mil>.

AMSC N/A

FSC 8140

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

Types

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- | | | |
|---------|---|--|
| Type I | – | Cover and base assemblies with retaining holes as shown on Figure 1. |
| Type II | – | Cover and base assemblies without retaining holes. |

Styles

- | | | |
|---------|---|--|
| Style A | – | With demountable sides and ends as shown on Figure 2. |
| Style B | – | Without demountable sides and ends as shown on Figure 3. |

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

COMMERCIAL ITEM DESCRIPTION

- | | | |
|-----------|---|--|
| A-A-208 | - | Ink, Marking Stencil, Opaque
(Porous and Non-Porous Surfaces) |
| A-A-59622 | - | Tags, Shipping and Stock |

DEPARTMENT OF DEFENSE STANDARDS

- | | | |
|--------------|---|---|
| MIL-STD-1168 | - | Ammunition Lot Numbering and Ammunition Data Card |
| MIL-STD-1916 | - | DOD Preferred Methods for Acceptance of Product |

(Copies of these documents are available online at <https://assist.dla.mil/quicksearch/> or from the Standardization Documents Order Desk, 700 Robbins Avenue, Bldg. 4D, Philadelphia, PA 19111-5094.)

2.2.2 Other Government documents, drawings and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

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U.S. ARMY ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING
CENTER (ARDEC) DRAWINGS

7548605	-	Clip, Corner
13029014	-	U-Bolt Assembly

(Copies of these drawings may be requested online at Pica.drawing.request@conus.army.mil or from U.S. Army ARDEC, ATTN: RDAR-EIS-PE, Picatinny Arsenal, NJ 07806-5000.)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation.

INTERNATIONAL STANDARDS FOR PHYTOSANITARY MEASURES (ISPM)

ISPM 15	-	Regulation of Wood Packing Material in International Trade
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(Copies of these documents are available online at <https://www.ippc.int>)

AMERICAN SOCIETY FOR TESTING AND MATERIALS INTERNATIONAL
(ASTM)

ASTM D4442	-	Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood Base Material
ASTM D3953	-	Standard Specification for Strapping, Flat Steel and Seals
ASTM D4690	-	Standard Specification for Urea-Formaldehyde Resin adhesives
ASTM D6199	-	Standard Practice for Quality of Wood Members of Containers and Pallets
ASTM F1667	-	Standard Specification for Driven Fasteners: Nails, Spikes, and Staples

(Copies of these documents are available online at <http://www.astm.org> or ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

2.4 Order of precedence. Unless otherwise noted herein or in the contract, 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.

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3. REQUIREMENTS

3.1 Required inspections.

3.1.1 First article. When specified (see 6.2), a sample shall be subjected to first article inspection in accordance with 4.2.

3.1.2 Conformance. A sample shall be subjected to conformance inspection in accordance with 4.3.

3.2 Wood species. Pallet units constructed in accordance with this specification shall be made from the species of woods specified in ASTM D6199 and Table I. The characteristics of the wood group are described in section 6.9.

TABLE I. Individual species permitted per grade.

Pallet Units	Individual Species and Wood Group	Pallet Parts
Grade A	Group II, Group III, Aspen, Cypress, Cottonwood, Magnolia, Spruce or Birch	All Parts
	Group IV, Douglas Fir, Larch or Pumpkin ash	Skids Only
Grade B	Groups II, Group III, Group IV, Aspen, Cedar, Cypress, Spruce, Cottonwood, Magnolia or Birch	All Parts

3.3 Ammunition lot numbering. Ammunition lot numbers shall be in accordance with MIL-STD-1168.

3.4 Moisture content.

3.4.1 Grade A pallet units. Container and pallet members shall have a moisture content, at the time of fabrication, of not greater than 19% nor less than 9% of their oven-dry weight in accordance with ASTM D6199.

3.4.2 Grade B pallet units. Lumber for Grade B pallet units shall be seasoned to a moisture content of not more than twenty-two percent nor less than 9%.

3.5 Thickness and width.

3.5.1 Thickness. Maximum variation on any piece shall not exceed the thickness as shown in Table II.

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3.5.2 Width. Width of lumber shall be as specified on applicable drawings (See 6.10). Variations will be permitted provided they do not exceed 1/8 inch for single un-jointed pieces or Linderman-jointed pieces of lumber, fabricated as specified in 3.7, may be used. Pieces of lumber may be butt-jointed or tongue-and-groove jointed to form an assembly. The type of joint used in the assembly shall conform to the applicable drawing (See 6.10). All joints shall be tight when fabrication of the assembly is completed.

3.5.2.1 Base or cover assembly. When the width of deck boards in the base or cover assembly of Grade B pallets is not specified in the applicable drawings (See 6.10), the width shall be the widest practicable for the assembly. A maximum of one-third of the boards shall not be less than a nominal width of four inches.

TABLE II. Maximum variation of thickness.

Thickness of lumber (inches)	Variation shall not exceed (inches)	
1 5/8 or thicker	- 1/16	+1/8
Less than 1 5/8	- 1/32	+1/16

3.6 Size. The length and width of the pallet units shall be as specified on applicable drawing (See 6.10). Length shall be considered as the dimensions parallel to the skids. The maximum length shall not exceed 62 inches and the maximum width shall not exceed 48 inches.

3.7 Linderman-jointed pieces. Individual pieces required in the construction of pallet units may be formed by Linderman jointing narrow widths of lumber. Linderman joints shall have two dovetail-shaped projections (tongues) along the edge of one member that shall extend into corresponding recesses (grooves) in the edge of the adjoining member according to Figure 4. The tongues shall be tapered from one end of the board to the other and shall fit tightly into correspondingly tapered grooves. Width and depth of dove tails and grooves shall be in accordance with Table III.

TABLE III. Linderman joint dimensions.

Thickness (inches)	Depth (inches)	Width (inches)	Tolerance Permitted (inches)
4/4 " lumber	3/32	3/16	± 1/32
5/4 " lumber	1/8	5/16	± 1/32
6/4 " lumber	1/8	5/16	± 1/32
8/4 " lumber	5/32	3/8	± 1/32
NOTE: See Figure 4 for informational purposes.			

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3.7.1 Assembly of pieces. Side and end assemblies shall not contain any major defect; specifically holes greater than $\frac{1}{4}$ inch.

3.7.2 Glue. The glue used in Linderman joints shall be urea-resin glue conforming to ASTM D4690.

3.8 Wood imperfections.

3.8.1 Individual pieces. The individual pieces of lumber used to construct Grade A or Grade B pallets shall be free of defects listed below:

- a. Presence of decay
- b. Warp, bowl, cup, or crook-pieces of lumber in an assembly which provides an uneven bearing surface or in themselves vary from a true or plane surface more than $\frac{1}{8}$ inch per lineal foot.
- c. Divergence in the grain of a piece of lumber in a pallet assembly which exceeds one inch in ten inches or less.
- d. Wane more than $\frac{3}{4}$ inches in width and more than $\frac{1}{4}$ inch in thickness of the piece. Wane extending the entire length of the piece will be acceptable if the above dimensions are not exceeded and the wane does not interfere with required marking.
- e. More than five worm holes in any one piece. Allowed worm holes shall not exceed $\frac{1}{4}$ inch in diameter with one hole not exceeding $\frac{5}{8}$ inch in diameter.
- f. Knots shall not interfere with nailing or drilling. Loose knots and knot holes are allowed up to $\frac{1}{2}$ inch in diameter. Sound knots are allowed up to $\frac{1}{3}$ the width of the piece.
- g. Chipped or torn grain, or machine skip of more than $\frac{1}{8}$ inch variation and more than the width of the piece in length.
- h. Insects, beetles, powder post beetle deterioration and any other infestation at time of delivery that may result in subsequent pallet destruction. To ensure that the pallet is completely free of the oak wilt fungus, all hardwood and softwood component parts shall be absolutely free from bark.

3.8.2 Non-acceptable lumber imperfections. Lumber shall not contain small streaks or pockets of pitch, stain or machine burn that interferes with the marking surfaces of the pallet.

3.8.3 Pallet assemblies. The Grade A and Grade B pallet assemblies shall be free of the defects listed below:

- a. Dimensional requirements not in conformance with applicable drawings (See 6.10).

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- b. Nailing requirements not in conformance with applicable drawings (See 6.10).
- c. Counter bores not as specified on applicable drawings (See 6.10) as to size and location.

3.8.4 Splits or season checks (Grade A pallet assemblies only). Grade A pallet assemblies shall be free of the defects listed below:

3.8.4.1 Skid. Extending in a straight plane the full length of the skid more than 1/8 inch wide or more than 1/3 the width or height of the lumber, or checks of various lengths on both sides of the skid extending at least 1/2 the length of the skid which may or may not extend in a straight plane, but whose combined depth as measured from each side of the skid would exceed 1/2 the thickness of the skid.

3.8.4.2 Base deck board. Split extending more than four inches in each direction from the nail or terminating at the edge of the board or a split extending from the end of a board into more than 1/2 the width of the circular cut-out.

3.8.4.3 Cover deck board. A split extending from the end or edge of the board into the first retaining hole or a split extending from hole to hole or a split extending more than 1/2 the length of a cover deck board.

3.8.4.4 Cover cleat. A split extending more than 1/2 the length of the cleat.

3.8.5. Repair of splits.

3.8.5.1 Type I pallets. A split ending on the end of the board not more than eight inches in length may be repaired with at least one nail on either side of the split. A maximum of six nails may be used. Not more than two repairs permitted on a single assembly. Corrugated fasteners, metal staples, or strapping may not be used to repair splits or checks in Grade A pallets.

a. Type I description. For Type I pallets fabricated with a layer of plywood nailed on top of the cover or base, the defects of this paragraph shall apply only to the lumber beneath the plywood. For the cover assembly, the lumber directly below the plywood shall be considered as part of the cover deck board and therefore shall meet the requirements of 3.8.4.3 and the second layer of lumber shall be considered the cover cleat and shall meet the requirements of 3.8.4.4. For the base assembly, the lumber directly beneath the plywood shall be considered part of the deck board and shall meet requirements of 3.8.4.2.

3.8.5.2 Type II pallets. A split terminating on an edge of a deck board not exceeding four inches in length and not more than two for all deck boards in the assembly and not more than one split to exceed 1/2 the length of a deck board, will be acceptable. Splits covered under 3.8.4.3 and 3.8.4.4 may be repaired by additional nailing provided not more than two repairs are made on one assembly. A maximum of six nails may be used.

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3.9 Nails.

3.9.1 Size and type. Nails shall be mechanically deformed screw shank, ring shank, drive screw type, or smooth cement coated or chemically etched sinker, corkscrew, cooler, or box type as specified in ASTM-F1667. Bright nails may be used when the combined thickness of two or more pieces being nailed together does not exceed three inches and the nails are clinched a minimum of ¼ inch. The size of nails used for jointing two or more pieces together, unless otherwise specified on the applicable drawing (See 6.10), when clinching is not required, shall be as specified on Table IV. If a Group II lumber piece be joined with a group III, a Group II nail shall be used. Pieces shall be pre-drilled if necessary, to prevent splitting.

TABLE IV. Size of nails.

Thickness of lumber against nail head (inches)	Group I & II	Group III
3/4 to 7/8	7d or 8d	6d or 7d
1 to 1-1/4	9d	8d
1-3/8 to 1-1/2	10d	10d
1-5/8 or over	16d	16d

3.9.2 Spacing. Nails shall be arranged as specified on the applicable drawings (See 6.10). If not specifically described on a drawing, nailed joints shall be nailed in accordance with the following:

- a. At least two for a nominal four inches in width or less, three for a nominal six inch width, four for a nominal eight inch width and at least five for a nominal ten and twelve inch width.
- b. Nails, 8d or smaller, shall be driven not less than one inch from the edge or end of the piece.
- c. Nails, 16d shall be driven not less than one inch from the edge or end of the piece. In general, spacing of nails longitudinally into cleats shall not exceed six inches.
- d. Nails shall be driven in a staggered pattern.

3.9.3 Driving. Nails shall be driven so that neither the head, the point, nor the clinched portion shall project above the surface of the wood. Occasional overdriving of nails shall be permitted, but shall be kept to a maximum of 25 percent for the cover and 25 percent of the base. When necessary, a head shall be countersunk at least 1/8 inch below the surface of the wood. All fasteners bent in driving shall be removed or broken off below the surface and replaced. The heads of fasteners shall be driven down beneath the surface of the board.

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3.10 Metal fasteners.

3.10.1 Corner irons. Corner irons fastened to the ends of skids and top surface of deck boards shall be at least six inches long and one inch wide. Hot or cold rolled commercial type steel or galvanized sheet steel, 15 or 16 gage, shall be used. The iron shall not protrude into a retainer hole and at least two nails shall be used to fasten each leg of the iron to the pallet, unless otherwise specified on the applicable drawing (See 6.10).

3.10.2 Corner clips. When specified on the applicable drawing (See 6.10), corner clips shall comply with the requirements of Drawing 7548605, or commercial type equivalent. The clips shall be fastened to the pallet with not less than two 4dcc nails through each leg, unless otherwise specified on the applicable drawing (See 6.10).

3.11 U-Bolt. When required within a specified pallet, U-Bolt requirements shall be in conformance with 13029014. When jointly hoisted and mounted to a pallet, the bolts shall withstand an applied load of 3600 lbs.

3.12 Construction. Grade A and Grade B pallets shall be dimensionally square and accurately formed. Holes shall be drilled clean and, unless otherwise specified, a plus or minus 1/16 inch tolerance on the diameter of the hole shall be permitted. A plus or minus 1/8 inch tolerance shall be permitted on all overall pallet dimensions except where minimum dimensions are specified. Deck boards and cleats shall not extend beyond the ends of the skids more than 1/8 inch. Cleats shall be flush with the ends or edges of the cover or base assembly. Pieces showing wane shall be positioned with the wane edge down.

3.12.1 Surfacing. Lumber shall be finished or dressed on two sides. Edges shall be straight and square with the surface of the lumber. Unless otherwise specified on applicable drawings (See 6.10), lumber may be finished on one side and resawn on the other side. The finished surface of resawn lumber shall always face the upper surface of the assembled pallet. The combined surface shall be level and comply with the requirements of paragraph 3.5 for thickness of individual pieces.

3.13 Preservative treatment. Grade A pallets, individual or the finished wood parts thereof, shall be completely immersed for a minimum of one minute in one of the following wood preservative solutions listed below:

a. PQ56 (Copper-8-quinolinolate) reduced (diluted) with water down to a solution of 1.8% copper (as a metal) by volume in water (See 6.14). (This compound is also known as oxine copper.)

b. An emulsion of M-GARD W550 (Zinc naphthenate) reduced (diluted) with water down to a solution of 3% zinc (as a metal) by volume in water (See 6.14).

c. An emulsion of M-GARD W510 (Copper naphthenate) reduced (diluted) with water down to a solution of 2% copper (as a metal) by volume in water (See 6.14).

d. A solution of Cunapsol 5 (Copper naphthenate) reduced down with water to 2 percent copper as metal (See 6.14).

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3.13.1 Alternate method for preservative treatment.

(1) Dip Treatment. Grade A pallets or the finished wood parts thereof, should be completely flooded for a minimum of one minute in PQ56, M-GARD W550, M-GARD W510, or Cunapsol 5 preservative, as applicable. All interior and exterior surfaces (when finished wood parts are dipped) are to be completely inundated with preservative. Care should be exercised to assure complete coverage of all surfaces of the board.

(2) Drained. Immediately following the dip treatment, wood products being treated should be drained for a period of not less than 5 minutes. If wood products are palletized, the pallet load should be tipped on edge to facilitate thorough drainage.

(3) Air Dried. After the dip treatment, the pallets should be air dried for a period of 24 hours minimum providing thru ventilation thus allowing full air circulation around all surfaces of the wood pallet. Accelerated drying in an oven or kiln is permitted providing oven or kiln temperature does not exceed 160 degrees F. The pallets should be air dried to a maximum moisture content of 19% when tested in accordance with 4.4.1 prior to shipment.

3.14 Markings. Letters and figures shall be marked with black 37038 stencil ink, A-A-208.

3.14.1 Manufacturer markings. Each Grade A pallet shall be marked on the underside of the pallet base and cover assembly by the pallet manufacturer with ½ in minimum letters, the manufacturer's name, address and month and year of manufacture.

3.14.2 Heat treatment. Foreign manufacturers shall have the heat treatment of non-manufactured wood products verified in accordance with their National Plan Protection Organization's (NPPO) compliance program as specified in ISPM 15. Heat treatment markings shall be in accordance with International Standards for Phytosanitary Measures (ISPM 15).

3.14.3 Preservative markings. The pallet shall be marked near the center of the outside stringer, or side-center block, in 1 in. high (min.) letters. The letters shall not be less than one inch in height and shall be separated from all other markings. The following symbols shall be used as listed below:

a. PQ56. The letters "PA" shall be annotated on opposite sides of the outer face of the base assembly and cover assembly on all pallets subjected to the PQ56 (copper-8-quinolinolate) preservative treatment in accordance with 3.14.1 and 3.14.2.

b. M-GARD W550. The letters "PB" shall be annotated on all pallets subjected to the M-GARD W550 (zinc naphthenate emulsifiable) preservative treatment in accordance with 3.14.1 and 3.14.2.

c. M-GARD W510. The letters "PC" shall be annotated on all pallets subjected to either the Cunapsol 5 (copper naphthenate) or the M-GARD W510 (copper naphthenate) preservative treatment in accordance with 3.14.1 and 3.14.2.

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d. Government procured. Grade B (interplant reusable) pallets shall have identification markings identical to Grade A pallets except the letters “PA”, “PB” or “PC” as applicable, shall be omitted.

3.15 Heat treatment quality marking. The quality mark for the pallet cover and base shall be placed on both of the longer sides on the same side as the preservative marking. Each pallet cover and base shall be marked to show the conformance to the International Plant Protection Convention Standard. Pallets made of non-manufactured wood shall be heat treated and marked appropriately. All non-manufactured wood used in the pallet shall be heat treated to a core temperature of 56 degrees Celsius for a minimum of 30 minutes. The pallet manufacturer and the manufacturer of wood to build the pallet shall be affiliated with an inspection agency accredited by the American Lumber Standards Committee and ensure traceability of the heat treated lumber to the mill.

3.16 Workmanship. Pallet shall be free of imperfections which may affect their utility. The pallets shall be free of exposed splinters, metal projections, or sharp edges which may cause injury when manually handled. All required markings shall be neat and sharply defined. Where two or more different defect characteristics not exceeding requirements occur in the same piece, the combination of characteristics shall be considered as a major defect.

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4. VERIFICATION

TABLE V. Requirement/verification cross reference matrix.

Method of Verification 1 - Analysis 2 - Demonstration 3 - Examination 4 – Test		Classes of Verification A - First Article B - Conformance						
Section 3 Requirements	Description	Verification Method				Verification Class		Section 4 Verification Method
		1	2	3	4	A	B	
3.1.1	First article			X	X	X		4.2
3.1.2	Conformance			X	X		X	4.3
3.2	Wood species			X	X	X	X	4.3.3.1
3.3	Lot numbering			X		X	X	4.3.1
3.4.1	Moisture content – Grade A			X	X	X	X	4.3.3.2/ 4.4.1/ 4.4.2/ 4.4.3
3.4.2	Moisture content – Grade B			X	X	X	X	4.3.3.2/ 4.4.1/ 4.4.2/ 4.4.3
3.5.1	Thickness			X	X	X	X	4.3.3.1
3.5.2	Width			X	X	X	X	4.3.3.1
3.5.2.1	Width – Base or cover assy.			X	X	X	X	4.3.3.1
3.6	Size			X	X	X	X	4.3.3.1
3.7	Linderman-jointed pieces			X	X	X	X	4.5/ 4.5.1
3.7.1	Assembly of pieces			X	X	X	X	4.3.3.1
3.7.2	Glue			X	X	X	X	4.5.2
3.8.1	Wood imperfections - Individual pieces			X	X	X	X	4.3.3.1
3.8.2	Acceptable lumber imperfections			X	X	X	X	4.3.3.2
3.8.3	Pallet assemblies			X	X	X	X	4.3.3.2
3.8.4.1	Splits or season checks – Skid			X	X	X	X	4.3.3.2
3.8.4.2	Splits or season checks – base deck board			X	X	X	X	4.3.3.2
3.8.4.3	Splits or season checks – cover deck board			X	X	X	X	4.3.3.2
3.8.4.4	Splits or season checks – cover cleat			X	X	X	X	4.3.3.2

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TABLE V. Requirement/verification cross reference matrix. - Continued

Method of Verification 1 - Analysis 2 - Demonstration 3 - Examination 4 – Test		Classes of Verification A - First Article B - Conformance						
Section 3 Requirements	Description	Verification Method				Verification Class		Section 4 Verification Method
		1	2	3	4	A	B	
3.8.5.1	Repair of splits – Type I pallets			X	X	X	X	4.3.3.2
3.8.5.2	Repair of splits – Type II pallets			X	X	X	X	4.3.3.2
3.9.1	Nails - Size and Type			X	X	X	X	4.3.3.2
3.9.2	Nails - Spacing			X	X	X	X	4.3.3.2
3.9.3	Nails - Driving			X	X	X	X	4.3.3.2
3.10.1	Metal fasteners – Corner irons			X	X	X	X	4.3.3.2
3.10.2	Metal fasteners – Corner clips			X	X	X	X	4.3.3.2
3.11	U-Bolt			X	X	X	X	4.3.3.2
3.12	Construction			X	X	X	X	4.3.3.2
3.12.1	Surfacing			X	X	X	X	4.3.3.2
3.13	Preservative treatment			X	X	X		4.6/ 4.6.1/ 4.6.2/ 4.6.3 as applicable
3.13.1	Alternate method for preservative treatment			X	X	X		4.6/ 4.6.1/ 4.6.2/ 4.6.3 as applicable
3.14.1	Markings – Manufacturer markings			X		X	X	4.3.3.2
3.14.2	Markings – Heat treatment markings			X		X	X	4.3.3.2/ 4.7
3.14.3	Markings – Preservative markings			X		X	X	4.3.3.2
3.15	Heat treatment quality marking			X	X	X	X	4.7
3.16	Workmanship					X	X	4.3.3.2

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4.1 Classification verification. The verification requirements specified herein are classified as follows:

- a. First article inspection (see 4.2).
- b. Conformance inspection (see 4.3).

4.2 First article inspection.

4.2.1 First article quantity. First article inspection shall be performed on the quantity of items as indicated in Table VI.

4.2.2 Inspections to be performed. The first article inspection shall be performed in accordance with Table VI.

4.2.3 First article rejection. If any item fails to comply with requirements, the first article sample shall be rejected.

TABLE VI. First article inspection.

Examination or Test	Number of Samples	Requirement Paragraph	Inspection Method
<u>Components</u> (Lumber prior to assembly)	15	3.8	4.3.3.1
<u>Assemblies</u>			
a) Examination for defects	15	As applicable	4.3.3.1/ 4.3.3.2
b) Moisture content	15	3.4	4.4.1/ 4.4.2/ 4.4.3
c) Linderman-jointed pieces (as applicable)	15	3.7	4.5/ 4.5.1/ 4.5.2
d) Presence of preservative (as applicable)	15	3.13	4.6/ 4.6.1/ 4.6.2/ 4.6.3 Type as applicable
e) Presence of heat treated quality marks	15	3.14.2	4.7/ Visual
f) Heat treatment	15	3.15	Visual
g) U-Bolt pull test (as applicable)	12	3.11	4.3.3.2

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4.3 Conformance inspection.

4.3.1 Lot formation. Lot formation shall be in accordance with lot formation requirement of MIL-STD-1916 (Formation and identification of lots or batches).

4.3.2 Classification of characteristics.

a. Sampling requirements. Inspection sampling requirements for critical, major and minor characteristics are defined in MIL-STD-1916. Unless specified otherwise, inspection Level IV shall be used for all characteristics defined as Majors and inspection Level II for all Minor characteristics; Critical characteristics shall be addressed in accordance with MIL-STD-1916.

b. Conformance inspection. Conformance inspection shall be performed in accordance with paragraph 4.3.3.1 through 4.3.3.2. For all conformance inspections the same sample specimen may be used for all non-destructive examinations or tests.

c. Alternative inspections. Alternative conformance inspections may be submitted and approved in accordance with MIL-STD-1916.

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4.3.3 Conformance inspection by classification of characteristics.

4.3.3.1	<u>Lumber, prior to assembly to Grade A and Grade B pallets.</u>				
Classification	Examination or test	Conformance Criteria		Requirement Paragraph	Inspection Method
		Grade A	Grade B		
<u>Critical</u>	None Defined				
<u>Major</u>					
101	Presence of decay	VL IV	VL II	3.8.1	Visual
102	Non-conformance with Table I	VL IV	VL II	3.2	Visual
103	Warp, bowl, cut or crooked pieces exceed requirement	VL IV	VL II	3.8.1	AIE
104	Divergence in grain exceeds requirements	VL IV	VL II	3.8.1	Visual
105	Wane exceeds requirements	VL IV	VL II	3.8.1	AIE
106	Knot exceeds requirements	VL IV	VL II	3.8.1	Visual
107	All wood components not absolutely free from bark	VL IV	VL II	3.8.1	Visual
<u>Minor</u>					
201	Size exceeds requirement	VL II	VL I	3.6	AIE
202	Thickness exceeds requirement	VL II	VL I	3.5.1	AIE
203	Width exceeds requirement	VL II	VL I	3.5.2	AIE
204	Worm holes exceed requirement	VL II	VL I	3.8.1	AIE
205	Chipped or torn grain or machine skips exceed requirement	VL II	VL I	3.8.1	Visual
206	Holes exceed requirement	VL II	VL I	3.7.1	AIE
Note:					

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4.3.3.2	<u>Pallet assembly.</u>				
Classification	Examination or test	Conformance Criteria		Requirement Paragraph	Inspection Method
		Grade A	Grade B		
<u>Critical</u>	None Defined				
<u>Major</u>					
101	Dimensional requirements not in conformance with applicable drawings (See 6.10)	VL IV	VL II	3.8.3	AIE
102	Pallet not dimensionally square and accurately formed	VL IV	VL II	3.12	AIE
103	Size and location of counter bores	VL IV	VL II	3.8.3	AIE
104	Splits or season checks on base deck board, cover deck board and cover cleat	VL IV		3.8.4.2/ 3.8.4.3/ 3.8.4.4	Visual
105	Size or type of nails incorrect	VL IV	VL II	3.9.1	Visual
106	Nailing requirements not in conformance with applicable drawings (See 6.10)	VL IV	VL II	3.9.1/ 3.9.2/ 3.9.3	Visual
107	Moisture content	15	15	3.4	4.4.1/ 4.4.2/ 4.4.3
108	U-Bolt requirements not in conformance with 13029014 (if applicable)	VL II	VL I	3.11	AIE
109	Linderman jointed pieces	15		3.7	4.5/ 4.5.1
110	ISPM heat treatment marking	VL IV	VLII	3.14.2	Visual
111	Presence of wood preservative	15		3.13/ 3.13.1	4.6

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4.3.3.2	<u>Pallet assembly</u> – continued.				
	Classification	Examination or test	Conformance Criteria		Requirement Paragraph
			Grade A	Grade B	
<u>Minor</u>					
201		Splits or season checks on skid or in post	VL II		3.8.4.1
202		Deckboards and cleats extending beyond ends of skids more than 1/8 inch	VL II	VL I	3.12
203		Repair of splits incorrect	VL II	VL I	3.8.5.1/ 3.8.5.2
204		Spacing and driving of nails incorrect	VL II	VL I	3.9.2/ 3.9.3
205		Corner irons and corner clips incorrect	VL II	VL I	3.10.1/ 3.10.2
206		Cleats not flush with ends or edges of cover or base assembly	VL II	VL I	3.12
207		Pieces of lumber showing wane not positioned with wane edge down	VL II	VL I	3.8.1
208		Lumber not finished correctly	VL II	VL I	3.12.1
209		Edges not straight and square with surface of lumber	VL II	VL I	3.12.1
210		Surface of pallet not level	VL II	VL I	3.12.1
211		Marking missing, misleading or unidentifiable (see 3.9)	VL II	VL I	3.8.2/ 3.14
212		Evidence of poor workmanship	VL II	VL I	3.16

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4.4 Methods of inspection.

4.4.1 Moisture content. Moisture content of lumber for Grade A and Grade B pallets shall be determined in accordance with ASTM-D4442. Moisture content shall be as specified in 3.4.

4.4.2 Moisture content sampling. A sample of 15 pallets shall be selected at random and subjected to this test. If one or two pallets fail to comply with the requirement of 3.4, the lot shall be considered eligible for retest as per 4.4.3. If three or more pallets fail to comply with the applicable requirement the lot shall be rejected.

4.4.3 Retest. A sample of 15 additional pallets shall be selected and subjected to the test specified in 4.4.1. Failure of one or more pallets to comply with the applicable requirement shall be cause for rejection of the lot.

4.5 Test of Linderman-jointed pieces in Grade A pallets. Three samples shall be cut from each of five pallets chosen at random from each lot of pallets. Two of the three samples shall be cut from the cover assembly and one from the base assembly. The samples shall be 2 inches, +/- 1/8 inch wide (parallel to the grain direction) by a length (perpendicular to the grain direction) equal to the width of the piece. Any sample that contains a nail hole or a visible split, shake or check across the entire width shall be discarded and a new sample shall be chosen to replace it. Samples shall be picked so that the joint to be tested is at least 2 5/8 inches from the edge of the board. Additional pallets shall be taken if necessary to secure fifteen satisfactory samples. Any break that is wholly or partially at the joint shall be observed as joint failures. In order for the lot of pallets to pass this test, at least twelve in the Linderman-joint samples shall not break at the joints.

4.5.1 Linderman joint sampling. Samples selected as specified in 4.4.2 shall be tested as cantilever beams as shown in Figure 5. The length of the sample shall be placed perpendicular to the top edge of the vise. The size of the block and the position to the cleat shall be selected so that the lever is parallel to the sample. The lever shall be at least 30 inches long. The sample shall be positioned vertically so that the center of the joint is 0.4 times the clear span, L, above the top face of the vise. A slow, even pull shall be applied to the top of the level until the sample yields in bending. The position of the break with respect to the joint shall be recorded to determine compliance with 3.7.

4.5.2 Urea resin glue. Testing shall be conducted in accordance with ASTM D4690, in order to satisfy shelf-life and pH level requirements. (See 6.14)

4.6 Presence of wood preservative. A sample of 15 Grade A pallets shall be selected at random for this test. Four members (two cover assemblies and two base assemblies) of the pallets selected shall be subjected to the test specified in 4.6.1, 4.6.2 or 4.6.3 as applicable. If one or more members fail to meet the applicable requirement, the pallet shall be classed defective. Failure of any pallet to comply with the requirement shall be cause for rejection of the lot.

4.6.1 Presence of PQ56 (copper-8-quinolinolate) preservative. Time of immersion shall be observed when treated with PQ56, the pallet shall show evidence of discoloration. (See 6.14)

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4.6.1.1 Primary method.

4.6.1.1.1 Materials and equipment. The materials and equipment required as follows:

- a. PQ check (indicator): The formulation contains 10 parts by weight of sodium diethyldithiocarbamate trihydrate and 90 parts by weight of distilled water. (see 6.14)
- b. Dropper: An ordinary glass tube eye dropper may be used.

4.6.1.1.2 Test procedure. Two drops of PQ Check (indicator) shall be applied to the wood surface. An immediate dark brown coloration and the spreading of the drops shall indicate PQ56 treatment.

4.6.1.2 Alternate method.

4.6.1.2.1 Materials and equipment. The material and equipment required are as follows:

- a. Reagent. Dissolve 0.5 grams chrome azurol S concentrate and 5.0 grams sodium acetate in 80 ml of distilled water and then dilute further to 500 ml total with distilled water. (see 6.14)
- b. Sprayer. A common manual (fly) sprayer type applicator should be used.

4.6.1.2.2 Test Procedure. Spray solution evenly over surface of dried wood. A deep blue color reveals the presence of copper (from the copper-8-quinolinolates).

4.6.2 Presence of M-Gard W550 (zinc naphthenate emulsifiable). Time of immersion shall be observed when treated with M-GARD W550, the pallet shall show evidence of discoloration. (See 6.14)

4.6.2.1 Materials and equipment. The materials and equipment required are as follows:

- a. Reagent. Dissolve 0.1 grams of dithizone (diphenylthiocarbazone) (see 6.14) In either 100 ml of methyl ethyl ketone or 100 ml of chloroform (Note: This solution may be stored for long periods of time).
- b. Eye dropper. An ordinary glass tube eye dropper may be used.

4.6.2.2 Test procedure. Five drops of the solution shall be applied to the wood surface, the indicator will turn red when zinc (M-GARD W550) is present. The color green indicates that the preservative is not present. Both colors fade quickly in the presence of light.

4.6.2.3 Alternate method.

4.6.2.3.1 Materials and equipment. The materials and equipment required are as

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follows:

a. Reagents (Stock solutions)

- (1) 1 gram of potassium ferricyanide dissolved in 100 ml of distilled water.
- (2) 1 gram of potassium iodide dissolved in 100 ml of distilled water,
- (3) Starch indicator solution. Make a paste of 1 gram of soluble starch in about 5 ml of distilled water, add 100 ml of distilled water and boil for 1 minute with constant stirring. Cool. Note: This solution is subject to biodegradation and therefore should not be used longer than 3 days before a new batch is prepared.

b. Sprayer. A DeVilbiss No. 30 atomizer or equivalent.

4.6.2.3.2 Test procedure. Mix 10 ml each of the three stock solutions and pour into the atomizer (sprayer). Spray mixture evenly over surface of dried wood. The solution will cause the treated wood to turn a deep blue instantly while the untreated part will retain its original color.

4.6.3 Presence of M-GARD W510 (copper naphthenate emulsifiable) or Cunapsol 5 (copper naphthenate) preservative. Time of immersion shall be observed when treated with M-GARD W510 or Cunapsol 5, the pallet shall show evidence of discoloration. (6.14)

4.6.3.1 Materials and equipment. The materials and equipment required are as follows:

a. Reagent. Dissolve 0.5 grams chrome azurol "S" concentrate (see 6.14) and 5.0 grams sodium acetate in 80 ml of distilled water and then dilute further to 500 ml total with distilled water.

b. Sprayer. A common manual (fly) sprayer type applicator shall be used.

4.6.3.2 Test procedure. Spray solution over surface of dried treated wood. A deep blue color reveals the presence of copper (from copper naphthenate).

4.7 Heat treatment. Heat treatment of wood shall be in conformance with ISPM 15.

a. Affiliation. The pallet manufacturer and the manufacturer of wood to build the pallet shall be affiliated with an inspection agency accredited by the Board of Review of the American Lumber Standard Committee.

b. Traceability. The pallet manufacturer and the manufacturer of wood used to build the pallet shall ensure traceability of the heat treated lumber to the mill.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as

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specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the military service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

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

6.1 Intended use. This specification covers the material, construction and design of wood pallet units used for the movement and storage of ammunition projectiles with mechanical handling equipment.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number and date of this specification, and of all reference documents cited in section 2.
- b. Packaging requirements (See 5.1).
- c. Requirements for first article (See 4.2).
- d. Requirements for acceptance inspection equipment designs (See 6.3).
- e. Certification of conformance requirement for each lot or shipment of product.
- f. Requirements for the establishment of visual standards at first article and whenever anomalies occur in production.
- g. Provision for Quality Management System.
- h. Ammunition Data Cards

6.3 Submission of contractor Acceptance Inspection Equipment (AIE) designs for approval. Submit copies of designs as required to: Commander, U.S. Army RDECOM-ARDEC, ATTN: RDAR-QEM-A, Picatinny Arsenal, NJ 07806-5000. This address will be specified on the Contract Data Requirements List, DD Form 1423 in the contract.

6.4 Approval of equivalent test methods. Prior approval of the Contracting Officer is required for use of equivalent test methods. A description of the proposed method should be submitted through the Contracting officer to: Commander, U.S. Army Armament Research, Development and Engineering Center, ATTN: RDAR-QEM-A, Picatinny Arsenal, NJ 07806-5000. This description should include but not be limited to the accuracy and precision and drawings of any special equipment required.

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6.5 Safety, health and environmental data. The pallet manufacturer will be required to obtain and provide all available safety, health and environmental data i.e., EPA Hazard Data Sheets, OSHA Safety Data Sheets, etc. Of specific interest are the acute, sub-chronic and chronic toxicity data. Also, the manufacturer will obtain and provide any special safety, health and environmental information (apparatus and procedures) to be used throughout the treated box duty life and disposal.

6.6 Request for establishment of visual standards. Submit requests to: Commander, U.S. Army ARDEC, ATTN: RDAR-QEM-A, Picatinny Arsenal, NJ 07806-5000.

6.7 Suggestions.

6.7.1 Weight. The maximum net weight to be contained by any pallet units should not exceed 2,000 pounds.

6.7.2 Wood treatment. Wood seals designed to prevent or retard the loss of moisture from seasoned lumber may be used to maintain and/or achieve moisture content provided that they do not affect the finish of the item to be packed.

6.7.3 Packing.

6.7.3.1 Level A. Pallets should be stacked and strapped together, 5 per stack in the following manner:

- a. Place a base assembly on the bottom.
- b. Place two lengths of strapping of sufficient length to encircle 5 covers and 4 bases, on top of the base pallet, approximately 4 inches from each end of the pallet base.
- c. Place a cover assembly on top of the strapping followed by a base assembly and cover assembly until 4 ½ complete units (4 base assemblies and 5 cover assemblies) are uniformly stacked on top of the bottom base assembly.
- d. Secure the 2 straps around the 4 ½ pallet assemblies.
- e. Apply 2 additional straps under the base pallet parallel and adjacent to the inside surface of the base assembly runners and completely encircling the stack of 5 pallet bases and covers.

Strapping should be a minimum of $\frac{3}{4}$ x 0.028, Type I or IV Class A or B, conforming to ASTM D3953 requirements.

6.7.3.2 Level C. Unless otherwise specified, pallet units should be shipped either completely assembled or knocked down and securely strapped in bundles in quantities that permit easy loading and handling.

6.7.4 Marking.

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6.7.4.1 Level A. In addition to any individual pallet marking required by the pallet drawing, each stack of pallets should have a waterproof paper tag stapled or tacked to the edge of a pallet base on the upper 1/3 of 2 sides of the pallet stack using a minimum of 2 staples or tacks. The following information should be printed, stenciled, stamped or typed on the tab.

National Stock Number
Quantity – Nomenclature
Lot (Mfg's Symbol and Number)
(Gross) WT Cube

Letters should be upper case; size of markings minimum ¼ inch. Stencil ink should be black, A-A-208, or commercial waterproof ink, and tags should conform to A-A-59622, Type B, Grade 15 WR, 20 WR, 15 JU, 15 SU, or 20 SU approximately 5 x 8 inches in size.

6.7.4.2 Level C. The marking of pallet units for shipment should be in accordance with the applicable drawing.

6.7.5 Storage. The acceptable condition of pallet units cannot be maintained during storage unless proper precautions are observed. Pallet units should be stored under cover. High temperatures, extremes of humidity, and excessive dampness should be avoided (dampness will promote rot, mold, and fungus growth). Hot, dry conditions dry the wood, causing checking, wrapping, and splitting.

6.8 Definitions.

a. Decay. Decay is disintegration of wood due to action of fungi. In the shop, decay can be best detected and differentiated from harmless stains and discoloration by use of the pick test. The pick test is performed with the knife or chisel by lifting up some of the grain or fibers in suspicious looking areas. If the material is more punky or more brash (break without splintering) than healthy wood of the same species, it is probably decayed. Suspicious areas are usually abnormally brown, bleached- looking, or mottled, and indicated by the absence of luster that is present in wood.

b. Amylaceous. Amylaceous means to be made of or resemble starch.

6.9 Wood characteristics.

(i) Group I. This group embraces the softer woods of both the coniferous and the broad-leaved species. These woods are relatively free from splitting in nailing, have moderate fastener withdrawal resistance, moderate strength as a beam, and moderate shock resisting capacity. They are soft, light in weight, easy to work, hold their shape well in manufacture, and are normally easy to dry.

(ii) Group II. This group consists of heavier coniferous woods, only. These woods usually have a pronounced contrast in the hardness of the springwood and the summerwood. They have a greater fastener withdrawal resistance than Group I woods, but are more likely to

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split, and the hard summerwood bands occasionally deflect the nails causing them to run out at the sides of the piece.

(iii) Group III. This group consists of hardwoods of medium density. These woods have about the same fastener withdrawal resistance and strength as beams in the Group II woods, but are less likely to split and shatter under impacts. The species in this group are the most useful for constructing box ends and cleats. They also furnish most of the rotary-cut veneers for wire bound boxes and plywood panels for construction of plywood boxes.

(iv) Group IV. This group consists of the high density hardwood species. They have both the greatest shock resisting capacity and fastener withdrawal resistance, but because of their extreme hardness present difficulties with respect to the driving of nails, plus the greatest tendency to split at the nails. They are the heaviest and hardest domestic woods and are difficult to work. They are especially useful where high fastener withdrawal resistance is required and many of them make excellent rotary cut veneers for wire-bound and plywood boxes.

6.10 Applicable drawings. Table VII is to be used for informational purposes only. Not all drawings referencing this specification are listed within this table.

TABLE VII. Applicable drawings referencing specification.

Type	Drawing Number						
155MM Projectiles	754927 5	8837839	9327883	9329574	9362569	9331807 (155mm)	7548346 (8" proj.)
155mm Projectiles	M101	M483	M549 Series	M795	M107	M804 Series	M404
	M104	M485 Series			M804 Series		M426
	M105	M549			M110A2		
	M110 Series	M687					
	M116	M692					
	M121 Series	M718 Series					
	M122	M731					
	M449 Series	M741 Series					
	XM631	M825					
		M864 Series					
		XM1023					
		XM1024					
		XM1025					
		XM1026					

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6.11 Suggested sources of supply.

- a. PQ-56, for the 1.8 percent solution, may be obtained from the Chapman Chemical Company, P.O. Box 9158, Memphis, TN 38019 or equivalent facility.
- b. M-GARD W550 (zinc naphthenate) for the 3 percent zinc as metal solution, may be obtained from the Mooney Chemicals Inc., 2301 Scranton Road, Cleveland, Ohio 44113-9988 or equivalent facility.
- c. Sodium Diethyldithiocarbamate Trihydrate may be obtained from J.T. Baker Chemical Co., Phillipsburg, New Jersey 08865 or equivalent facility.
- d. Chrome azurol "S" may be obtained from Eastman Chemical Co., Rochester, New York or equivalent facility.
- e. Dithizone (Diphenylthiocarbazone) may be obtained from J.T. Baker Chemical Company, Phillipsburg, New Jersey 08865 or equivalent facility.
- f. M-GARD W510 (copper naphthenate), for 2 percent copper as metal, may be obtained from Mooney Chemicals Inc., 2301 Scranton Road, Cleveland, Ohio 44113-9988 or equivalent facility.
- g. Cunapsol 5 (copper naphthenate), for 2 percent copper as metal, may be obtained from Chapman Chemical Company, P.O. Box 9158, Memphis, TN 38019 or equivalent facility.

6.12 Subject term (keyword) listing.

Heat treatment

Preservative treatment

Lumber

6.13 Grade A pallet consideration. Pallets for shipment of Projectile Metal Parts and reuse with projectile, loaded, are included as Grade A pallets (see 1.2.1.)

6.14 Certification. Certification forms are accepted as evidence of the requirements listed below:

- a. Correct percentages of preservative treatment applied to lumber
- b. Urea resin glue test results

6.15 Amendment notations. The margins of this specification are marked with vertical lines to indicate where changes from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

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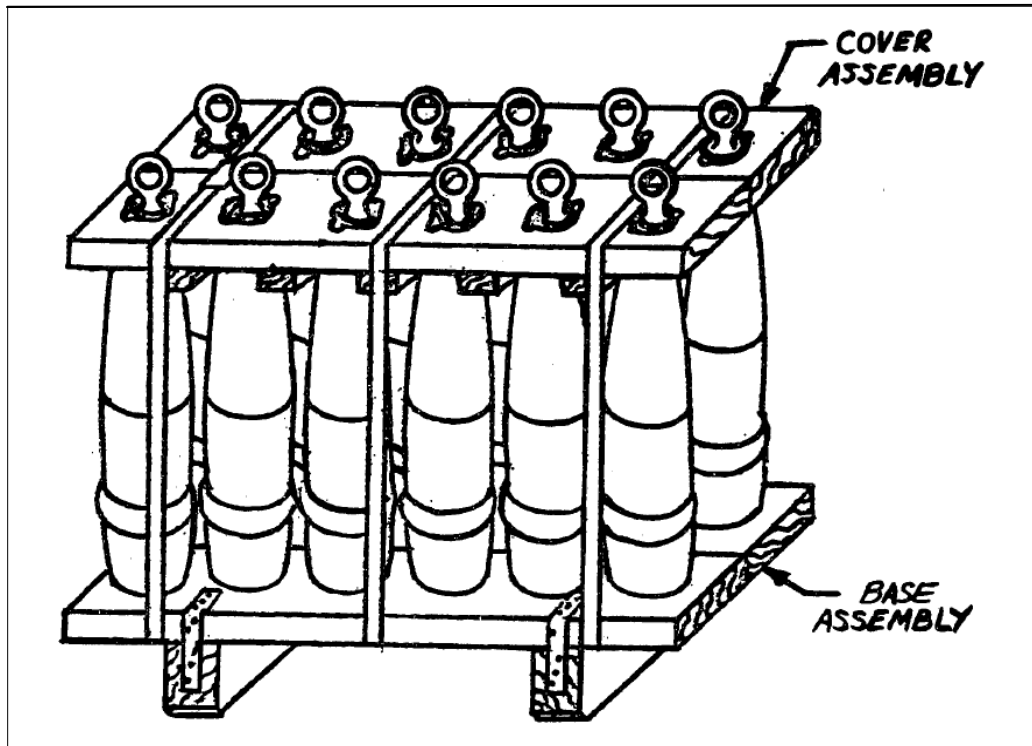


FIGURE 1. Pallet unit – Type I.

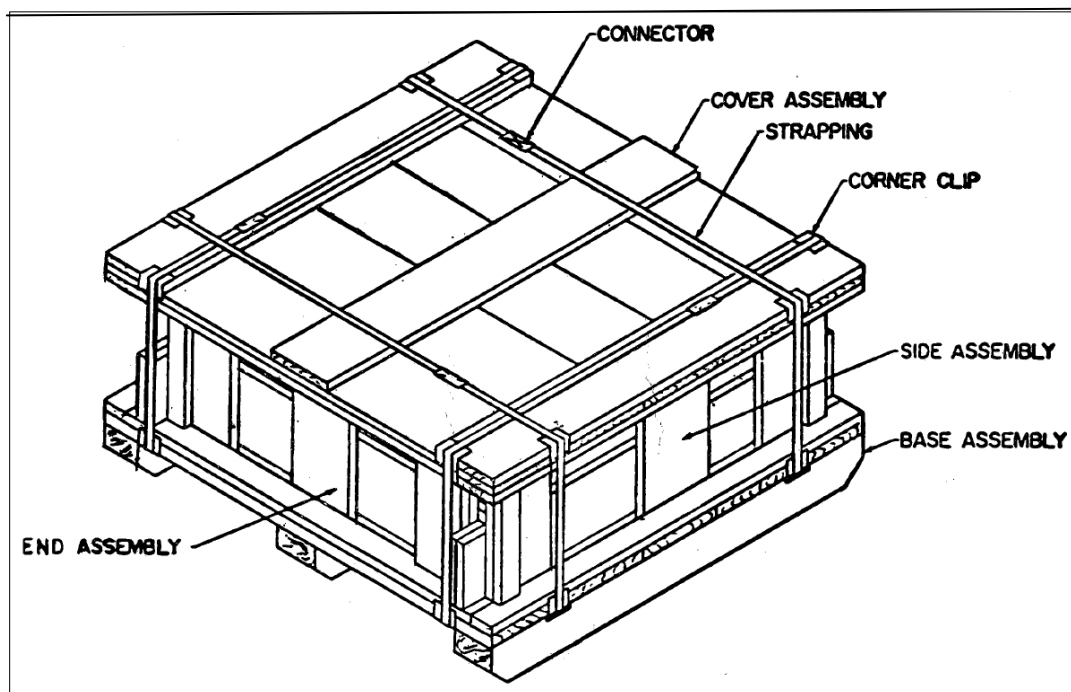


FIGURE 2. Pallet unit – Type II, Style A.

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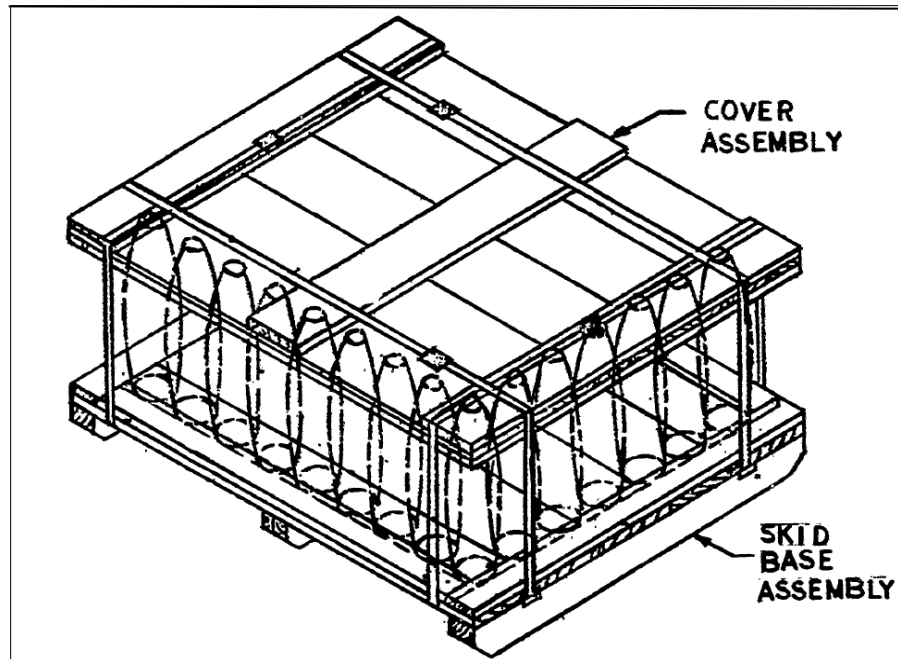


FIGURE 3. Pallet unit – Type II, Style B.

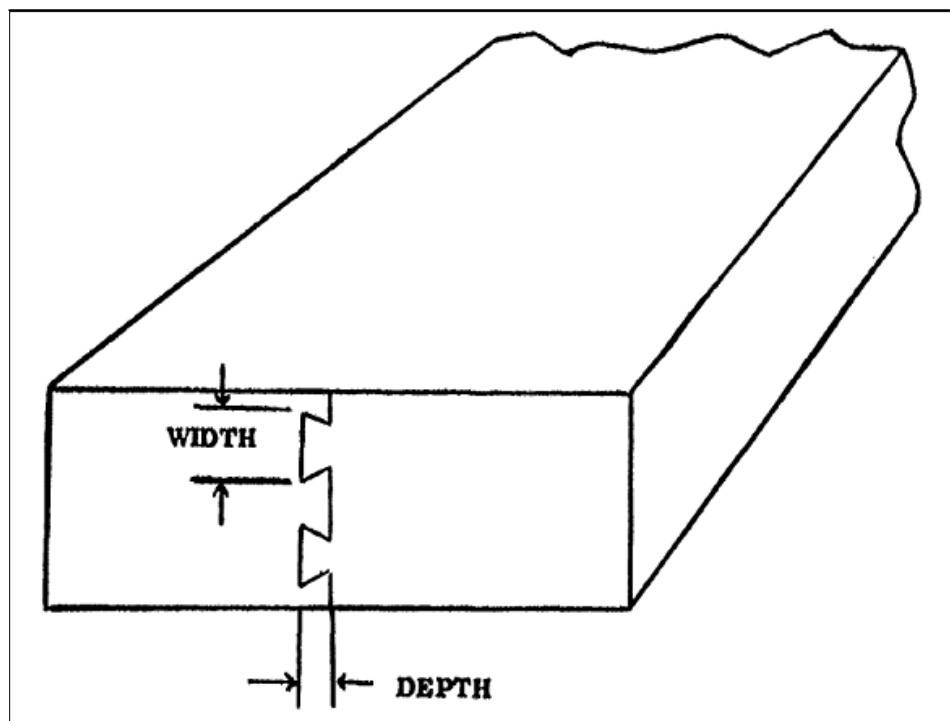


FIGURE 4. Double-tapered, Two dovetail, Linderman-joint.

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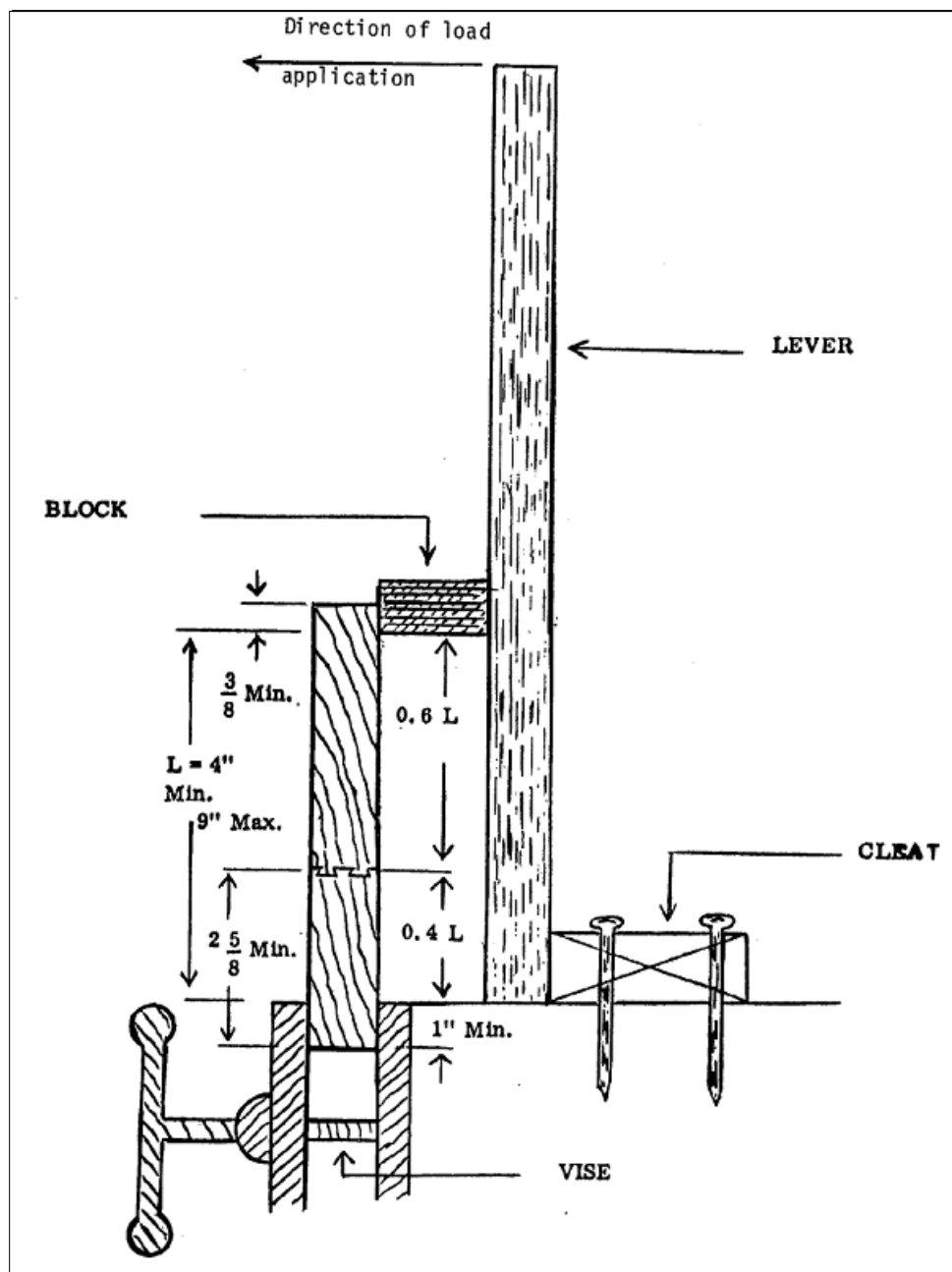


FIGURE 5. Set-up for testing quality of Linderman joints.

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APPENDIX A

GRADE B, GOVERNMENT FURNISHED

A.1 SCOPE

A1.1 This appendix prescribes the criteria to be utilized to determine the serviceability of Government furnished pallets.

A1.2 Classification.

A1.2.1 Grade, Type and Style. This appendix covers one grade, one type and two styles of wood pallet as follows:

GRADE

Grade B	-	Pallet Units for Interplant Shipment of Inert Projectiles, and Non-Issue Ammunition Components.
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TYPE

Type II	-	Cover and Base Assemblies
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STYLES

Style A	-	With demountable sides and ends as shown on Figure 2.
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Style B	-	Without demountable sides and ends as shown on Figure 3.
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A.2 APPLICABLE DOCUMENTS

A.2.1 Government Documents.

A.2.1.2 Other Government documents, drawings and publications. The following other Government documents, drawings, and publications form a part of the specification to the extent specified herein.

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APPENDIX A

U.S. ARMY ARMAMENT RESEARCH, DEVELOPMENT CENTER AND
ENGINEERING CENTER (ARDEC) DRAWINGS

7548604	Pallet for Fixed and Semi-Fixed Projectiles
8837835	Pallet for Projectile Metal Parts
8848553	Pallet for 4.2 Inch Mortar Projectile Bodies

A.3 REQUIREMENTS

A.3.1 Ammunition lot numbering. Ammunition lot numbers shall be assigned and ammunition data cards be submitted in accordance with MIL-STD-1168.

A.3.2 Presence of decay. The individual pieces of lumber used to construct Grade A or Grade B pallets shall be free of signs of decomposition or rot.

A.3.3 Pallet deformed. Grade A and Grade B pallets shall be dimensionally square and accurately formed.

A.3.4 Nail projecting. Nails shall be driven so that neither the head, the point, nor the clinched portion shall project above the surface of the wood. When necessary, a head shall be countersunk at least 1/8 inch below the surface of the wood.

A.3.5 Surface of pallet not level. The combined surface shall be level and comply with the requirements of paragraph 3.5 for thickness of individual pieces.

A.3.6 Workmanship. Pallets shall be free of imperfections which may affect their utility such as loose or broken boards. In addition, the pallets shall be free of excessive splinters, metal projections, or sharp edges which may cause injury when manually handled (see A.6.1)

A.4 VERIFICATION

A.4.1 Lot formation. Lot formation shall be in accordance with lot formation requirement of MIL-STD-1916 (Formation and identification of lots or batches).

A.4.2 Examination. Inspection sampling requirements for critical, major and minor characteristics are defined in MIL-STD-1916. Unless specified otherwise, inspection Level II shall be used for all characteristics defined as Majors and inspection Level I for all Minor characteristics; Critical characteristics shall be addressed in accordance with MIL-STD-1916.

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APPENDIX A

A.4.2.1	<u>Inspection of pallet.</u>			Drawing Number 7548604, 8837835 or 8848553
				Next Higher Assembly
Category	Examination or test	Grade B Conformance Criteria	Requirement Paragraph	Inspection Method
<u>Critical</u>	None Defined			
<u>Major</u>				
101	Presence of decay	VL II	A.3.2	Visual
102	Broken or loose board	VL II	A.3.6	Visual
103	Pallet deformed	VL II	A.3.3	Visual
<u>Minor</u>				
201	Nail projecting	VL I	A.3.4/ A.3.6	Visual
202	Surface of pallet not level	VL I	A.3.5	Visual
203	Evidence of poor workmanship	VL I	A.3.6	Visual
Notes				

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APPENDIX A

A.5 NOTES

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

A.5.1 Intended use. See 1.1 Scope.

A.5.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number and date of this specification, and of all reference documents cited in section 2.
Packaging requirements (See 5.1).
- c. Requirements for first article (See 4.2).
- d. Requirements for acceptance inspection equipment designs (See 6.3).
- e. Certification of conformance requirement for each lot or shipment of product.
- f. Requirements for the establishment of visual standards at first article and whenever anomalies occur in production.
- g. Provision for Quality Management System.
- i. Ammunition Data Cards

A.5.3 Reworked pallets. If economically repairable and under specific directions from the procuring contract officer, pallets should be reworked to comply with the applicable requirements of this document.

Custodian
Army - AR
Navy - OS
Air Force – 11

Preparing Activity:
Army – AR
(Project 8140-2012-004)

Review activities:
Army – AV, MI
Navy – AS, MC
Air Force –69, 70, 99
DLA- DH, GS, GS3, GS7

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.dla.mil>.