

INCH-POUND
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MIL-B-2427G (AR)  
 AMENDMENT 9  
21 May 2002  
 SUPERSEDING  
 AMENDMENT 8  
 23 July 2001

## MILITARY SPECIFICATION

### BOX, AMMUNITION PACKING, WOOD, NAILED

This amendment forms a part of MIL-B-2427G (AR), dated 30 August 1984, and is approved for use by the U.S. Army Armament Research, Development and Engineering Center, and is available for use by all Departments and Agencies of the Department of Defense.

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#### \* 1.2 Classification.

- a. Grade A. Change as follows:  
 “Grade A – Preservative and heat treated boxes for the unrestricted overseas shipment or long term storage and handling of ammunition or explosive ammunition components.”
- b. Add new grade as follows:  
 “Grade B – Heat treated, non-preservative treated boxes for overseas shipment and short term storage and handling of ammunition or explosive ammunition components.”
- c. Grade C. Change as follows:  
 “Grade C – Boxes without preservative or heat treatment. For interplant shipment and for storage and handling under controlled conditions of ammunition or explosive ammunition components, for domestic shipment only.”

#### 2.1.1 Specification and standards.

Under “SPECIFICATION, FEDERAL”, delete “QQ-S-781 – Strapping, Steel and Seals”.

Under “STANDARDS, MILITARY”, delete:

“MS 35492 – Screw, Wood, Flat Head, Cross Recessed  
 MS-35494 – Screw, Wood, Flat Head”

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2.2 Other publications. Under “AMERICAN SOCIETY FOR TESTING AND MATERIALS”, add:

“ASTM-A777 - Galvanized Round Steel Tying Wire, Standard Specification for  
ASTM-D3953 - Strapping, Flat Steel and Seals, Standard Specification for (DoD adopted)”

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3.3 Rope handles. After the third sentence, add new sentence as follows:

“This length includes approximately eleven (11) inches of rope (five and on half inches under each cleat) that is routed under the cleats for attachment of the rope handle.”

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3.4 Metal fittings. Delete the following drawings listed:

“MS 35492 – Screw, Wood, Flat Head, Cross Recessed, Part Number (No.) MS-35492-41  
MS 35494 – Screw, Wood, Flat Head, Part Number (No.) MS-35494-46”

Last sentence: Delete in its entirety and substitute:

“Screws shall be standard commercial number 7x3/4 inch or number 8x3/4 inch tamperproof wood or sheet or sheet metal screws with countersink heads. The screws shall be zinc or cadmium plated, and meet all requirements of FF-S-107 except for head design. Any style of tamperproof head is acceptable so long as the screws cannot be removed with a common hand tool.”

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3.7.1 Tenth sentence: Delete “more than 1/8 the thickness of the board” and substitute: “more than .125 inches below board surface.”

3.7.1 After last sentence, add sentence as follows:

“When two nails are occasionally driven coincidentally in the same location, the nails shall be acceptable as long as the integrity of the box is not affected (splitting terminating in edge of box).”

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3.8 Box identification. After the third sentence, add:

“The letters “PC” shall be annotated on all boxes subjected to either the Cunapsol 5 (copper naphthenate) or the M-GARD W510 (copper naphthenate) preservative in accordance with 3.9.”

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3.9 Preservative treatment. Delete in its entirety and substitute:

“3.9 Preservative treatment. Grade A boxes, individual or palletized or the finished wood parts thereof, shall be completely immersed for a minimum of one minute in a solution of wood preservative.

- a. PQ56 reduced with water down to 1.8 percent copper-8-quinolinolate as solution (see 6.6).
- b. An emulsion of wood preservative M-GARD W550 (zinc naphthenate) reduced with water down to 3 percent zinc as metal (see 6.7).
- c. An emulsion of M-GARD W510 (copper naphthenate) reduce down with water to 2 percent copper as metal (see 6.14).
- d. A solution of Cunapsol 5 (copper naphthenate) reduced down with water to 2 percent copper as metal (see 6.15).

Alternatively, Grade A boxes, individual or palletized or the finished wood parts thereof, shall 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 shall be exercised to assure complete coverage of all surfaces of the board. Immediately following the dip treatment, wood products being treated shall be drained for a period of not less than 5 minutes. If wood products are palletized, the pallet load shall be tipped on edge to facilitate thorough drainage. After the dip treatment, the boxes must be air dried for a period of 24 hours minimum providing thru ventilation thus allowing full air circulation around all surfaces of the wood box. Accelerated drying in an oven or kiln is permitted providing oven or kiln temperature does not exceed 160° F. The boxes must be air dried to a maximum moisture content of 18 percent when tested in accordance with 4.5.2 prior to shipment.

3.9.1 Presence of PQ56 (copper-8-quinolinolate) preservative. When treated with PQ65, the box shall show evidence of discoloration when tested as specified in 4.5.5.

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3.9.2 Presence of M-GARD W550 (zinc naphthenate emulsifiable) preservative. When treated with M-GARD W550, the box shall show evidence of discoloration when tested as specified in 4.5.6.

3.9.3 Presence of M-GARD W510 (copper naphthenate) or Cunapsol 5 (copper naphthenate) preservative. When treated with M-GARD W510 or Cunapsol 5, the box shall show evidence of discoloration when tested as specified in 4.5.7.”

\* 3.10 First article inspection. Renumber to ‘3.11 First article inspection.’

\* Add new paragraph as follows:

“3.10 Heat treatment (Grade A and B only). Boxes shall be fabricated from wood heat treated to a core temperature of 56 degrees Celsius for a minimum of 30 minutes or shall be heat treated to the same requirement after box fabrication. For Grade A boxes, heat treatment shall take place prior to preservation application. The box manufacturer shall be affiliated with an inspection agency accredited by the United States Department of Agriculture. Each box shall be marked to show conformance to the International Plant Protection Convention Standard. The quality mark shall be placed on both ends of the box between the end cleats and the mark shall show traceability to the original source of heat treatment.”

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\* 4.4.2.1 Assembly. Change “Grade A C” to “Grade A B C”. The inspections for Grade A shall also apply for Grade B.

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4.4.2.1 Assembly. Add the following major defects as follows:

“Grade	Categories	Defects	Method of Inspection
A B			
X X	123.	Rope end not visible at cleat groove	Visible
X X	124.	Nails not driven into centerline of cleat and over centerlines of grooves as shown in Figure 1	Visible”

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4.4.3.5 and 4.4.3.6. Delete in their entirety and substitute:

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“4.4.3.5 Presence of wood preservative. (See 3.9), Major defect. A sample of 15 boxes shall be selected at random, from each lot, for this test. Four individual boards of each box (cleat, top or bottom board, end board, and batten) shall be subjected to the test specified in 4.5.5, 4.5.6 or 4.5.7, as applicable. If one or more boards fail to meet the applicable requirement, the box shall be classed defective. Failure of any box to comply with the requirements shall be cause for rejection of the lot.”

\* Add new paragraph as follows:

“4.4.3.7 Presence of heat treatment. (see 3.10), Major defect. A sample of 15 boxes shall be selected at random for this test. If the heat treatment marking does not comply on one or more boxes, then the lot shall be rejected. The boxes shall also be examined for the presence of pests or evidence of infestation (e.g. worm holes). Any visual obvious infestation or evidence of infestation of any box in the sample lot shall be cause for rejection.”

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4.5.1 Load test of rope handles. Delete in its entirety and substitute the following paragraphs:

“4.5.1 Load test of rope handles. The box shall be packed with any suitable material until its gross weight is twice as great as its gross weight packed with the item for which it was intended. If the resulting weight of the packed box is 250 pounds (lbs.) or less, 4.5.1.1 shall be followed. If the resulting weight is greater than 250 lbs. and not greater than 500 lbs., 4.5.1.2 shall be followed.

4.5.1.1 Rope handle load test (250 lbs. or less). The box shall suspend freely for one minute, minimum, from each rope handle in turn. In the event that one or both handles fail the requirement, the box shall be classed defective.

4.5.1.2 Rope handle load test (from greater than 250 lbs. to 500 lbs., maximum). The box shall suspend freely for one minute, minimum, from both rope handles (at once). In the event that one or both handles fail the requirement, the box shall be classed defective.”

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4.5.6 Presence of M-GARD W550 (zinc naphthenate emulsifiable) preservative. Delete in its entirety and substitute:

“4.5.6 Presence of M-GARD W550 (zinc naphthenate emulsifiable) preservative.

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

a. Reagent. Dissolve 0.1 gram of dithizone (diphenylthiocarbazone) (see 6.12) 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 eyedropper may be used.

4.5.6.2 Test procedure. Five drops of the solution shall be applied to the wood surface. The indicator turns 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.”

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Add new paragraphs 4.5.7 and 4.5.7.1 as follows:

“4.5.7 Presence of M-GARD W510 (copper naphthenate emulsifiable) or Cunapsol 5 (copper naphthenate) preservative. The materials and equipment required are as follows:

a. Reagent. Dissolve 0.5 grams chrome azurol “S” concentrate (see 6.11) 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) type applicator shall be used.

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

\* Add new paragraph as follows:

“4.5.8 Presence of heat treatment. Visually inspect the heat treatment marking on each of the boxes for conformance to the applicable requirements, including content, legibility and location.”

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5.2.1 Fourth sentence.

Delete “Strapping shall be a minimum of  $\frac{3}{4}$  inch wide by .028 inch thick, Class 1, Type I or IV regular duty.”

Substitute “Strapping shall be a minimum of  $\frac{3}{4}$  inch wide by .028 inch thick, Type 1 or 2 Regular-duty, in accordance with ASTM D3953.”

5.2.2 Second sentence.

Delete “Strapping shall be in accordance with QQ-S-781,  $\frac{3}{4}$  inch wide by .028 inch thick, Class 1, Type I or IV regular duty.”

Substitute “Strapping shall be in accordance with ASTM-D3953,  $\frac{3}{4}$  inch by .028 inch thick, Type 1 or 2 Regular-duty. Finish B is required for overseas shipments. Finish A or C may be used for domestic shipments. Seals shall be compatible with strapping.”

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6.12 Change to read as follows:

“6.12 Dithizone. Dithizone (diphenylthiocarbazone) may be obtained from J.T. Baker Chemical Co., Phillipsburg, New Jersey 08865 or equivalent facility.”

Add new paragraphs as follows:

“6.14 M-GARD W510. 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.

6.15 Cunapsol 5. 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.”

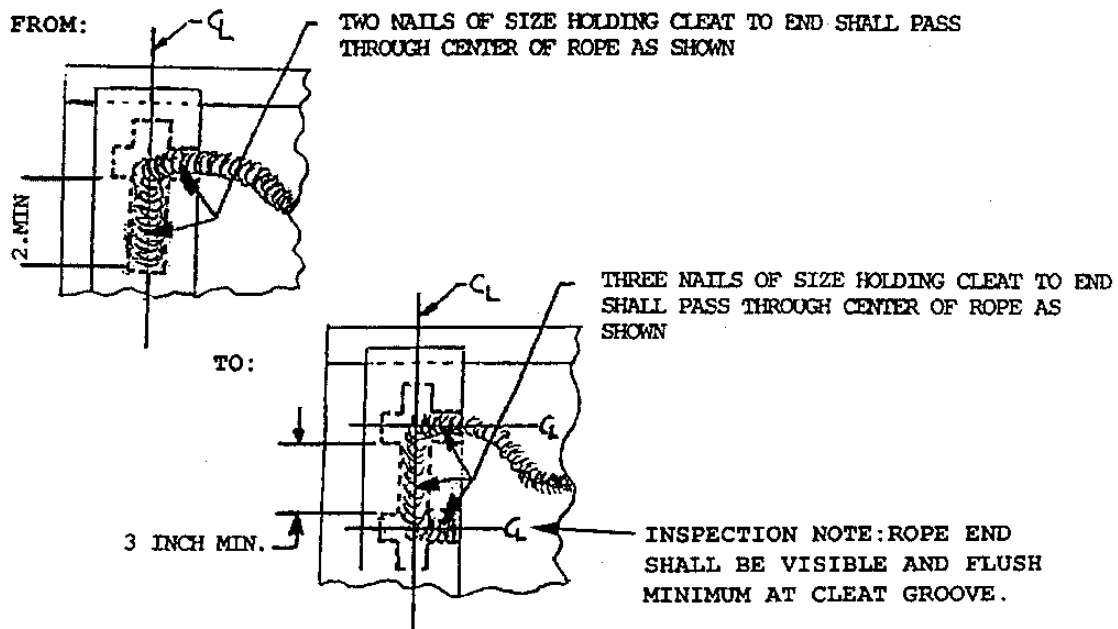
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FIGURE 1. Wood box with exterior vertical cleats.

Delete "ROPE SHALL EXTEND TO THIS DIMENSION". Also, delete the corresponding leader line.

Also, make the following change:



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Figure 1A. Vertical axis, length of rope. Add 5 and ½ inches to each of the lengths shown.



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20.1 Specifications. Delete “QQ-S-781 - Strapping, Steel and Seals”

20.3 Standards. Add:

“ASTM-A777 - Galvanized Round Steel Tying Wire, Standard Specification for  
ASTM-D3935 - Strapping, Flat Steel and Seals, Standard Specification for (DoD  
adopted)”

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30.2.1 Flat steel strapping.

Delete “Flat steel strapping shall comply with Class 1, Type I or IV of QQ-S-781. Class A or B finish shall be for overseas shipment (Level A); Class C may be used for domestic shipment (Level B or C).”

Substitute “Flat steel strapping shall comply with Type 1 or 2, Regular-duty of ASTM-D3953. Finish A or B shall be used for overseas shipment (Level A); Finish C may be used for domestic Shipment (Level B or C).”

30.2.2 Round wire strapping.

First sentence. Delete “Class 2 of QQ-S-781” and substitute “ASTM-A777, Class 1 or 2.”

Second sentence. Delete “Finish A or B” and substitute “Type 1 coating”

Fourth sentence. Delete in its entirety and substitute “Wire of any gage listed in ASTM-A777 and meeting the requirements “of Table 1” of that specification may be used.”

40.1 Round wire strapping. Delete paragraph in its entirety (including subparagraphs 40.1.1 through 40.1.4) and substitute:

“40.1 Round wire strapping. The strapping used will have passed the nominal diameter, breaking strength, percent elongations, and zinc coating tests per ASTM-A777. The zinc coating is only required for Type 1 material. Authentication by proper certification from the ammunition packing and packaging facility will be available for review by the Government”

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TABLE II. Delete in its entirety.

The margins of this amendment are marked with an asterisk or vertical lines to indicate where changes (additions, modifications, corrections, deletions) from the previous amendment 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 entire content irrespective of the marginal notations and relationship to the previous amendment.

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