

PPP-T-495B  
 February 25, 1974  
 SUPERSEDING  
 Fed. Spec. PPP-T-495A  
 October 2, 1961

## FEDERAL SPECIFICATION

### TUBES, MAILING, AND FILING

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 the requirements for round treated and untreated mailing, filing, and map storage tubes.

1.2 Classification. The tubes shall be of the following types, classes, and styles as specified (see 6.2).

Type I - Untreated.

Class 1 - Spiral wound.

Class 2 - Convolute wound.

Style A - Plain no closure.

Style C - Metal screw cap with bottom end crimped on.

Style D - Three piece telescope with metal ends.

Type II - Waterproof treated.

Class 1 - Spiral wound.

Class 2 - Convolute wound.

Style D - Three piece telescope with metal ends.

#### 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-T-425	- Tinfoil (Hot Dip and Electrolytic).
UU-C-282	- Chipboard: Plain.
UU-P-268	- Paper, Kraft, Untreated, Wrapping.
MM-A-260	- Adhesive, Water-Resistant, For Sealing Waterproofed Paper.
PPP-B-585	- Boxes: Wood, Wirebound.
PPP-B-591	- Boxes, Fiberboard, Wood-Cleated.
PPP-B-601	- Boxes, Wood, Cleated-Plywood
PP-8-636	- Boxes, Shipping, Fiberboard.
PP-8-100	- Shipping Material, Flexible.

FSC 8110

2 of 13

## Federal Standards:

- FED-STD-101 - Preservation, Packaging, and Packing Materials:  
Test Procedures.
- FED STD-123 - Marking for Domestic Shipment (Civil agencies).

(Activities outside the Federal Government may obtain copies of Federal Specifications, Standards, and Handbooks as outlined under General Information in the Index of Federal Specifications and Standards and at the prices indicated in the Index. The Index, which includes cumulative monthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

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

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

## Military Specification:

- MIL-L-10547 - Liners, Case, and Sheet, Overwrap Water-Vaporproof or Waterproof, Flexible.

## Military Standards:

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-129 - Marking for Shipment and Storage.

(Copies of specifications, standards, drawings, and publications required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply:

Uniform Classification Committee, Agent

Uniform Freight Classification

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

National Motor Freight Traffic Association, Inc., Agent

National Motor Freight Classification

(Application for copies should be addressed to the American Trucking Associations, Inc., Tariff Order Section, 1616 P Street, N.W., Washington, DC 20006.)

Technical Association of the Pulp and Paper Industry

T-402 - Conditioning Paper and Paperboard for Testing

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

Composite Can and Tube Institute

T-108 - Side-to-Side Crush Composite Tubes and Cover

(Application for copies should be addressed to the Composite Can and Tube Institute, 1725 Eye Street, N.W., Washington, DC 20006.)

(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. The materials shall be of the quality normally used for this purpose in commercial practice, unless otherwise specified herein.

3.1.1 Adhesive. The adhesive used for bonding of type I tubes shall be of suitable type, free from objectionable odor. The adhesive used for the bonding of type II tubes shall conform to MMM-A-250.

3.1.2 Chipboard. The chipboard shall conform to UU-C-282. Other thicknesses of plain chipboard, having the same physical properties as specified in UU-C-282, may be used to meet the minimum wall thickness of tube as specified in tables I, II, and III, provided the bonding strength is not affected as indicated in 4.4.2.

APP-1 1953

3.1.3 Kraft paper. The kraft paper shall conform to the requirements of SU-P 268 or grade B, 40 pound basis weight paper.

3.1.4 Waterproof, kraft paper, wrapping. The waterproof paper shall conform to class B-2, B-3 or C-1 of FPP-B-1055.

3.1.5 Tinplate. Tinplate shall conform to type II, grade 3, class A, or grade 4, class 25, bright finish of QQ-T-425.

### 3.2 Construction.

3.2.1 Body. Tubes shall either be class 1 spirally wound or class 2 convolutely wound as specified (see 6.2), and shall be constructed of materials specified under 3.1 (see figure 1).

3.2.2 Butt joints class - 1 tubes. Plies of class 1 tubes shall be wound with butt joints, with a maximum gap of 1/16 inch, except the outer ply for type II tubes shall be overlapped at the joint.

3.2.3 Seams class - 2 tubes. The seams on class 2 tubes shall be tapered or beveled to form a smooth seam, except the outer ply of type II tubes shall be overlapped at the joint.

3.2.4 Crushing strength. Crushing strength shall be not less than 8 pounds per inch of tube length, when tested as specified in 4.4.2.

3.2.5 Adhesion requirements. The samples submitted to the tests specified in 4.4.1 through 4.4.3 shall be examined for quality of adhesion between layers by observing the amount of fiber failure when the paper layers are separated. All layers shall show no larger unstuck area than 1/2 inch square and the total for such unstuck areas shall not be greater than 20 percent of the total area of each layer.

3.2.6 Size. Inside diameter and inside length shall be as specified (see 6.2). The tolerance on inside diameter shall be  $\pm 1/32$  inch. The tolerance on inside length shall be plus 3/8 inch, minus 0 inch.

3.3 Type I, styles A, C, and D tubes. Type I, styles A, C, and D tubes shall conform to the requirements of tables I, II, and III, as applicable. Wall thickness for style D tubes shall be the combined thickness of the inner and outer tubes.

TABLE I. Type I, style A and B

<u>Inside diameter</u>	<u>Wall thickness minimum</u>
Inches	Inch
Under 1 to 1-1/4	0.08
Over 1-1/4 to 2-1/4	0.085
Over 2-1/4 to 2-3/4	0.100
Over 2-3/4 to 3 1/4	0.105
Over 3-1/4 to 4	0.110
Over 4 to 10	0.125

TABLE II. Type I, style C tubes

<u>Inside diameter</u>	<u>Wall thickness minimum</u>
Inches	Inch
Under 1 to 1-1/2	0.110
Over 1-1/2 to 2-1/2	0.120
Over 2-1/2 to 3-1/4	0.140
Over 3-1/4 to 4-1/2	0.150

TABLE III. Type I and II, style D tubes

<u>Inside diameter</u>	<u>Wall thickness minimum</u>
Inches	Inch
Under 1-1/2 to 1-3/4	0.110
Over 1-3/4 to 2-3/4	0.120
Over 2-3/4 to 3-1/2	0.140
Over 3-1/2 to 4	0.140
Over 4 to 6-1/2	0.150

### 3.4 Closures.

3.4.1 Metal ends. Metal ends shall be constructed of tinplate specified in 3.1.5 and shall be secured to the tube by double crimping (false-double seam), smooth or serrated crimping. Crimped ends shall withstand a minimum load 25 and 100 pounds, respectively, for type I and II tubes, applied to the axis of the tubes when tested as specified in 4.4.3.

3.4.1.3

3.4.2 Screw cap and neck. Metal screw caps and necks shall be constructed of tinplate specified in 3.1.5. Screw caps and necks shall be threaded so that not less than 1 1/4 turns are required to remove the screw cap from the metal neck when closed. Attachment of the neck to the tube shall be as specified for metal end in 3.4.1.

3.4.3 Type I and II, style D tubes. Inner tube shall be built-up chipboard specified in 3.1.2 and secured to the outer tube with adhesive as specified in 3.1.1. The end of inner tube over which the cover fits shall extend a minimum of 1-1/2 inches and 4 inches, respectively, for type I and II tubes, and shall be protected so that, when tested in 4.4.4, the cover will not cause peeling the component layers of either the tube wall or cover. If the fit between the inner and outer tubes is tight enough so that the inner tube will not move under its own weight when the assembled tubes are inverted, the inner tube need not be secured to the outer tube with adhesive.

3.4.4 Style D covers. Covers for style D tubes shall fit over the inner tube so it will not move under its own weight when tested as specified in 4.4.4.

3.4.5 Type II, style D tubes. Outer tubes and cover shall be constructed of three spirally or convolutedly wound plies, as specified (see 6.2), with the minimum wall thickness specified in table III. Material for first ply shall be chipboard specified in 3.1.2. Material for second ply shall consist of two complete layers of the paper specified in 3.1.4 and glued with the applicable adhesive specified in 3.1.1. Material for the third ply shall consist of one complete layer of the paper specified in 3.1.4 and glued with the applicable adhesive specified in 3.1.1.

3.5 Marking of tubes. Marking of tubes shall be as specified by the procuring agency (see 6.2).

3.6 Workmanship. Tubes shall be free from evidence of foreign matter, surface scuffing, blisters, imperfect adhesion between layers, ragged cuts and imperfect crimps. Metal components shall be free of cracks, sharp edges and burrs.

#### 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by 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 supplies and services conform to prescribed requirements.

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

4.2 Component and material inspection. In accordance with 4.1 above, the supplier is responsible for insuring that components and materials used were manufactured, tested and inspected in accordance with the requirements of referenced subsidiary specifications and standards to the extent specified therein, or, if none, in accordance with this specification.

4.2.1 Inspection of the end item.

4.2.1.1 Examination of the end item. Examination of the end item shall be in accordance with the classification of defects and acceptable quality levels (AQL) set forth below. No more than two tubes, randomly selected, shall be drawn from any one shipping container from each lot offered for Government acceptance for visual and dimensional characteristics. The lot size for the purpose of determining the sample size, shall be as indicated in the applicable paragraph below. The inspection levels and AQLs shall be as specified in 4.2.1.6.

4.2.1.2 Visual examination. The sample unit for this examination shall be one complete tube. The lot size shall be expressed in units of tubes.

Examine	Defect	Classification	
		Major	Minor
Construction	Not spirally or convolutely wound, as specified	X	
	Spirally wound tubes not butt jointed	X	
	Not a smooth seam where butt jointed		X
	Gap of butt joint in excess of 1/16 inch on spirally wound tube		X
	Seams on convolutely wound tubes not tapered or beveled; seam not smooth	X	
Closures			
	Styles C and D		
	Metal ends or screw cap and neck, as applicable, not type or construction specified	X	
	Screw cap (style C) and tube neck with less than 1-1/4 turns		X
	Metal ends (style D) not double crimped, smooth or serrated crimped	X	

7-4053

Examine	Defect	Classification	
		Major	Minor
Workmanship	Any crack, sharp edge or burr on screw cap or metal end, as applicable	X	
	Not clean		X
	Any surface scuffing, blister, imperfect adhesion between layers, ragged cuts and imperfect crimps	X	
Marking (metal ends)	Marking, when specified, missing		X
	Marking illegible		X

4.2.1.3 Dimensional examination. The sample unit for this examination shall be one complete tube. The lot size shall be expressed in units of tubes.

<u>Examine</u>	<u>Defect</u>
Inside of diameter of tube	Varies more than $\pm 1/32$ inch from specified diameter.
Inside length of tube	Less than specified length.
	More than $3/8$ inch greater than specified length.
Wall thickness	Less than specified.
Inner tube (style D) Type I Type II	End of inner tube extends less than 1-1/2 inches.
	End of inner tube extends less than 4 inches.

4.2.1.4 Examination of style D tube. The sample unit for this examination shall be 10 style D tubes. The sample tubes shall be delaminated to determine ply construction in accordance with the requirements of 3.4.3, and 3.4.5. Failure to meet the construction requirements for the ply fabrication shall be cause for rejecting the lot.

4.2.1.5 Examination of preparation for delivery. The sample unit for this examination shall be one shipping container. The lot size shall be expressed in units of shipping containers.

<u>Examine</u>	<u>Defect</u>
Packing	Not type shipping container specified. Any component missing; component not as specified.



	<u>Defect</u>
Packing (cont'd)	Improper closure (as applicable), affecting serviceability; not securely sealed with adequate adhesive. Any break, tear, or hole. Container of improper size causing bulge or distortion, or shifting of contents.
Marking	Marking of unit packages (as applicable), not as specified. Illegible, incorrect, incomplete, missing; of improper size, location, method or sequence of application.
Contents	Weight of content exceeds 50 pounds.

4.2.1.6 Inspection levels and AQLs. The inspection levels, for determining the sample size, and the AQLs expressed in defects per 100 units, shall be as follows:

<u>Paragraph</u>	<u>Inspection levels</u>	<u>AQLs</u>	
		<u>Major</u>	<u>Total</u>
4.2.1.2	S-4	2.5	6.5
4.2.1.3	S-2		2.5
4.2.1.5	S-2	-	4.0

4.3 Testing of the end item. The end item shall be tested for the applicable characteristics as indicated in table IV. The sample unit shall be the amount of material required to perform all required tests at one time. The lot size shall be expressed in units of tubes of each type, style and size offered for acceptance at one time. The sample unit shall be two tubes. All characteristic tests shall be applicable to the sample unit and the AQL expressed in terms of defects per hundred units shall be 4.0 for each characteristic. The inspection level shall be S-2.

TABLE IV. Instructions for testing

<u>Characteristic</u>	<u>Requirement paragraph</u>	<u>Test method paragraph</u>	<u>Number of deter. per unit</u>	<u>Results reported to nearest numerical unit</u>
Crushing strength	3.2.4	4.4.2	1	0.1 pound
Stripping (metal end, style D and E)	3.4.1	4.4.3	1	1.0 pound
Adhesion	3.2.5	4.4.3	1	Pass or fail
Tube fit	3.4.3	4.4.4	1	Pass or fail
Over fit (style D)	3.4.3	4.4.4	1	Pass or fail

1 T 1058

#### 4.4 Tests.

4.4.1 Test conditions. Tubes and components shall be conditioned as specified in TAPPI method T 402.

4.4.2 Crushing strength test. The crushing strength as specified in 3.2.4 shall be not less than eight pounds per inch of tube length. The test shall be in accordance with the Composite Can and Tube Institute (CCTI) standard testing procedure T-108.

4.4.3 Stripping and adhesion test. The container body shall be prepared by cutting a section of proper length for holding in a fixture shown in figure 2. Tension shall be applied at a rate of  $0.25 \pm 0.05$  inch per minute. Separation of the end at less than those values specified in 3.4.1 shall be cause for rejection. The samples shall also be examined for the adhesion between layers requirement specified in 3.2.5.

4.4.4 Cover fit test. Place the cover on the tube and then remove. Repeat the procedure four times. Any peeling of the tube or cover, or any looseness shall constitute failure of this test.

### 5. PREPARATION FOR DELIVERY

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

5.1.1 Level A. Tubes shall be packed in a snug-fitting fiberboard shipping container conforming to style RSC, grade V3s of PPP-B-636. Each shipping container shall be closed, waterproofed by means of tape, and reinforced with flat strapping or tape banding in accordance with PPP-B-636. The weight of contents of each shipping container shall not exceed 50 pounds.

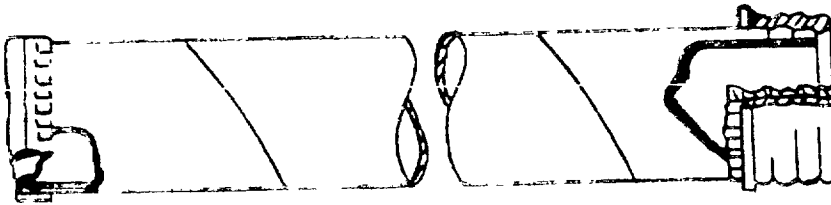
5.1.2 Level B. Tubes shall be packed in a snug-fitting fiberboard shipping container conforming to style RSC, type CF, variety SW, or type SF, class domestic of PPP-B-636. Each shipping container shall be closed in accordance with method II of the appendix of PPP-B-636. The weight of contents of each shipping container shall not exceed 50 pounds.

5.1.2.1 When specified (see 6.2), the shipping container shall be V3c, V3s, or V4s, fabricated and closed in accordance with PPP-B-636.

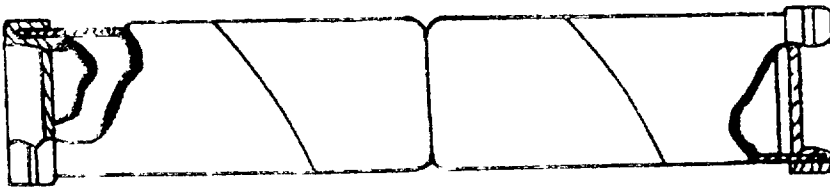
5.1.3 Level C (Commercial Packing). The tubes shall be packed in a manner to insure carrier acceptance and safe delivery at destination at the lowest transportation rate for such supplies. The quantity per shipping container shall be the same as that normally used by the supplier for retail distribution. Containers shall comply with U.S. Postal Service, Uniform Freight Classification Rules or National Motor Freight Classification Rules, as applicable.



*STYLE A-TUBES, MAILING, PLAIN*



*STYLE C-TUBES, MAILING, METAL SCREW CAP*



*STYLE D-TUBES, MAILING THREE PIECE  
TELESCOPE WITH METAL ENDS*

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PP-110

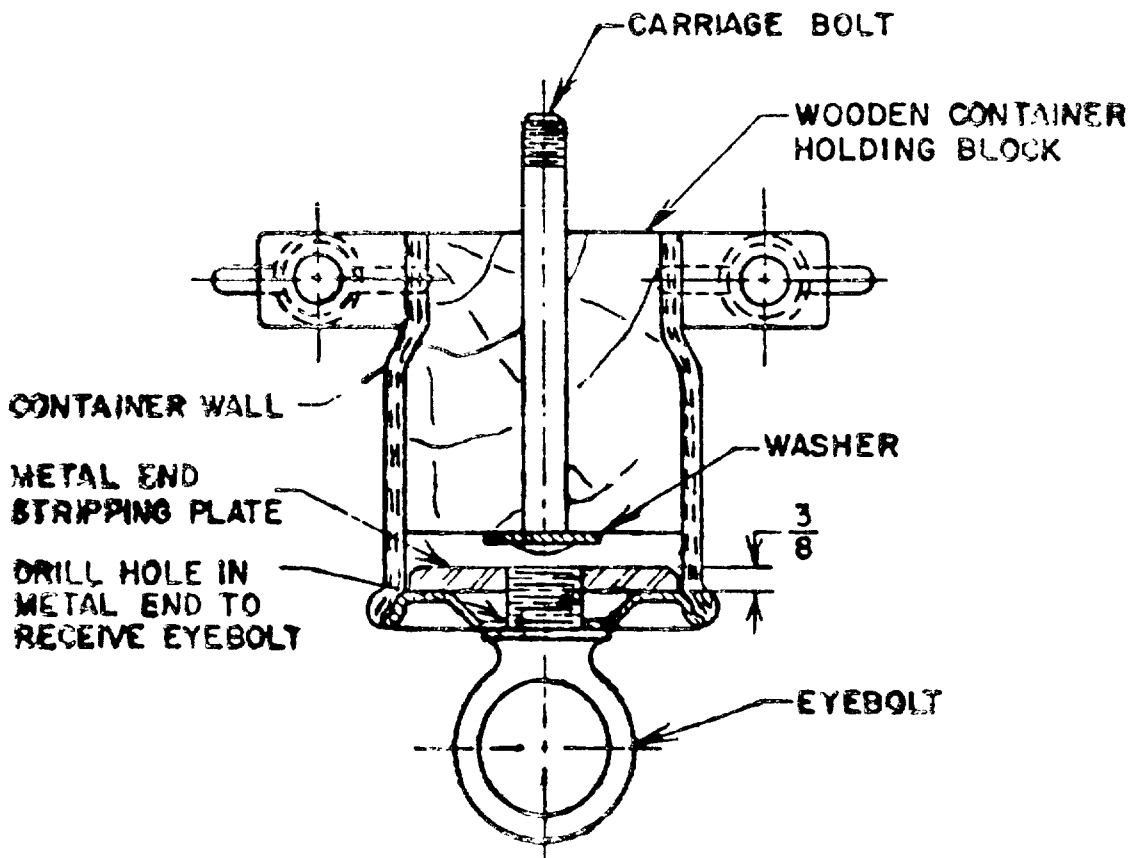
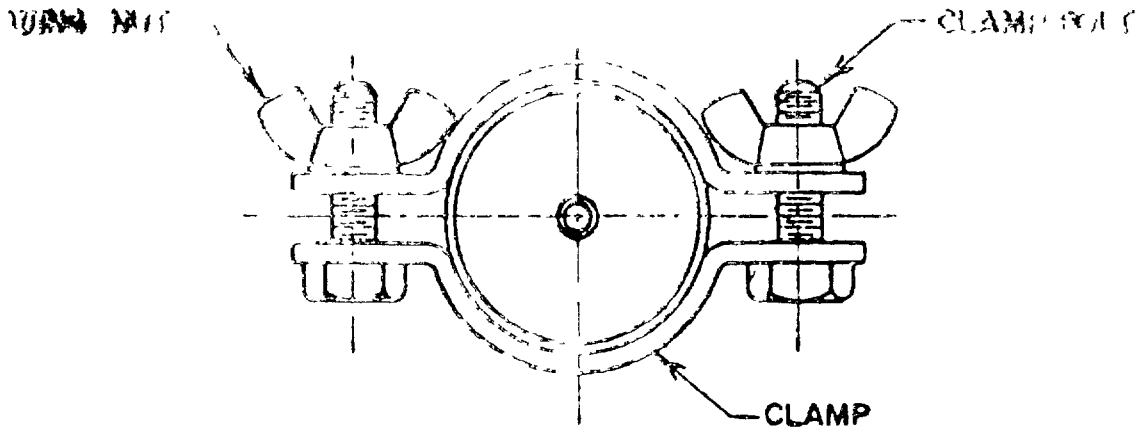


FIGURE 2 - Stereoplug, Metal End

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5.2 Packing.

5.2.1 Civil agencies. In addition to any special marking required by the contract or order, shipping containers shall be marked in accordance with FED-STD-123.

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

## 6 NOTES

6.1 Intended use. Tubes conforming to this specification are suitable for use as mail containers for the shipment and storage of maps, blueprints, drawings, etc.

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, class, style (see 1.2.1).
- (c) Size, length, and diameter (see 3.2.6).
- (d) Marking on tubes, when required (see 3.5).
- (e) Level of packing required (see 5.1).
- (f) When weather resistant grade fiberboard shipping containers are required for level B packing (see 5.1.2.1).
- (g) Marking, when required (see 5.2).

Custodians:

Army - GL  
Navy - SA  
Air Force - 69

Preparing activity:

Army - GL  
CIVIL AGENCY COORDINATING ACTIVITY.

Review activities:

Army - SM  
Air Force - 71  
USA - GS

GSA-FSS

Project No. 8110-0218

User activities:

Army - AV  
Navy - MC, SH, YD  
Air Force - 80

Orders for this publication are to be placed with General Services Administration acting as an agent for the Department of Defense. The location 2 of this specification is obtainable upon request from the address referenced in the preceding paragraph.

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c Reason/Rationale for Recommendation

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