

INCH-POUND

MIL-DTL-5677C
w/AMENDMENT 1
15 May 2019
SUPERSEDING
MIL-DTL-5677C
23 October 2018

DETAIL SPECIFICATION

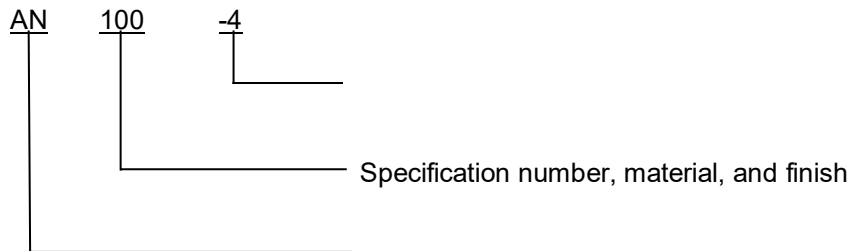
THIMBLES, WIRE-CABLE, AIRCRAFT

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 for aircraft wire-cable thimbles (see 6.1).

1.2 Part or Identifying Number (PIN). The PIN consists of the letters AN, the basic specification number, specification sheet number, a dash, and the size, material and finish.



Wire cable thimbles are to be furnished in the following grades:

- Grade A - Carbon steel
- Grade B - Corrosion resistant steel
- Grade C - Phosphor bronze

Comments, suggestions, or questions on this document should be addressed to: DLA Land and Maritime, Attn: DSCC-VAI, P.O. Box 3990, Columbus OH 43218-3990, or emailed to FluidFlow@dla.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>.



2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 or 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 had been made to ensure the completeness of the list, document users are cautioned that they must meet all specified requirements documents cited in sections 3 or 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 listed in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-C-87115 - Coating, Immersion Zinc Flake/Chromate Dispersion

DRAWINGS

AN100 - Thimble - Wire-Cable

(Copies of these documents are available online at <https://quicksearch.dla.mil>.)

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 or contract.

ASTM INTERNATIONAL

ASTM A967/A967M - Standard Specification for Chemical Passivation Treatments for Stainless Steel Parts
ASTM B117 - Standard Practice for Operating Salt Spray (Fog) Apparatus
ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel

(Copies of these documents are available online at <https://www.astm.org>.)

SOCIETY OF AUTOMOTIVE ENGINEERS, INC. (SAE)

SAE-AMS-STD-753 - Corrosion-Resistant Steel Parts: Sampling, Inspection and Testing for Surface Passivation
SAE-AMS2430 - Shot Peening
SAE-AMS2700 - Passivation of Corrosion Resistant Steels

(Copies of these documents are available online at <https://www.sae.org>.)

2.4 Order of precedence. Unless otherwise noted here in or in the contract, in the event of a conflict between the text of this document and the references cited herein (except for related specification sheets), 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 Specification sheet. The individual item requirements shall be as specified herein and in accordance with the applicable specification sheet. In the event of any conflict between requirements of this specification and the specification sheets, the latter shall govern.

3.2 First article. When specified (see 6.2), a sample shall be subjected to first article inspection in accordance with 4.4.

3.3 Materials.

3.3.1 Recycled, recovered, environmentally preferable or biobased materials. Recycled, recovered, environmentally preferable, or biobased materials should be used to the maximum extent possible, provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.2.1.1 Recovered materials. The term "recovered materials" means materials, which have been collected or recovered from solid waste and reprocessed to become a source of raw materials, as opposed to virgin raw materials. Unless otherwise specified, none of the above shall be interpreted to mean that the use of used or rebuilt products is allowed under this specification.

3.2.2 Composition. Thimbles shall be manufactured from the following material:

3.3.2.1 Grade A. Grade A shall be cold-rolled steel of the composition UNS G10100 or as specified in table I.

TABLE I. Steel composition.

Carbon	Manganese	Phosphorus	Sulphur
Percent	Percent	Percent (max)	Percent (max)
0.05 - 0.15	0.30 - 0.60	0.045	0.050

3.3.3 Grade B. Grade B shall be corrosion resisting (CRES) sheet steel in accordance with UNS S30400.

3.3.4 Grade C. Grade C shall be medium temper sheet phosphor bronze in accordance with UNS C51000.

3.3.5 Finish.

3.3.5.1 Grade A finish. Grade A shall be zinc flake in accordance with MIL-C-87115 or electrodeposited zinc in accordance with ASTM B633 and shall be tested in accordance with 4.6.2.

3.3.5.2 Grade B finish. Grade B finish shall be passivated in accordance with one of the following methods:

- Nitric passivation per ASTM A967/A967M, Nitric 3 method or SAE AMS2700, Method 1, type 7.
- Nitric passivation per ASTM A967/A967M, Nitric 1 method or SAE AMS2700, Method 1, type 2.
- Citric passivation per ASTM A967/A967M, Citric 1, 2, or 3 method or SAE AMS2700, Method 2.
- Glass bead peening in accordance with SAE AMS2430.

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3.3.5.3 Grade C finish. No finish.

3.4 Performance.

3.4.1 Corrosion resistance (CRES only). CRES thimbles after passivation shall show no signs of corrosion, tarnish, and rust that cannot be removed with a damp cloth, after 24 hours of continuous exposure to salt spray.

3.5 Workmanship. Thimbles shall be free of cracks, seams, laminations, blisters, and other surface defects.

4. VERIFICATION

4.1 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. First article inspection (see 4.4 and 6.2).
- b. Conformance inspection (see 4.5).

4.2 Inspection conditions. Unless otherwise specified, all inspections shall be performed in accordance with the test conditions specified in 4.6.1 through 4.6.3.

4.2.1 Test equipment and inspection facilities. Test and measuring equipment and inspection facilities of sufficient accuracy, quality, and quantity to permit performance of the required inspection shall be established and maintained by the contractor.

4.3 Responsibility for compliance. All items shall meet all requirements of sections 3 and 4. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

4.3.1 Lot records. Manufacturers shall keep lot records for 3 years minimum. Manufacturers shall monitor for compliance to the prescribed procedures, and observe that satisfactory manufacturing conditions and records on lots are maintained for these thimbles. The records, including as a minimum, an attributes summary of all quality conformance inspections conducted on each lot, shall be available to review by customers at all times.

4.4 First article inspection. Unless otherwise specified (see 6.2), two randomly selected thimbles, produced under the production contract shall be subjected to a first article inspection. The thimbles shall be inspected and tested as specified in table I.

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TABLE I. First article inspection. 1/

Inspection	Requirement paragraph	Test paragraph
Visual inspection	3.1, 3.2.2, 3.4, and 3.5	4.6.1
Corrosion resistance (Grade B)	3.4.1	4.6.3
Grade A finish	3.3.5.1	4.6.2

4.4.1.1 Samples for first article. The first article may be either a first production item or a standard production item from the supplier's current inventory provided the item meets the requirements of the specification and is representative of the design, construction, and manufacturing technique applicable to the remaining items to be furnished under the contract.

4.4.2 Failures. All samples must meet all of the contract requirements. Failure of a sample unit to pass any test shall be cause for rejection of the entire lot and to grant first article approval. If any sample fails to meet the requirements of this specification, the inspector shall select another sample from the lot. If this sample fails to meet the requirements of this specification, the lot which it represents shall be rejected. Before resubmitting for acceptance, full particulars concerning previous rejection and the action taken to correct the defects found in the original shall be furnished to the Inspector. Thimbles rejected after retest shall not again be submitted without the specific approval of the Procuring Activity.

4.4.3 First article samples. Unless otherwise specified, after award of the contract or order, the manufacturer shall forward 1 thimble. The sample shall be representative of the construction, workmanship, components, and materials to be used during production. When a manufacturer is in continuous production of the thimbles from one contract to another, submission of additional first article samples for a new contract may be waived at the discretion of the acquiring activity (see 6.2).

4.4.4 Disposition of samples. First article samples shall be furnished to the Government as directed by the contracting officer (see 6.2).

4.5 Conformance inspection. For manufacturers that have successfully passed first article inspections and are continuously producing thimbles to this specification on going inspections shall consist individual inspections, see table II. If first article is waived due to prior successful first article inspection the individual inspections shall be the manufactures in house inspection procedures.

4.5.1 Individual inspection. Individual inspections shall be consist of two thimbles from each lot and shall be subjected to the inspections and tests specified in table II.

TABLE II. Individual inspection.

Inspection	Requirement paragraph	Test paragraph
Examination of product	3.1, 3.2.2, 3.4, and 3.5	4.6.1

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4.6 Examinations and tests.

4.6.1 Visual inspection. Fittings shall be examined to ensure conformance with this specification. Continuous examination shall be performed to assure compliance with the following requirements:

- a. Specification sheet (see 3.1).
- b. Materials (see 3.4) and finishes (see 3.2.2).
- c. Workmanship (see 3.5).

4.6.2 Grade A thimbles. Grade A thimbles shall be tested in accordance with MIL-C-87115 and the zinc plating shall be tested in accordance with ASTM B633.

4.6.3 Grade B thimbles. Two grade B thimbles, after passivation, shall be subjected to the salt spray test in accordance with ASTM B117 and shall meet the requirements of 3.4.1

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as 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. Thimbles described in this specification are intended for use in making splice and wrapped cable terminations for in military aerospace vehicles.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. Title, number, and date of the applicable specification sheet and the complete PIN.
- c. When first article is required for inspection and approval (see 3.1, 4.4, and 6.3).
- d. Disposition of samples (see 4.4.3)
- e. Packaging (see 5.1).

6.3 First article. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examinations, approval of first article test results, and disposition of first article samples. Invitations for bids should provide that the Government reserves the right to waive the requirement for samples for first article inspection to those bidders offering a product which has been previously acquired or tested by the Government, and that bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract.

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6.3.1 Defense Logistics Agency (DLA) waiver of first article test. A waiver of a first article testing will only be considered by DLA when the contractor has delivered the same item within the last 3 years, has no unfavorable quality history, has not changed processes, or changed any subcontractors. DLA will not accept first article testing results outside the stated requirements.

6.4 Subject term (key word) listing.

Carbon steel
Corrosion resistant steel
Phosphor bronze

6.5 Amendment notations. The margins of this amendment 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.

CONCLUDING MATERIAL

Custodians:
Navy - AS
Air Force - 71
DLA - CC

Preparing activity:
DLA - CC
(Project 4030-2019-001)

Review activities:
Air Force - 99

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>.