

INCH-POUND

MIL-DTL-25136B
14 January 2008
SUPERSEDING
MIL-DTL-25136A
27 October 2000

DETAIL SPECIFICATION

WIRE W-106 AND W-106-A

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

1. SCOPE

1.1 Scope. This specification covers two types of airplane antenna wire designated as W-106 and W-106-A. The wires differ only in their tensile strength.

2. APPLICABLE DOCUMENTS

2.1 General. There are no documents referenced in this specification.

3. REQUIREMENTS

3.1 Material. The wire specified herein shall consist of a hard-drawn, copper-covered steel wire. The copper covering shall be continuous, uniform and continuously electroplated or welded to the steel core. All materials used shall conform to the requirements specified herein.

3.2 Construction.

3.2.1 Diameter. The overall diameter of the wire shall be .040 (1.02mm)±.001 inch (.03mm).

3.2.2 Tensile strength. The tensile strength of the wire shall be in accordance with the following:

- a. Type W-106. Not less than 100 pounds (approximately 80,000 psi) nor more than 150 pounds (approximately 120,000 psi).
- b. Type W-106-A. Not less than 170 pounds (approximately 135,000 psi) nor more than 210 pounds (approximately 167,000 psi).

Comments, suggestions, or questions on this document should be addressed to Defense Supply Center, Columbus, ATTN: DSCC-VAI, P.O. Box 3990, Columbus, OH 43218-3990, or email to WireCable@dsccl.dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <http://assist.daps.dla.mil>.

MIL-DTL-25136B

3.2.3 Elongation. The elongation in 10 inches (254.00 mm) shall not be more than 1.5%.

3.2.4 Bending. The wire shall not fracture or split on the outside of the bent portion when bent flat on itself.

3.2.5 Torsion. The wire shall be capable of withstanding at least 45 complete twists in one direction in a 6 inch (152.40 mm) length without breaking when tested as specified herein.

3.2.6 Electrical resistance. The dc resistance per 1,000 feet at 20 °C shall not exceed the following values:

Type	Maximum resistance (Ω)
W-106	17.9
W-106-A	24.2

3.3 Workmanship. The wire shall be uniform in properties and shall be free from pits, die marks, rust, excessive scale, scrapes, splits, laps, cracks, seams, and other defects. The wire shall not be wavy or kinked.

3.4 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable 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.

4. VERIFICATION

4.1 Classification of inspections. The inspection requirements specified herein are classified as conformance inspection (see 4.4).

4.2 Inspection conditions. Unless otherwise specified (see 6.2), all inspections shall be conducted at a temperature of 25 °C ± 10 °C.

4.3 Requirements cross-reference matrix. Table I provides a cross-reference matrix of section 3 requirements tested or verified herein.

TABLE I. Requirements cross-reference matrix.

Inspection	Requirement	Verification
Material	3.1	4.5.1
Diameter	3.2.1	4.5.2
Tensile	3.2.2	4.5.3
Elongation	3.2.3	4.5.3
Bending	3.2.4	4.5.4
Torsion	3.2.5	4.5.5
Electrical resistance	3.2.6	4.5.6
Workmanship	3.3	4.5.1

4.4 Conformance inspection. The conformance inspection shall consist of the following:

- a. Individual tests (see 4.4.1).
- b. Sampling tests (see 4.4.2).

4.4.1 Individual tests. Each piece of continuous finished wire shall be tested as specified in 4.5.1 and 4.5.2.

4.4.2 Sampling tests. A 10-foot sample of wire shall be selected from each quantity of 10,000 feet (see 4.6 and 6.2) or fraction thereof on the order and tested as specified in 4.5. If the sample fails to meet any one of the tests under 4.5, two additional samples of sufficient length for the particular failed test(s) shall be selected from the same source as the original sample and the failed test(s) repeated two times.

4.4.3 Failure of tests. When sampling tests are specified on a number of items that are selected from an order to be delivered and one or more of this number fails to meet the specified tests, acceptance of all items still on hand and subsequently produced shall be withheld until the extent and cause of failure is determined. For operational reasons, individual tests may be continued pending investigation of a sampling test failure. However, final acceptance of the items on hand and subsequently produced is contingent upon the inspector's decision regarding the overall conformance of the product to specification requirements. When corrective action has been accomplished, all necessary tests shall be repeated. If investigation indicates that the defects may exist in items previously accepted, full particulars concerning the defects, including recommendations for correction, shall be furnished to the contracting officer.

4.5 Test methods.

4.5.1 Examination of product. Each coil of antenna wire shall be examined visually to determine conformance to this specification with respect to material and workmanship.

4.5.2 Diameter. Each coil of wire shall be measured at both ends to determine compliance with the diameter requirements of this specification. Sufficient additional spot checks along the coil length shall be made to assure conformance to this requirement.

4.5.3 Tensile strength and elongation. Three full cross-section specimens (see 4.6) shall be marked with a 10 inch (254.00 mm) gage length and tested for compliance with the tensile strength, both the upper and lower limits, and elongation requirements of this specification. The testing machine shall be sensitive to a variation of 0.4% of any recorded load and shall be calibrated when required by the inspector. The speed of the testing machine shall be such that the load is accurately indicated at all times. Specimens breaking outside of the gage marks shall be disregarded and additional specimens tested.

4.5.4 Bending. The wire shall be bent flat on itself, to test its compliance with the bending requirement of this specification.

4.5.5 Torsion. The wire shall be tested to determine compliance with the torsion requirement of this specification as follows:

The specimen shall be gripped between jaws 6 inches (152.40 mm) apart; one jaw being held stationary, the other jaw to be revolved continuously in one direction with a pull of 5 pounds applied to the wire longitudinally throughout the test.

4.5.6 Electrical resistance. The wire shall be tested for direct current resistance while at an ambient temperature of 20 °C. If another temperature is used, an approved temperature correction shall be applied.

4.6 Specimens. A specimen shall be a length of wire taken from the 10-foot sample. All specimens and samples used for test articles shall be in addition to the quantity specified in the purchase order or contract (see 6.2).

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DoD personnel, 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 packaging activities within the Military Service or Defense Agency, or within the military service's system command. Packaging data retrieval is available from the managing Military Service 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 is being retained as a military detail specification because of unique Air Force antenna requirements. The wire covered by this specification is intended to be used as airborne trailing wire antennas.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. If required, the specific issue of individual documents referenced
- c. Length of wire (see 4.6 and 6.3).
- d. Inspection conditions, if other than as specified (see 4.2).
- e. If sampling plan is to be other than as specified (see 4.4.2).
- f. Packaging requirements (see 5.1, 6.3, and 6.4).

6.3 Packaging. MIL-DTL-12000 has been used in the past to specify requirements for the preservation, packing, unitization, and marking of cable, cord, and wire for storage and domestic and overseas shipments. Continuous lengths of approximately 3,000 feet per reel have been specified.

6.4 Marking. The interior and exterior shipping containers have been marked as either "Wire W-106" or "Wire W-106-A" in the past in accordance with MIL-STD-129.

6.5 Subject term (key word) listing.

Antenna

Trailing

6.6 Environmentally preferable material. Environmentally preferable materials should be used to the maximum extent possible to meet the requirements of this specification. As of the dating of this document, the U.S. Environmental Protection Agency (EPA) is focusing efforts on reducing 31 priority chemicals. The list of chemicals is available on their website at <http://www.epa.gov/epaoswer/hazwaste/minimize/chemlist.htm>. Further information is available at the following EPA site: <http://www.epa.gov/epaoswer/hazwaste/minimize/>. Included in the EPA list of 31 priority chemicals are cadmium, lead, and mercury. Use of the materials on the list should be minimized or eliminated unless needed to meet the requirements specified herein (see section 3).

6.7 Test reports. MIL-HDBK-831 has been used in the past to specify requirements for the preparation of test reports.

6.8 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

CONCLUDING MATERIAL

Custodians:
Air Force - 11
DLA - CC

Preparing activity:
DLA - CC

(Project 6145-2007-011)

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 this information above using the ASSIST Online database at <http://assist.daps.dla.mil>.