

INCH-POUND

MIL-DTL-13276C
20 FEBRUARY 2009
SUPERSEDING
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15 October 2003

DETAIL SPECIFICATION
WIRE, ELECTRICAL; ANTENNA,
(WIRE W-28)

Inactive for new design after 16 June 1997

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

1. SCOPE

1.1 Scope. This specification covers stranded, cylindrical electrical wire fabricated from silicon bronze, suitable for antenna applications.

1.2 Classification. Wire W-28 consists of 7 strands of 20 AWG silicon bronze wire concentric stranded, forming a tight cylindrical conductor.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4, or 5 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, 4, or 5 of this specification, whether or not they are listed.

2.2 Government documents.

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

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@dsc.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>.

NATIONAL CONFERENCE OF STANDARDS LABS (NCSL)

NCSL Z540.3 - General Requirements for Calibration of Measuring and Test Equipment

(Copies of these documents are available online at <http://www.ncsli.org> or from NCSL International 2995 Wilderness Place, Suite 107 Boulder, Colorado 80301-5404.)

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

3. REQUIREMENTS

3.1 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.

3.2 Materials. The material for the wire shall be as specified herein.

3.3 Strands. Each strand of wire W-28 shall consist of a silicon bronze alloy wire with a diameter of 0.032 inch, ± 0.001 inch (20 AWG).

3.4 Conductor construction. Wire W-28 shall be constructed of 7 strands of wire as specified in 3.3, concentrically stranded with a left-hand lay to form a tight cylindrical conductor. The length of lay shall be between 7.5 and 15 inches.

3.5 Conductor joints. Factory joints in conductors shall be avoided, and in no case shall they exceed two joints per strand per length of wire, with joints spaced not less than 50 feet apart. All joints shall be butt brazed using silver alloy solder and a nonacid flux; and shall be finished smoothly in a workmanlike manner. No twist joints shall be used. The tensile strength of a section of each strand, which includes a joint, shall not be less than 90 percent of the tensile strength of an adjacent section of the strand of equal length without a joint.

3.6 Breaking strength. Wire W-28 shall have a breaking strength of not less than 600 pounds (see 4.6).

3.7 Elongation. The elongation shall be not less than 0.80 percent of the zero length of stranded conductor. The elongation shall be determined by measurements made between the jaws of the testing machine. The zero length shall be the distance between the jaws when a load equal to 60 lbs. is applied. The zero length shall be as near 60 inches as practicable. The final length shall be the distance between the jaws at the time of rupture (see 4.6).

3.8 DC resistance. The dc resistance of wire W-28 shall not exceed 10.5 ohms per 1000 feet at or corrected to 68°F (see 4.7).

3.9 Workmanship. Strands and complete wire W-28 shall be manufactured and finished in a careful and workmanlike manner in accordance with the good design and sound practice.

4. VERIFICATION

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

4.2 Test equipment and inspection facilities. Test and measuring equipment and inspection facilities of sufficient accuracy, quality, and quantity to permit performance of the required inspections shall be used. The establishment and maintenance of a calibration system to control the accuracy of the measuring and test equipment shall be in accordance with NCSL-Z540.3 or equivalent.

4.3 Operator qualification test. This test shall be performed at the start of production for each order for wire under this specification and shall be as stated in 4.3.1.

4.3.1 Procedure. Each operator required to make joints in strands will submit a group of twelve specimens of strand which include a joint with a specimen of adjacent normal section of each. These specimens will be tested for breaking strength. An operator will be considered qualified after submitting a group of twelve specimens which meet the requirements of 3.5. Records of such qualifications shall be available for verification by the Government.

4.4 Conformance inspection. Conformance inspection shall consist of groups A and B inspections (see 4.4.5 and 4.4.6, respectively) and shall be performed on every lot of cable procured under this specification. Sampling inspection shall be accomplished for each lot in accordance with 4.4.2.

4.4.1 Lot. A lot shall consist of all cable manufactured under substantially the same conditions and offered for inspection at one time.

4.4.1.1 Lot size. The lot size shall be defined as the number of units of product submitted for inspection.

4.4.1.2 Unit of product. A unit of product shall be defined as the continuous length of cable contained on a single reel, spool, or in a package.

4.4.1.3 Specimen. A specimen is a single piece of finished wire which is taken from a sample unit and subjected to inspection.

4.4.2 Sampling. A random sample shall be selected from each lot as specified in table I.

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TABLE I. Inspection sample.

Inspection lot size ^{1/}	Sample size
1	1
2 to 8	2
9 to 90	3
91 to 150	12
151 to 280	19
281 to 500	21
501 to 1,200	27
1,201 to 3,200	36
3,201 to 10,000	38
10,001 to 35,000	46

^{1/} Lot size is based on the number of units of product

4.4.3 Rejected lot. Failure of any sample to pass any inspection shall constitute a failure of the lot. If an inspection lot is rejected, the contractor may rework the lot to correct the defects or screen out the defective units, and resubmit the lot for re-inspection. Such lots shall be separated from new lots and shall be identified as re-inspected lots (see 4.4.4).

4.4.4 Noncompliance. If a sample fails to pass any inspection, the contractor shall notify the cognizant inspection activity of such failure and take corrective action on the materials or processes or both, as warranted, on all units of the product. Acceptance and shipment of the product shall be discontinued until corrective action has been taken. After the corrective action has been taken, the conformance inspection shall be repeated on replacement articles. (This includes all tests and examinations, or only the test that the original sample failed, at the option of the cognizant inspection activity.) Final acceptance and shipment shall be withheld until inspection has shown that the corrective action was successful. In the event of failure after re-inspection, information concerning the failure shall be provided to the cognizant inspection activity.

4.4.5 Group A inspection. This inspection, including sampling, shall consist of visual and dimensional examinations (see 4.5) to determine compliance with the requirements as specified in 3.2 through 3.5 and 3.9 as applicable.

4.4.6 Group B inspection. This inspection, including sampling, shall consist of the tests and examinations as specified in 4.6 and 4.7.

4.5 Visual and dimensional inspection. Strands and completed wire shall be inspected to verify that the materials and workmanship comply with this specification.

4.5.1 Construction and lay. Construction and lay shall be determined by physical examination and measurement of the complete wire.

4.6 Breaking strength and elongation. Breaking strength and elongation shall be made on a tensile strength machine, preferably of the pendulum type. Breaking strength test shall be made after stranding, on the completed wire. The speed shall be not more than 3 inches per minute. Care shall be taken to insure that strands in the stranded wire are evenly gripped during testing. (Successful testing of stranded wire for tensile properties requires an adequate means of gripping the ends of the test specimen. Various means are available, such as a long tube or socket into which the wire may be soldered, or in which, after insertion, the wires may be swaged or pressed without serious distortion. Ordinary jaws or clamping

devices are usually not suitable). At the conclusion of the test, the wire shall meet the requirements for breaking strength and elongation specified in 3.6 and 3.7, respectively.

4.7 DC resistance. The dc resistance of the wire shall be measured with a bridge having an accuracy of at least 0.2% and shall not exceed the value specified in 3.8.

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. Wire W-28 is intended primarily for use in antenna applications.

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 (see 2.1).
- c. Packaging requirements (see 5.1).
- d. Classification of wire required (see 1.2)
- e. Length of wire required.
- f. Size of spool or reel and length on each.
- h. Coil, spool, and reel marking requirements.

6.3 Subject term (key word) listing.

Concentric
Cylindrical conductor
Silicon bronze
Stranded

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6.4 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 and additional information is available on their website <http://www.epa.gov/osw/hazard/wastemin/priority.htm>. Use of these materials should be minimized or eliminated unless needed to meet the requirements specified herein (see [Section 3](#)).

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

CONCLUDING MATERIAL

Custodians:
Army - CR
DLA - CC

Preparing activity:
DLA - CC

(Project 6145-2009-002)

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>