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FEDERAL SPECIFICATION

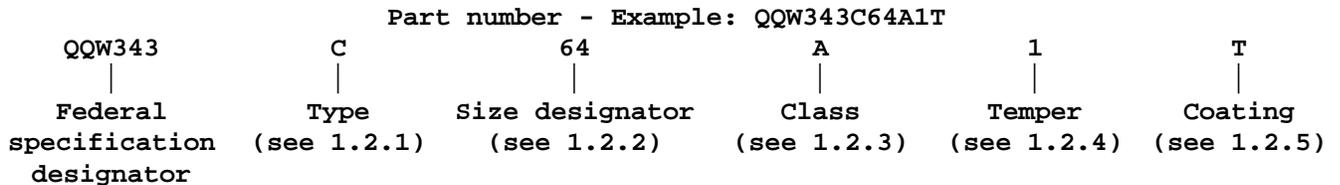
WIRE, ELECTRICAL, COPPER (UNINSULATED)

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 solid, bunch-stranded, concentric-lay-stranded, and rope-lay-stranded round, uninsulated, copper conductor for use in electrical wire.

1.2 Classification. Copper wire covered by this specification shall be of the following type, size, class, temper, coating and part number.



1.2.1 Type (see 3.3). The type designates the construction of the wire.

- S - Solid single strands (see 3.3.1 and 3.3.5).
- B - Bunch-stranding.
- C - Concentric-lay-stranding.
- R - Rope-lay-bunched member stranding (formerly type RB).
- E - Rope lay concentric member stranding (formerly type RC).
- H - Hookup conductors.

1.2.2 Size designator. For type S, the wire size is the wire diameter or cross-sectional area expressed as American Wire Gauge (AWG) per ASTM B258. For types B, C, R and E, the wire size is the metallic cross sectional area of the wire expressed as the equivalent AWG or as circular mils. For type H, the size is as indicated for each of the wires in ASTM B286. In the part number, the wire sizes shall be indicated by use of the size designation in Table II, III, and IV for the respective wire sizes.

AMSC N/A

FSC 6145

DISTRIBUTION STATEMENT A. Approved for public release, distribution is unlimited.

1.2.3 Class. The class letter as shown in Tables II and III is to be used in the part number. The class defines the construction details within a particular type. Type S wires are classified as class S for the purpose of this specification.

1.2.4 Temper. The temper is specified in Table I and should be indicated by a number in the part number as follows:

- 1 - Soft or drawn and annealed. (Annealed for type H only).
- 2 - Medium hard drawn.
- 3 - Hard drawn.
- 4 - Unannealed (type H silver or nickel coated conductors only).

1.2.5 Coating. The coating on the wire is specified in Table I and should be indicated by a letter in the part number as follows (see 3.3.7).

- B - No coating.
- N - Nickel (class 2 of ASTM B355).
- S - Silver.
- T - Tin.
- C - Nickel (class 10 of ASTM B3551).
- E - Nickel (class 27 of ASTM B355).

2. APPLICABLE DOCUMENTS

2.1 The following documents of the issue in effect on date of invitation of bids or request for proposal, form a part of this specification to the extent specified herein.

Federal Specifications:

LLL-R-626 - Rosin, Gum, Wood, and Tall Oil

Federal Standards:

* FED-STD-185 - Identification Marking of Copper and Copper Base Alloy Mill Products.

(Activities outside the Federal Government may obtain copies of Federal specifications, standards and commercial item descriptions as outlined under General Information in the Index of Federal Specifications, Standards, and Commercial Item Descriptions. The Index, which includes cumulative bimonthly 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, other Federal specifications and commercial item descriptions required by activities outside the Federal Government for bidding purposes are available without charge from General Services Administration Business Service Centers in Boston; New York, Washington, DC; Philadelphia; Atlanta; Chicago; Kansas City, MO; Fort Worth; Houston; Denver; San Francisco; Los Angeles and Seattle, WA).

Military Specifications:

MIL-C-3993 - Copper and Copper Base Alloy Mill Products, Packaging of.

Military Standards:

MIL-STD-202 - Test Methods for Electronic and Electrical Components Parts.

(Copies of military specifications and standards required by contractors 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 otherwise described, the issue in effect on date of invitation of bids or request for proposal shall apply. The issues of the document which are indicated as DoD adopted shall be of the issue listed in the current DoDISS.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) STANDARDS:

- 1/ ASTM B1 - Hard-Drawn Copper Wire.
- 1/ ASTM B2 - Medium-Hard Drawn Copper Wire.
- 1/ ASTM B3 - Soft or Annealed Copper Wire.
- 1/ ASTM B8 - Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft.
- 1/ ASTM B33 - Tinned Soft or Annealed Copper Wire for Electrical Purposes.
- 1/ ASTM B49 - Hot Rolled Copper Redraw Rod for Electrical Purposes.
- 1/ ASTM B172 - Rope-Lay Stranded Copper Conductors having Bunch-Stranded Members for Electrical Conductors.
- 1/ ASTM B173 - Rope-Lay-Stranded Copper Conductors having Concentric-Stranded Members for Electrical Conductors.
- ASTM B174 - Bunch-Stranded Copper Conductors for Electrical Conductors.
- 1/ ASTM B193 - Conductor Materials, Electrical, Resistivity of.
- 1/ ASTM B246 - Tinned Hard-Drawn and Medium-Hard-Drawn Copper Wire for Electrical Purposes.
- 1/ ASTM B258 - Standard Nominal Diameters and cross-sectional Areas of AWG Sizes of Solid Round Wires used as Electrical Conductors.
- 1/ ASTM B286 - Copper Conductors for use in Hookup Wire for Electronic Equipment.
- 1/ ASTM B298 - Silver-Coated Soft or Annealed Copper Wire.
- 1/ ASTM B355 - Nickel-Coated Soft or Annealed Copper Wire.

(Application for copies should be addressed to the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

- 1/ These documents have been adopted by DoD.

American National Standards Institute (ANSI)

- ANSI/ASQC Z1.4 - Sampling Procedures and Tables for Inspection by Attributes.
- ANSI/NCSL Z540-1 - General Requirements for Calibration Laboratories and Measuring and Test Equipment.

(Application for copies should be addressed to the American National Standards Institute, 11 West 42nd Street, New York, NY 10036.)

3. REQUIREMENTS

3.1 Detail specification. The individual item requirements shall be as specified herein and in accordance with the applicable ASTM document. In the event of any conflict between requirements of this specification and the ASTM, the former shall govern.

3.2 Materials. The composition of the copper shall conform to ASTM B49.

3.3 Construction.

3.3.1 Solid wire (type S and type H (class S)). Solid wires shall conform to and cover the range of wire sizes of the applicable ASTM specified in Table I. The diameters and cross-sectional areas shall be in accordance with ASTM B258. Solid wire of 41 through 56 AWG shall be in accordance with Table IV.

3.3.2 Bunch-stranded wire (type B). Bunched stranded wire shall conform to the requirements of ASTM B174. Table II shows wire classes, sizes and strand count and also lists the wire size designators which are to be used in the part number (see 1.2.2).

3.3.3 Concentric-lay-stranded wire (type C). Concentric-lay-stranded wire shall conform to ASTM B8. Table II shows wire classes, sizes and strand count and also lists the wire size designators which are to be used in the part number (see 1.2.2).

3.3.4 Rope-lay-stranded wire. Rope-lay-stranded wires shall conform to ASTM B172 for bunch-stranded members (type R) and ASTM B173 for concentric-lay-stranded member (type E). Wire classes, sizes, and strand count are included in Table II which also lists the wire size designators which are used in the part numbers (See 1.2.2).

TABLE I. Temper and construction.

Type	Coatings available <u>2/</u>	Tempers available <u>2/</u>	Shall conform to ASTM B	AWG range <u>2/</u>
S <u>1/</u>	Uncoated Uncoated Uncoated Tin coated Tin coated	Soft or drawn and annealed Medium hard drawn Hard drawn Soft or drawn and annealed Medium hard drawn or hard drawn	3 2 1 33 246	40 thru 4/0 18 thru 4/0 18 thru 4/0 40 thru 4/0 16 thru 4
C	Uncoated or tin	Soft or medium-hard or hard	8	24-4/0 and 250000- 500000 circular mils
R	Uncoated or tin	Soft or drawn and annealed Soft or annealed	172	12-4/0 and 250000- 2000000 circular mils
E	Uncoated or tin	Soft or drawn and annealed	173	14-4/0 and 250000- 5000000 circular mils
B	Uncoated or tin	Soft or drawn and annealed	174	28-7
H <u>1/</u>	Tin Silver or nickel	Annealed Unannealed or annealed	286 298 AND 355	10-30 even AWGs solid, 32-4/0 stranded

1/ The requirements for 33 through 56 AWG are in Table IV. These documents have been adopted by DoD.

2/ For information only.

3.3.5 Hookup wire (type H). Wire used as hookup wire shall conform to ASTM B286 and Table III. Type S wire used for hookup and interconnect wire is superseded by type H, class S wire.

3.3.6 Splices. Splices shall not be made in wire, except as permitted by the applicable ASTM standard. Splices shall be so constructed and distributed throughout the wire that the diameter, configuration, resistance, flexibility, and mechanical strength of the completed wire shall not be adversely affected.

3.3.7 Conductor coatings. Conductor coatings (see 1.2.5) shall be in accordance with the applicable ASTM standards in Table I.

3.4 Performance. All wires shall meet the performance requirements of the applicable ASTM standard and Table IV.

3.4.1 Solderability (type H only). All finished wires shall provide good electrical and mechanical solder joints when tested in accordance with 4.6.3 and have a minimum solder coverage of 95%. Requirement is not acceptable to nickel coated conductors.

3.4.2 Elongation 33 through 44 AWG wires only. Wire sizes 33 through 40 AWG shall meet the minimum elongation percentage of 15 percent and wire sizes 41 through 44 AWG shall meet the minimum elongation of 10 percent when tested in accordance with 4.6.4.

3.5 Marking. Marking for identification shall be in accordance with FED-STD-185.

3.6 Workmanship. Strands and wire shall be manufactured and processed in a careful and workman like manner in accordance with good design and sound practice. Each solid wire and strand shall be uniform in cross section and free from injurious flaws, scales, and other imperfections.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract, the contractor 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 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. The establishment and maintenance of a calibration system to control the accuracy of the measuring and test equipment shall be in accordance with ANSI/NCSL Z540-1.

TABLE II. Construction details. 1/

Wire size designator	Cross section area (circular mils)	Approximate American wire gauge size 2/	Type C					Type E	
			Class AA	Class A	Class B	Class C	Class D	Class G	Class H
99	5000000	-	-	169	217	-	271	1159	1729
98	4500000	-	-	169 3/	217 3/	-	271 3/	1159	1729
97	4000000	-	-	169 3/	217 3/	-	271 3/	1159	1729
96	3500000	-	-	127 3/	169 3/	217 3/	271 3/	1159	1729
95	3000000	-	-	127	169	217	271	1159	1729
94	2500000	-	-	91	127	169	217	703	1159
93	2000000	-	-	91	127	169	217	703	1159
92	1900000	-	-	91 3/	127 3/	169 3/	217 3/	703	1159
91	1900000	-	-	91 3/	127 3/	169 3/	217 3/	703	1159
90	1750000	-	-	91	127	169	217	703	1159
89	1700000	-	-	91 3/	127 3/	169 3/	217 3/	703	1159
88	1600000	-	-	91 3/	127 3/	169 3/	217 3/	703	1159
87	1500000	-	-	61	91	127	169	427	703
86	1400000	-	-	61 3/	91 3/	127 3/	169 3/	427	703
85	1300000	-	-	61 3/	91 3/	127 3/	169 3/	427	703
84	1250000	-	-	61	91	127	169	427	703
83	1200000	-	-	61 3/	91 3/	127 3/	169 3/	427	703
82	1100000	-	-	61 3/	91	127	169 3/	427	703
81	1000000	-	37	-	61	91	127	427	703
80	900000	-	37 3/	-	61 3/	91 3/	127 3/	427	703
79	800000	-	37	-	61	91	127	427	703
78	750000	-	37	-	61	91	127	427	703
77	700000	-	37	-	61	91	127	427	703
76	650000	-	37 3/	-	61 3/	91	127 3/	427	703
75	600000	-	-	37	61	91	127	427	703
74	550000	-	-	37 3/	61 3/	91 3/	127 3/	427	703
73	500000	-	19	-	37	61	91	427	703
72	450000	-	19 3/	-	37 3/	61 3/	91 3/	259	427
71	400000	-	-	19	37	61	91	259	427
70	350000	-	12	19	37	61	91	259	427
69	300000	-	12	19	37	61	91	259	427
68	250000	-	12	19	37	61	91	259	427
67	211600	0000	-	7	19	37	61	133	259
66	167800	000	-	7	19	37	61	113	259
65	133100	00	-	7	19	37	61	133	259
64	105600	0	-	7	19	37	61	133	259
01	83690	1	3	-	7	37	61	49	259
02	66360	2	3	-	7	19	37	49	133
03	52620	3	3	-	7	19	37	49	133
04	41740	4	3	-	7	19	37	49	133
05	33090	5	-	-	7	19	37	49	133
06	26240	6	-	-	7	19	37	49	133
07	20820	7	-	-	7	19	37	49	133
08	16510	8	-	-	7	19	37	49	133
09	13090	9	-	-	7	19	37	49	133
10	10380	10	-	-	7	19	37	49	-
12	6534	12	-	-	7	19	37	49	-
14	4110	14	-	-	7	19	37	49	-
16	2580	16	-	-	7	19	-	-	-
18	1620	18	-	-	7	19	-	-	-
20	1020	20	-	-	7	19	-	-	-
22	640	22	-	-	7	19	-	-	-
24	404	24	-	-	7	19	-	-	-
26	253	26	-	-	-	-	-	-	-
28	159	28	-	-	-	-	-	-	-
30	100	30	-	-	-	-	-	-	-
32	64	32	-	-	-	-	-	-	-

1/ Number 23 AWG has been dropped.

2/ For number 10 AWG and smaller wire, the AWG chosen for stranded wires is the number nearest the even numbered solid wire and larger cross area.

3/ Inactive for new design.

TABLE II. Construction details. 1/ (Continued)

Wire size designator	Type B								Type R		
	Class I 24 AWG strands	Class J 28 AWG strands	Class K 30 AWG strands	Class L 32 AWG strands	Class M 34 AWG strands	Class O 36 AWG strands	Class P 38 AWG strands	Class Q 40 AWG strands	Class I 24 AWG strands	Class K 30 AWG strands	Class M 34 AWG strands
99	-	-	-	-	-	-	-	-	-	-	-
98	-	-	-	-	-	-	-	-	-	-	-
97	-	-	-	-	-	-	-	-	-	-	-
96	-	-	-	-	-	-	-	-	-	-	-
95	-	-	-	-	-	-	-	-	-	-	-
94	-	-	-	-	-	-	-	-	-	-	-
93	-	-	-	-	-	-	-	-	-	-	-
92	-	-	-	-	-	-	-	-	4921	-	-
91	-	-	-	-	-	-	-	-	4788	-	-
90	-	-	-	-	-	-	-	-	4522	-	-
89	-	-	-	-	-	-	-	-	4389	-	-
88	-	-	-	-	-	-	-	-	4256	-	-
87	-	-	-	-	-	-	-	-	3990	-	-
86	-	-	-	-	-	-	-	-	3724	-	-
85	-	-	-	-	-	-	-	-	3458	-	-
84	-	-	-	-	-	-	-	-	3192	-	-
83	-	-	-	-	-	-	-	-	3059	-	-
82	-	-	-	-	-	-	-	-	2926	-	-
81	-	-	-	-	-	-	-	-	2793	-	-
80	-	-	-	-	-	-	-	-	2527	10101	25913
79	-	-	-	-	-	-	-	-	2261	9065	22631
78	-	-	-	-	-	-	-	-	1995	7980	20069
77	-	-	-	-	-	-	-	-	1862	7581	18788
76	-	-	-	-	-	-	-	-	1729	6916	17507
75	-	-	-	-	-	-	-	-	1596	6517	16226
74	-	-	-	-	-	-	-	-	1470	5985	14945
73	-	-	-	-	-	-	-	-	1372	5453	13664
72	-	-	-	-	-	-	-	-	1225	5054	12691
71	-	-	-	-	-	-	-	-	1127	4522	11396
70	-	-	-	-	-	-	-	-	980	3990	10101
69	-	-	-	-	-	-	-	-	882	3458	8806
68	-	-	-	-	-	-	-	-	735	2989	7581
67	-	-	-	-	-	-	-	-	637	2499	6384
66	-	-	-	-	-	-	-	-	532	2107	5320
65	-	-	-	-	-	-	-	-	418	1666	4256
64	-	-	-	-	-	-	-	-	342	1323	3325
01	-	-	-	-	-	-	-	-	266	1064	2646
02	-	-	-	-	-	-	-	-	210	836	2107
03	-	-	-	-	-	-	-	-	161	665	1666
04	104 <u>4/</u>	-	-	-	-	-	-	-	133	532	1323
05	-	-	-	-	-	-	-	-	105	420	1064
06	65 <u>4/</u>	-	-	-	-	-	-	-	84	336	836
07	52	-	-	-	-	-	-	-	63	266	665
08	41	-	-	-	-	-	-	-	-	210	532
09	33	-	-	-	-	-	-	-	-	168	420
10	26	65	104	165	-	-	-	-	-	133	326
12	-	41	65	104	-	-	-	-	-	-	259
14	-	26	41	65	104	-	-	-	-	-	168
16	-	16	26	41	65	104	165	-	-	-	-
18	-	10	16	26	41	65	104	165	-	-	-
20	-	7	10	16	26	41	65	104	-	-	-
22	-	-	7	10 <u>3/</u>	19	26 <u>4/</u>	41 <u>4/</u>	65	-	-	-
24	-	-	-	7	-	19 <u>5/</u>	26 <u>4/</u>	41 <u>4/</u>	-	-	-
26	-	-	-	-	7	10 <u>4/</u>	16 <u>4/</u>	26 <u>4/</u>	-	-	-
28	-	-	-	-	-	7	10 <u>4/</u>	16 <u>4/</u>	-	-	-
30	-	-	-	-	-	-	7	10 <u>4/</u>	-	-	-
32	-	-	-	-	-	-	-	-	-	-	-

3/ Inactive for new design.

4/ Not covered by ASTM's.

5/ Replace 16 strands.

TABLE III. Construction details (type H wire).

Wire Size Designator	Approximate AWG size <u>1/</u>	Class B	Class C	Class E	Class F	Class J	Class K	Class S
67	4/0						2109	
66	3/0						1672	
65	2/0						1330	
64	0					1045	1064	
01	1					817	836	
02	2						665	
04	4				133		420	
06	6				133		266	
08	8				133		168	
10	10			37	49	104	105	1
12	12		19	37		65		1
14	14		19		41			1
16	16		19	26				1
18	18	7	19	26				1
20	20	7	10	19				1
22	22	7		19				1
24	24	7		19				1
26	26	7		19				1
28	28	7						1
30	30	7	10					1

1/ Except for 3/0 and 1, the AWG number chosen for stranded wires is the number nearest the even numbered solid wire with the larger cross sectional area.

4.2 Classification of inspections. The inspections specified herein are classified as follows:

- a. Materials inspection (see 4.3).
- b. Quality conformance inspections (see 4.5).

4.3 Materials inspection (when specified see 6.2f). Materials inspection shall consist of certificate of compliance that the materials conform to 3.2.

4.4 Inspection of packaging. The sampling and inspection of the preservation packing and container marking shall be in accordance with the requirements of MIL-C-3993.

4.5 Quality conformance inspection.

4.5.1 Lot. A lot shall consist of all wire of a single wire designation offered for inspection at one time except that the lot shall not exceed 1,000,000 feet or one week's production, whichever is less. The lot shall be expressed in units of thousands of feet (total footage in lot divided by 1,000).

4.5.2 Sample. A sample shall consist of individual lengths of wire chosen at random from any one lot for the purpose of inspection or test. The sample size or number of lengths chosen from each lot shall be determined by the sampling plan.

4.5.3 Sample unit. A sample unit shall consist of one of the individual lengths of the sample. Each sample unit shall be sufficient length to permit the performance of all applications or tests.

4.5.4 Specimen. A specimen shall consist of a piece of one sample unit upon which a particular inspection or test is to be made.

4.5.5 Sampling. A random sample of the size specified shall first be selected from the lot. A specimen of sufficient length shall then be selected from each sample unit for the specified tests. Sampling inspection shall be in accordance with ANSI/ASQC Z1.4, inspection level S-4, acceptance number 0 (single plan).

4.5.6 Resubmitted inspection lots. ANSI/ASQC Z1.4 shall apply except that a resubmitted lot shall be inspected by the contractor using tightened inspection. Before resubmitting, complete details concerning the cause of rejection and the action taken to correct the defects found in the lot shall be furnished by the contractor to the acquiring activity.

4.6 Performance.

4.6.1 Visual and mechanical inspection. Wire furnished under this specification shall be inspected for compliance with 3.1, 3.3 through 3.3.7, 3.5, 3.6 and Table IV.

TABLE IV. Small solid uninsulated wire dimensions.

Wire size designator	Approximate AWG size	Diameter inches (Nominal)
33	33	.0071
34	34	.0063
35	35	.0056
36	36	.0050
37	37	.0045
38	38	.0040
39	39	.0035
40	40	.0031
41	41	.0028
42	42	.0025
43	43	.0022
44	44	.0020
45	45	.00176
46	46	.00157
47	47	.00140
48	48	.00124
49	49	.00111
50	50	.00099
51	51	.00088
52	52	.00078
53	53	.00070
54	54	.00062
55	55	.00055
56	56	.00049

4.6.2 Performance test. Performance test on wire furnished under this specification shall conform to all the requirements and tests specified in the applicable ASTM Standards (see 3.1, 3.3.5, 3.4, 3.4.1, and 3.4.2).

4.6.3 Solderability (type H only). Solderability shall be tested in accordance with method 208 of Mil-STD-202 (see 3.4.1). Sample length shall be 2 inches. The sample shall be immersed 1/2 inch +1/8 inch. The test wire shall be wrapped 1/4 ± 1/16 inch from the end dipped in the solder.

4.6.3.1 Wire sizes 41 through 46. A specimen of wire shall be wound for a distance of 1/2 to 3/4 inch around the end of a 6-inch length of 20 AWG (0.0320 inch) clean, tinned copper wire, hot-dipped in accordance with ASTM 833. There shall be a minimum of five turns and a maximum of ten turns, with a slight spacing between each turn. The specimens so prepared shall be tested in accordance with MIL-STD-202, Method 208.

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4.6.4 Elongation (33-44 AWG wires only). A specimen of wire having effective length of 10 inches shall be elongated to its breaking point at a rate of 12 inches \pm 1 inch per minute. The gripping jaws shall be such that a break will not occur within 1/4 inch of each jaw. The travel distance of the jaw at the instant of break shall be noted and the percentage of elongation calculated.

5. PREPARTION FOR DELIVERY.

5.1 Packaging requirements. The wire shall be packed in accordance with MIL-C-3993.

6. NOTES.

6.1 Intended use. Wires covered by this specification are intended to be used for electrical conductors in equipment and may be used as conductors in electrical cables.

6.2 Ordering data. Purchasers should select the preferred options permitted herein and include the following information in procurement documents.

- a. Title, symbol, and date of this specification.
- b. Part number (see 1.2).
- c. Identification if required (see 3.5).
- d. Inspection responsibility, when other than specified (see 4.1).
- e. Inspection conditions, if other than specified (see 4.4).
- f. If materials inspection is required (see 4.3).

6.3 Wire size. For solid wires 56 thru 4/0, the wire size is the American Wire Gauge (AWG) size per ASTM B258. For all wires larger than 4/0, the size is indicated by the cross section area in circular mils (thousandth of an inch); for sizes of stranded wires smaller than 250000 circular mils, the AWG number which is closest but larger in size is used except for hookup wire (type H) in which only the even numbers are used.

NOTE: Caution should be taken during handling and disposal of all crating materials in accordance with ASTM C930 and FED-STD-313.

CIVIL AGENCY COORDINATING ACTIVITY:

Custodians:

Army - CR
Navy - YD1
Air Force - 85

Preparing activity:

DLA-IS

(Project 6145-2132)

Review activities:

Army - AR, MI
Navy - AS, CG, MC, SH
Air Force - 06, 11, 99
DLA - CC