

INCH-POUND

QQ-B-575C

September 22, 1993

SUPERSEDING

QQ-B-575B

May 22, 1979

## FEDERAL SPECIFICATION

BRAID, WIRE (COPPER, TIN-COATED, OR SILVER COATED, TUBULAR, OR FLAT)

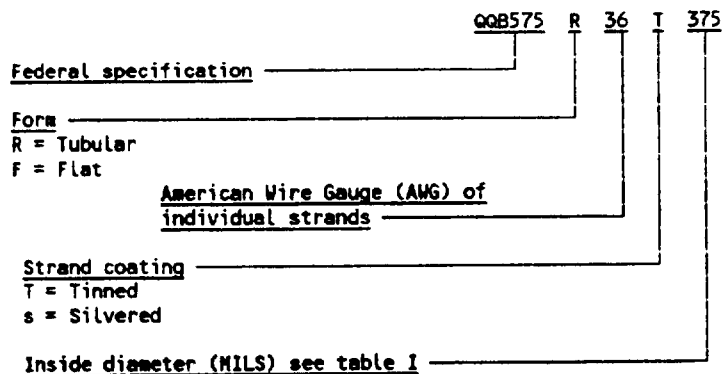
This specification was approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal Agencies.

## 1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers tinned or silver coated copper wires braided in tubular or flat form intended for use as shielding over electrical conductors or connections to motor brushes, controller contacts, and grounding bonds.

1.2 Classification.

1.2.1 Federal Part or Identifying Number (PIN). PINs shall be in the following form:



## 2. APPLICABLE DOCUMENTS

2.1 Issues of documents. 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 STANDARD:

FED-STD-123 - Marking for 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 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, Philadelphia, Washington, DC, Atlanta, Chicago, Kansas City, MO, Fort Worth, Houston, 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.

AMSC N/A

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FSC 6145

**MILITARY SPECIFICATION**

MIL-C-12000 - Cable, Cord, and Wire, Electric, Packaging of.

**MILITARY STANDARDS:**

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.  
 MIL-STD-129 - Marking for Shipment or Storage.  
 MIL-STD-202 - Test Methods for Electronic and Electrical Component Parts.

(Copies of specifications, standards, drawings, and publication 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 a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply.

**AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)**

ANSI C7.4 Tinned Soft or Annealed Copper Wire for Electrical Purposes, Specifications for (ASTM B33).

(Application for copies should be addressed to the American Standards Institute, 1430 Broadway, New York, NY 10018.)

**AMERICAN SOCIETY FOR TESTING MATERIALS (ASTM)**

ASTM B298 Standard Specification for Silver-Coated Soft or Annealed Copper Wire.

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

**3. REQUIREMENTS**

3.1 Material. The wire used in the construction of the braids covered by this specification shall conform to the requirements of ANSI C7.4 for tin coated copper and ASTM B298 for silver coated copper except that silver coating shall be 40 microinches minimum in thickness (see 4.3.1).

3.1.1 Wire lengths. Individual wires shall be to size and shall be uniform in cross-section. Each wire shall be one continuous length, free from splices except as specified herein. All wire shall be commercially free from lumps, kinks, splits, abrasions, scraped or corroded surfaces, and skin impurities.

3.2 Design and construction. The wire braid shall have the number of carriers and ends shown in table I for the braid and wire sizes specified.

\* 3.2.1 Splices.

\* 3.2.1.1 Carrier splices. There shall be not more than one splice or break in any carrier in each 25-foot length of the braid.

\* 3.2.1.2 Wire splices. Excluding the carrier splice there shall not be more than one broken or spliced end of wire in each 25 feet of the braid.

QQ-B-575C

TABLE 1. Dimensions and data.

PIN 1/	Strand wire size (AWG)	Tubular inside diameter (inch) 2/	Number of carriers	Number of ends	Current rating 3/ (amps)	Approx AWG equivalent	Flat form width X thickness 2/
QQB575*36*031	36	.031	24	24	7.0	22	.046 x .020
QQB575*36*062	36	.062	24	48	11.0	19	.093 x .031
QQB575*34*062	34	.062	16	32	11.0	19	-
QQB575*32*062	32	.062	16	16	9.0	20	-
QQB575*36*078	36	.078	24	72	16.0	18	.125 x .020
QQB575*36*109	36	.109	24	96	19.0	16	.156 x .031
QQB575*34*109	34	.109	16	64	19.0	16	-
QQB575*32*109	32	.109	16	32	18.0	17	-
QQB575*36*125	36	.125	24	120	25.0	15	.187 x .020
QQB575*34*125	34	.125	24	72	19.0	16	-
QQB575*32*125	32	.125	24	48	25.0	15	-
QQB575*36*156	36	.156	24	240	40.0	12	.250 x .046
QQB575*36*171	36	.171	24	168	32.0	14	.250 x .030
QQB575*34*171	34	.171	24	120	36.0	13	-
QQB575*32*171	32	.171	24	72	32.0	14	-
QQB575*36*203	36	.203	24	312	46.0	11	.281 x .046
QQB575*34*203	34	.203	24	192	46.0	11	-
QQB575*32*203	32	.203	24	120	46.0	11	-
QQB575*36*250	36	.250	24	384	53.0	10	-
QQB575*30*281	30	.281	24	120	60.0	9	-
QQB575*36*375	36	.375	48	384	53.0	10	.625 x .030
QQB575*34*375	34	.375	48	240	53.0	10	-
QQB575*32*375	32	.375	48	144	46.0	11	-
QQB575*30*375	30	.375	24	168 4/	75.0	8	-
QQB575*30*437	30	.437	24	240	90.0	6	.500 x .093
QQB575*36*500	36	.500	48	528	62.0	9	.625 x .046
QQB575*34*500	34	.500	48	336	62.0	9	-
QQB575*32*500	32	.500	48	192	62.0	9	-
QQB575*30*500	30	.500	24	360	120.0	6	.625 x .093
QQB575*30*562	30	.562	48	480	145.0	3	-

See footnotes at end of table.

TABLE I. Dimensions and data - Continued.

PIN <sup>1/</sup>	Strand wire size (AWG)	Tubular inside diameter (inch) <sup>2/</sup>	Number of carriers	Number of ends	Current rating <sup>3/</sup> (amps)	Approx AWG equivalent	Flat form width X thickness <sup>2/</sup>
QQB575*30*656	30	.656	48	768	190.0	1	-
QQB575*36*781	36	.781	48	864	88.0	7	.750 X .040
QQB575*34*781	34	.781	48	528	88.0	7	-
QQB575*32*781	32	.781	48	336	88.0	7	-
QQB575*30*875	30	.875	48	336	100.0	5	1.375 X .050
QQB575*30*1000	30	1.000	48	384	120.0	4	-
QQB575*30*1125	30	1.125	48	432	130.0	4	-
QQB575*30*1375	30	1.375	48	528	150.0	3	1.500 X .060

<sup>1/</sup> The complete PIN will include additional to indicate form (first asterisk) and strand coating (second asterisk) (see 1.2.1).

\* <sup>2/</sup> Tolerances are as follows:

Dimensions	Tolerance
.000 - .099	.010
.100 - .249	.016
.250 - .499	.031
.500 - .999	.063
over - .999	.094

<sup>3/</sup> Direct current ratings are given for information only and are not requirements. Values shown are for uninsulated braid in free air at 30°C (80°F). Values should be derated if the braid is insulated or in close contact with other components.

<sup>4/</sup> This PIN supersedes the similar construction using 96 ends (NSN 6145-00-191-8402).

**3.2.2 Coverage (tubular braid only).** Tubular braids shall be designed with the braid angle or picks per inch which will produce a minimum of 90 percent coverage except for .078 inch and smaller diameter which shall be 70 percent minimum (see 4.3.2).

**3.2.3 Lengths.** Unless otherwise specified (see 6.1), 90 percent of the total order for braid shall be supplied in continuous, unspliced lengths as shown below. Ten percent of the total order for braid shall be acceptable in random unspliced lengths as shown below.

Braid Diameter (inches)	Lengths	
	90% nominal	10% minimum
≤ .171	250 ft.	50 ft.
≥ .203	100 ft.	25 ft.

**3.3 Flattening of tubular braid.** Unless otherwise specified, tubular shielding braid shall not be flattened beyond the point which will occur only by its own weight when wound on spools for shipping (see 4.3.1).

**3.4 Solderability.** Braids shall provide good electrical and mechanical solder joints when tested in accordance with 4.3.3.

**3.5 Workmanship.** Workmanship shall be in accordance with high-grade commercial practice.

QQ-B-575C

#### 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.

Responsibility for compliance. All items shall meet all requirements of sections 3 and 5. 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.

4.2 Inspection conditions. Unless otherwise specified herein, all inspections shall be performed in accordance with test conditions specified in section 6 of FED-STD-228.

4.2.2 Inspection lots. A lot shall consist of five reels or spools of each braid size and wire size delivered.

\* 4.2.3 Sampling plan. Sampling for visual and dimensional examination shall be as agreed upon by the supplier and purchaser (AQL) 6.5.

#### 4.3 Quality conformance inspection.

4.3.1 Inspection of product for delivery. Samples selected in accordance with 4.2 shall be subjected to a visual and dimensional examination to determine compliance with requirements 3.1, 3.1.1, 3.2, 3.3 and 3.5.

4.3.2 Coverage (tubular braid only). The percent of coverage shall be determined by using the following formula (see 3.2.2).

$$K = 100 (2F - F^2)$$

$$F = \frac{NPW}{C \sin A}$$

$$\tan A = \frac{2\pi (D+2W)P}{C}$$

where

K = percent coverage of braided shields  
 A = braid angle  
 C = number of carriers (table I)  
 D = inside diameter in inches (table I)  
 N = total number of ends (table I)  
 P = picks per inch  
 W = diameter of individual braid wire in inches

\* 4.3.3 Solderability. Five specimens of braid shall be tested in accordance with method 208 of MIL-STD-202 (see 3.4). Before test, braid shall be cleaned to remove any lubricants that may have been used during production. Each specimen shall be wrapped with standard copper wrapping wire in accordance with method 208 of MIL-STD-202. The specimens shall be tested without steam aging.

4.3.4 Rejected lots. Rejected lots shall not be resubmitted for inspection without furnishing full particulars concerning previous rejections and means taken to correct the defects.

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-12000.

## 5. PACKAGING

5.1 Packaging requirements. Except for the marking of shipments to civil agencies and the additional marking specified herein, the packaging requirements for wire braids shall be in accordance with MIL-C-12000.

5.1.1 Marking for civil agency procurement. The container marking of shipments to civil agencies shall be in accordance with FED. STD. NO. 123.

5.1.2 Marking of spools and reels. In addition to the marking requirements of MIL-C-12000, each spool and reel shall be marked with the following information:

- a. Federal PIN (in lieu of manufacturer's PIN and CAGE).
- b. Net weight (in pounds).
- c. Date (month, day, and year) and number of inspections.
- d. Date (month, day, and year) of manufacture.
- e. Manufacturer's name or trademark.

## 6. NOTES

6.1 Ordering data. Purchasers should exercise any desired options offered herein and procurement documents should specify the following:

- Title, number, and date of this specification.
- Federal PIN (see 1.2.1).
- Resistance to flattening, if other than specified (see 3.3).
- Responsibility for inspection, if other than specified (see 4.1).
- Bid sample whether required or not (see 6.2).

6.2 It is believed that this specification adequately describes the characteristics necessary to secure the desired material, and that normally no samples will be necessary prior to award to determine compliance with this specification. If, for any particular purpose, samples with bids are necessary, they should be specifically asked for in the invitation for bids, and the particular purpose to be served by the bid samples be definitely stated, the specification to apply in all other respects.

6.3 Federal specifications do not include all types, classes, grades, sizes, etc., of the commodities indicated by the titles of the specifications, or which are commercially available, but are intended to cover the types, etc., which are suitable for Federal Government requirements.

6.4 Transportation description. Transportation descriptions and minimum weights applicable to this commodity are:

### Rail:

- Wire strand, copper.
- Carload minimum weight 30,000 pounds.

### Motor:

- Wire strand, copper.
- Truckload minimum weight 30,000 pounds subjected to Rule 115, National Motor Freight Classification.

6.5 Reclaimed materials. The use of reclaimed materials is encouraged to the maximum extent possible.

6.6 Supersession data. The tubular tin coated braids in this revision supersede those of QQ-B-575A. The silver coated braids in this revision supersedes those of Bureau of Naval Weapons Drawing 63A5A71.

\* 6.7 Application note: If braid is to be soldered, suggest the termination end of braid be cleaned to remove any lubrication that may have been used during production. Ozone depleting chemicals shall not be used to clean braid.

6.8 The margins of this specification are marked with asterisks to indicate where changes (additions, modifications, corrections, deletions) from the previous revision 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 revision.

QQ-B-575C

MILITARY INTERESTS:

Custodians

Army - CR  
Navy - AS  
Air Force - 85

Review activities

Army - MI, AR, ME  
Navy - OS  
DLA - IS  
NSA - NS  
DNA - DS

User Activities

Army - AT, AV  
Navy - MC, SH

Preparing activity:

Army - CR

Agent:

DLA - ES

(Project: 6145-2052)