

INCH-POUND

J-W-1177/20B

June 10, 1988

SUPERSEDING

J-W-1177/20A

September 27, 1976

FEDERAL SPECIFICATION SHEET

WIRE, MAGNET, ELECTRICAL, CLASS 155, TYPE DgV,
POLYESTER-GLASS-FIBER-COVERED, ROUND

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

The complete requirements for acquiring the wire described herein shall consist
of this specification and the latest issue of J-W-1177.

Classification: Class 155;
type Dg and type Dg2 (bare with single or double
polyester-glass fiber, unvarnished),
type DgV and type Dg2V (bare with single or double
polyester-glass fiber, varnished),
type BDg and type BDg2 (single film, single or
double polyester-glass fiber, unvarnished),
type BDgV and type BDg2V (single film, single or
double polyester-glass fiber, varnished),
type B2Dg and type B2Dg2 (heavy film, single or
double polyester-glass fiber, unvarnished),
type B2DgV and type B2DgV (heavy film, single or
double polyester-glass fiber, varnished); round.

Insulating materials: The fiber covering and application of the covering
shall be as specified in J-W-1177. If an
underlying film coating is used, it shall have a
class 130 rating. The varnish used in treating
fibrous covered wire shall conform to the require-
ments of class 155 of MIL-I-24092, or an alternate
selected on the basis of service experience or
equivalent test data. The varnish used shall be
identified in the qualification test report.

NEMA/ANSI equivalent: All test requirements are equivalent to MW-45 of
NEMA MW 1000.

General requirements: See J-W-1177 for general requirements, quality
assurance provisions, and packaging.

AMSC N/A

FSC 6145

DISTRIBUTION STATEMENT A Approved for public release; distribution unlimited

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Requirements:

Characteristics	Test procedure, see J-W-1177	Wire sizes, AWG	Requirements
Dimensions	4.7.1.2	4/0-30	See table I.
Adherence and flexibility	4.7.2.2.1	4/0-30	Covering shall not open sufficiently to expose the bare or underlying film- coated wire after bending 9 AWG and heavier wire on a 10X mandrel and 10-30 AWG wire on a 5X mandrel.
	4.7.2.2.2	4/0-30	No loosening, fraying or loss of adherence of the covering except at the point of rupture.
Elongation	4.7.5	4-30	Not less than the values shown in table II.
Dielectric strength	4.7.9	4/0-30	Not less than the values shown in table III.
Thermal endurance	----	4/0-30	Class 155. All insulating materials shall meet the thermal class ratings as described above.

TABLE I. Dimensions.

AWC size	Bare wire diameter, inch/ Nominal			Minimum increase, inch, polyester-glass fiber covering		Minimum overall diameter, inch, polyester-glass-covered					
						Bare		Single film		Heavy film	
						Type Dg	Type Dg2	Type BDg	Type BDg2	Type B2Dg	Type B2Dg2
0000	0.4554	0.4600	0.4646	0.0040	0.0060	0.4696	0.4736	---	---	---	---
000	.4055	.4096	.4137	.0040	.0060	.4187	.4227	---	---	---	---
00	.3612	.3648	.3684	.0040	.0060	.3734	.2774	---	---	---	---
0	.3217	.3249	.3281	.0040	.0060	.3331	.3371	---	---	---	---
1	.2864	.2893	.2922	.0040	.0060	.2972	.3012	---	---	---	---
2	.2550	.2676	.2602	.0040	.0060	.2652	.2692	---	---	---	---
3	.2271	.2294	.2317	.0040	.0060	.2367	.2407	---	---	---	---
4	.2023	.2043	.2053	.0040	.0060	.2123	.2153	---	---	0.2158	0.2188
5	.1801	.1819	.1828	.0040	.0060	.1897	.1927	---	---	.1932	.1962
6	.1604	.1620	.1628	.0040	.0060	.1696	.1726	---	---	.1731	.1761
7	.1429	.1443	.1450	.0040	.0060	.1517	.1547	---	---	.1551	.1581
8	.1272	.1285	.1292	.0040	.0060	.1358	.1388	---	---	.1392	.1422
9	.1133	.1144	.1150	.0040	.0060	----	.1245	---	---	.1249	.1279
10	.1009	.1019	.1024	.0035	.0055	.1079	.1109	---	---	.1111	.1141
11	.0898	.0907	.0912	.0035	.0055	.0966	.0996	---	---	.0998	.1028
12	.0800	.0808	.0812	.0035	.0055	.0866	.0896	---	---	.0897	.0927
13	.0713	.0720	.0724	.0035	.0055	.0777	.0807	---	---	.0807	.0837
14	.0635	.0641	.0644	.0035	.0055	.0697	.0727	0.0716	0.0746	.0732	.0762
15	.0565	.0571	.0574	.0035	.0055	.0627	.0657	.0644	.0674	.0659	.0689

See footnote at end of table.

TABLE I. Dimensions. - Continued

AWG size	Bare wire diameter, inch ¹ / ₁₆			Minimum increase, inch, polyester-glass fiber covering		Minimum overall diameter, inch, polyester-glass-covered					
						Bare		Single film		Heavy film	
	Minimum	Nominal	Maximum	Type Dg	Type Dg2	Type Dg	Type Dg2	Type BDg	Type BDg2	Type B2Dg	Type B2Dg2
16	0.0503	0.0508	0.0511	0.0035	0.0055	0.0563	0.0593	0.0581	0.0611	0.0595	0.0625
17	.0448	.0453	.0455	.0035	.0055	.0508	.0538	.0525	.0555	.0538	.0568
18	.0399	.0403	.0405	.0035	.0055	.0457	.0487	.0474	.0504	.0487	.0517
19	.0355	.0359	.0361	.0035	.0055	.0413	.0443	.0429	.0459	.0441	.0471
20	.0317	.0320	.0322	.0035	.0055	.0373	.0403	.0389	.0419	.0401	.0431
21	.0282	.0285	.0286	.0035	.0055	.0338	.0368	.0353	.0383	.0364	.0394
22	.0250	.0253	.0254	.0035	.0055	.0306	.0336	.0320	.0350	.0331	.0361
23	.0224	.0226	.0227	.0035	.0055	.0278	.0308	.0293	.0323	.0303	.0333
24	.0199	.0201	.0202	.0025	.0045	.0253	.0268	.0267	.0282	.0277	.0292
25	.0177	.0179	.0180	.0025	.0045	.0231	.0246	.0244	.0259	.0253	.0268
26	.0157	.0159	.0160	.0025	.0045	.0211	.0226	.0223	.0238	.0232	.0247
27	.0140	.0142	.0143	.0025	.0045	.0193	.0208	.0206	.0221	.0214	.0229
28	.0125	.0126	.0127	.0025	.0045	.0177	.0192	.0190	.0205	.0197	.0212
29	.0112	.0113	.0114	.0025	.0045	.0164	.0179	.0176	.0191	.0183	.0198
30	.0099	.0100	.0101	.0025	.0045	.0151	.0166	.0162	.0177	.0169	.0184

1/ The maximum bare wire dimensions may be exceeded up to the ASTM maximum bare wire, provided the minimum increase is maintained and the maximum overall diameter specified is not exceeded.

TABLE II. Elongation of finished wire.

AWG size	Minimum elongation, percent
4-8	30.0
9-15	20.0
16-21	15.0
22-30	10.0

TABLE III. Minimum breakdown voltages.

AWG size	Diameter of mandrel, inches	Minimum breakdown, volts ^{1/}	
		Single covering	Double covering
4/0-9	----	150	270
10-23	1.00	360	540
24-30	0.25	225	400

^{1/} For fiber covered wire having an underlying film coating, add the minimum breakdown voltage for film coated wire.

Part number: Magnet wire covered by this specification shall be defined by the following part numbering system. Example:
M1177/20-06C021.

M1177/20- Federal specification identifier	06 Two digit type code	C Single letter conductor code	021 Three character size code
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The following codes shall apply:

Type	Type code	Conductor	Conductor code
Dg	01	Copper	C
Dg2	02	Aluminum	A
DgV	03	Nickel-coated copper	N
Dg2V	04	Silver-coated copper	S
BDg	05		
BDg2	06		
BDgV	07		
BDg2V	08		
B2Dg	09		
B2Dg2	10		
B2DgV	11		
B2Dg2V	12		

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The size code shall be the bare wire dimensions. AWG wire size shall be used.

Intended use: Type Dg magnet is intended for 155°C applications for uses similar to those of glass-insulated (type GV) wire when increased toughness, flexibility and nonfraying properties are required.

Revision letters are not used to denote changes due to the extensiveness of the changes.

MILITARY INTERESTS:

CIVIL AGENCY COORDINATING ACTIVITIES:

Custodians:

Army - CR
Navy - SH
Air Force - 85

CSA - FSS, PBO, PCD

INTERIOR - BLM

HHS - FDA

DCGOVT - DCG

NASA - JFK

COMMERCE - NBS

TRANSPORTATION - APM, FAA

Review activities:

Army - AR, ER, MI
DLA - IS

User activities:

Army - ME
Navy - AS, CC, MC, OS

Preparing activity:

Navy - SH
(Project 6145-1111-16)