

INCH-POUND

J-W-1177/32

June 10, 1988

## FEDERAL SPECIFICATION SHEET

WIRE, MAGNET, ELECTRICAL, CLASS 180, TYPE Dg0  
POLYESTER-GLASS-FIBER-COVERED, ORGANIC VARNISH TREATED, ROUND

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

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

- Classification:** Class 180;  
type Dg0 and type Dg20 (bare with single or double polyester-glass fiber, varnished),  
type LDg0 and type LDg20 (single film, single or double polyester-glass fiber, varnished),  
type L2Dg0 and type L2Dg20 (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 155 rating. The varnish used in treating fibrous covered wire shall conform to the requirements of class 180 of MIL-I-24092, or an alternate selected on the basis of equivalent test data. The varnish shall be a high temperature non-silicone insulating varnish. The varnish used shall be identified in the qualification test report.
- NEMA/ANSI equivalent:** All test requirements are equivalent to MW-51 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

J-W-1177/32

**Requirements:**

Characteristics	Test procedure, see J-W-1177	Wire sizes, AWG	Requirements
Dimensions	4.7.1.2	4-30	See table I.
Adherence and flexibility	4.7.2.2.1	4-30	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	4-30	There shall be 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	4-30	Not less than the values shown in table III.
Thermal endurance	---	4-30	Class 180. All insulating materials shall meet the thermal class ratings as described above.

TABLE I. Dimensions.

AWG size	Bare wire diameter, inch		Minimum increase single polyester glass fiber covering, inch	Single covering			Minimum increase single polyester glass fiber covering, inch	Double covering	
	Minimum	Nominal		Maximum	Maximum overall diameter, inch				
					Bare	Single film			Heavy film
4	0.2023	0.2043	1/0.2053	---	---	0.2158	0.2153	0.2188	
5	.1801	.1819	1/.1828	---	---	.1932	.1927	.1962	
6	.1604	.1620	1/.1628	---	---	.1731	.1726	.1761	
7	.1429	.1443	1/.1450	---	---	.1551	.1547	.1581	
8	.1272	.1285	1/.1292	---	---	.1392	.1388	.1422	
9	.1133	.1144	1/.1150	---	---	.1249	.1245	.1279	
10	.1009	.1019	1/.1024	0.1079	---	.1111	.1109	.1141	
11	.0898	.0907	1/.0912	.0968	---	.0998	.0996	.1028	
12	.0800	.0808	1/.0812	.0866	---	.0897	.0895	.0927	
13	.0713	.0720	1/.0724	.0777	---	.0807	.0807	.0837	
14	.0635	.0641	1/.0644	.0697	0.0716	.0732	.0727	.0762	
15	.0565	.0571	1/.0574	.0627	.0644	.0659	.0657	.0689	
16	.0503	.0508	1/.0511	.0563	.0581	.0595	.0593	.0625	
17	.0448	.0453	1/.0455	.0508	.0525	.0538	.0538	.0568	
18	.0399	.0403	1/.0405	.0457	.0474	.0487	.0487	.0517	
19	.0355	.0359	1/.0361	.0413	.0429	.0441	.0443	.0471	
20	.0317	.0320	1/.0322	.0373	.0389	.0401	.0403	.0431	
21	.0282	.0285	1/.0286	.0338	.0353	.0364	.0368	.0404	
22	.0250	.0253	1/.0254	.0306	.0320	.0331	.0336	.0361	
23	.0224	.0226	1/.0227	.0278	.0293	.0303	.0308	.0333	
24	.0199	.0201	1/.0202	.0253	.0267	.0277	.0268	.0292	
25	.0177	.0179	1/.0180	.0231	.0244	.0253	.0246	.0268	
26	.0157	.0159	1/.0160	.0211	.0223	.0232	.0226	.0247	
27	.0141	.0142	1/.0143	.0193	.0206	.0214	.0208	.0229	
28	.0125	.0126	1/.0127	.0177	.0190	.0197	.0192	.0212	
29	.0112	.0113	1/.0114	.0164	.0176	.0183	.0179	.0198	
30	.0099	.0100	1/.0101	.0151	.0162	.0169	.0166	.0177	

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

J-W-1177/32

TABLE II. Elongation.

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 <sup>1/</sup>	
		Single covering	Double covering
4-9	—	150	270
10-23	1.00	360	540
24-30	0.25	225	400

<sup>1/</sup> For polyester-glass fiber covered wire having an underlying film coating, add the minimum breakdown voltage for the film coated wire.

Part number: Magnet wire covered by this specification shall be defined by the following part numbering system. Example:  
M1177/32-06C029.

<u>M1177/32-</u>	<u>06</u>	<u>C</u>	<u>029</u>
Federal specification identifier	Two digit type code	Single letter conductor code	Three character size code

The following codes shall apply:

Type	Type code	Conductor	Conductor code
Dg0	01	Copper	C
Dg20	02	Aluminum	A
LDg0	03	Nickel-coated copper	N
LDg20	04	Silver-coated copper	S
L2Dg0	05		
L2Dg20	06		

J-W-1177.32

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

**Intended use:** Type Dg0 magnet wire is intended for use in 180°C applications similar to G0 where increased toughness, flexibility and nonfraying properties are required.

**MILITARY INTERESTS:**

**Custodians:**

Army - CR  
Navy - SH  
Air Force - 85

**Review activities:**

Army - AR, ER, MI  
DLA - IS

**User activities:**

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

**CIVIL AGENCY COORDINATING ACTIVITIES:**

GSA - FSS, PBO, PCD  
INTERIOR - BLM  
HHS - FDA  
DCGOVT - DCG  
NASA - JFK  
COMMERCE - NBS  
TRANSPORTATION - APM, FAA

**Preparing activity:**

Navy - SH  
(Project 6145-1111-28)