INCH-POUND
J-W-1177/19B
June 10, 1988
SUPERSEDING
J-W-1177/19A
September 27, 1976

FEDERAL SPECIFICATION SHEET

WIRE, MAGNET, ELECTRICAL CLASS 155, TYPE GV, 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 GV and type G2V (bare with single or double glass fiber, varnished), type BGV and type BG2V (single film, single or double glass fiber, varnished), type B2GV and B2G2V (heavy film, single or double 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 requirements of class 155 of MIL-I-24092, or an alternate selected on the basis of 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-41 of NEMA MW 1000.
General requirements:	See J-W-1177 for general requirements, quality assurance provisions, and packaging.

AMSC N/A FSC 6145

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 15X mandrel and 10-30 AWG wire on a 10X mandrel.
Elongation	4.7.5	4/0-30	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, sizes 0000 to 30 AWG.

AWG size	Bare wire diameter, inch 1/			Minimum increase, inch glass-fiber-covered		Maximum overall diameter, inch glass-fiber-covered					
	Minimum	Nominal	Maximum	Single	Double	Type GV	Type G2V	Type BGV	Type BG2V	Type B2GV	Type B2G2V
0000	0.4554	0.4600	0.4646	0.0045	0.0070	0.4716	0.4756	----	----	----	----
000	.4055	.4096	.4137	.0045	.0070	.4207	.4247	----	----	----	----
00	.3612	.3648	.3684	.0045	.0070	.3754	.3794	----	----	----	----
0	.3217	.3249	.3281	.0045	.0070	.3351	.3391	----	----	----	----
1	.2864	.2893	.2922	.0045	.0070	.2992	.3032	----	----	----	----
2	.2550	.2576	.2602	.0045	.0070	.2672	.2712	----	----	----	----
3	.2271	.2294	.2317	.0045	.0070	.2387	.2427	----	----	----	----
4	.2023	.2043	.2053	.0045	.0070	.2133	.2173	----	----	----	----
5	.1801	.1819	.1828	.0045	.0070	.1907	.1947	----	----	0.1942	0.1982
6	.1604	.1620	.1628	.0045	.0070	.1706	.1746	----	----	.1741	.1781
7	.1429	.1443	.1450	.0045	.0070	.1527	.1567	----	----	.1561	.1601
8	.1272	.1285	.1292	.0045	.0070	.1368	.1408	----	----	.1402	.1442
9	.1133	.1144	.1150	.0045	.0070	.1225	.1265	----	----	.1259	.1299
10	.1009	.1019	.1024	.0040	.0060	.1089	.1119	----	----	.1121	.1151
11	.0898	.0907	.0912	.0040	.0060	.0976	.1006	----	----	.1008	.1038
12	.0800	.0808	.0812	.0040	.0060	.0876	.0906	----	----	.0907	.0937
13	.0713	.0720	.0724	.0040	.0060	.0787	.0817	----	----	.0817	.0847
14	.0635	.0641	.0644	.0040	.0060	.0707	.0737	0.0726	0.0756	.0742	.0772
15	.0565	.0571	.0574	.0040	.0060	.0637	.0667	.0654	.0684	.0669	.0699

See footnote at end of table.

TABLE I. Dimensions, sizes 0000 to 30 AWG. - Continued

AWG size	Bare wire diameter, inch 1/			Minimum increase, inch glass-fiber-covered		Maximum overall diameter, inch glass-fiber-covered					
	Minimum	Nominal	Maximum	Single	Double	Type GV	Type G2V	Type BGV	Type BG2V	Type B2GV	Type B2G2V
16	0.0503	0.0508	0.0511	0.0040	0.0060	0.0573	0.0603	0.0591	0.0621	0.0605	0.0635
17	.0448	.0453	.0455	.0040	.0060	.0518	.0548	.0535	.0565	.0548	.0578
18	.0399	.0403	.0405	.0040	.0060	.0467	.0497	.0484	.0514	.0497	.0527
19	.0355	.0359	.0361	.0040	.0060	.0423	.0453	.0439	.0469	.0451	.0481
20	.0317	.0320	.0322	.0040	.0060	.0383	.0413	.0399	.0429	.0411	.0441
21	.0282	.0285	.0286	.0040	.0060	.0348	.0378	.0363	.0393	.0374	.0404
22	.0250	.0253	.0254	.0040	.0060	.0316	.0346	.0330	.0360	.0341	.0371
23	.0224	.0226	.0227	.0040	.0060	.0288	.0318	.0303	.0333	.0313	.0343
24	.0199	.0201	.0202	.0025	.0045	.0243	.0263	.0257	.0277	.0267	.0287
25	.0177	.0179	.0180	.0025	.0045	.0221	.0241	.0234	.0254	.0243	.0263
26	.0157	.0159	.0160	.0025	.0045	.0201	.0221	.0213	.0233	.0222	.0242
27	.0141	.0142	.0143	.0025	.0045	.0183	.0203	.0196	.0216	.0204	.0224
28	.0125	.0126	.0127	.0025	.0045	.0167	.0187	.0180	.0200	.0187	.0207
29	.0112	.0113	.0114	.0025	.0045	.0154	.0174	.0166	.0186	.0173	.0193
30	.0099	.0100	.0101	.0025	.0045	.0141	.0161	.0152	.0172	.0159	.0179

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	
	With glass-fiber covering	Glass-fiber covering removed
0000-0	35.0	35.0
1-8	30.0	30.0
9-15	20.0	30.0
16-21	15.0	25.0
22-28	----	20.0
29 and 30	----	15.0

TABLE III. Minimum breakdown voltages.

AWG size	Diameter of mandrel, inch	Minimum breakdown, volts1/	
		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: M1177/19-06C021.

M1177/19-	06	C	021
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
GV	01	Copper	C
G2V	02	Aluminum	A
BGV	03	Nickel-coated copper	N
BG2V	04	Silver-coated copper	S
B2GV	05		
B2G2V	06		

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

Intended use: Type GV magnet wire is intended for 155°C applications in rotating machinery, transformers and similar equipment where positive spacing between adjacent wires is required.

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

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 6145-1111-15)

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