INCH-POUND
J-W-1177/24B
June 10, 1988
SUPERSEDING
J-W-1177/24A
September 27, 1976

FEDERAL SPECIFICATION SHEET

WIRE, MAGNET, ELECTRICAL, CLASS 180, TYPE DgH, POLYESTER-GLASS-FIBER-COVERED, SILICONE 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 DgH and type Dg2H (bare with single or double polyester-glass, silicone varnished), type LDgH and type LDg2H (single film, single or double polyester-glass, silicone varnished), type L2DgH and type L2Dg2H (heavy film, single or double polyester-glass, silicone 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 treated 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 modified silicone insulating varnish or silicone compound to provide a tough outer finish. The varnish used shall be identified in the qualification test report.
NEMA/ANSI equivalent:	Test requirements are equivalent to MW-47 of NEMA MW 1000 except for thermal rating.
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	4-30	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	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 1/			Minimum increase, inch, glass-fiber covering		Minimum overall diameter, inch, polyester-fiber-covered					
						Bare		Single film		Heavy film	
	Minimum	Nominal	Maximum	Single	Double	Type DgH	Type Dg2H	Type LDgH	Type LDg2H	Type L2DgH	Type L2Dg2H
4	0.2023	0.2043	0.2053	0.0040	0.0060	----	0.2153	----	----	0.2158	0.2188
5	.1801	.1819	.1828	.0040	.0060	----	.1927	----	----	.1932	.1962
6	.1604	.1620	.1628	.0040	.0060	----	.1726	----	----	.1731	.1761
7	.1429	.1443	.1450	.0040	.0060	----	.1547	----	----	.1551	.1581
8	.1272	.1285	.1292	.0040	.0060	----	.1388	----	----	.1392	.1422
9	.1133	.1144	.1150	.0040	.0060	----	.1245	----	----	.1249	.1279
10	.1009	.1019	.1024	.0035	.0055	0.1079	.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
16	.0503	.0508	.0511	.0035	.0055	.0563	.0593	.0581	.0611	.0595	.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	.0029
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, inch	Minimum breakdown, volts 1/	
		Single covering	Double covering
4-9	----	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: M1177/24-06C021.

M1177/24-	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
DgH	01	Copper	C
Dg2H	02	Aluminum	A
LDgH	03	Nickel-coated copper	N
LDg2H	04	Silver-coated copper	S
L2DgH	05		
L2Dg2H	06		

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

Intended use: Type DaH magnet wire is intended for 180°C applications for uses similar to those of glass-insulated (type GH) 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:

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 6145-1111-20)

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