

INCH-POUND

J-W-1177/47

June 10, 1988

## FEDERAL SPECIFICATION SHEET

WIRE, MAGNET, ELECTRICAL, CLASS 90, TYPE F,  
NYLON-COVERED, 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 90; type F (single nylon covered) and type F2 (double nylon covered); round.
- Insulating materials: The nylon shall be of good quality and substantially free from knots, ravelings, foreign matter and other irregularities. The fiber covering and application of the covering shall be as specified in J-W-1177.
- NEMA/ANSI equivalent: Dimension, elongation and coverage requirements are equivalent to MW-22 of NEMA MW 1000.
- General requirements: See J-W-1177 for general requirements, quality assurance provisions, and packaging.

## Requirements:

Characteristics	Test procedure, see J-W-1177	Wire sizes, AWG	Requirements
Dimensions	4.7.1.2	24-40	See table I.
Elongation	4.7.5	24-40	Not less than the values shown in table II.
Coverage	----	24-40	The covering shall not open sufficiently to expose bare copper when the specimen is wound 10 turns around a mandrel having a diameter equal to 10 times the diameter of the bare wire. Normal vision shall be used.

AMSC N/A

FSC 6145

DISTRIBUTION STATEMENT A Approved for public release; distribution unlimited

J-W-1177/47

## Requirements: (Continued)

Characteristics	Test procedure, see J-W-1177	Wire sizes, AWG	Requirements
Dielectric strength	4.7.9	24-40	Not less than 100 volts/mil (layer-to-layer test).
Thermal endurance	----	24-40	Class 90. All insulating materials shall meet the thermal class ratings as described above.

TABLE I. Dimensions.

AWG size	Type F					Maximum overall diameter,	
	Bare wire diameter, inch			Minimum increase, one layer of nylon fiber			
	Minimum	Nominal	Maximum	inch	mm	inch	mm
24	0.0199	0.0201	$\frac{1}{0.0202}$	0.0013	0.033	0.0224	0.569
25	.0177	.0179	$\frac{1}{.0180}$	.0013	.033	.0202	.513
26	.0157	.0159	$\frac{1}{.0160}$	.0013	.033	.0182	.462
27	.0141	.0142	.0143	.0013	.033	.0165	.419
28	.0125	.0126	.0127	.0013	.033	.0149	.378
29	.0112	.0113	.0114	.0013	.033	.0136	.345
30	.0099	.0100	.0101	.0013	.033	.0123	.312
31	.0088	.0089	.0090	.0013	.033	.0112	.284
32	.0079	.0080	.0081	.0013	.033	.0103	.262
33	.0070	.0071	.0072	.0013	.033	.0094	.239
34	.0062	.0063	.0064	.0013	.033	.0086	.218
35	.0055	.0056	.0057	.0013	.033	.0079	.201
36	.0049	.0050	.0051	.0013	.033	.0073	.185
37	.0044	.0045	.0046	.0013	.033	.0068	.173
38	.0039	.0040	.0041	.0013	.033	.0063	.160
39	.0034	.0035	.0036	.0013	.033	.0058	.147
40	.0030	.0031	.0032	.0013	.033	.0054	.137

See footnote at end of table.

TABLE I. Dimensions. - Continued

AWG size	Type F2					Maximum overall diameter	
	Bare wire diameter, inch			Minimum increase, two layers of nylon fiber			
	Minimum	Nominal	Maximum	inch	mm	inch	mm
24	0.0199	0.0201	1/0.0202	0.0026	0.066	0.0246	0.625
25	.0177	.0179	1/ .0180	.0026	.066	.0224	.569
26	.0157	.0159	1/ .0160	.0026	.066	.0204	.518
27	.0141	.0142	.0143	.0026	.066	.0187	.475
28	.0125	.0126	.0127	.0026	.066	.0171	.434
29	.0112	.0113	.0114	.0026	.066	.0158	.401
30	.0099	.0100	.0101	.0026	.066	.0145	.368
31	.0088	.0089	.0090	.0026	.066	.0134	.340
32	.0079	.0080	.0081	.0026	.066	.0125	.318
33	.0070	.0071	.0072	.0026	.066	.0116	.295
34	.0062	.0063	.0064	.0026	.066	.0108	.274
35	.0055	.0056	.0057	.0026	.066	.0101	.257
36	.0049	.0050	.0051	.0026	.066	.0095	.241
37	.0044	.0045	.0046	.0026	.066	.0090	.229
38	.0039	.0040	.0041	.0026	.066	.0085	.216
39	.0034	.0035	.0036	.0026	.066	.0080	.203
40	.0030	.0031	.0032	.0026	.066	.0076	.193

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.

TABLE II. Elongation of the finished wire.

AWG size	Minimum elongation, percent
24-34	20
35-40	15

Part number: Magnet wire covered by this specification shall be defined by the following part numbering system. Example:  
M1177/47-01C021.

M1177/47-	01	C	021
Federal specification identifier	Two digit type code	Single letter conductor code	Three character size code

J-W-1177/47

The following codes shall apply:

Type	Type code	Conductor	Conductor code
F	01	Copper	C
F2	02	Aluminum	A
		Nickel-coated copper	N
		Silver-coated copper	S

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

Intended use: Type F magnet wire is intended for 90°C applications in the rebuilding of rotating machinery, transformers and similar equipment where an alternative insulation is not available.

## 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 6145-1111-43)