

INCH-POUND

J-W-1177/45

June 10, 1988

## FEDERAL SPECIFICATION SHEET

WIRE, MAGNET, ELECTRICAL, CLASS 220, TYPE MDgGM,  
POLYESTER-GLASS AND GLASS-FIBER, POLYIMIDE-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 220; type MDgGM (single film, single polyester-glass fiber, single glass fiber, polyimide varnished); round.

Insulating materials: The fiber covering and application of the covering shall be as specified in J-W-1177. The underlying film coating shall have a class 220 rating. The varnish used in treating fibrous covered wire shall conform to the requirements of class 220 of MIL-I-24092 or an alternate selected on the basis of equivalent test data. The varnish shall be a modified polyimide insulating varnish to provide a tough outer finish. The varnish used shall be identified in the qualification test report. The glass covering shall be bonded with class 220 varnish, and the polyester-glass covering shall be either fused or bonded with the class 220 varnish.

NEMA/ANSI equivalent: There is no NEMA/ANSI equivalent.

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-1177/45

## 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 220. All insulating materials shall meet the thermal class ratings as described above.

TABLE I. Dimensions.

AWG sizes, inclusive	Minimum increase, inch, glass and polyester-glass covering <sup>1/</sup>	Maximum increase, inch glass and polyester-glass covering <sup>1/</sup>
4-9	0.0065	0.0100
10-23	.0060	.0085
24-40	.0045	.0065

<sup>1/</sup> To these minimum dimensions must be added the minimum film build provided by the type M2 enamel.

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, inch	Minimum breakdown, volts <sub>1/</sub>
4-9	---	270
10-23	1.00	540
24-30	0.25	400

1/ 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:  
M1177/45-01C029.

<u>M1177/45-</u>	<u>01</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
MDgGM	01	Copper	C
		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 MDgGM magnet wire is intended for use in 220°C applications similar to GO where increased toughness, flexibility and nonfraying properties are required. Type MDgGM magnet wire has been standardized for the repair of shipboard electrical power equipment.

J-W-1177/45

**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 6145-1111-41)