RESISTANCE WIRE, ENAMEL INSULATED (98 CU - 2 NI) — **ESF-M6A103-A1**

RESISTANCE WIRE, ENAMEL INSULATED (94 CU - 6 NI) — **ESF-M6A103-A2**

RESISTANCE WIRE, ENAMEL INSULATED (78 CU - 22 NI) — **ESF-M6A103-A3**

1. SCOPE

The materials defined by these specifications are low resistivity copper-nickel alloy resistance wires.

2. APPLICATION

These specifications were released originally for material used as resistance wires in instrument cluster gauges.

3. REQUIREMENTS

3.0 STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS

Material suppliers and part producers must conform to the Company's Standard Requirements For Production Materials (WSS-M99P1111-A).

3.1 CONSTRUCTION

3.1.1 Enameled

The wire shall be light enameled, without increasing the O.D. more than 0.020 mm. The enamel shall be a polyurethane baking type.

3.2 CHEMICAL COMPOSITION (Nominal)

	A1	A2	A3
Nickel	2	6	22
Copper	98	94	78

3.3 WIRE SIZE AND RESISTANCE

The wire shall have an O.D. of approximately #38 B & S Gauge, 0.15 mm, and shall be drawn to the following resistance at a reference temperature of 20 °C. (Gauge of ESF-M6A103-A3 as specified on engineering drawing.)

ESF-M6A103-A1	5.964-6.331 Ω/m
ESF-M6A103-A2	11.928-12.662 Ω/m
ESF-M6A103-A3	As specified on engineering drawing.

Date	Action	Revisions
2003 10 09	Revised	Para 3.0 inserted; para 3.6 and 4 deleted
1985 03 20	CF40 RD888002-262	Released

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Test Procedure: Determine resistance by ohmic measurement of a 3.05 m length of wire from each continuous spool length assigned for test. The wire should be accurate to within 6 mm.

Use a Weston Meter Model #50868 and 48272, or equivalent.

3.4 SPECIFIC RESISTANCE (Nominal)
(ASTM B 63 at 20 °C)

ESF-M6A103-A1	0.050 $\Omega mm^2/m$
ESF-M6A103-A2	0.096 $\Omega mm^2/m$
ESF-M6A103-A3	0.30 $\Omega mm^2/m$

3.5 TEMPERATURE COEFFICIENT OF RESISTANCE, max
(ASTM B 84 between 20 and 100 °C)

ESF-M6A103-A1	1700 ppm/°C
ESF-M6A103-A2	900 ppm/°C
ESF-M6A103-A3	210 ppm/°C

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