



RESISTOR WIRE – IGNITION

ESB-M2L35-A

1. SCOPE

The material defined by this specification is an insulated, stranded cable made of high resistivity, low temperature coefficient alloy.

2. APPLICATION

This specification was released originally for material used for assembling into automotive wiring harness assemblies as a precision resistor ignition primary circuit component.

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 INSULATION COLOR

Shall be specified on the engineering drawing.

3.2 CONSTRUCTION

3.2.1 Conductor

Shall consist of 7 strands of #28 AWG (0.0128 in (0.325 mm) maximum dia) soft or annealed alloy wire bunched to an approximate diameter of 0.040 in (1.02 mm).

3.2.1.1 Chemical Composition

Copper	53.5 - 55
Nickel	43 min
Iron	0.5 max
Manganese	3 max
Carbon	0.1 max
Silicon	0.25 max
Sulphur	0.03 max
Zirconium	0.05 max

3.2.1.2	Tensile Strength (414 - 724 MPa)	60,000 - 105,000 psi
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3.2.1.3	Resistance, min	0.258 Ohm/ft (0.846 Ohm/m)
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Date	Action	Revisions
2003 06 27	Revised	Para 3.0 inserted; Para 3.5 & 4 deleted
1978 12 01		Metricated, Renumbered and Retyped CAH1-RD572066-193
1963 06 12		Released ASI #927

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3.2.1.4 Temperature Coefficient of Resistance
(-40 to 100 °C) +/- 0.00002

3.2.2 Cable Insulation

Conductor shall be coated with a nominal 0.037 in (0.94 mm) thick wall of a chlorosulfonated polyethylene rubber (ESB-M1L54 & 55) capable of continuous service at 105 °C. Insulation shall be substantially concentric around the conductor. The material shall conform closely to, but strip readily from the conductor strands leaving them reasonably clean and suitable for soldering.

3.2.2.1 Identification

On cables with secondary markings, the finished cable shall have Resistor Wire - Do Not Cut or Splice" printed on the cable at 5.0 - 6.0 in (125 - 150 mm) intervals instead of the tracer (stripe, hash or dot) color as specified in the ES-DIAB-1274-AA specification. The paint shall be chlorosulfonated polyethylene. On solid color cables, the above note shall be printed using white chlorosulfonated polyethylene paint at 5.0 - 6.0 in (125 - 150 mm) intervals.

3.2.3 Finished Cable Diameter 0.112 - 0.128 in
(2.85 - 3.25 mm)

3.3 INSULATION QUALITY

3.3.1 Tensile Strength, min 1600 psi (11.0 MPa)
(ASTM D 412, speed 12 in
(305 mm)/min)

Elongation, min 250%

3.3.2 Dielectric Test No rupture of the insulation.

Test Method: A specimen of the cable 24 in (610 mm) long shall be formed into a loop. One inch (25 mm) of the insulation shall be removed from each end of the wire and the ends twisted together. The loop thus formed shall be immersed in water containing 5% salt by weight at 22 +/- 3 °C, so that no more than 6 in (152 mm) of each end of the specimen protrudes above the solution. After being immersed for 5 h, and while still immersed, the specimen shall withstand the application of 1000 volts (rms) at 60 Hz frequency, between the conductor and the water for 1 min.

3.3.3 High Temperature Resistance

One inch (25 mm) of the insulation shall be removed from each end of a 24 in (610 mm) sample of the finished cable. The sample shall be then suspended around a 4.5 in (114 mm) mandrel. Each end of the conductor shall have a weight of 1 lb (0.45 kg) suspended from it. This condition shall be maintained for 120 h in a mechanical convection oven at 121 +/- 3 °C. When cool, the weights shall be removed from the specimen and it shall be taken off the mandrel, bent in the reverse direction around a 3 in (76 mm) mandrel at a rate not to exceed one complete turn/min. Then it shall be subjected to the dielectric test, para 3.3.2.