



CABLE, LOW TENSION, MODIFIED POLYESTER INSULATED, COPPER AND TINNED COPPER CONDUCTOR

WSA-M1L133-A1

1. SCOPE

The materials defined by this specification are stranded insulated low tension wires for use throughout the vehicle. The wire insulation system shall be suitable for continuous operation between temperatures of -55 to 150 °C.

2. APPLICATION

The products described by this specification are intended for use in automotive electrical systems and harnesses, especially in areas where mechanical toughness, temperature, fluids, and flex life are of concern.

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).

3.2 CONDUCTOR

- 3.2.1 Conductor Material
(ASTM B 3 or B 33, prior to bunching)
- 3.2.2 Conductor Elongation
(ASTM B 3 or B 33, values per Table I, prior to insulating)
- 3.2.3 Conductor Diameter
(ASTM D 3032, Sec. 15 optical method, values per Table I)
- 3.2.4 The conductor area may be determined by measuring individual strand diameters and calculating the sum of the individual strand areas.
- 3.2.5 Conductor Resistance
(Table I)

3.3 FINISHED WIRE

- 3.3.1 The insulating material shall be an extrusion of modified polyester material. The surface shall be smooth and without cracks, knots, blisters or other faults.
- 3.3.2 Dimensions
(ASTM D 3032, Sec. 15 and 16, values per Table I)

Date	Action	Revisions
2003 06 24	Revised	Para 3.0 inserted; Para 3.1, 3.13, 4 deleted, corrected numbering
1994 08 10	NC00E1024447036	Released L. Mastrofrancesco

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3.3.3 Tensile and Elongation
(ASTM D 3032, Sec. 17 using 25 mm jaw separation and bench marks, and a jaw separation speed of 50 mm per minute.

3.3.3.1 Tensile, min 27 mPa

3.3.3.2 Elongation, min 250%

3.3.4 The color of the finished wires are per the Munsell Color Coding System and shall conform to Table III. The following method shall be used to evaluate the color of the cables.

Comparison must be made by a person with normal or corrected vision, under cool white fluorescent lighting. The surface being inspected and the tolerance set must be in the same plane. Cable samples must be placed flat, overlapping the color standard. Color tolerance Reference Sets are available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096.

3.4 FAULT TESTING OF THE COMPLETE DELIVERY

(In process testing)
(ASTM D 3032, Sec. 13)

3.5 DIELECTRIC

(SAE J1128, PARA 4.3)

No dielectric breakdown is allowed.

3.6 COLD BEND

(SAE J1128, Sec. 4.4 for Type SXL except at - 55 °C.

No cracking or breakdown of the finished cable insulation is allowed.

3.7 PINCH RESISTANCE

(SAE J1128, para 4.9, values per Table I)

3.8 HEAT AGING

The tensile specimen shall be prepared per ASTM D 3032, Section 17, and then conditioned in an air circulating oven for 168 h at 165 +/- 2 °C. Upon removal from the oven, the samples shall be conditioned at 20 +/- 5 °C for a minimum of 4 h, and then tested for retention of tensile strength and elongation per paragraph 3.3.3.

3.8.1 Retention of Tensile Strength, min 80%

3.8.2 Retention of Elongation, min 50%

3.9 RESISTANCE TO FLAME PROPAGATION

(SAE J1128, para 4.5)