CABLE, LOW TENSION, POLYETHYLENE INSULATED, REDUCED WALL THICKNESS, BARE — **ESB-M1L123-A**

CABLE, LOW TENSION, POLYETHYLENE INSULATED, REDUCED WALL THICKNESS, TINNED — **ESB-M1L123-A2**

1. SCOPE

The material defined by these specifications is a low tension stranded cable insulated with cross-linked polyethylene. The cable is similar to SAE J 1128 type SXL

2. APPLICATION

These specifications were released for automotive applications requiring the use of cross-linked insulation.

Note: The assemblers of electrical wire harnesses shall use the bulk wire suppliers as shown in the Ford Motor Company Materials Approved Source List.

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 Unless otherwise specified, the individual strands of the conductor shall be soft or annealed copper conforming to ASTM B 3, except strand dimensions. These dimensions shall be controlled to yield the cross-sectional area listed for the conductor of the finished cable per Table 1. Conductor area shall be determined by measuring individual strand diameters and calculating the sum of the individual strand areas. As an alternate method, conductor area may also be determined in accordance with ASTM B 263. For this procedure, let k=2 in accordance with ASTM B 174, para 12.3. When tinned conductor strands are specified, they shall withstand the continuity of coating tests specified in SAE J1128 (ESB-M1L123-A2 Only).

3.2.2 The strands shall be bunched per ASTM B 174. The maximum lay length shall be as specified in ASTM B 174 Table 2, Column A. Conductor strand count shall comply with Table 1. Missing strands are not allowed.

Date	Action	Revisions	Rev 03
2012 05 30	Re-Activated	Re-Activate A1	M. Gramlich, NA
2012 03 20	INACTIVATED	ESB-M1L123-A inactivated	M. Gramlich, NA
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3.3 INSULATION

3.3.1 The color of the insulation shall be specified on the engineering drawing of the component utilizing this material. Base and strip colors shall correspond to SAE J1128. Where striping is specified, one or two stripes may be used. The width of the stripe(s) shall be a minimum of 0.3 mm but not more than 15% of the circumference of the wire. If the insulation is dyed or painted, all cable quality tests in Section 3.4 except 3.4.2, 3.4.3, and 3.4.4 must be performed on the finished product. The insulation and the color may show no evidence of peeling or cracking and must conform to the color tolerances specified.

3.3.2 The insulating material shall be flame retardant, homogeneous, cross-linked polyethylene, similar to SAE J1128 type SXL. The material shall adhere closely to, but strip readily from the conductors, leaving them free of insulation and in suitable condition for applying terminals. Water soluble stripping agents shall not be used.

3.3.3 Insulation thickness shall comply with the requirements of Table 2. Insulation thickness shall be measured with an optical device accurate to at least 0.01 mm or a pin micrometer with a diameter of 0.5 mm. The test method for determining minimum insulation thickness at any point shall be in accordance with ANSI/UL-1581, Reference Standard for Electrical Wires, Cables, and Flexible Cords, Paras 240 through 250.11. In case of dispute the referee method shall be the optical device.

3.4 CABLE QUALITY TESTS

The following tests: Dielectric Test, Cold Bend Test, Flame Test, Oil Absorption Test, Overload Test, and Short Circuit Test correspond respectively to sections 4.3, 4.4, 4.5, 4.6, 4.7, and 4.8 of SAE J1128 type SXL. For Cold Bend and Oil Absorption tests the requirements for 22 gage wire shall be the same as those for 20 gage wire.

The test listed below shall be conducted in addition to the test listed above.

3.4.1 Insulation Physical Properties Test

This test shall be conducted in accordance with Section 4.2 of SAE J1128 for type SXL except that the test temperature shall be 160 +/- 2 °C.

3.4.2 Pinch Test

This test shall be conducted in accordance with Section 4.9 of SAE J1128 except that the minimum values for pinch resistance shall comply with those listed in Table 3.

3.4.3 High Temperature Resistance

25 mm of the insulation shall be removed from each end of a 600 mm sample of the finished cable. The sample shall be suspended around a cylindrical mandrel having a diameter specified in Table 4. The weight specified for the Cold Bend test above (SAE J1128, Section 4.4, Table 5, Type SXL) shall be suspended from each end of the conductor. This condition shall be maintained for 168 h in a mechanical convection oven at a temperature of 165 +/- 2 °C.

When cool, the specimen shall be removed from the mandrel and wrapped in the reverse direction around a mandrel of the diameter specified for the Cold Bend Test in the manner prescribed for the Cold Bend Test. The specimen shall then be subjected to the Dielectric Test (SAE J1128, Section 4.3).

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