



CABLE-STRANDED, VINYL INSULATED (EXTRA FLEXIBLE) #19 GAGE

ESF-M1L44-A

1. SCOPE

The material defined by this specification is a vinyl insulated low tension cable with a large number of stranded fine wire for flexibility.

2. APPLICATION

This specification was released originally for material used for the primary lead wire on the distributor.

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 CABLE QUALITY

The materials shall meet all of the requirements listed herein and must be equal to the original approved purchase sample.

3.2 CABLE SIZE AND CONSTRUCTION

Cable Size Awg	Number of Wires	Wire Size	Nominal Insulation Thickness Mm
19	105 Copper 7 Steel	40 Awg 36 Bwg	0.86

The conductor shall consist of 7 rope layed members. Six members shall consist of 16 strands of #40 Awg bare copper wire. The central member shall consist of 7 strands of #36 Bwg steel wire plus 9 strands of #40 Awg bare copper wire. The 6 members shall be rope layed around the central core.

3.3 COPPER WIRE QUALITY

The strands of the conductor shall conform to ESF-M2L1-A, soft or annealed bare copper wire, except for dimensions which do not apply to the wire after stranding

Date	Action	Revisions
2006 11 06	Revised	ESF-M1L44-B & C inactivated and removed, no replacement named; Revised 3.2; 3.3 & 3.5.1 R. Lord
2003 04 24	Revised	Para 3.0 inserted; Para 3.6 & 4 deleted
1963 09 01	Released	



**3.4 INSULATION COLOR**

Black or as specified
on Engineering drawing

3.5 INSULATION QUALITY

The material shall adhere closely to, but strip readily from the conductors, leaving them reasonably clean and in suitable condition for soldering.

Insulation thickness shall be in accordance with 3.2 and shall be determined by measuring the diameter over the insulation, then removing the insulation and measuring the diameter of the conductor. Half of the difference shall be considered as the wall thickness.

3.5.1 Mechanical Properties

A test specimen of the thermoplastic insulation prepared as in the SAE J200 section on sampling shall be used. The dumbbell cut sample shall have marks placed upon it 50 mm apart. The sample shall then be stretched at the rate of 305 mm/min. The tensile strength shall be calculated upon the original cross section of the test specimen before stretching. Testing shall be conducted at 23 +/- 2 °C. Care should be exercised in cutting samples to obtain uniform cross section. The physical properties shall be as follows:

Tensile Strength, min MPa	Elongation, min %
9.0	275

3.5.2 High Temperature Resistance

25 mm of the insulation shall be removed from each end of a 610 mm sample of the finished cable. The sample shall be suspended around a cylindrical mandrel having a diameter of 114 mm. Each end of the conductor shall have suspended from it a weight of 0.45 kg. This condition shall be maintained for 120 h at 120 +/- 122 °C in a circulating air oven. When cool, the weight shall be removed from the specimen and it shall be taken off the mandrel, bent in the reverse direction around a mandrel of 76 mm diameter at a rate not to exceed one complete turn/min and then be subjected to the dielectric test, para 3.5.3.

3.5.3 Dielectric Test

A specimen of the cable 610 mm long shall be formed into a loop. 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 room temperature, so that not more than 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 V (rms) at 60 Hz frequency between the conductor and the water for 1 min without rupture of the insulation.