

UNDERWRITERS LABORATORIES INC. CERTIFICATION REQUIREMENT DECISION

This Certification Requirement Decision is prepared by UL LLC. It is normative for the applicable UL Product Certification Program(s); however, it is currently not part of the UL Standard(s) referenced below.

Product Category (CCN): FFSO/2/3

Standard Number: UL 62

Standard Title: Standard for Flexible Cords and Cables

Edition Date: July 6, 2018

Edition Number: 20

Section / Paragraph Reference: 4.9 (new), 5.4 (new), 6.2.3b exception, 6.4.1c exception, 6.8 (new), Table 40A (new), Table 61 (new), Fig 11(new)

Subject:

DECISION:

(NEW)

4.9 Electric Vehicle Cables containing fluid-filled tubes for use in Engineered Systems Electric Vehicle Cables containing fluid-filled tubes for use in Engineered Systems are specifically designed to be used with a unique connector and Electrical Vehicle Supply Equipment (EVSE). These cables have constructional features engineered specifically to correspond to the safety features designed into the overall EVSE.

4.9.1 General

These cables have a temperature rating of 60 – 105°C dry, 60°C wet, 600 V, or 1000 V, employing oil-resistant and sunlight-resistant jacket and suitable for use in wet locations.

The materials used in cables with a temperature rating higher than 105C dry shall be evaluated in accordance with 4.1.2.2 and 4.1.6.3.

4.9.2 Conductors

Conductors shall comply with Clause 4.1.1.

4.9.3 Insulation

4.9.3.1 Insulation shall be in accordance with Clause 4.1.2. The classes, thickness, and required testing of insulation of a generic material class shall be as shown in Table 40A. Insulation thickness of signal and communication conductors 0.824 mm² (18 AWG) and smaller shall comply with the requirements for 0.824 mm² (18 AWG) circuit conductors.

4.9.3.2 The minimum average and minimum thickness at any point shall be determined in accordance with the test Thickness in CAN/CSA-C22.2 No. 2556, UL 2556, or NMX-J-177-ANCE.

4.9.4 Covering

The application of a covering, in accordance with Clause 4.1.3, over the insulation of individual conductors, shall be permitted.

4.9.6 Shielding

UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM  **Documents**
Document Sharing Hub

A shield over an individual conductor or groups of conductors, if provided, shall comply with the test in Clause 5.2.9.

4.9.7 Tubes intended to carry fluid

Tubes used for carrying fluid shall be permitted.

4.9.8 Conductor assembly

Conductor assembly, fillers, and binders shall be in accordance with Clause 4.1.4.

When data/signal conductors are assembled with circuit conductors, they shall be cabled in the same direction and with the same length of lay as the circuit conductors. The data/signal conductors may be individual(s) or pairs or groups and either shielded or unshielded and jacketed or unjacketed.

4.9.9 Shielding

A shield over the complete assembly of conductors, if provided, shall comply with Clause 4.1.5.

4.9.10 Jackets

4.9.10.1 Jackets shall be in accordance with Clause 4.1.6. The classes, thickness, and required testing of jackets to be used on a particular type shall be as shown in Table 40A.

4.9.7.2 The jacket on a cable containing at least one conductor larger than 33.6 mm² (2 AWG) shall be reinforced by a tape, two servings, or braid of natural or synthetic material. If two servings are used, they shall be applied in opposite directions of lay. The reinforcing layer shall be under the single layer jacket, or between the layers of the two-layered construction. The total jacket thickness shall be in accordance with Tables 57 and 58.

4.9.7.3 The average and minimum thickness of the jacket shall be determined in accordance with the test Thickness in CAN/CSA-C22.2 No. 2556, UL 2556, or NMX-J-177-ANCE.

4.9.8 Overall dimensions

The overall diameter of the finished cord or cable is not defined.

(NEW)

5.4 Tests for cables used in engineered electric vehicle supply equipment systems

Cables used in engineered electric vehicle supply equipment systems shall be subject to the tests in Table 40A with the following additions or modifications.

Tests on samples of complete cable shall be performed in both the filled and unfilled condition unless otherwise specified.

5.4.1 Flame test

5.4.1.1 FT2 Flame

5.4.1.1.1 The FT2 flame test shall be performed on the cable with the tubes unfilled. In addition to the conformance criteria in 5.1.5.3, if the flame penetrates the jacket and the tubes such that the fluid could leak, the test is considered nonconforming.

5.4.1.2 VW-1 Flame (optional)

5.4.1.2.1 The VW-1 flame test shall be performed on the complete cable with the tubes unfilled. In addition to the conformance criteria in 5.1.5, if the flame penetrates the jacket and the tubes such that the fluid could leak, the test is considered nonconforming.

The VW-1 flame test shall also be performed on the tubes in the unfilled condition. In addition to the conformance criteria in 5.1.5, if the flame penetrates the tube such that the fluid could leak out, this is considered a nonconformance.

5.4.1.3 FT1 Flame (optional) The FT1 flame test shall be performed on the complete cable with the tubes unfilled. In addition to the conformance criteria in 5.1.5, if the flame penetrates the jacket and the tubes such that the fluid could leak, the test is considered nonconforming.

5.4.2 Fluid compatibility of tubes (optional)

5.4.2.1 Samples of the tube shall be immersed for the time and temperature indicated in Table 61. The immersion fluid shall be the fluid intended to be used in the Engineered System. Unaged and immersed specimens shall be subjected to the tensile and elongation test. The material shall retain 75% of the original value of tensile strength and elongation.

5.4.3 Fluid compatibility of insulation or jacket (optional)

5.4.3.1 The Fluid Compatibility Test defined in SAE J 1128 shall be used. The immersion fluid shall be the fluid intended to be used in the Engineered System. The test temperature shall be the same as the temperature rating of the cable. There shall be no more than 15% change in diameter of the exposed component.

5.4.4 Hydrostatic Strength Test of tube (optional)

5.4.4.1 Two samples of the tube shall be subjected to the test. The results are not acceptable if either sample bursts or shows visible distortion.

5.4.4.2 Samples shall be tested for 15 min

5.4.4.3 The test shall be conducted by filling the tube with water so as to exclude all air, connecting the sealed tube to a hydraulic pump, gradually increasing the pressure to the value corresponding to 1.5 times the maximum working pressure, or 1.5 times the maximum setting of a pressure relief device, whichever is greater.

5.4.5 Abrasion (optional)

5.4.5.1 Six straight, 15 inch or 380 mm specimens are to be cut from a sample length of finished cable in the unfilled condition. The specimens are to be laid parallel to one another on a flat horizontal steel plate and are to be individually secured in place at their ends. An abrasion tool consisting of a weighted solid steel right-circular cylinder across one face of which three straight parallel teeth are machined symmetrically about a diameter (see Figure 11) is to be supported above (not touching) the center of each specimen with its teeth perpendicular to the longitudinal axis of the specimen. The support is to minimize the play of the tool at the ends of each stroke during the abrasion process.