

Subject 486D

July 14, 2017

SUMMARY OF TOPICS

The following changes in requirements to the Standard for Sealed Wire Connector Systems, UL 486D, are being proposed:

- 1. Sealed Wire Connector Systems Rated 601 – 1500 V***
- 2. Standard Scope Clarification***
- 3. Sunlight Resistance / Salt Water Immersion***

STP BALLOTS AND ALL COMMENTS DUE: August 28, 2017

UL's goal is to have no interest category comprise more than one-third of the STP membership balance. To improve the current balance for STP 486, UL is looking for participants in the following interest categories: Commercial/Industrial User, Consumer, Government, and Testing & Standards. Definitions for these interest categories are available on the Standards STP Internet site:

<http://ulstandards.ul.com/develop-standards/participation/interest-categories/>

If you are interested in applying for STP 486 membership or are aware of potential candidates for this STP, please contact the STP Project Manager, Mitchell Gold at Mitchell.Gold@ul.com.

For your convenience in review, proposed additions to existing requirements are shown underlined and proposed deletions are shown ~~lined-out~~.

1. Sealed Wire Connector Systems Rated 601 – 1500 V

RATIONALE

Proposal submitted by: Robert Osborne, UL LLC

Sealed wire connector systems are needed for applications up to 1500 volts. This Certification Requirement Decision expands the scope of UL 486D to include ratings up to 1500 volts by revising performance requirements to address this higher voltage level. Two test specifications require updates to reflect the higher voltage. The Dielectric Withstand Test value is increased to 2000 volts plus 2.25 times the maximum rated voltage, which is consistent with other Standards that include equipment rated 1500 volts (one example being the Standard for Terminal Blocks, UL 1059). The test voltage used during the Leakage Current Test is also increased to 1500 volts.

PROPOSAL

1.4 These requirements apply to sealed wire connector systems intended for use with 30 AWG (0.05 mm²) through 2 000 kcmil (1 012 mm²) conductors with currents not exceeding the ampacity of insulated conductors rated either 75 °C (167 °F) or 90 °C (194 °F) and intended for use at 1500 V or less.

**UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL**



Documents
Document Sharing Hub

9.2.3 Dielectric withstand

9.2.3.1 Immediately after the insulation resistance test and while still immersed, each assembly rated 600 V shall be subjected to a 2200 V, 60 Hz potential for 1 min. The potential shall be applied between the conductor/assembly and the water.

9.2.3.2 The dielectric withstand test value for sealed wire connector systems rated 601 – 1500 volts shall be 2000 volts, 60 HZ, plus 2.25 times maximum rated voltage.

9.2.9 Leakage current

9.2.9.1 Following the dielectric withstand test and while still immersed, the assemblies rated 600 V shall be subjected to a 600 V, 60 Hz potential between the water and conductor/assembly and the resulting leakage current measured.

9.2.9.2 Following the dielectric withstand test and while still immersed, assemblies rated 601 – 1500 V shall be subjected to a test voltage of the rated voltage potential (at 60 Hz) between the water and conductor/assembly and the resulting leakage current measured.

2. Standard Scope Clarification

RATIONALE

Proposal submitted by: Greg Steinman, Thomas & Betts

With the upcoming publication of UL 486G Twist-on Style Splicing Sealed Wire Connectors, there is a need to modify the scope of UL 486D to declare UL 486D is no longer the standard to use for twist-on style splicing sealed wire connectors. The installation of these products differ from the systems listed in UL 486D.

PROPOSAL

1.5 This standard does not apply to twist-on style splicing sealed wire connectors.

3. Sunlight Resistance / Salt Water Immersion

RATIONALE

Proposal submitted by: The SunRes Task Force on behalf of CANENA THC 99 for Connectors

These products were initially selected for this testing because they are already in use in such areas as marinas, where exposure from sunlight and salt water exists. This proposal was put together by the SunRes Task Force at the request of industry.

PROPOSAL

1 Scope

1.1 The requirements in this standard cover sealed wire connector systems, including insulating caps, covers, resins, tubing, and tapes provided with, or for use with, specific wire connectors. These systems are intended for wet or damp locations, and other installations such as direct burial, below grade, or above grade where protected from direct exposure to sunlight. The wire connectors covered by these

UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL



Documents
Document Sharing Hub

requirements are intended for use with copper conductor, aluminum conductor, or both in accordance with installations covered by the National Electrical Code, NFPA 70; the Canadian Electrical Code, Part I, C22.1; and NOM 001 SEDE, Standard for Electrical Installations.

Note 1: Unless marked for the purpose, ~~These~~ wire connector systems have not been evaluated for direct exposure to sunlight. Additional performance considerations to show equivalency to the connected conductors should be considered for UV exposure.

Note 2: These wire connector systems have ~~not~~ only been evaluated for fresh water unless marked for direct exposure to salt or seawater.

Note 3: These wire connector systems may also be used indoors.

2 Reference publications

2.2 Normative references

2.2.1 ANCE Standards

NMX-J-543-ANCE-13
Wire Connectors

NMX-J-548-ANCE-13
Splicing Wire Connectors

NMX-J-553-ANCE
Wires and Cables - Weather Resistance of Insulation or Jacket of Electrical Conductors - Test Method

2.2.4 ASTM Standards (American Society for Testing and Materials)

ASTM G21-13
Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi

ASTM G151-10
Standard Practice for Exposing Nonmetallic Materials in Accelerated Test Devices that Use Laboratory Light Sources

ASTM G153-13
Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials

ASTM G155-13
Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials

4.2 Fresh water – water generally drawn from lakes, streams, or underground sources and delivered by a private well or a municipality for industrial, commercial, or household use.

4.3 Salt treated water – fresh water treated with salt for sanitation purposes, which is considered fresh water for the purposes of this standard.

4.4 Sea water – salt water generally found in seas and oceans.

4.2 4.2 4.5 Sealed wire connector system – a connector and its associated insulating and sealing components.