

Subject 486F

March 15, 2013

SUMMARY OF TOPICS

The following requirements to the Standard for Bare and Covered Ferrules, UL 486F, are being proposed for preliminary review and comment only:

1. For Preliminary Review Only: Proposed First Edition of the Standard for Bare and Covered Ferrules, UL 486F

COMMENTS DUE: APRIL 29, 2013

This proposal is for review and comment only (no ballot at this time). Please note that comments on a preliminary review document will not receive a response from the proposal author through CSDS. Instead, the proposal author will be asked to review the comments and adjust the proposals and/or supporting rationale as the author determines to be appropriate. The preliminary review process is an informal mechanism that provides authors with the opportunity to refine their proposals before they advance to the next stage in UL's standards development process.

In some cases, the author of the proposals may choose to discontinue them. In this case, the author need not do anything after preliminary review has ended. Normally, the next step in the process is the more formal STP ballot and stakeholder review process. Only comments posted during the STP ballot and stakeholder review process will be provided with a response in CSDS.

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 Commercial/Industrial User, General, Government, Supply Chain, and Testing and Standards interest categories. Definitions for these interest categories are available on the Standards STP Internet site:

<http://www.ul.com/global/eng/pages/solutions/standards/developstandards/participation/interestcategories/>

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, Marcia.M.Kawate@ul.com.

1. For Preliminary Review Only: Proposed First Edition of the Standard for Bare and Covered Ferrules, UL 486F

RATIONALE

Proposal submitted by: Jake Killinger, UL on behalf of the Technical Harmonization Committee for Connectors, THC 99

This is the First Edition of the Standard for Bare and Covered Ferrules intended for field wiring and factory wiring for use in accordance with the National Electrical Code NFPA 70, NEC, Canadian Electrical Code, CSA C22.1, and Mexican Electric Code, ANCE NOM-001-SEDE.

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PROPOSAL

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1 Scope

1.1 These requirements cover bare and covered ferrules intended for field wiring and factory wiring for use in accordance with the National Electrical Code, ANSI/NFPA-70, Canadian Electrical Code, CSA C22.1, and Mexican Electrical Code, ANCE NOM-001-SEDE.

1.2 These ferrules are intended to facilitate the connection of stranded wire on to devices, such as terminal blocks. Their purpose is to treat stripped wire and prevent turned back strands during installation. They are intended to be used to attach to one stranded copper conductor or two stranded copper conductors of the same size.

1.3 These ferrules are suitable for use with 1/0 – 20 AWG stranded copper conductors.

1.4 These ferrules are intended to be terminated in wire connection devices rated for solid conductors.

1.5 Ferrules are not intended for use in IDC (insulation displacement connection) terminal blocks.

1.6 This standard does not apply to Wire connectors such as pin adapters covered in ANCE NMJ J-543-ANCE, CSA C22.2 No. 65, UL 486A-486B.

2 Reference Publications

2.1 Any undated reference to a code or standard appearing in the requirements of this standard shall be interpreted as referring to the latest edition of that code or standard.

2.2 CSA Standards

C22.1-12

Canadian Electrical Code, Part I (CEC)

CAN/CSA-C22.2 No. 0.17-00 (R2004)

Evaluation of Properties of Polymeric Materials

2.3 UL Standards

UL 94

Tests for Flammability of Plastic Materials for Parts in Devices and Appliances

UL 746C

Polymeric Materials – Use in Electrical Equipment Evaluations

2.4 NFPA* Standard

ANSI/NFPA 70-2011,

National Electrical Code (NEC)

*National Fire Protection Association

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2.5 NOM Standards – Mexican Secretary of Energy

NOM-001-SEDE-2005,
Standard for Electrical Installations

3 Units of Measure

3.1 The values given in SI (Metric) units shall be normative, except for AWG conductor sizes. Any other values are for information only.

4 Definitions

For the purpose of this Standard, the following terms and definitions apply.

4.1 Covered – Encased within material of composition or thickness that is not recognized as electrical insulation.

4.2 Ferrule – A conductive sleeve used to facilitate the termination of stranded wire in devices used to terminate solid conductors.

4.3 Plastic Sleeve – A non-conductive plastic material used for identification purposes.

5 Symbols and Abbreviations

5.1 ° – Degree

5.2 AWG – American Wire Gage/gauge

5.3 C – Celsius

5.4 mm² – Squared millimeters

5.5 V – Volts

6 Construction

6.1 General

6.1.1 A ferrule shall be provided with one opening to accept one or two stranded type copper conductors applied with compression tooling.

6.1.2 A ferrule shall comply with the dimensional requirements in Tables 1 – 5 and Figures 1 – 5. Intermediate lengths and longer lengths are permissible.

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6.2 Materials

6.2.1 A ferrule shall be of copper or a copper alloy containing at least 80% copper and be coated with tin.

6.2.2 A plastic sleeve shall be colored as defined in Tables 4 and 5.

6.3 Flammability

6.3.1 The covering material shall have a minimum flammability classification of HB as determined by tests described in UL 94 or CAN/CSA-C22.2 No. 0.17. As an alternative, the covering shall meet the glow wire test as specified in UL 746C or CSA C22.2 No 0.17, or NMX-J-508 for a temperature of 650 °C.

6.4 Thermal properties

6.4.1 A polymeric material used for covering shall have a minimum relative thermal index of 80 °C (176°F) (electrical, mechanical strength, and mechanical with impact). The material shall be evaluated using the specimen thickness.

7 Test Requirements

7.1 General

7.1.1 All ferrules shall comply with the test requirements in 7.2. Covered ferrules shall additionally comply with the test requirements in 7.3 – 7.4.

7.2 Tensile Test

7.2.1 During testing in accordance with 9.2, the conductor shall not visibly move within the ferrule or be pulled out of the ferrule.

7.3 Mold stress relief

7.3.1 As a result of conditioning as specified in 9.3, there shall not be any warpage, shrinkage or other distortion that results in interference with the operation, function, or installation of the device.

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