UL 486C

STANDARD FOR SAFETY

Splicing Wire Connectors

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UL Standard for Safety for Splicing Wire Connectors, UL 486C

Sixth Edition, Dated January 11, 2013

Summary of Topics

This new edition of ANSI/UL 486C includes the following changes: a) Editorial revisions; b) Addition of Single Input Wire (SIW) requirements; c) Reusable and nonreuseable wire sizes; d) Insulation puncture and flashover test voltage; e) Correction to Table 1; f) Correction to Table 8; g) Table 10 and clause 9.1.5.4 conflict; and h) Bushing diameter tolerance.

The new and revised requirements are substantially in accordance with Proposal(s) on this subject dated August 24, 2012.

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The requirements in this Standard are now in effect, except for those paragraphs, sections, tables, figures, and/or other elements of the Standard having future effective dates as indicated in the preface. The prior text for requirements that have been revised and that have a future effective date are located after the Standard, and are preceded by a ″SUPERSEDED REQUIREMENTS″ notice.

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Association of Standardization and Certification
NMX-J-548-ANCE
Third Edition

Canadian Standards Association
CSA C22.2 No. 188-13
Third Edition

Underwriters Laboratories Inc.
UL 486C
Sixth Edition

Splicing Wire Connectors

January 11, 2013

ANSI/UL 486C-2013

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This Standard is subject to periodic review, and suggestions for its improvement will be referred to the appropriate committee. To submit a proposal for change, please send the following information to inquires@csagroup.org and include "Proposal for change" in the subject line: Standard designation (number); relevant clause, table, and/or figure number; wording of the proposed change; and rationale for the change.

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This ANSI/UL Standard for Safety consists of the Sixth Edition. The most recent designation of ANSI/UL 486C as an American National Standard (ANSI) occurred on January 11, 2013. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page (front and back), or the Preface.

The Department of Defense (DoD) has adopted UL 486C on January 28, 1992. The publication of revised pages or a new edition of this Standard will not invalidate the DoD adoption.

Comments or proposals for revisions on any part of the Standard may be submitted to UL at any time. Proposals should be submitted via a Proposal Request in UL's On-Line Collaborative Standards Development System (CSDS) at http://csds.ul.com.

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CONTENTS

Preface 5

1 Scope 7
2 Reference publications 9
2.1 Normative references 9
2.2 Informative references 10
3 Units of measure 10
4 Definitions 10
5 Symbols and abbreviations 11
6 Construction requirements 12
6.1 General 12
6.2 Intermixing 13
6.3 Materials 13
7 Test requirements 14
7.1 General 14
7.2 Current cycling 15
7.3 Static-heating sequence 16
7.4 Mechanical sequence 16
7.5 Dielectric-withstand test sequence 17
7.6 Secureness of insulation 17
7.7 Flexing 17
7.8 Low temperature installation 17
7.9 Moisture absorption 17
7.10 Stress corrosion/moist ammonia (NH_4) 18
7.11 Stress corrosion/mercurous nitrate ($HgNO_3$) 18
7.12 Spring action 18
7.13 Over-torque 18
7.14 Separable part securement 19
8 Sampling requirements 19
8.1 General 19
8.2 Current cycling 20
8.3 Static-heating sequence 21
8.4 Mechanical sequence 21
8.5 Dielectric withstand 22
8.6 Secureness of insulation 22
8.7 Flexing 22
8.8 Low temperature installation 22
8.9 Moisture absorption 23
8.10 Stress corrosion/moist ammonia (NH_4) 23
8.11 Stress corrosion/mercurous nitrate ($HgNO_3$) 23
8.12 Spring-action sequence 23
8.13 Over-torque 23
8.14 Separable part securement 24
9 Test methods 24
9.1 General 24
9.2 Current cycling 31
9.3 Static-heating sequence 31
9.4 Mechanical sequence 33
9.5 Dielectric withstand 34
9.6 Secureness of insulation 35

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9.7 Flexing 36
9.8 Low temperature installation 37
9.9 Moisture absorption 37
9.10 Stress corrosion/moist ammonia (NH_4) 37
9.11 Stress corrosion/mercurous nitrate ($HgNO_3$) 37
9.12 Spring-action sequence 38
9.13 Over-torque 39
9.14 Separable part securement 39
10 Marking, labeling, and packaging 39

Annex A – Informative references

Annex B – Flammability test (material V-2 and VTM-2)

B.1 General 59
B.2 Reference publications 59
B.3 Apparatus 60
B.4 Test specimens 60
B.5 Specimen conditioning 61
B.6 Test method 62
B.7 Results 63

Annex C – Example of stability factor calculation

Annex D – Example of applying 8.2.2 and 8.2.3

Annex E – Example of applying 9.3.4.4

Annex F – Marking Locations Guide

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Preface

This is the harmonized ANCE, CSA Group, and UL standard for Splicing Wire Connectors. It is the third edition of NMX-J-548-ANCE, the third edition of CSA C22.2 No. 188, and the sixth edition of UL 486C. This edition of NMX-J-548 cancels the previous edition published in 2008. This edition of CSA C22.2 No. 188 supersedes the previous edition published in 2004. This edition of UL 486C supersedes the previous edition published in 2004.

This harmonized standard was prepared by the Association of Standardization and Certification (ANCE), the CSA Group, and Underwriters Laboratories Inc. (UL). The efforts and support of the Technical Harmonization Committee for Connectors, of the Council on the Harmonization of Electrotechnical Standards of the Nations of the Americas (CANENA), are gratefully acknowledged.

This Standard is considered suitable for use for conformity assessment within the stated scope of the Standard.

This standard was reviewed by the CSA Integrated Committee on Electrical Connectors, under the jurisdiction of the CSA Technical Committee on Wiring Products and the CSA Strategic Steering Committee on Requirements for Electrical Safety, and has been formally approved by the CSA Technical Committee.

This standard has been approved by the American National Standards Institute (ANSI) as an American National Standard.

Where reference is made to a specific number of samples to be tested, the specified number is to be considered a minimum quantity.

> **Note:** *Although the intended primary application of this standard is stated in its scope, it is important to note that it remains the responsibility of the users of the standard to judge its suitability for their particular purpose.*

Level of harmonization

This standard uses the IEC format but is not based on, nor is it to be considered equivalent to, an IEC standard. This standard is published as an equivalent standard for ANCE, CSA Group, and UL.

An equivalent standard is a standard that is substantially the same in technical content, except as follows: Technical national differences are allowed for codes and governmental regulations as well as those recognized as being in accordance with NAFTA Article 905, for example, because of fundamental climatic, geographical, technological, or infrastructural factors, scientific justification, or the level of protection that the country considers appropriate. Presentation is word for word except for editorial changes.

Reasons for differences from IEC

The Technical Harmonization Committee identified several IEC standards that address electrical wire connectors included in the scope of this standard. The IEC standards for electrical wire connectors are recognized as being generally system-specific, containing the requirements for the relevant wire connectors and cables in many discrete IEC standards.

The THC determined the safe use of electrical wire connectors is dependent on the design and performance of the wire connectors in relation to the North American electrical codes with which they are intended to be installed. The THC agreed such future investigation would be facilitated by the harmonization of the North American electrical codes for wire connectors with IEC installation practices.

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Interpretations

The interpretation by the standards development organization of an identical or equivalent standard is based on the literal text to determine compliance with the standard in accordance with the procedural rules of the standards development organization. If more than one interpretation of the literal text has been identified, a revision is to be proposed as soon as possible to each of the standards development organizations to more accurately reflect the intent.

ANCE effective date

The effective date for ANCE will be announced through the Diario Oficial de Ia Federación (Official Gazette) and is indicated on the cover page.

CSA Group effective date

The effective date for CSA Group will be announced through CSA Informs or a CSA Group certification notice.

UL effective date

As of January 11, 2013 all products Listed or Recognized by UL must comply with the requirements in this standard.

A UL effective date is one established by Underwriters Laboratories Inc. and is not part of the ANSI approved standard.

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1 Scope

1.1 This Standard applies to single-polarity, hand- or tool-applied splicing wire and cable connectors intended for use with all alloys of copper, aluminum conductors, or copper-clad aluminum conductors, or all three, in accordance with the *Canadian Electrical Code Part I*, C22.1, in Canada, the *National Electrical Code*, NFPA-70, in the United States of America, or the *Standard for Electrical Installations*, NOM-001-SEDE, in Mexico, as follows:

Note: Copper-clad aluminum conductors are for use only in the United States in accordance with the National Electrical Code, NFPA 70.

a) connectors intended to hold two or more conductor(s);

b) connectors intended for use in appliances and equipment that comply with the requirements for such appliances and equipment;

c) connectors intended for use with 6 AWG (13.3 mm^2) or smaller conductors; and

d) uninsulated connectors that are used in circuits rated 8 000 V and less.

Note: Examples of splicing wire connectors include twist-on connectors, insulation-piercing or displacement connectors, spring-action connectors, tool-applied crimp, mechanical set-screw connectors, etc.

1.2 This Standard is intended for splicing wire connectors suitable for use with conductors in the size ranges as follows:

a) Aluminum:

1) 12 AWG (3.3 mm^2) and 10 AWG (5.3 mm^2) solid;

2) 12 AWG (3.3 mm^2) to 6 AWG (13.3 mm^2) stranded, Class B concentric, compressed, and compact; and

3) 12 AWG (3.3 mm^2) to 6 AWG (13.3 mm^2) stranded single input wire (SIW).

In Mexico, the use of aluminum conductors is permitted only with thermoset insulation and for sizes of 6 AWG (13.3 mm^2) and higher.

b) Copper-clad aluminum:

1) In Canada, this construction is not allowed.

2) In Mexico, this construction is not allowed.

3) In the United States:

i) 12 AWG (3.3 mm^2) and 10 AWG (5.3 mm^2) solid; and

ii) 12 AWG (3.3 mm^2) to 6 AWG (13.3 mm^2) stranded, Class B concentric, compressed, and Class C concentric.

c) Copper:

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1) 30 AWG (0.05 mm^2) to 10 AWG (5.3 mm^2) solid; and

2) 30 AWG (0.05 mm^2) to 6 AWG (13.3 mm^2) stranded, Class B concentric and compressed, and Class C concentric.

d) Compact-stranded copper conductors:

In Canada and Mexico, for 8 AWG (8.4 mm^2) and 6 AWG (13.3 mm^2).

In the United States this is not applicable.

e) Rigid (solid and stranded) metric wire falling within the ranges of the above AWG sizes.

Note: For example, a connector rated for 6 AWG (13.3 mm^2) – 14 AWG (2.1 mm^2) may be additionally rated for 10 – 2.5 mm^2.

f) Other class and strand configurations as indicated by marking.

1.3 These requirements cover splicing wire connectors intended for:

a) copper-to-copper;

b) aluminum-to-aluminum;

c) copper-clad aluminum-to-copper-clad aluminum;

d) copper-to-aluminum or copper-clad aluminum and aluminum-to-copper-clad aluminum conductor combinations intended for intermixing of conductors and dry locations only; or

e) all of the above.

1.4 This Standard is intended for splicing wire connectors suitable for currents not exceeding the ampacity of insulated conductors rated 75 °C or 90 °C, in accordance with the rating of the connector.

1.5 This Standard does not apply to:

a) insulated splicing wire connectors intended for use at voltage levels in excess of 600 V [1 000 V in a sign or luminaire];

b) terminal wire connectors;

c) wire binding screw terminals;

d) built-in terminal connectors on devices rated less than 30 A and intended for outlet box mounting or having provision for stress relief;

e) built-in terminal connectors on devices having integral cable clamps;

f) flat quick connect terminals; and

g) soldering lugs.

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2 Reference publications

2.1 Normative references

Where reference is made to any Standards, such reference shall be considered to refer to the latest editions and revisions thereto available at the time of printing, unless otherwise specified.

2.1.1 ANCE Standards

NMX-J-192-ANCE
Electrical Products – Wires and Cables – Flame Test on Electrical Wires – Test Method

NMX-J-218-ANCE
Wires and Cables – Aluminum 1350 Drawing Stock for Electrical Purposes – Specifications

NMX-J-417-ANCE
Wires and Cables – Convection Laboratory Ovens for Evaluation of Electrical Insulation – Specifications and Test Methods

NMX-J-508-ANCE
Electrical Fittings – Safety Requirements – Specifications and Test Methods

2.1.2 CSA Standards

C22.1-12
Canadian Electrical Code, Part 1 (CEC)

CAN/CSA-C22.2 No. 0.17-00 (R2009)
Evaluation of Properties of Polymeric Materials

2.1.3 UL Standards

UL 746C
Polymeric Materials – Use in Electrical Equipment Evaluations

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2.1.4 NFPA* Standards

ANSI/NFPA 70-2011
National Electrical Code (NEC)

* National Fire Protection Association

2.1.5 NOM Standards – Mexican Secretary of Energy

NOM-001-SEDE
Standard for Electrical Installations

2.2 Informative references

2.2.1 See Annex A for a listing of supplemental standards.

3 Units of measure

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

4 Definitions

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

4.1 Circular Mil (Cmil) – the area of a circle with a diameter of 0.001 in.

4.2 Control Conductor – an unbroken conductor that is included in the current-cycling test loop.

4.3 Crimping Die – that part of a crimping tool which forms the crimp(s) and usually incorporates the crimp anvil(s), the crimp indentor(s), and the positioner.

Note: Crimping dies may have a separate or integral section for compressing the insulation grip, if provided.

4.4 Equalizer – a busbar that provides for equipotential and uniform current flow in a stranded conductor without adversely affecting the temperature of the connector(s).

4.5 Packaging Container – the container in which the unit containers are packaged.

4.6 Single Input Wire (SIW) – a stranded conductor that varies the number of wires within a range of conductor sizes in order to permit that range of conductor sizes to be constructed from a single wire size.

4.7 Splicing Wire Connector – a connector that establishes a connection between two or more conductors by means of mechanical pressure and is not intended to be permanently mounted.

4.8 Stability Factor S – the measure of temperature stability of a connector during the current-cycling test.

4.9 Temperature Rating – the maximum temperature of an insulated connector assigned by the manufacturer.

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4.10 Temperature Rise – the difference of the temperature of the connector, measured under load, and the ambient temperature.

4.11 Unit Container – the smallest container in which connectors are packaged.

4.12 Voltage Rating – the maximum voltage of an insulated connector.

5 Symbols and abbreviations

5.1 ° – Degree

5.2 A – Amps, Amperes

5.3 Al – Aluminum

5.4 AWG – American Wire Gage/gauge

5.5 C – Celsius

5.6 CC or CCA – Copper-clad aluminum

5.7 Cu – Copper

5.8 d – Days

5.9 f – Flexible

5.10 h – Hour

5.11 $HgNO_3$ – Mercurous nitrate

5.12 Hz – Hertz, cycles per second

5.13 in – Inches

5.14 m – Meter

5.15 mil – Thousandth of an inch

5.16 min – Minutes

5.17 ml – Milliliter

5.18 mm – Millimeter

5.19 mm^2 – Square millimeter

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5.20 N – Newton – Kilogram meter/sec^2

5.21 NH_4 – Ammonia

5.22 r – Rigid solid and rigid stranded

5.23 rpm – Revolutions per minute

5.24 s – Seconds

5.25 SAE – Society of Automotive Engineers

5.26 sol – Solid

5.27 str – Stranded

5.28 V – Volts

6 Construction requirements

6.1 General

6.1.1 The design and construction of a connector intended for use with stranded conductors shall be such that all strands of the conductor shall be contained within the connector.

6.1.2 A connector that is suitable for compact-stranded conductors shall also accept all strands of a Class B concentric-stranded conductor of the same size.

6.1.3 The clamping or twist-on movement of a connector shall adapt it for use with conductors of different sizes, when such use is intended, without permanent removal or addition of parts. Examples of clamping means are:

a) direct-bearing screws with or without use of a pressure plate;

b) deformation of the connector barrel (crimping) using a special tool;

c) element for insulation piercing or insulation displacement;

d) spring-action clamp;

e) helical coiled spring; and

f) formed insulation cavity (no spring).

6.1.4 Any rearrangement or adjustment of a connector that is necessary to adapt it to various sizes of conductors shall be obvious unless the connector is marked as described in 10.11.

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6.1.5 There shall be no sharp edges or corners on the outer surface of a connector that result in damage to insulation that the connector contacts.

6.2 Intermixing

6.2.1 Intermixing (direct conductor contact) between conductors of different materials shall be permitted if the connector meets the performance requirements of this standard and is marked in accordance with 10.5d).

6.3 Materials

6.3.1 The main current-carrying part of a connector shall be of aluminum, an aluminum alloy, copper, a copper alloy, or other material investigated and found to meet the performance requirements of this Standard.

6.3.2 Except as specified in 6.3.3, a connector body of a copper, copper alloy, aluminum, or aluminum alloy and intended for aluminum conductor shall be coated with an electrically conductive coating, such as tin, that will inhibit oxidation and corrosion.

Note: Other coatings may be used if investigated for the purpose and found suitable.

6.3.3 With reference to 6.3.2, the following need not be coated:

a) a connector shipped prefilled with an oxide-inhibiting compound; and

b) a connector of aluminum or aluminum alloy that is intended for aluminum conductor only.

6.3.4 Iron or steel, if protected against corrosion, may be used for screws, plates, yokes, springs, or other parts that are employed as a means of clamping the conductor, if such parts are not the primary current-carrying members.

6.3.5 Insulation employed as a part of the connector shall be suitable for its rated temperature in accordance with Table 1.

6.3.6 Insulation employed as a part of the connector shall be suitable for the tested voltage rating of the connector in accordance with Table 2.

6.3.7 The insulating material shall have a minimum flammability classification of V-2 or VTM-2 as determined by tests described in Annex B. The material thickness for determining the flammability shall be measured at points supporting live parts or within 3 mm (0.118 in) of live parts, whichever is less.

Note: Insulating tubing that has a VW1 rating is not considered equivalent. Tubing may be tested using bar samples to achieve a V-2 minimum rating or the glow wire test (see 6.3.8) may be performed.

6.3.8 With reference to 6.3.7, a material other than V-2 or VTM-2 may be used when the insulation of the wire connector complies with the requirements for the glow-wire test as specified in UL 746C, or CAN/CSA-C22.2 No. 0.17, or NMX-J-508-ANCE, with a glow wire at a temperature of 750 °C.

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6.3.9 The insulation color of a twist-on or set-screw connector rated for aluminum conductor shall be purple or brown. The insulation color of a twist-on or set-screw connector rated for copper wire only shall be any color other than purple or brown.

7 Test requirements

7.1 General

7.1.1 A connector shall meet the test requirements when separate specimen sets are subjected to the tests in Table 3 and Table 4, as applicable, for the design of the connector.

7.1.2 For a tool-applied crimp-on connector, when the conductors are secured by a single securing means, tests shall be conducted with the conductors pre-twisted according to the instructions provided by the manufacturer and according to 10.12d) and 10.18. The conductors shall not be required to be pre-twisted when the design of the connector does not lend itself to direct contact, such as a butt-end splice.

7.1.3 With reference to 7.1.2, at the manufacturer's option, tests of connectors intended for original equipment manufacturer (OEM) use may be conducted with the conductors not pre-twisted. However, instructions for pre-twisting the conductors shall be provided for field-wiring applications. Instructions for pre-twisting shall be optional for OEM wiring applications. If the connector can be crimped without providing direct contact between the conductors, then tests shall be conducted with the connector crimped so they are not in direct contact. Connectors tested with the conductors not pre-twisted shall be marked as specified in 10.19.

7.1.4 For the current-cycling, static-heating sequence, and mechanical sequence tests, when more than a single conductor is secured by a single securing means, tests on duplicate specimens shall be conducted to represent the most severe conductor position conditions that could result when conductors are assembled into the connector.

7.1.5 A connector of copper or copper alloy need not be subjected to the current-cycling test using copper conductors, unless the connector is dependent upon insulation piercing, insulation displacement, or spring action.

7.1.6 A twist-on connector provided with a metal insert need not be subjected to the current-cycling test using copper conductors. A twist-on connector not provided with a metal spring shall be subjected to the current-cycling test.

7.1.7 With reference to 7.1.5 and 7.1.6, a pre-filled twist-on connector, with or without a spring insert, shall also be subjected to the current-cycling test using copper conductors.

Note: Pre-filling usually consists of a gel, epoxy, anti-oxidant, or similar compound.

7.1.8 The initial static-heating test need not be conducted in the static-heating sequence using copper conductor.

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7.1.9 Conductor-sizes 30 – 20 AWG (0.05 – 0.52 mm^2) need not be subjected to the secureness test in the static-heating sequence or mechanical sequence.

7.1.10 Specimen sets shall be subjected to the test sequences using the conductor material specified in Table 5 for the one or more conductor material combinations for which the connector is intended. The dielectric withstand, stress corrosion, secureness of insulation, flexing, and low temperature installation tests may be conducted using either copper or aluminum or copper-clad aluminum conductor. When a connector is rated for copper-to-copper, aluminum-to-aluminum, and copper-to-aluminum (intermixed), or copper-clad aluminum, the mechanical sequence with copper-to-aluminum conductors may be omitted.

7.1.11 Testing using AWG conductors shall be considered representative of Class 1 and 2 metric conductors (rigid solid and rigid stranded) within the cross-sectional area envelope of the rated AWG range. A connector rated for Class 5 and 6 metric conductors (flexible stranded) shall be subjected to all test sequences using flexible metric conductors.

7.1.12 Tests conducted on a connector with compact-stranded conductors shall be considered representative of concentric and compressed stranded conductors of the same size.

7.2 Current cycling

7.2.1 The specimen sets shall complete 500 continuous cycles of current-on and current-off operations, while carrying the current corresponding to the conductor size as specified in Table 6. Other than as noted in 9.2.3, each cycle of operation shall consist of 1 h on and 1 h off.

Note: A current source may be maintained at or above the required value by regulation or frequent adjustment.

7.2.2 The current-cycling test shall be completed without any connector exceeding a 125 °C temperature rise above the ambient temperature for any recorded cycle.

7.2.3 The stability factor ″S_i″ (see 7.2.4) shall not exceed ± 10 for connector temperature measurements taken at approximately 25, 50, 75, 100, 125, 175, 225, 275, 350, 425, and 500 cycles.

7.2.4 The stability factor ″S_i″ for each of the 11 temperature measurements shall be determined by applying the following equations:

$$S_i = d_i - D$$

$$D = [(d_1 + d_2 + ... + d_{11}) / 11]$$

in which:

D is the average temperature deviation;

i is a number from 1 to 11 and signifies one of the 11 individual temperature measurements; and

d_i is a temperature deviation for an individual temperature measurement.

Note: The value for d_i is determined by subtracting the control-conductor temperature from the connector temperature. The value for d_i is a positive number when the connector temperature is more than that of the control conductor and a negative number when the connector temperature is less than that of the control conductor. The average of the 11 temperature deviations is then determined. See Annex C for example.

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7.3 Static-heating sequence

7.3.1 The specimen sets shall carry continuously the value of 60 Hz test current specified in Table 6 for the conductor size being tested until stable temperatures are reached without exceeding a 50 °C temperature rise above ambient temperature.

Note: A current source may be maintained at or above the required value by regulation or frequent adjustment.

7.3.2 The joint between a connector and the conductor shall be intact after being subjected for 30 min to the secureness test described in 9.3.2.

7.3.3 The joint between a connector and the conductor shall be intact after being subjected for 1 min to the pullout test described in 9.3.4.

7.3.4 As a result of the tests, there shall be no breakage of the conductor or any strand of a stranded conductor, stripping of threads, shearing of parts, or other damage to the connector. Breaking of the conductor or any strand of a stranded conductor shall be determined by examination of the complete connector assembly while still intact after the secureness or pullout tests. Breakage has occurred if the conductor or a strand of a stranded conductor becomes visibly unattached. Strand breakage of 5 percent is allowed for all classes of conductors other than B and C.

7.4 Mechanical sequence

7.4.1 The joint between a connector and the conductor shall be intact after being subjected for 30 min to the test described in 9.4.1.

7.4.2 The joint between a connector and the conductor shall be intact after being subjected for 1 min to the test described in 9.4.2.

7.4.3 As a result of the tests, there shall be no breakage of the conductor or any strand of a stranded conductor, stripping of threads, shearing of parts, or other damage to the connector. Breaking of the conductor or any strand of a stranded conductor shall be determined by examination of the complete connector assembly while still intact after the secureness or pullout tests. Breakage has occurred if the conductor or a strand of a stranded conductor becomes visibly unattached. Strand breakage of 5 percent is allowed for flexible and fine stranded conductors.

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7.5 Dielectric-withstand test sequence

7.5.1 An insulated wire connector shall withstand, without breakdown, the dielectric-withstand tests specified in Table 7.

7.5.2 The insulation of an insulated connector shall not crack or break when the connector is assembled as intended on the conductor.

7.5.3 The oven conditioning described in 9.5.2.2 and 9.5.2.3 shall not cause the connector insulation to harden, soften, crack, deform, loosen, or otherwise change so as to adversely affect the insulating properties of the conductor insulation or the connector insulation.

Note: Discoloration of the connector insulation is allowed.

7.6 Secureness of insulation

7.6.1 The insulation of a connector shall not be damaged and shall not become detached from the body of the connector when subjected to the secureness of insulation test in 9.6.

7.7 Flexing

7.7.1 An insulating cover employing a hinge, a latch, or a lock shall retain its resilience and shall not crack when subjected to the flexing test specified in 9.7.

7.8 Low temperature installation

7.8.1 In Canada, the thermoplastic or thermosetting insulation of a compression-type connector assembled by a tool shall not crack or fracture when installed and tested in accordance with 9.8. This test shall not apply to insulated wire connectors intended for factory installation only.

In the United States and Mexico, this requirement does not apply.

7.9 Moisture absorption

7.9.1 Porcelain or cold-molded composition used as insulation on connectors shall not absorb more than 3 percent of its mass when subjected to the moisture-absorption test specified in 9.9.

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7.10 Stress corrosion/moist ammonia (NH_4)

7.10.1 A copper alloy part of a connector shall be resistant to stress corrosion cracking.

Note: The moist ammonia test is considered an alternative to the mercurous nitrate test.

7.10.2 A copper alloy part containing more than 15 percent zinc shall be tested for stress corrosion cracking.

7.10.3 A copper alloy part containing more than 15 percent zinc shall show no evidence of cracking when examined using a 25X magnification after being subjected to the stress corrosion/moist ammonia (NH_4) test specified in 9.10.

7.11 Stress corrosion/mercurous nitrate ($HgNO_3$)

7.11.1 A copper alloy part of a connector shall be resistant to stress corrosion cracking.

Note: The mercurous nitrate test is considered an alternative to the moist ammonia test.

7.11.2 A brass part containing less than 80 percent copper shall not crack when subjected to the stress corrosion/mercurous nitrate ($HgNO_3$) test specified in 9.11.

7.12 Spring action

7.12.1 After being subjected to the conditioning in 9.12.1, a spring-action connector shall not exceed a temperature rise of 50 °C above the ambient temperature when tested as specified in 9.12.2.

7.12.2 A spring-action connector shall withstand without dielectric breakdown the application of the test potential when tested as specified in 9.12.3.

7.13 Over-torque

7.13.1 A connector to which torque is applied by means of a blade-type screwdriver shall withstand the values of torque as specified in 9.13. There shall be no shearing of parts, stripping of threads, or other damage to the connector.

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