

March 3, 2015

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UL 2903

Outline of Investigation for Solar Tracker Power and Control Cable

Issue Number: 1

MARCH 3, 2015

Summary of Topics

This is the first issue of the Outline of Investigation for Solar Tracker Power and Control Cable, UL 2903.

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INTRODUCTION

1 Scope

1.1 This Outline covers multiple-conductor, jacketed cables intended for use as solar tracker power and control cable. Wires and cables are rated 60, 75, 90, or 105°C (140, 167, 194, or 221°F), 300 V. The cables are suitable for installation in dry and wet locations where directly buried and exposed to sunlight.

2 Components

2.1 Except as indicated in 2.2, a component of a product covered by this outline shall comply with the requirements for that component.

2.2 A component is not required to comply with a specific requirement that:

- a) Involves a feature or characteristic not required in the application of the component in the product covered by this outline, or
- b) Is superseded by a requirement in this outline.

2.3 A component shall be used in accordance with the rating established for the intended conditions of use.

2.4 Specific components are incomplete in construction features or restricted in performance capabilities. Such components are intended for use only under limited conditions, such as certain temperatures not exceeding specified limits and shall be used only under those specific conditions.

3 Units of Measurement

3.1 Values stated without parentheses are the requirement. Values in parentheses are explanatory or approximate information.

4 References

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

4.2 Wherever the designation "UL 1581" is used in this standard, reference is to be made to the designated parts of the Reference Standard for Electrical Wires, Cables, and Flexible Cords, UL 1581. Whenever the designation "UL 2556" is used in this standard, reference it to be made to the designated parts of the Standard for Wire and Cable Test Methods, UL 2556.

CONSTRUCTION

5 Assembly

5.1 The cable shall consist of a multiple-conductor cable, where the insulated conductors are cabled or laid together under an overall nonintegral jacket. The cable may contain any number of coverings, fillers, binders, and/or shields under the jacket.

6 Conductors

6.1 General

6.1.1 The conductors shall be annealed copper, solid or stranded, bare, or tin-coated. The conductors shall be a minimum 24 AWG (0.205 mm²).

6.2 Coated copper conductor

6.2.1 Each tin-coated conductor shall comply with the requirements of the Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes, ASTM B33.

6.2.2 A tin coating is appropriate for use on individual wires (strands) or selected wires, such as the outer layer of wires of a stranded conductor. The tin coating shall comply with 6.2.1.

6.3 Uncoated copper conductors

6.3.1 Each wire in an uncoated copper conductor shall comply with the requirements of .Standard Specification for Soft or Annealed Copper Wire, ASTM B3.

6.4 Strands

6.4.1 Copper strands smaller than 36 AWG (0.0127 mm²) shall not be used.

7 Insulation

7.1 The insulation shall be thermoplastic or thermoset. The insulation thickness is not specified.

8 Overall Jacket

8.1 The overall jacket shall be thermoplastic or thermoset.

8.2 The jacket thickness is not specified, but in no case shall be less than 30 mils (0.76 mm) minimum average, 24 mils (0.61 mm) minimum at any point.

8.3 The jacket shall have a minimum unaged tensile strength of 1200 psi (8.3 MPa) and a minimum unaged elongation of 100 percent as specified in the applicable table in Specific Materials in UL 1581.

TEST PROGRAM

9 Performance and Test Requirements

9.1 Physical properties

9.1.1 Insulation

9.1.1.1 The physical properties of the various classes of insulation when tested before and after accelerated aging, shall comply with the applicable requirements shown in the tables in Specific Materials in UL 1581. Compliance shall be determined in accordance with the test, Physical Properties (ultimate elongation and tensile strength), in UL 2556.

9.1.2 Jackets

9.1.2.1 The physical properties of the various classes of jackets when tested before and after accelerated aging, shall comply with the applicable requirements shown in the tables in Specific Materials in UL 1581. In no case shall the jacket have a tensile strength of less than 1200 psi (8.3 MPa) or an elongation of less than 100 percent. Compliance shall be determined in accordance with the test, Physical Properties (ultimate elongation and tensile strength), in UL 2556 conducted on die-cut samples.

9.2 Copper corrosion

9.2.1 A bare (uncoated) copper insulated conductor shall show no evidence of corrosion when tested in accordance with the test, Copper Corrosion, in UL 2556, and when performed at the temperature and for the duration indicated for the material in 9.1.1.1.