SUBJECT 1650

OUTLINE OF INVESTIGATION

FOR

PORTABLE POWER CABLE

Issue Number: 3

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Summary of Topics

This outline is being issued to make editorial corrections to Table 2.5 and add an alternate material for the reinforcement layer under the jacket.

The UL Foreword is no longer located within the UL Standard. For information concerning the use and application of the requirements contained in this Standard, the current version of the UL Foreword is located on ULStandardsInfoNet at: http://ulstandardsinfonet.ul.com/ulforeword.html

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INTRODUCTION

1 Scope

1.1 This Outline covers portable power cables for use in accordance with Article 400 of the National Electrical Code, NFPA 70. Portable Power Cables consist of either a single insulated conductor or two or more insulated conductors with or without grounding conductors with an overall fiber-reinforced jacket. The insulation and jacket are both thermoset on types G, G-GC and W and are thermoplastic elastomer on Type PPE. This cable is used to supply power to mobile equipment and machinery.

CONSTRUCTION

2 General

2.1 Portable power cable employs flexible stranded copper conductors in a size range of 12 AWG to 500 kcmil, except for single conductor Type W that employs flexible stranded copper conductors in sizes 12 AWG to 1000 kcmil. This cable is rated 2000 V, 75°C (167°F) or 90°C (194°F) dry, and 60°C (140°F) or 75°C (167°F) where exposed to oil. For cable so marked, ratings of 60°C (140°F), 75°C (167°F), or 90°C (194°F) ″wet″ are also assigned. The term ″wet″ indicates that the cable is acceptable for immersion in water. Wet rated cable that has been additionally investigated for use where exposed to the direct rays of the sun is marked ″Sunlight Resistant″ or ″Sun Res.″

2.2 Portable power cables shall consist of the following circuit, grounding and ground-check conductors:

a) Type G – Contains 2 – 6 circuit conductors and a grounding conductor. The grounding conductor is either bare or covered with a green-colored braid or tape, and may either be a single conductor or be sectioned into two or more parts.

b) Type G-GC – Same as Type G except that the cable also contains one, 12 AWG or larger, yellow insulated conductor which is used as a ground check.

c) Type W – Contains 1 – 6 circuit conductors and may or may not contain a grounding conductor. If included, the grounding conductor is fully insulated and colored green.

d) Type PPE – Contains 1 – 6 circuit conductors and may or may not contain a grounding conductor. If included, the grounding conductor is fully insulated and colored green.

2.3 The circuit conductors shall be annealed, stranded copper, bare or tinned, according to the Standard for Thermoset-Insulated Wires and Cables, UL 44, in sizes 12 AWG to 1000 kcmil. The length and direction of lay shall be as described in UL 44. Circuit conductors 12 – 10 AWG shall contain a minimum of 19 strands; 8 – 3 AWG circuit conductors shall contain a minimum of 49 strands; 2 AWG to 2/0 shall contain a minimum of 133 strands; and 3/0 to 1000 kcmil shall contain a minimum 259 strands.

2.4 The grounding conductor where used may be a single conductor or may be sectioned into two or more equal parts. The grounding conductor shall be of a size complying with Table 2.1 or 2.2 for types G, PPE, and G-GC as applicable based on the largest circuit conductor in the cable. The grounding wire for type W shall be the same size as the circuit conductors. The total circular mil area of a sectioned grounding conductor shall be equal to or greater than that of the corresponding size of a single conductor. The extruded, green insulation on a single grounding conductor shall be fully insulated and shall comply with the applicable requirements for the circuit conductor insulation. The insulation on a sectioned grounding conductor shall be of the same material as the circuit conductors and shall not be less than 30 mils. A green braid or tape may be employed on the grounding conductor in types G and G-GC.

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