

September 14, 2010

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SUBJECT 2733

OUTLINE OF INVESTIGATION
FOR
SURFACE VEHICLE ON-BOARD CABLE

Issue Number: 2

September 14, 2010

Summary of Topics

This second issue of the Outline of Investigation for Surface Vehicle On-Board Cable includes the following:

Required cold rating of -30°C (rather than -25°C) with the option of -40°C ;

Change in description of the ethanol blend to align with requirements for Equipment Compatibility with Fuels and Biofuels;

Limitation on materials allowed to have an ethanol exposure rating based on requirements for Equipment Compatibility with Fuels and Biofuels;

Clarification of the compliance criteria for the weatherometer test; and

Correction of the compliance criteria in the abrasion test.

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INTRODUCTION

1 Scope

1.1 This outline covers the requirements for single conductor cables for use in on-board surface vehicles. The cable is rated:

- a) 60, 75, 90, or 105°C;
- b) minus 30°C;
- c) oil resistant;
- d) water resistant; and
- e) either 300 or 600 V, ac or dc.

2 Units of Measurement

2.1 In addition to being stated in the inch/pound units that are customary in the USA, each of the requirements in this outline is also stated in units that make the requirement conveniently usable in countries employing the metric system (practical SI). Equivalent – although not necessarily exactly identical – results are to be expected from applying a requirement in USA or metric terms. Equipment calibrated in metric units is to be used when a requirement is applied in metric terms.

3 Components

3.1 Except as indicated in 3.2, a component (including gaskets and polymeric materials) of a product covered by this outline of investigation shall comply with the requirements for that component.

3.2 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 of investigation, or
- b) Is superseded by a requirement in this outline of investigation.

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

3.4 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.

4 Undated References

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

CONSTRUCTION

5 Materials and Workmanship

5.1 Only materials that are acceptable for the particular use shall be employed in a cable. Cables shall be made and finished with the degree of uniformity and grade of workmanship that are practicable in a well-equipped factory.

5.2 Each material used in a cable shall be compatible with all of the other materials used in the cable.

6 General

6.1 Assembly

6.1.1 These cables consist of a single insulated conductor or a single, coaxial cable.

6.1.2 Each coaxial cable shall consist of a single central conductor covered in turn with solid or foamed insulation (with or without a skin) complying (including thicknesses) with Insulation, 6.3; a shield complying with Shield, 6.4; and a jacket complying with Jacket, 6.5.

6.2 Conductors

6.2.1 Conductors shall be solid or stranded. Conductors 18 – 4/0 AWG in size shall comply with the "0.98 X Nominal" minimum area column as shown in Table 20.1 of the Reference Standard for Electrical Wires, Cables, and Flexible Cords, UL 1581. Conductors 0.75 – 95 mm² in size shall comply with the requirements in Table 6.1. Conductors shall consist of copper in accordance with the Standard Specification for Soft or Annealed Copper Wire, ASTM B3, the Standard Specification for Tinned Soft or Annealed Copper Wire for Electrical Purposes, ASTM B33, the Standard Specification for Silver-Coated Soft or Annealed Copper Wire, ASTM B298, or the Standard Specification for Nickel-Coated Soft or Annealed Copper Wire, ASTM B355. The conductor stranding is not defined, but shall be judged based on compliance of the cable with the test program in Section 7.