IEEE Standard for Flame-Propagation Testing of Wire and Cable

IEEE Power Engineering Society

Sponsored by the
Insulated Conductors Committee

IEEE
3 Park Avenue
New York, NY 10016-5997, USA

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Abstract: Standardization of cable flame propagation testing is beneficial to cable manufacturers, distributors, and users. Uniform procedures; consistent, repeatable results; and measurable test acceptance criteria are required to allow comparisons among competing products and to allow selection of the correct product for the application.

Keywords: 20 kW, 20 min, 70 000 Btu/h, after burn, cable, char, charring, flame propagation, test protocol, vertical cable tray, wire

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Introduction

This introduction is not part of IEEE Std 1202-2006, IEEE Standard for Flame-Propagation Testing of Wire and Cable.

This standard provides a test procedure for determining wire and cable flame propagation characteristics due to ignition sources either outside of or within the cable system. The purpose of this revision is to update the standard to current industry practices and to harmonize this document with similar vertical tray flame test standards, such as UL 1685 and CSA C22.2 No. 22.2 No. 0.3-01 (R2005), FT4. This standard is not meant to determine circuit integrity or fire stop capability of wire or cable systems. This standard is also not meant to determine the protection afforded to cables by tray covers, conduits, or fire barrier materials. These considerations are covered in other more appropriate standards. This standard may be used to satisfy wire and cable flame propagation requirements identified in National Electrical Code® (NEC®) (NFPA 70-2005); CSA Standard C22.1-06, Canadian Electrical Code (CEC), Part I; or Mexican NOM-001 (MEC), Aparatos Electronicos de Uso Domestico Alimentados por Diferentes Fuentes de Energia Electrica. This standard is referenced in other standards such as IEEE Std 383™-2003 and IEEE Std 1580™-2001.

This standard has been coordinated with Underwriters Laboratories (UL), the Canadian Standards Association (CSA), and Mexico's SDO Association of Standardization and Certification (ANCE) as part of the tri-national harmonization process. Even though the IEEE is not formally part of the harmonization group, the content of this standard has been reviewed to achieve common technical requirements.

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Participants

The Wire and Cable Fire Propagation Working Group of the Maintenance, Operation & Safety Subcommittee of the Power Systems Engineering Committee of the Industrial and Commercial Power Systems Department of the IEEE Industrial Applications Society originally prepared this standard. The document was initially issued in 1991 and confirmed for use on a five-year period since. The standard was transferred to the Insulated Conductors Committee (ICC) of the Power Engineering Society in mid-2002 and revised by ICC working group D15W, which had the following membership:

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IEEE Standard for Flame-Propagation Testing of Wire and Cable

1. Overview

1.1 Scope

This standard provides a protocol for exposing cable samples to a theoretical 20 kW (70 000 Btu/h) flaming ignition source for a 20-min test duration. The test determines the flame propagation tendency of single-conductor and multi-conductor cables intended for use in cable trays.

1.2 Purpose

The purpose of this standard is to establish a test protocol and performance criteria to determine the flame propagation tendency of cables in a vertical cable tray.

1.3 Applications

This standard shall apply to multi-conductor cables and single insulated conductors that are allowed to be installed in cable tray, or to other cables and conductors for which a flame rating to the requirements of this standard is desired.

1.4 Disclaimer

The results obtained using this test do not imply that cables of similar cable construction will necessarily perform the same way in other cable arrangements, other cable tray configurations, or other environments.

1.5 Test precautions

Fire testing of products and materials is inherently hazardous. Adequate safeguards for personnel and property shall be employed while conducting these tests.