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IEEE Standard for Helically-Applied Fiber Optic Cable Systems (WRAP) for Use on Overhead Utility Lines

IEEE Power and Energy Society

Developed by the
Power System Communications and Cybersecurity Committee

IEEE Std 1594™-2020
(Revision of
IEEE Std 1594-2008)

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Abstract: An all-dielectric fiber optic cable (WRAP) designed to be helically wrapped around a conductor or other messenger on overhead power facilities is covered by this standard.

Keywords: all-dielectric, cable, conductor, earth wire, fiber optic, ground wire, IEEE 1954™, helical, helically, messenger, power lines, WRAP, wrapped

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Introduction

This introduction is not part of IEEE Std 1594-2020, IEEE Standard for Helically-Applied Fiber Optic Cable Systems (WRAP) for Use on Overhead Utility Lines.

This introduction is not part of IEEE Std 1594™-2020, IEEE Standard for Helically-Applied Fiber Optic Cable Systems (WRAP Cable) for Use on Overhead Utility Lines.

This standard is the first standard focused on fiber optic cables that are wrapped around either an overhead conductor, the ground wire (sometimes called earth wire), or a messenger wire. This type of system is typically utilized where optical fiber is desired to be installed in the overhead transmission line right-of-way and where other fiber optic options either cannot be utilized or there is some constraint preventing their use.

Contents

IEEE Standard for Helically-Applied Fiber Optic Cable Systems (WRAP) for Use on Overhead Utility Lines

1. Overview

1.1 Scope

This standard covers an all-dielectric fiber optic (WRAP) cable designed to be helically wrapped around a conductor or other messenger on overhead power facilities. This covers the mechanical, electrical, and optical performance; installation guidelines; acceptance criteria; test requirements; environmental considerations; packaging and shipping guidelines; and accessories.

1.2 Purpose

Other existing standards do not cover all-dielectric fiber optic (WRAP) cable designed to be helically wrapped around a conductor or other messenger on overhead power facilities. This standard simplifies procurement, standardizes testing, assures product quality, and assists usage.

2. Normative references

The following referenced documents are indispensable for the application of this document (i.e., they must be understood and used, so each referenced document is cited in text and its relationship to this document is explained). For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments or corrigenda) applies.

ASTM E29-06b, Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications.[1]

IEC 60068-1, Environmental Testing—Part 1: General and Guidance.[2]

IEC 60068-2-5, Environmental Testing—Part 2: Tests. Test S: Simulated Solar Radiation at Ground Level and Guidance for Solar Radiation Testing and Weathering.

IEC 60068-2-38, Basic Environmental Testing Procedures—Part 2: Tests—Test Z/AD: Composite Temperature/Humidity Cyclic Test.

[1]ASTM publications are available from the American Society for Testing and Materials (https://www.astm.org/).
[2]IEC publications are available from the International Electrotechnical Commission (https://www.iec.ch) and the American National Standards Institute (https://www.ansi.org/).