IEEE Guide for the Selection, Testing, Application, and Installation of Cables having Radial-Moisture Barriers and/or Longitudinal Water Blocking

IEEE Power & Energy Society

Sponsored by the
Insulated Conductors Committee

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Abstract: Detailed information relating to the design, testing, application and installation of various types of electrical cables in order to prevent the deleterious effect of moisture and chemical ingress and resultant failures in service is provided in this guide. This includes single and multi-conductor cables over a complete range of voltage ratings. Testing criteria and installation methods covered along with many technical references.
Keywords: laminate sheaths, longitudinal water blocking, moisture impervious, powders, radial-moisture barriers, sealed overlap, water-swellable tapes, yarns

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Introduction

This introduction is not part of IEEE Std 1142-2009, IEEE Guide for the Selection, Testing, Application, and Installation of Cables having Radial-Moisture Barriers and/or Longitudinal Water Blocking.

This guide is an update of previously published IEEE Guide 1142-1995. When that guide was circulated for a renewal ballot it was found that many revisions were needed to reflect changes in technology and to incorporate additional types of cables along with other means of preventing moisture/chemical ingress into cable cores. The objective still remains to supply complete information for utility and industrial cable users on ways and means to protect cables from the deleterious effects of moisture and chemical ingress to cable insulation as well as protection from unfavorable environmental and installation conditions. Much information has been derived from reported global experience as well as the many technical papers that have been presented in recent years on these topics. The bibliography has been updated to cover many new informative references.

This guide will be most useful to those users who wish to maximize cable life and minimize cable faults that cause interruptions in critical circuits.

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IEEE Guide for the Selection, Testing, Application, and Installation of Cables having Radial-Moisture Barriers and/or Longitudinal Water Blocking

1. Overview

1.1 Scope

This guide provides cable manufacturers and users with extensive information on the design, testing, application, and installation of low, medium, and high-voltage power cables, as well as communication, control and instrument cables that make use of metal-plastic laminates as radial-moisture barriers. This guide addresses additional means of protecting cables from the entrance of moisture through the use of polymeric super absorbent materials for longitudinal water blocking of stranded conductors and other spaces within cables. The alternate use of extruded metal sheaths or bare, longitudinally applied, metallic tapes with sealed seams will likewise be addressed.