



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

IEEE Power & Energy Society

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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 impregnations, 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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Participants

At the time this guide was submitted to the IEEE-SA Standards Board for approval, the Moisture Impervious Cables Working Group had the following membership:

Joseph Snow, Chair

Ajit M. Anandani, Vice Chair

Kenneth Bow, Technical Editor

Michael Bayer
Kent Brown
Luanne Cantrell
Paul Caronia

David Cavassa
Mo Dawud
John Hans
Frank Kuchta
Daniel Mainstruck

Pierre Mirebeau
Kenneth Prier
Candelario Saldivar
Hon Suen
Thomas Wilki

At the time the draft guide was completed, the following individuals contributed information of use in the preparation of this guide:

Victor Banks

Steve Czupryna
Armando Rios

Donald Voltz

The following members of the individual balloting committee voted on this guide. Balloters may have voted for approval, disapproval, or abstention.

John R. Barker
Michael Bayer
William Bloethe
Kenneth Bow
James A. Braun
Chris Brooks
Kent Brown
Thomas Campbell
John Cancelosi
Weijen Chen
Robert Christman
F. Denbrock
John Densley
Gary L. Donner
Gary Engmann
Todd Goyette
Steven Graham

Randall Groves
Jeffrey Hartenberger
Lee Herron
Lauri Hiivala
A. S. Jones
Tanuj Khandelwal
Chad Kiger
Robert Konnik
Jim Kulchisky
Chung-Yiu Lam
Benjamin Lenz
Gerald Liskom
G. Luri
Arturo Maldonado
John Merando
Gary Michel
Daleep Mohla
Michael S. Newman

Serge Pelissou
Resuali Robert
Michael Roberts
Bartien Sayogo
Gil Shultz
James E. Smith
Jerry Smith
Joseph Snow
Gregory Stano
Gary Stoedter
David Tepen
John Vergis
Martin Von Herrmann
Waldemar Von Miller
Carl Wall
Thomas Williams
Dawn Zhang

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John Krupar

David J. Law
Ted Olsen
Glenn Parsons
Ronald C. Petersen
Narayanan Ramachandran
Jon Walter Rosdahl
Sam Sciacca

*Member Emeritus

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Michael Janezic, *NIST Representative*

Michelle Turner
IEEE Standards Program Manager, Document Development

Soo H. Kim
IEEE Standards Program Manager, Technical Program Development

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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.