

IEEE Guide for the Application, Maintenance, and Evaluation of Room-Temperature Vulcanizing (RTV) Silicone Rubber Coatings for Outdoor Ceramic Insulators

IEEE Dielectrics and Electrical Insulation Society

Sponsored by the
Standards Committee

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IEEE Guide for the Application, Maintenance, and Evaluation of Room-Temperature Vulcanizing (RTV) Silicone Rubber Coatings for Outdoor Ceramic Insulators

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Abstract: The various important aspects that need to be considered for satisfactory long-term performance of room-temperature vulcanizing (RTV) silicone rubber high-voltage insulator coatings (HVIC) are outlined in the guide. Methods of application, pre-coated applications, maintenance issues on coated applications, factors affecting long-term performance, erosion resistance, temporary loss of hydrophobicity, aging, laboratory accelerated tests, partially coated insulation, and functional outdoor evaluation are described.

Keywords: applications, evaluation, IEEE 1523™, maintenance, RTV silicone rubber coatings, tests

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E. A. Cherney
A. El-Hag
R. S. Gorur

S. Ilhan
Luiz Meyer
M. Marzinotto

I. Ramirez
K. Siderakis
N. Vasudev

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

Demetrio Bucaneg Jr.
Robert Christman
Paul Gaberson
Michael Garrels
Edwin Goodwin

Randall Groves
Werner Hoelzl
Jim Kulchisky
Chung-Yiu Lam
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Jerry Smith
John Verge

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Dorothy Stanley
Mehmet Ulema
Phil Wennblom
Philip Winston
Howard Wolfman
Jingyi Zhou

*Member Emeritus

Introduction

This introduction is not part of IEEE Std 1523-2018, IEEE Guide for the Application, Maintenance, and Evaluation of Room-Temperature Vulcanizing (RTV) Silicone Rubber Coatings for Outdoor Ceramic Insulators.

One of the most promising methods of helping prevent the flashover of outdoor insulation under contaminated and wet conditions, room-temperature vulcanized (RTV) silicone rubber high voltage insulator coating (HVIC) has been applied to conventional (ceramic) and polymeric (non-ceramic) insulation to help preventative maintenance activities. The use of RTV coatings began on a trial basis during the 1970s and large-scale application of the coatings began in the 1980s. The work on an application guide began in the early 1990s with round robin tests in several laboratories and concurrently with user experience, the first IEEE application guide was issued in 2002. Since that time considerable advances have been made in the understanding and use of RTV HVIC. From early beginnings of a maintenance coating, present day applications are often applied as an original equipment manufacturer product. This revision of the guide incorporates the knowledge obtained over 15 years of experience on the application, maintenance, and evaluation of RTV silicone rubber coatings for outdoor ceramic insulators, since the existing guide was issued in 2002.

Acknowledgments

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1. Overview

1.1 Scope

This guide is based on the knowledge and more than 25 years of experience on the use of room-temperature vulcanizing (RTV) silicone rubber coatings that are used to improve the contamination performance of outdoor high-voltage (HV) insulators. This guide discusses various important aspects that are needed for satisfactory long-term performance of HV insulator coatings (HVIC); namely, various application methods, pre-coated insulators, partially coated insulators, maintenance issues on coated insulators, factors affecting long-term performance, the question of aging, laboratory accelerated tests, and functional outdoor evaluation. However, it must be clear that for any specific application, judgment and experience are required to analyze and balance the many characteristics, which are discussed to obtain satisfactory performance and reliability.

1.2 Purpose

This guide is intended for the use of RTV coatings on ceramic insulation. In this context, ceramic is used to denote wet process porcelain and toughened glass insulators.

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. (See [Annex A](#) for more information.)

ASTM D 149-09 (2013), Standard Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies.

ASTM D 150-11, Standard Test Methods for AC Loss Characteristics and Permittivity (Dielectric Constant) of Solid Electrical Insulation.