



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 31838.5-2021

**Solid insulating materials - Dielectric and resistive properties -
Part 5: Resistive properties(DC method) - Volume resistance
and volume resistivity of impregnation and coating materials**

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for Standardization Work Part 1. Structure and Drafting Rules of Standardization Documents" Drafting.

This document is part 5 of GB/T 31838 "Dielectric and Resistance Characteristics of Solid Insulating Materials". GB/T 31838 has been released

The following parts.

- Part 1. General Provisions;
- Part 2. Resistance characteristics (DC method) volume resistance and volume resistivity;
- Part 3. Resistance characteristics (DC method) surface resistance and surface resistivity;
- Part 4. Resistance characteristics (DC method) insulation resistance;
- Part 5. Resistance characteristics (DC method) Volume resistance and volume resistivity of dipping and coating materials;
- Part 6. Dielectric characteristics (AC method), relative permittivity and dielectric loss factor (frequency 0.1Hz~10MHz);
- Part 7. Resistance specific (DC method) Measuring volume resistance and volume resistivity at high temperatures.

The translation method used in this document is equivalent to IEC 62631-3-11.2018 "Dielectric and Resistance Characteristics of Solid Insulating Materials Part 3-11"

Points. Determination of electrical resistance characteristics (DC method) Test method for

volume resistance and volume resistivity of dipping and coating materials".

The Chinese documents that have a consistent correspondence with the normative reference documents in this document are as follows.

---GB/T 9271-2008 paint and varnish standard test board (ISO 1514.2004, MOD);

---GB/T 13452.2-2008 Determination of paint film thickness of paints and varnishes (ISO 2808.2007, IDT);

---GB/T 31838.2-2019 Dielectric and resistance characteristics of solid insulating materials Part 2. Resistance characteristics (DC method)

Volume resistance and volume resistivity (IEC 62631-3-1.2016, IDT).

This document has made the following editorial changes.

---In order to be consistent with the existing standard series, the name of the document is changed to "Dielectric and Resistance Characteristics of Solid Insulating Materials Part 5. Resistance

Characteristics (DC method) Volume resistance and volume resistivity of dipping and coating materials".

Introduction

Many fields in the electrical industry require data on the volume resistance and volume resistivity of solid insulating materials. GB/T 31838 proposes solid

The test method for the dielectric and resistance characteristics of insulating materials provides a unified sample system for users to test the dielectric and resistance characteristics of solid insulating materials

Preparation methods and test procedures, etc.

Currently, GB/T 31838 is composed of seven parts.

---Part 1. General Provisions. Put forward the factors that affect the dielectric and resistance characteristics of solid insulating materials, and guide the other parts of the document.

prepared by.

---Part 2. Resistance characteristics (DC method) Volume resistance and volume resistivity. It is proposed to measure solid insulating materials (excluding immersion

Stains and coating materials, casting materials) volume resistance and volume resistivity test methods.

---Part 3. Resistance characteristics (DC method) Surface resistance and surface resistivity. Proposed to measure the surface resistance of solid insulating materials

And the test method of surface resistivity.

---Part 4. Resistance characteristics (DC method) Insulation resistance. A test method for measuring the insulation resistance of solid insulating materials is proposed.

---Part 5. Resistance characteristics (DC method) Volume resistance and volume resistivity of dipping and coating materials. For dipping and coating

For layered insulating materials, test methods for measuring volume resistance and volume resistivity are proposed.

--- Part 6. Dielectric characteristics (AC method) relative permittivity and dielectric loss factor (frequency 0.1Hz ~ 10MHz). mention

A test method for measuring the dielectric properties of solid insulating materials at a frequency of 0.1 Hz to 10 MHz.

---Part 7. Resistance specific (DC method) Measuring volume resistance and volume resistivity at high temperatures. The proposed temperature is not higher than 800 degrees C

The following test methods for determining the volume resistance and volume resistivity of solid insulating materials.

Dielectric and resistance properties of solid insulating materials

Part 5. Resistance characteristics (DC method) impregnation and

Volume resistance and volume resistivity of coating material

1 Scope

This document specifies the test method for the volume resistance and volume resistivity of solid insulating materials under applied DC voltage.

This document is applicable to materials such as unsaturated polyester-based impregnating resins, environmental curing covering paints, and thermal curing impregnating varnishes.

2 Normative references

The contents of the following documents constitute the indispensable clauses of this document through normative references in the text. Among them, dated quotations

Only the version corresponding to that date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to

This document.

IEC 62631-3-1 Dielectric and resistance characteristics of solid insulating materials Part 3-1. Determination of resistance characteristics (DC method) Volumetric electricity

General method of resistance and volume resistivity

(Dielectric and resistive properties of solid insulating materials-Part 3-1.

Determination of resistive properties (DC methods)-Volume resistance and volume resistivity-General method)

ISO 1514 Paints and varnishes-Standard panels for testing

ISO 2808 Paints and varnishes-Determination of film thickness)

3 Terms and definitions

The following terms and definitions apply to this document.

The terms and definitions used in this document in ISO and IEC can be found on the following website.

3.1

Volume resistance

The part of the insulation resistance determined by volume conductivity.

Note. The unit of volume resistance is expressed in ohm.

3.2

Volume resistivity

The volume resistance relative to the volume of the material.

Note 1. The unit of volume resistivity is expressed in ohm meters (ohm.m).

Note 2. For insulating materials, the volume resistivity is usually measured by applying electrodes on the sheet sample.

Note 3. According to IEC 60050-121, in electromagnetics, "conductivity" is defined as a scalar or tensor, and the product of the electric field strength in the medium is equal to the current density.

Degree, "resistivity" is defined as "when there is a reciprocal, the reciprocal of conductivity". When measuring with this method, the volume resistivity is possible in the volume of the measurement.

The average value of non-uniform resistivity also includes the influence of possible polarization phenomena on the electrode.