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

GB/T 4074.5-2024

Replacing GB/T 4074.5-2008

**Test methods of winding wires - Part 5: Electrical properties
(English Translation)**

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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 for standardization documents" Drafting:

This document is part 5 of GB/T 4074 "Test methods for winding wires": GB/T 4074 has been published in the following parts:

--- Part 1: General provisions;

--- Part 2: Dimensional measurement;

--- Part 3: Mechanical properties;

- Part 4: Chemical properties;
- Part 5: Electrical properties;
- Part 6: Thermal properties;
- Part 7: Test method for determining the temperature index of enameled winding wire;
- Part 8: Test method for determination of temperature index of enameled winding wire - Rapid method;
- Part 21: High frequency pulse voltage resistance:

This document replaces GB/T 4074.5-2008 "Winding wire test methods Part 5: Electrical properties" and is consistent with GB/T 4074.5-2008:

In addition to structural adjustments and editorial changes, the main technical changes are as follows:

- Changed some test equipment in the breakdown voltage test (see 5.2, 4:2 of the:2008 edition);
- Changed the enameled round wire test method and clarified the insulation thickness of the product (see 5.3:1, 4:3 of the:2008 edition);
- Added the insulation thickness enameled round wire breakdown voltage test method (see 5.3:2);
- Added an overview of the paint film continuity test (see 6.1);
- Changed the specification range of the low-voltage continuity test in the paint film continuity test (see 6.2, 5:1 of the:2008 edition);
- Changed the specification range of the high voltage continuity test in the paint film continuity test (see 6.3, 5:2 of the:2008 edition);
- Added the graphite brush electrode principle in the high voltage continuity test (see 6.3:1);
- Added graphite fiber brush electrode assembly in high voltage continuity test (see 6.3:2, 5:2:2 of the:2008 edition);
- Added online high voltage continuity test (see 6.4):

This document is equivalent to IEC 60851-5:2019 "Winding wire test methods Part 5: Electrical properties":

A new chapter "Terms and Definitions" has been added to this document:

The following minimal editorial changes were made to this document:

- In order to coordinate with the existing standards, the name of the standard is changed

to "Winding Wire Test Methods Part 5: Electrical Properties":

Introduction

Winding wire is one of the main raw materials for power, motor, electrical appliances, home appliances, electronics, communications, transportation, power grid, aviation and other fields:

It has a wide range and covers many fields, and has become an important mechanical industrial product:

GB/T 4074 is the only test method standard for measuring winding wire products in China, which is of great significance to product testing, market regulation and product improvement:

Play an important role:

GB/T 4074 "Test methods for winding wires" aims to establish the test method standards for the performance of different types of winding wire products:

Partial composition:

--- Part 1: General provisions: The purpose is to establish the terms, definitions and general test principles for winding wire test methods:

--- Part 2: Dimensional measurement: The purpose is to establish test methods for measuring the dimensions of different products of winding wire:

--- Part 3: Mechanical properties: The purpose is to establish test methods for the mechanical properties of different types of winding wire products:

--- Part 4: Chemical properties: The purpose is to establish test methods for the chemical properties of different types of winding wire products:

--- Part 5: Electrical properties: The purpose is to establish test methods for the electrical properties of different types of winding wire products:

--- Part 6: Thermal properties: The purpose is to establish test methods for the thermal properties of different types of winding wire products:

--- Part 7: Test method for determining the temperature index of enameled winding wire: The purpose is to establish a method for determining the temperature index of enameled winding wire:

Test procedures:

--- Part 8: Test method for determining the temperature index of enameled winding wire:
Rapid method: The purpose is to establish the determination of the temperature index of enameled winding wire:

Rapid test procedure for the sensitivity index:

--- Part 21: High-frequency impulse voltage resistance performance: The purpose is to establish the test method for the high-frequency impulse voltage resistance performance of winding wires:

Winding wire test methods Part 5: Electrical properties

1 Scope

This document describes the following test methods for winding wires:

- Test method 5: Resistance;
- Test method 13: Breakdown voltage;
- Test method 14: Paint film continuity;
- Test method 19: Dielectric loss factor;
- Test method 23: Pinhole test;

For terms, definitions, general principles of test methods and catalogue of test methods for winding wires, please refer to IEC 60851-1:

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document:

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to this document:

IEC 60851-1 Winding Wires-Test Methods-Part 1: General General Note: GB/T 4074.1-2024 Winding wire test methods Part 1: General provisions (IEC 60851-1:2021, IDT)

3 Terms and definitions

There are no terms or definitions that require definition in this document:

4 Test Method 5: Resistance

Resistance is the DC resistance of 1m long winding wire at 20°C:

The measurement accuracy of the test method used should be 0.5%:

For bundled cables, their length should not exceed 10m, and both ends should be soldered