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

GB/T 4074.7-2024

Replacing GB/T 4074.7-2009

**Test methods of winding wires - Part 7: Test procedure for the
determination of the temperature index of enamelled winding
wires**

(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 1 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 measurements;-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 determining the temperature index of enameled winding wires - Rapid method;

Part 21: High frequency pulse voltage resistance.

This document replaces GB/T 4074.7-2009 "Test methods for winding wires - Part 7: Test method for determining the temperature index of enameled winding wires" Compared with GB/T 4074.7-2009, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

The definitions of temperature index and failure time have been changed (see 3.1 and 3.3, 3.1 and 3.3 of the 2009 edition); -the test specimen preparation for non-film wrapped enameled round wire has been changed (see 5.1.1, 5.1.1 of the 2009 edition); -the recommended number and minimum number of specimens in a test sample have been changed (see 5.3, 5.3 of the 2009 edition); -Changed the recommended aging temperature and time per cycle for estimated temperature indexes of 150 to 159 (see Table 3, Table 2 of the 2009 edition);

Added the requirement of selecting the test voltage for self-adhesive enameled wire according to the thickness of the insulation including the thickness of the self-adhesive layer (see Chapter 7);

Added the correlation coefficient r in the test report information (see Chapter 9);

Added the recommended minimum test report information and some commonly used test temperatures in the regression line calculation method (see Appendix A);

The calculation formula and result interpretation of the correlation coefficient in Appendix B have been changed (see Appendix B, Appendix B of the 2009 edition). -this document is equivalent to IEC 60172:2020 "Test method for determination of temperature index of enameled and film-wound winding wires".

Introduction

Winding wire is one of the main supporting raw materials in the fields of electricity, motors, electrical appliances, home appliances, electronics, communications, transportation, power grids, aviation, etc.

First, it has a wide range of uses 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, which are to be divided into the following 9 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.

Inspection procedures.

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

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

Winding wire test methods Part 7: Determination of temperature of enameled winding wires
Index test method

1 Scope

According to IEC 60216-1, this document specifies the evaluation of a test voltage under atmospheric pressure by periodically monitoring the change in the AC test voltage.

This test method is not applicable to fiber Insulated wire or inorganic fiber film wrapped wire.

Note: The data obtained by this test method can provide designers and R&D engineers with a basis

for further evaluation of insulation systems and equipment tests and selection of winding wires.

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 latest version (including all amendments) applies to this document.

In this document.

IEC 60216-1 Electrical insulating materials - Thermal resistance - Part 1: Ageing process and evaluation of test results materials-Thermal endurance properties-Part 1: Aging procedures and evaluation of test results) Note. GB/T 11026.1-2016 Electrical insulating materials - Heat resistance - Part 1: Ageing procedures and evaluation of test results (IEC 60216-1.

2013, IDT)

IEC 60216-3 Electrical insulating materials - Thermal resistance - Part 3: Calculation method materials-Thermal endurance properties-Part 3: Instructions for calculating thermal endurance characteristics) Note. GB/T 11026.3-2017 Thermal resistance of electrical insulating materials Part 3: Procedure for calculating characteristic thermal resistance parameters (IEC 60216-3.

2006, MOD)

3 Terms and Definitions

The following terms and definitions apply to this document.

Temperature index; T_I A value used to compare the temperature/time characteristics of electrical insulating materials or simple material combinations based on the Arrhenius equation of temperature versus life.

Temperature (in degrees Celsius) obtained by extrapolating the Ust diagram to a lifetime of 20 000 h.

NOTE In insulation systems, the temperature index is derived from known service experience or from a known comparative functional evaluation based on which a reference insulation system is evaluated and established.

[Source. IEC 60050-212:2010, 212-12-11 Merge Note 1 into the definition and modify it, and specify the life is 20 000 h.]