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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 1094.10-2022

Replacing GB/T 1094.10-2003

Power transformers - Part 10: Determination of sound levels

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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" drafted.

This document is part 10 of GB/T 1094 "Power Transformers". GB/T 1094 has released the following parts.

--- Part 1.General;

--- Part 2.Temperature rise of liquid-immersed transformers;

--- Part 3.Insulation levels, insulation tests and air gaps for external insulation;

--- Part 4.Lightning impulse and operating impulse test guidelines for power transformers and reactors;

--- Part 5.Ability to withstand short circuits;

--- Part 6.Reactors;

--- Part 7.Loading guidelines for oil-immersed power transformers;

--- Part 10.Sound level determination;

--- Part 10.1.Application Guidelines for Sound Level Determination;

--- Part 11.Dry-type transformers;

--- Part 12.Loading guidelines for dry-type power transformers;

--- Part 14.Liquid-immersed power transformers using high-temperature insulating materials;

--- Part 15.Gas-filled power transformers;

--- Part 16.Transformers for wind power generation;

--- Part 18.Frequency response measurement;

--- Part 23.DC bias suppression device.

This document replaces GB/T 1094.10-2003 "Power Transformers - Part 10.Determination of Sound Levels", and GB/T 1094.10-2003

In contrast, except for structural adjustments and editorial changes, the main technical changes are as follows.

--- Added some terms and definitions (see Chapter 3);

--- Added sound level measurement of distribution transformers (see Chapter 4, Chapter 5 and Chapter 8);

--- Added new sound level measurement specifications (see Chapter 5);

--- Except for distribution transformers, 1/3 octave measurement has been added (see Chapter 5);

--- Increased the height of the measurement surface to be calculated from the reflection plane (see Chapters 7 and 11);

--- Added sound level measurement principles for dry reactors (see Chapters 7 and 8);

--- Except for distribution transformers, the standard measurement distance is modified from 0.3m to 1m (see Chapter 8, Chapter 8 of the.2003 edition);

--- Unify the calculation formula for measuring surface area (see Chapter 10);

--- Added the amendment criterion of the sound intensity method (see Chapter 11);

--- Adjusted the relevant drawings (see full text).

This document is modified to adopt IEC 60076-10.2016 "Power Transformers - Part 10.Determination of Sound Levels".

The technical differences between this document and IEC 60076-10.2016 and their reasons are as follows.

--- Replace IEC 61672-1 with the normatively quoted GB/T 3785.1 to adapt to the technical conditions of our country;

--- Replace IEC 61672-2 with the normatively quoted GB/T 3785.2 to adapt to the technical conditions of our country;

--- Replace ISO 61043.1993 with the normatively quoted GB/T 17561 to adapt to the technical conditions of our country;

--- Replace ISO 3382-2.2008 with the normatively quoted GB/T 36075.2 to adapt to the technical conditions of our country.

The following editorial changes have been made to this document.

--- Added reference to GB/T 1094.6 in paragraph 2 of the scope, and adjusted the IEC 60076 series of standards to GB/T 1094.1;

--- The content of the introduction has been improved, and the last sentence in the last paragraph of the introduction has been deleted;

--- References have been adjusted.

Please note that some content of this document may be patented. The issuing agency of this document assumes no responsibility for identifying patents.

Introduction

The formulation of power transformer standards is to establish a set of best evaluation criteria for power transformers, and to select raw materials for power transformers.

Provide guidance on matters needing attention in selection, design, production, inspection, selection, operation, maintenance, etc. The GB/T 1094 series of standards aim to ensure that

Principles and related rules that are immediately applicable to the design, manufacture, test, operation, maintenance, etc. of power transformers. It is planned to consist of 16 parts.

constitute.

--- Part 1.General. The purpose is to establish the rules applicable to the design, manufacture and production test of various types of power transformers.

General principles and related rules.

--- Part 2.Temperature rise of liquid immersed transformers. The purpose is to establish the relevant temperature rise aspects applicable to various types of liquid immersed power transformers.

technical requirements and test methods.

--- Part 3.Insulation level, insulation test and external insulation air gap. The purpose is to establish suitable for various types of liquid immersed power transformers

Technical requirements and insulation test methods for insulation levels, insulation tests and external insulation air gaps.

--- Part 4.Lightning impulse and operating impulse test guidelines for power transformers and reactors. The purpose is to establish

Technical requirements and test methods for lightning impulse testing and operational impulse testing of power transformers and reactors.

--- Part 5.Ability to withstand short circuits. The purpose is to establish the relevant specifications applicable to various types of power transformers regarding their ability to withstand short circuits.

Technical requirements and test methods.

--- Part 6.Reactors. The purpose is to establish technical requirements and test requirements applicable to various types of reactors.

--- Part 7.Loading guidelines for oil-immersed power transformers. The purpose is to carry out the operation of various types of oil-immersed power transformers with load.

provide guidance.

--- Part 10.Sound level determination. The purpose is to establish techniques applicable to the determination of sound levels of various types of power transformers and reactors.

technical requirements and test methods.

--- Part 10.1.Application guidelines for sound level determination. The purpose is to measure the application method of sound level related to various power transformers and reactors.

provide guidance.

--- Part 11.Dry-type transformers. The purpose is to establish technical requirements and test requirements applicable to various types of dry-type power transformers.

--- Part 12.Dry-type power transformer load guidelines. The purpose is to improve various types of dry-type power transformers related to load operation.

for guidance.

--- Part 14.Liquid-immersed power transformers using high-temperature insulating materials. The purpose is to establish suitable for various types of high temperature insulation

Technical requirements and test requirements for materials of liquid immersed transformers.

--- Part 15.Gas-filled power transformers. The purpose is to establish technical requirements and tests applicable to various types of gas-filled power transformers.

inspection requirements.

--- Part 16.Transformers for wind power generation. The purpose is to establish the technical requirements and tests applicable to various types of wind power transformers.

inspection requirements.

--- Part 18.Frequency response measurements. The purpose is to establish technical