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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 1094.14-2022

Power transformer - Part 14: Liquid-immersed power transformer using high-temperature insulation 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"

drafted.

This document is Part 14 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 /Z 1094.14-2011 "Power transformers - Part 14.Liquid immersed transformers using high temperature insulating materials"

Design and Application", compared with GB /Z 1094.14-2011, except for structural adjustment and editorial changes, the main technical changes are as follows.

--- Adjusted normative references (see Chapter 2, Chapter 2 of the.2011 edition);

--- Modified and improved terms and definitions (see Chapter 3, Chapter 3 of the.2011 edition);

--- The number of insulation systems is adjusted to three. conventional, mixed and high temperature (see Chapter 4, Chapter 5 of the.2011 edition);

---Introduce winding definitions to distinguish various types of mixed insulation systems (see Chapters 3, 4 and 5, Chapters 3 and 5 of the.2011 edition

Chapter and Chapter 6);

--- Changed the uniform high temperature insulation system to the high temperature insulation system (see Chapter 4 and Chapter 5, Chapter 5 and Chapter 6 of the.2011 edition

chapter);

--- Modified the example diagram of the insulation system (see Chapter 4, Chapter 5 of the.2011 edition);

--- All recommended temperature limits corresponding to GB/T 1094.7 are given in the corresponding tables (see Chapters 5 and 7,.2011

Chapters 6 and 8 of the.2008 edition).

This document uses the redrafted method to modify the use of IEC 60076-14.2013 "Power transformers - Part 14.The use of high temperature insulating materials

Liquid-Immersed Power Transformers.

The technical differences between this document and IEC 60076-14.2013 and the reasons are as follows.

--- In Chapter 1, the main technical content regulated by this document has been added;

--- Regarding normative reference documents, this document has made adjustments with technical differences to adapt to the technical conditions of our country and the circumstances of the adjustment.

The situation is reflected in Chapter 2 "Normative References", and the specific adjustments are as follows.

* Replacing IEC 60076-1 and GB/T 1094.2 with GB/T 1094.1, which adopts international standards

IEC 60076-2, GB/T 1094.5 replaced IEC 60076-5, GB/T 1094.16 replaced IEC 60076-16,

GB 2536 replaces IEC 60296, GB/T 4109 replaces IEC 60137, GB/T 10230.1 replaces

IEC 60214-1, GB/T 18494.1 replaced IEC 61378-1, GB/T 18494.2 replaced IEC 61378-2,

NB/SH/T 0945 replaces IEC 61099;

* Added reference to NB/T 10199;

--- Adjust the content of terms and definitions in IEC original 3.19 to 8.2.2 of this document, and adjust the content of Note 1 and Note 2 to

text;

---In 6.1, "natural esters should meet the requirements of NB/T 10199" was added to meet the actual situation in my country;

---D.2 "Part D." column item added "MV. medium voltage winding" to conform to the actual situation of our country.

The following editorial changes have also been made to this document.

--- Replace IEC 60076-7 and IEC 60085 with GB/T 1094.7-2008 and GB/T 11021-2014 respectively, and replace them with

Adjusted from normative citations to references;

--- Adjust "Note 1.See IEC 60085" in 3.3 to "[Source. GB/T 11021-2014, 3.11, with modifications]";

--- Deleted Note 2 in 3.6;

--- Correct R2=0.9835 in the description of Figure A.1 to R2=0.9835;

--- Replace the data in Table A.2 with the content in Table 2 in GB /Z 1094.14-2011;

--- Deleted the first sentence of paragraph 2 of A.5 "IEC 61100 provides rules for classifying insulating liquids according to ignition point and calorific value.

but";

--- Adjust the "natural ester" of Table A.3 from row 6 to row 5;

--- Correct the "Figure C.4" mentioned in the second paragraph of the text below Figure C.1 to "Figure C.6";

--- Adjust "Third Winding" in Example 2 and Example 4 of D.4 to "Medium Voltage Winding";

--- Adjusted the references, deleted documents that were not cited in the text, and changed

IEC 60050 (alparts) to

IEC 60050-212.2010, adds IEEEC57.100 and GB/T 1094.6.

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 provide power transformers from production materials.

Provide guidance on matters needing attention in selection, product design, product production, product inspection, product selection, and operation and maintenance.

GB/T 1094 aims to establish compliance principles and relevant regulations applicable to the design, manufacture, test methods, operation and maintenance of power transformers.

Then, it is proposed to consist of 14 parts.

--- 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 for ability to withstand short circuits.