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

GB/T 7595-2017

Quality of transformer oils in service

运行中变压器油质量

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Foreword

This Standard was drafted in accordance with the rules given in GB/T 1.1-2009. This Standard replaces GB/T 7595-2008, Quality of Transformer Oils in Service. Compared with GB/T 7595-2008, the major changes of this Standard are as follows: -- the application scope of the standard is modified; -- the normative references are modified; -- the standard for the quality of mineral transformer oils in service is modified; -- the standard for the quality of breaker oils in service is modified; -- the inspection items, such as chromaticity, and relevant quality indexes and test methods are added; -- part of test methods are modified; -- the terms and definitions are deleted; -- part of test items are deleted; -- test cycles and test items are deleted; -- informative Annex A "Maximum Viscosity of Transformer Oils at the Lowest Cold- start Energizing Temperature" is deleted; -- informative Annex B "Effects of Different Electrode Shapes and Operating Methods on the Measured Values of Breakdown Voltage" is deleted; -- informative Annex C "Anti-degradation Measures for Transformer Oils in Service" is deleted. This Standard was proposed by China Electricity Council. This Standard shall be under the jurisdiction of the National Standardization Technical Committee on Electrification (SAC/TC 322). The major drafting organization of this Standard. Xi'an Thermal Power Research Institute Co., Ltd. The contributory drafting organizations of this Standard. China Petroleum Karamay Lubricating Oil Research Institute, Jiangsu Electric Power Company Electric Power Research Institute, State Grid Tianjin Electric Power Research Institute, Guangdong Power Grid Co., Ltd. Electric Power Research Institute. The main drafters of this Standard. Xiao Xiuyuan, Ma Shujie, Wang Juan, Meng Quality of Transformer Oils in Service

1 Application Scope

China's national quality standard for mineral transformer and circuit breaker oils in service. This document governs oil already in equipment rather than oil being bought, and that distinction is the point of it: a transformer's oil is its insulation and its coolant at once, it is expected to last the transformer's life of forty years, and it is the only part of the machine that can be sampled without taking it out of service. Everything known about a large transformer's internal condition comes from its oil - the dielectric strength that says whether

it can still hold off the voltage, the moisture that degrades both oil and paper, the acidity and interfacial tension that track oxidation, and the dissolved gases whose pattern identifies an internal fault by type. A transformer failure is a fire and a very long outage, so the limits here are what decide whether a machine keeps running, is treated or is taken out. The standard applies to mineral transformer and breaker oils in electrical equipment, and not to cable or capacitor impregnating oils.

This Standard specifies the quality standard for mineral transformer oils and beaker oils in service. This Standard applies to the quality and supervision of mineral transformer oils and breaker oils in service, which are filled in electrical equipment. This Standard does not apply to mineral insulating oils, which are used for cables or condensers as impregnating compounds.

2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition dated applies to this document. For undated references, the latest edition of the referenced documents (including all amendments) applies to This Standard.

GB/T 261, Determination of Flash Point - Pensky-Martens Closed Cup Method

GB/T 264, Petroleum Products - Determination of Acid Number

GB/T 507, Insulating Liquids - Determination of the Breakdown Voltage at Power Frequency

GB 2536, Fluids for Electrotechnical Applications - Unused Mineral Insulating Oils for Transformers and Switchgear

GB/T 5654, Insulating Liquids - Measurement of Relative Permittivity, Dielectric Dissipation Factor and D.C. Resistivity

GB/T 6540, Petroleum Products - Determination of Colour

GB/T 6541, Petroleum Products - Mineral Oils - Determination of Interfacial Tension of Oil against Water - Ring Method

GB/T 7598, Determination of Water-soluble Acid in Transformer and Turbine Oils in Service by Colorimetric Method

GB/T 7600, Determination of Water Content in Transformer Oils in Service by Coulometric Method

GB/T 7601, Determination of Water Content for Transformer and Turbine Oils in Service by Gas Chromatographic Method

GB/T 8926-2012, Standard Test Method for Insolubles in Used Lubricating Oils

GB/T 14542, Guide for Maintenance and Supervision of Transformer Oil in Service

GB/T 25961, Standard Test Method for Corrosive Sulfur in Electrical Insulating Oils

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