PD IEC TS 62332-2:2014

BSI Standards Publication

Electrical insulation systems (EIS) — Thermal evaluation of combined liquid and solid components

Part 2: Simplified test

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National foreword

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The UK participation in its preparation was entrusted to Technical Committee GEL/112, Evaluation and qualification of electrical insulating materials and systems.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Electrical insulation systems (EIS) –Thermal evaluation of combined liquid and solid components –
Part 2: Simplified test

Systèmes d'isolation électrique (SIE) – Évaluation thermique de composants liquides et solides combines –
Partie 2: Essai simplifié

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRICAL INSULATION SYSTEMS (EIS) – THERMAL EVALUATION OF COMBINED LIQUID AND SOLID COMPONENTS –

Part 2: Simplified test

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Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC TS 62332-2, which is a technical specification, has been prepared by IEC technical committee 112: Evaluation and qualification of electrical insulating materials and systems.

The text of this technical specification is based on the following documents:

Enquiry draft	Report on voting
112/256/DTS	112/268/RVC

Full information on the voting for the approval of this technical specification can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all the parts in the IEC 62332 series, published under the general title *Electrical insulation systems (EIS) – Thermal evaluation of combined liquid and solid components*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- transformed into an International standard,
- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

This technical specification describes a method for the thermal evaluation of electrical insulation systems (EIS) for electrotechnical products with combined liquid and solid components. More specifically, this part addresses liquid immersed power transformers. Part 1 covers general test requirements. This Part 2 covers a simplified test method which can be used as a screening test prior to conducting Part 1 testing or it can be used to determine a thermal classification of an EIS. This method can also be used as a quality control test to evaluate minor product changes.

This specification provides a standardized test method for sealed tube testing. The sealed tube should contain all the primary EIS elements, and in relative component ratios which compare with actual liquid immersed power transformers.

This technical specification has been prepared in conjunction with IEC TC 14, *Power transformers* and IEC TC 10, *Fluids for electrotechnical applications*. Any comments or suggestions from other technical committees to make this technical specification more general are welcome.

ELECTRICAL INSULATION SYSTEMS (EIS) – THERMAL EVALUATION OF COMBINED LIQUID AND SOLID COMPONENTS –

Part 2: Simplified test

1 Scope

This part of IEC 62332, which is a technical specification, is applicable to EIS containing solid and liquid components where the thermal stress is the dominant ageing factor, without restriction to voltage class.

This part specifies a sealed tube test procedure for the thermal evaluation and qualification of electrical insulation systems (EIS). One aspect of this procedure is to also provide a method to assign thermal classifications to materials used in EIS where solid and liquid components are both used. This procedure describes a comparative ageing method whereby a reference system composed of kraft paper and mineral oil is compared to a candidate system of any combination of solid and insulating liquid. The test procedures in this part are specifically applicable to liquid immersed transformer insulation systems.

Similar procedures should also work for other electrotechnical devices with a combination of liquid and solid components, such as bushings, cables or capacitors, but this will be added as additional parts once experience is gained using this technical specification.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60085, *Electrical insulation – Thermal evaluation and designation*

IEC 60156, *Insulating liquids – Determination of the breakdown voltage at power frequency – Test method*

IEC 60216-2:2005, *Electrical insulating materials – Thermal endurance properties – Part 2: Determination of thermal endurance properties of electrical insulating materials – Choice of test criteria*

IEC 60216-3, *Electrical insulating materials – Thermal endurance properties – Part 3: Instructions for calculating thermal endurance characteristics*

IEC 60216-4-1, *Electrical insulating materials – Thermal endurance properties – Part 4-1: Ageing ovens – Single-chamber ovens*

IEC 60216-5, *Electrical insulating materials – Thermal endurance properties – Part 5: Determination of relative thermal endurance index (RTE) of an insulating material*

IEC 60243-1, *Electrical strength of insulating materials – Test methods – Part 1: Tests at power frequencies*