

Power transformers - Additional European requirements - Part 3-4: Large power transformer - Special tests for corrugated tank and radiators

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## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

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English Version

Power transformers - Additional European requirements -  
Part 3-4: Large power transformer - Special tests for corrugated  
tank and radiators

Transformateurs de puissance - Exigences européennes  
supplémentaires: Partie 3-4: Transformateurs de grande  
puissance - Essais spéciaux pour cuve ondulée et  
radiateurs extensibles

Leistungstransformatoren - Zusätzliche europäische  
Anforderungen - Teil 3-4: Großleistungstransformatoren -  
Sonderprüfungen für Wellwandkessel und Radiatoren

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European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

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## European foreword

This document (EN 50708-3-4:2022) has been prepared by CLC/TC 14 "Power transformers".

The following dates are fixed:

- latest date by which this document has to be (dop) 2023-08-15 implemented at national level by publication of an identical national standard or by endorsement
- latest date by which the national standards (dow) 2025-08-15 conflicting with this document have to be withdrawn

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## Introduction

This part of the EN 50708 series deals with a special test for hermetically sealed transformers.

For the purpose of this document, the requirements of the general EN 50708-1-1:2020 apply.

This document contains particular requirements for specific transformers or transformer applications, which are based on the requirements of the general EN 50708-1-1:2020.

This document should be considered in conjunction with the requirements of the general parts.

The particular requirements of the different sub parts of the EN 50708 series supplement, modify or replace certain requirements of the general parts of EN 50708-1 and/or EN 50708-1-X being valid at the time of publication of this document. The absence of references to the exclusion of a part or a clause of a general part means that the corresponding clauses of the general part are applicable (undated reference).

Requirements of other -X parts with X greater than 1 being eventually relevant for cases covered by this document also apply. This document could therefore also supplement, modify or replace certain of these requirements valid at the time of publication of this document.

The main clause numbering of each part follows the pattern and corresponding references of EN 50708-1-1:2020. The numbers following the particular number of this document are those of the corresponding parts, or clauses of the other parts of the EN 50708 series, valid at the time of publication of this document.

In the case where new or amended general parts with modified numbering were published after the sub part was issued, the clause numbers referring to a general part in sub parts might no longer align with the latest edition of the general part. Dated references should be observed.

## 1 Scope

This document describes a special test for tanks of liquid-immersed transformers which during service are hermetically sealed and fully filled with liquid and volume change of the liquid due to temperature change compensated by elastic deformation of the cooling element for Large Power Transformers having a rated power greater than 3150 kVA.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 50708 (all parts), *Power transformers — Additional European requirements*

EN IEC 60296, *Fluids for electrotechnical applications - Mineral insulating oils for electrical equipment (IEC 60296)*

EN 60836, *Specifications for unused silicone insulating liquids for electrotechnical purposes*

EN 62770, *Fluids for electrotechnical applications - Unused natural esters for transformers and similar electrical equipment (IEC 62770)*

EN IEC 63012, *Insulating liquids - Unused modified or blended esters for electrotechnical applications (IEC 63012)*

IEC 60076-2, *Power transformers — Part 2: Temperature rise for liquid-immersed transformers*

IEC 60076-7, *Power transformers — Part 7: Loading guide for mineral-oil-immersed power transformers*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in the EN 50708 (all parts) apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

## 4 Service conditions

Refer to EN 60076-1.

## 5 Special test for corrugated tank and tank with expandable radiators

### 5.1 General information

For liquid immersed transformers with corrugated tank or tank with expandable radiators, a special test to check the reliability of the tank or expandable radiators is described hereafter.

This test is representative of the life cycle of the tank of the transformers under operation and ensures a relevant level of quality. Other kinds of tests may be carried out by agreement between the manufacturer and the customer at the time of the offer. The liquid used for the test shall be of the same type (viscosity and expansion coefficient) as the one used in service.

Attention shall be paid that air pocket are not present when filling and during the test.

Possible limitation of the radiator expansion system during the test shall be the same as that in operation.