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IEEE Standard Test Code for Dry-Type Distribution and Power Transformers

IEEE Power and Energy Society

Developed by the
Transformers Committee

IEEE Std C57.12.91™-2020
(Revision of IEEE Std C57.12.91-2011)

IEEE

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Transformers Committee
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IEEE SA Standards Board

Abstract: To reflect current practice in the testing procedures of dry-type transformers, substantive changes to Clause 5, Clause 7, Clause 10, Clause 11, and Clause 13 of IEEE Std C57.12.91-2011 have been made in this revision. Also Annex B has been added to provide guidelines for converting test results measured at 60 Hz to the equivalent values at 50 Hz and vice versa. This revision does not address transformer requirements and specific test criteria; rather they are contained in appropriate standards such as IEEE Std C57.12.01 or in user specifications.

Keywords: dry-type transformer, IEEE C57.12.91™, power transformer

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Introduction

This introduction is not part of IEEE Std C57.12.91-2020, IEEE Standard Test Code for Dry-Type Distribution and Power Transformers.

This revision of IEEE Std C57.12.91-2011 incorporates changes to Clause 5, Clause 7, Clause 10, Clause 11, and Clause 13 and adds Annex B.

In Clause 5, 5.2.1 has been modified to clarify the location of the resistance measurements. Clause 7 has been modified to allow the use of electronic ratio meters for ratio measurement. Clause 10 has been modified to add the test method for partial discharge tests. This information was previously in IEEE Std C57.12.01.[1] Clause 11 was modified to clarify the location of the hot-resistance measurements and to clarify how an additive factor may be used in lieu of excitation temperature measurements. Clause 13 was extensively modified to bring the methods of measuring and calculating audible sound level for dry-type transformers into similarity with the methods outlined in IEEE Std C57.12.90 for liquid-immersed transformers. Finally, Annex B was added to provide guidelines for converting test results measured at 60 Hz to the equivalent values at 50 Hz and vice versa.

[1] Information on normative references can be found in Clause 2.

Contents

IEEE Standard Test Code for Dry-Type Distribution and Power Transformers

1. Overview

1.1 Scope

This standard describes methods for performing tests specified in IEEE Std C.57.12.01 and other referenced standards applicable to dry-type distribution and power transformers, with a voltage of 601 V or higher in the highest voltage winding.[2] It is intended for use as a basis for performance and for the proper testing of dry-type distribution and power transformers.

This standard applies to all dry-type transformers including those with solid cast and/or resin encapsulated windings, *except as follows*:

a) Instrument transformers
b) Step-voltage and induction voltage regulators
c) Arc furnace transformers
d) Rectifier transformers
e) Specialty and General Purpose transformers
f) Mine transformers
g) Testing transformers
h) Welding transformers

NOTE—Where IEEE standards do not exist for the transformers mentioned above or for other special transformers, this standard may be applicable as a whole or in parts subject to agreement between the parties responsible for the application and for the design of the transformer.[3]

1.2 Purpose

The purpose of this standard is to provide information regarding the procedures for the testing of dry-type transformers. Transformer requirements and specific test criteria are not a part of this standard but are contained in appropriate standards such as IEEE Std C57.12.01 or in user specifications.

[2] Information on normative references can be found in Clause 2.
[3] Notes in text, tables, and figures are given for information only and do not contain requirements needed to implement the standard.