

IEEE Standard for the Preparation of Test Procedures for the Thermal Evaluation of Solid Electrical Insulating Materials

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IEEE Standards Coordinating Committee 4 on
Insulation Systems

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Insulation Systems**

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Abstract: The test procedures covered by this standard apply to the thermal endurance of solid insulating materials, including processed compositions of raw materials, before they are fabricated into insulating structures identified with specific parts of electrical equipment.

Keywords: destructive test, end-point criteria, IEEE 98™, nondestructive test, proof test, relative temperature index, solid insulating materials, temperature index, thermal aging, thermal endurance

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Introduction

This introduction is not part of IEEE Std 98-2016, IEEE Standard for the Preparation of Test Procedures for the Thermal Evaluation of Solid Electrical Insulating Materials.

IEEE Std 98-1986 reflected many of the concepts incorporated in IEC 60216-1974 while maintaining many of the practical considerations from the initial IEEE Std 98-1972™.

IEEE Std 98-2002 incorporated additional changes in the IEC 60216 Standards and introduced the Fixed Time Frame Method (FTFM) of sampling for the thermal evaluation of materials.

IEEE Std 98-2016 provides details on the purpose of temperature indices and relative temperature indices rating, on thermal aging, causes of variations in ovens, and how to overcome influence of oven characteristics. More details for proof test and examples of nondestructive tests and proof tests are provided. [Table B.1](#) has been revised for consistency with IEC 60216-2 [\[B1\]](#) and UL 746-B [\[B6\]](#). Annexes summarizing accepted sampling techniques and an Annex on accelerated aging have been added.¹

¹The numbers in brackets correspond to those of the bibliography in [Annex D](#).

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1. Overview

1.1 Scope

The test procedures covered by this standard apply to the thermal endurance of solid insulating materials, including processed compositions of raw materials, before they are fabricated into insulating structures identified with specific parts of electrical equipment.

Tests for specific types of insulating materials, such as wire enamel, varnish, sheet, tape, etc. are not within the scope of this standard.

1.2 Purpose

This standard provides principles for the development of test procedures to evaluate the thermal endurance of solid electrical insulating materials (EIMs) thermally aged in air. The test procedures use accelerated thermal endurance test(s), conducted in accordance with prescribed procedures herein. The thermal endurance value for a measured property can be assigned based on one of two following methodologies:

- Temperature index (TI), which establishes the temperature index value by means of a preselected time coordinate.