



Designation: D5423 – 23

Standard Specification for Forced-Convection Laboratory Ovens for Evaluation of Electrical Insulation¹

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1. Scope

1.1 This specification covers forced-convection ventilated electrically-heated ovens, operating over all or part of the temperature range from 20 °C above the ambient temperature to 500 °C, and used for thermal endurance evaluation of electrical insulating materials.

1.2 The specification requirements for Type I ovens are based on IEC Publication 60216-4-1, and are technically identical to it. The requirements for Type II ovens are essentially identical to the requirements of Specification D2436. This specification and an associated test method, D5374, have replaced Specification D2436.

1.3 While the ovens covered by this specification are intended primarily for thermal endurance evaluation, their characteristics make them suitable for other applications as applicable.

1.4 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.6 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

¹ This specification is under the jurisdiction of ASTM Committee D09 on Electrical and Electronic Insulating Materials and is the direct responsibility of Subcommittee D09.17 on Fire and Thermal Properties.

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2. Referenced Documents

2.1 ASTM Standards:²

D1711 Terminology Relating to Electrical Insulation
D2436 Specification for Forced-Convection Laboratory Ovens for Electrical Insulation (Withdrawn 1994)³
D5374 Test Methods for Forced-Convection Laboratory Ovens for Evaluation of Electrical Insulation

2.2 Other Document:

IEC Publication 60216-4-1 Electrical Insulating Materials—Thermal Endurance Properties—Part 4-1: Ageing Ovens—Single-Chamber Ovens⁴

3. Terminology

3.1 For terms related to electrical and electronic insulating materials issues refer to Terminology D1711.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *rate of ventilation, n*—the number of air changes per hour in the oven chamber.

3.2.2 *set temperature, n*—the average of all of the measured temperatures within the oven, averaged over the period of any cyclic temperature variation that occurs.

3.2.2.1 *Discussion*—This is the actual operating temperature of the oven. In IEC 60216-4-1, this term is called the exposure temperature.

3.2.3 *temperature fluctuation, n*—maximum change in temperature at one point in the oven over a period of time.

3.2.3.1 *Discussion*—This property depends upon the sensitivity and type (on/off or proportional) of control used and the heater mass in relation to surface area.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ The last approved version of this historical standard is referenced on www.astm.org.

⁴ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.