



Designation: D7969 – 16 (Reapproved 2024)

Standard Specification for Gravity Convection and Forced Ventilation Ovens¹

This standard is issued under the fixed designation D7969; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification covers the performance requirements for general purpose air ovens ordinarily used in testing operations, which have a testing chamber up to 0.6 m³ (25 ft³) in volume.

1.2 It is applicable to gravity convection ovens designed to operate over all or part of the temperature range from 20°C above ambient room temperature to 200°C.

1.3 It is applicable to forced ventilation ovens designed to operate over all or part of the temperature range from 20°C above ambient room temperature to 500°C.

1.4 This specification does not include safety requirements that are essential for ovens used in the presence of combustible materials.

1.5 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for reference only and may be approximate.

1.5.1 The SI base unit of the expression of temperature is Kelvin (K), the unit of measure used in this specification is Celsius (°C) and has been derived mathematically.

1.6 Calibration ovens to this standard are necessary to assure their operative performance under typical conditions of use and shall be performed periodically, either according to the manufacturer's recommendations, the quality requirements of the end user, their customers, or suppliers.

1.7 *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.*

1.8 *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 D11 on Rubber and Rubber-like Materials and is the direct responsibility of Subcommittee D11.15 on Degradation Tests.

Current edition approved Feb. 1, 2024. Published March 2024. Originally approved in 2015. Last previous edition approved in 2016 as D7969 – 16. DOI: 10.1520/D7969-16R24.

2. Referenced Documents

2.1 ASTM Standards:²

E145 Specification for Gravity-Convection and Forced-Ventilation Ovens

3. Terminology

3.1 Definitions:

3.1.1 *ambient room temperature*—a temperature as recorded, typically but not necessarily, close to room temperature.

3.1.2 *room temperature*—a temperature in the range from 20 to 30°C (68 to 86°F).

3.1.3 *standard laboratory atmosphere*—an atmosphere having a temperature of 23 ± 2°C (73.4 ± 3.6°F) and a relative humidity of 50 ± 10 % RH (40 to 60 % RH) shall be the standard laboratory atmosphere.

3.1.4 *standard laboratory temperature*—a temperature of 23 ± 2°C (73.4 ± 3.6°F) shall be the standard laboratory temperature.

4. Oven Types

4.1 This specification covers the following four types of air ovens:

4.1.1 *Type IAGC*—An oven ventilated by gravity convection having a uniformity of temperature within ±2 % of the differential between oven and ambient temperatures.

4.1.2 *Type IBGC*—An oven ventilated by gravity convection having a uniformity of temperature within ±5 % of the differential between oven and ambient temperatures.

4.1.3 *Type IIAFV*—An oven having forced ventilation and a uniformity of temperature within ±1 % of the differential between oven and ambient temperatures.

4.1.4 *Type IIBFV*—An oven having forced ventilation and a uniformity of temperature within ±2.5 % of the differential between oven and ambient temperatures.

5. Performance Requirements

5.1 The temperature within the testing chamber shall be controllable by an automatic device, and shall be uniform

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.