



Designation: D3012 – 19

Standard Test Method for Thermal-Oxidative Stability of Polypropylene Using a Specimen Rotator Within an Oven¹

This standard is issued under the fixed designation D3012; 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 test method provides a means for estimating the resistance of polypropylene, in molded form, to accelerated aging by heat in the presence of air using a forced draft oven.

1.2 The stability determined by this test method is not directly related to the suitability of the material for use when different environmental conditions prevail and shall not be used to predict performance.

NOTE 1—The specified thermal levels in this test method are considered sufficiently severe to cause failure of commercial grades of heat-stable polypropylene within a reasonable period of time. If desired, lower temperatures can be applied to estimate the performance of polypropylene with lower heat stabilities.

1.3 The values stated in SI units are to be regarded as the standard. The values in parentheses are for information only.

1.4 *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.*

NOTE 2—This test method and ISO 4577–1983 are technically similar but different in preparation of test specimens, thickness of test specimen, measurement of the number of air flow changes in the ovens, and the number of air changes per hour required.

1.5 *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.*

2. Referenced Documents

2.1 ASTM Standards:²

- D618 Practice for Conditioning Plastics for Testing
- D883 Terminology Relating to Plastics
- D3641 Practice for Injection Molding Test Specimens of Thermoplastic Molding and Extrusion Materials
- D4101 Classification System and Basis for Specification for Polypropylene Injection and Extrusion Materials
- D5374 Test Methods for Forced-Convection Laboratory Ovens for Evaluation of Electrical Insulation
- E77 Test Method for Inspection and Verification of Thermometers
- E220 Test Method for Calibration of Thermocouples By Comparison Techniques
- E456 Terminology Relating to Quality and Statistics
- E608/E608M Specification for Mineral-Insulated, Metal-Sheathed Base Metal Thermocouples
- E644 Test Methods for Testing Industrial Resistance Thermometers
- E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method
- E1137/E1137M Specification for Industrial Platinum Resistance Thermometers
- E2251 Specification for Liquid-in-Glass ASTM Thermometers with Low-Hazard Precision Liquids
- E2935 Practice for Conducting Equivalence Testing in Laboratory Applications

2.2 ISO Standard:³

- ISO 4577–1983 Plastics—Polypropylene and Propylene Copolymers—Determination of Thermal Oxidative Stability in Air-Oven Method

¹ This test method is under the jurisdiction of ASTM Committee D20 on Plastics and is the direct responsibility of Subcommittee D20.15 on Thermoplastic Materials.

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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 Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

*A Summary of Changes section appears at the end of this standard