



Designation: D4745 – 19 (Reapproved 2024)

Standard Classification System and Basis for Specification for Filled Polytetrafluoroethylene (PTFE) Molding and Extrusion Materials Using ASTM Methods¹

This standard is issued under the fixed designation D4745; 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 standard classification system and basis for specification covers polytetrafluoroethylene (PTFE) filled molding compounds made with virgin PTFE resins defined in Specification **D4894**, as Types II and III.

NOTE 1—This system can be used as a model for other PTFE compounds having particulate fillers that can survive the sintering temperatures of PTFE as can those listed in this standard. This system is restricted to virgin PTFE base resin for technical reasons. Recycled or reprocessed material cannot be processed successfully.

NOTE 2—The properties measured on commercially fabricated parts may differ from the listed values for samples prepared by the procedures given in this specification, depending on part geometry and processing parameters. Compounds used for ram extrusion are made from resins that comply with ASTM-D4745 Type II prior to their pre-sintering process. Property values measured on extruded products will vary from the listed values for Type II compounds which are prepared by the procedures given below which standardize mold diameter and sintering cycle. End users should assess these expected variations in ram extruded products to ensure their suitable use in their specific application.

1.2 The values stated in SI units are to be regarded as standard.

1.3 The following statement applies to the test method portion, Section 11, of this specification: *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. See Note 5 for a specific warning statement.*

NOTE 3—There is no known ISO equivalent to this standard.

1.4 *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 D20 on Plastics and is the direct responsibility of Subcommittee D20.15 on Thermoplastic Materials.

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2. Referenced Documents

2.1 ASTM Standards:²

D792 Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement

D883 Terminology Relating to Plastics

D1600 Terminology for Abbreviated Terms Relating to Plastics (Withdrawn 2024)³

D1708 Test Method for Tensile Properties of Plastics by Use of Microtensile Specimens

D3892 Practice for Packaging/Packing of Plastics

D4894 Specification for Polytetrafluoroethylene (PTFE) Granular Molding and Ram Extrusion Materials

IEEE/ASTM SI-10 Standard for Use of the International System of Units (SI): The Modern Metric System⁴

3. Terminology

3.1 *Definitions*—The terminology given in Terminology **D883** is applicable to this specification unless otherwise specified.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *bulk density, n*—the mass in kilograms per cubic liter of resin compound measured under the conditions of the test.

3.2.2 *filled compound, n*—blend of PTFE resin as the matrix and particulate fillers, generally glass, other inorganic, metallic, or polymeric materials that withstand the sintering temperature of PTFE (327 to 380°C).

3.2.3 *free-flow resins (pelletized), n*—generally made by treatment of finely divided resins to produce free-flowing agglomerates.

3.2.4 *lot, n*—one production run.

3.2.5 *pigmented compound, n*—a compound in which a pigment is added for colorant purposes only.

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 ASTM International Headquarters, 100 Barr Harbor Drive, West Conshohocken, PA 19428

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