Designation: D 4895 – 04

Standard Specification for Polytetrafluoroethylene (PTFE) Resin Produced From Dispersion [1]

This standard is issued under the fixed designation D 4895; 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[2] covers dry-powder resins of polytetrafluoroethylene (PTFE) that have been prepared from dispersions of PTFE by manufacturing techniques that involve controlled coagulation of the dispersion. These resins are generally known as "fine-powder" resins or "coagulated-dispersion powder" resins. The conversion of these resins to finished products normally involves a process called "paste extrusion," and sometimes involves formative processes such as calendering. A volatile liquid is present as a processing aid during these formative stages of conversion, and is subsequently removed during the finishing stages of conversion. These PTFE resins are homopolymers of tetrafluoroethylene, or, in some cases, modified homopolymers containing not more than 1 % by weight of other fluoromonomers. The usual methods of processing thermoplastics generally are not applicable to these materials because of their viscoelastic properties. The materials covered herein do not include mixtures of PTFE with additives such as colors, fillers, or plasticizers; nor do they include reprocessed or reground resin or any fabricated articles because the properties of such materials have been irreversibly changed when they were fibrillated or sintered. The methods and properties included are those required to identify the various resins. An additional procedure is provided in the appendix for further characterization of the resins.

1.2 The values stated in SI units as detailed in IEEE/ASTM SI 10 are to be regarded as standard. The values given in brackets are for information only.

1.3 The following safety hazards caveat pertains only to the Specimen Preparation Section, Section 9, and the Test Methods Section, Section 10, 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 and health practices and determine the applicability of regulatory limitations prior to use.* See Warning note in 9.1.1 for a specific hazards statement.

NOTE 1—Information in this specification is technically equivalent to related information in ISO 12086-1 and ISO 12086-2.

2. Referenced Documents

2.1 *ASTM Standards:* [3]

D 618 Practice for Conditioning Plastics for Testing
D 638 Test Method for Tensile Properties of Plastics
D 792 Test Methods for Specific Gravity (Relative Density) of Plastics by Displacement
D 883 Terminology Relating to Plastics
D 1895 Test Methods for Apparent Density, Bulk Factor, and Pourability of Plastic Materials
D 3892 Practice for Packaging/Packing of Plastics
D 4052 Test Method for Density and Relative Density of Liquids by Digital Density Meter
D 4441 Specification for Aqueous Dispersions of Polytetrafluoroethylene
D 4591 Test Method for Determining Temperatures and Heats of Transitions of Fluoropolymers by Differential Scanning Calorimetry
D 4894 Specification for Polytetrafluoroethylene (PTFE) Granular Molding and Ram Extrusion Materials
E 11 Specification for Wire-Cloth Sieves for Testing Purposes
E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications
E 177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods
IEEE/ASTM SI 10 Use of the International System of Units (SI): The Modern Metric System

2.2 *ISO Standards:*[4]

ISO 12086-1 Plastics Fluoropolymer Dispersions and

[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] Specifications for other forms of polytetrafluoroethylene are found in Specifications D 4441 and D 4894.

[3] 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.

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

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

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