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Standard Specification for PTFE MOLDING AND EXTRUSION MATERIALS¹

This standard is issued under the fixed designation D 1457; 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 molding and extrusion resins of PTFE (polytetrafluoroethylene) that have never been melted after preforming or molding and are normally processed by methods similar to those used in powder metallurgy or ceramics, or by ram extrusion or extrusion with a volatile aid. These PTFE resins are homopolymers of tetrafluoroethylene or copolymers containing not more than 1 % by weight of other fluoromonomers. The usual methods of plastics processing generally are not applicable to these materials because of their viscoelastic properties at processing temperatures. The materials included herein do not include mixtures of PTFE resin with additives such as colors, fillers, plasticizers, any fabricated articles, or reprocessed or reground resin. The methods and properties included are those required to identify the various types of resins. Additional procedures are provided in the Appendixes for further characterization of the resins.

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

2. Applicable Documents

2.1 ASTM Standards:

- D 618 Methods of Conditioning Plastics and Electrical Insulating Materials for Testing²
- D 638 Test Method for Tensile Properties of Plastics²
- D 792 Test Methods for Specific Gravity and Density of Plastics by Displacement²
- D 1505 Test Method for Density of Plastics by the Density-Gradient Technique²
- D 1895 Test Methods for Apparent Density, Bulk Factor, and Pourability of Plastic Materials³

D 1898 Recommended Practice for Sampling of Plastics³

D 3297 Practice for Molding and Machining Tolerances for PTFE Resin Parts⁴

D 3892 Practice for Packaging/Packing of Plastics⁴

E 11 Specification for Wire-Cloth Sieves for Testing Purposes⁵

E 177 Recommended Practice for Use of the Terms Precision and Accuracy as Applied to Measurement of a Property of a Material⁵

E 380 Standard for Metric Practice⁶

2.2 Military Standard:⁷

MIL-STD-105 Sampling Procedures and Tables for Inspection by Attributes

3. Types

3.1 This specification covers the following six types of PTFE resin generally used for compression molding or extrusion, or both:

3.1.1 *Type I*—Granular resin used for general-purpose molding and extrusion.

3.1.2 *Type III*—Resin produced from a coagulated dispersion and normally used with a volatile processing aid. Type III resins are divided into four grades by such characteristics

¹ This specification is under the jurisdiction of ASTM Committee D-20 on Plastics and is the direct responsibility of Subcommittee D20.15 on Thermoplastic Materials.

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² 1983 Annual Book of ASTM Standards, Vol 08.01.

³ 1983 Annual Book of ASTM Standards, Vol 08.02.

⁴ 1983 Annual Book of ASTM Standards, Vol 08.03.

⁵ 1983 Annual Book of ASTM Standards, Vol 14.02.

⁶ 1983 Annual Book of ASTM Standards, Complete in Vol 14.02 only. Excerpts in all other parts.

⁷ Available from Naval Publications and Forms Center, 5801 Tabor Ave., Philadelphia, Pa. 19103. Attn: NPFC 105.