



Designation: D8501 – 23a

Standard Classification System for and Basis for Specification for Unfilled Poly(Ether Ketone Ketone) (PEKK) Materials for Molding, Extrusion, Composites, Powder Coating and Additive Manufacturing¹

This standard is issued under the fixed designation D8501; 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 poly(ether ketone ketone) materials, commonly referred to as PEKK, which are suitable for molding, extrusion, composites, powder coating and additive manufacturing. Only materials in this Class 6-8 are covered by this specification. This classification system provides requirements for the use of regrind or reprocessed materials.

1.2 This specification covers thermoplastic resin materials supplied in pellet as well as powder form.

1.3 This specification applies only to PEKK copolymers, without any additional fillers or inorganic additives, alloys, or treatments for modification of attributes.

1.4 This classification system and subsequent line callout (specification) are intended to provide means of calling out poly(ether ketone ketone) materials used in the fabrication of end items or parts.

1.5 Poly(ether ketone ketone) (PEKK) is a member of the poly(aryl ether ketone) or PAEK polymer family. PEKK has a broad range of repeat unit combinations of Isophthaloyl and Terephthaloyl repeat units. This standard classifies the polymer options.

1.6 The values stated in SI units, as detailed in IEEE/ASTM S-10, are to be regarded as the standard. The values given in parentheses are for information only.

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.*

NOTE 1—There is no known ISO equivalent to this standard.

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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NOTE 2—PEKK is a thermoplastic polymer. Testing conditions can affect the technical results. Specimens prepared by techniques different than prescribed in this specification can have properties that vary from the values specified.

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.*

2. Referenced Documents

2.1 ASTM Standards:²

- D150 Test Methods for AC Loss Characteristics and Permittivity (Dielectric Constant) of Solid Electrical Insulation
- D257 Test Methods for DC Resistance or Conductance of Insulating Materials
- D618 Practice for Conditioning Plastics for Testing
- D638 Test Method for Tensile Properties of Plastics
- D792 Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement
- D883 Terminology Relating to Plastics
- D1238 Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer
- D1600 Terminology for Abbreviated Terms Relating to Plastics (Withdrawn 2024)³
- D2863 Test Method for Measuring the Minimum Oxygen Concentration to Support Candle-Like Combustion of Plastics (Oxygen Index)
- D3418 Test Method for Transition Temperatures and Enthalpies of Fusion and Crystallization of Polymers by Differential Scanning Calorimetry
- D3892 Practice for Packaging/Packing of Plastics

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.

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