



Designation: D6456 – 10 (Reapproved 2026)

Standard Specification for Finished Parts Made from Polyimide Resin¹

This standard is issued under the fixed designation D6456; 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 is intended to be a means of calling out finished plastic parts ready for industrial or consumer use.

1.2 This specification covers finished parts and shapes from which parts are machined, made from a semi-crystalline polyimide (PI).

1.3 This specification is intended to replace MIL-R-46198 and Provisional Standard Specification PS 93.

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

1.4 This specification covers parts made from semi-crystalline polyimide, which is a thermosetting material that shows no softening or melting by DMA (D4065) at or below 260°C (500°F).

1.5 Since PI is a thermoset resin, no provisions are included for recycled products.

1.6 The classification system outlined in this specification is intended to be identical to that used by Department of Defense for over 20 years. No changes are intended at this time.

1.7 The values are stated in SI units and are regarded as standard in all property and dimensional tables. For reference purposes, inch-pound units are stated in parentheses.

1.8 *Application*—Parts in this specification are generally used for applications requiring the following combination of properties: low coefficient of friction, and low thermal expansion coupled with heat resistance for continuous operation at temperatures up to 260°C (500°F) and for short-term excursions upward to 482°C (900°F).

1.9 The following precautionary caveat pertains only to the test method portion, Section 12, 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.*

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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1.10 *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

- D638 Test Method for Tensile Properties of Plastics
- D695 Test Method for Compressive Properties of Rigid Plastics
- D790 Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
- 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
- D4065 Practice for Plastics: Dynamic Mechanical Properties: Determination and Report of Procedures
- E8/E8M Test Methods for Tension Testing of Metallic Materials

2.2 ANSI Standard:

- Z1.4 Standard for Sampling Plans and Tables for Inspection by Attributes^{4,5}

2.3 Military Standards:⁶

- MIL-R-46198 Resin, Polyimide, Hot Pressed or Pressed and Sintered

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at www.astm.org/contact. 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 American National Standards Institute (ANSI), 1180 Avenue of the Americas, 10th Floor, New York, NY 10036, <http://www.ansi.org>.

⁵ Replaced MIL-STD-105.

⁶ Available from Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098