



Standard Practices for Production and Preparation of Powder Metallurgy (PM) Test Specimens¹

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1. Scope*

1.1 These standard practices cover the specifications for those uniaxially compacted test specimens that are used in ASTM standards, the procedures for producing and preparing these test specimens, and reference the applicable standards.

1.2 Basic tool design and engineering information regarding the tooling that is required to compact the test specimens and machining blanks are contained in the annexes.

1.3 This standard is intended to be a comprehensive one-source document that can be referenced by ASTM test methods that utilize PM test specimens and in ASTM PM material specifications that contain the engineering data obtained from these test specimens.

1.4 These practices are not applicable to metal powder test specimens that are produced by other processes such as cold isostatic pressing (CIP), hot isostatic pressing (HIP), powder forging (PF) or metal injection molding (MIM). They do not pertain to cemented carbide materials.

1.5 Detailed information on PM presses, compacting tooling and sintering furnaces, their design, manufacture and use are not within the scope of these practices.

1.6 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.7 *This standard may involve hazardous materials, operations, and equipment. 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.*

¹ This practice is under the jurisdiction of ASTM Committee B09 on Metal Powders and Metal Powder Products and is the direct responsibility of Subcommittee B09.02 on Base Metal Powders.

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2. Referenced Documents

2.1 ASTM Standards:²

- A34/A34M Practice for Sampling and Procurement Testing of Magnetic Materials
- A341/A341M Test Method for Direct Current Magnetic Properties of Materials Using D-C Permeameters and the Ballistic Test Methods
- A596/A596M Test Method for Direct-Current Magnetic Properties of Materials Using the Ballistic Method and Ring Specimens
- A773/A773M Test Method for Direct Current Magnetic Properties of Low Coercivity Magnetic Materials Using Hysteresisgraphs
- A811 Specification for Soft Magnetic Iron Parts Fabricated by Powder Metallurgy Techniques
- A839 Specification for Iron-Phosphorus Powder Metallurgy Parts for Soft Magnetic Applications
- A904 Specification for 50 Nickel-50 Iron Powder Metallurgy Soft Magnetic Parts
- A927/A927M Test Method for Alternating-Current Magnetic Properties of Toroidal Core Specimens Using the Voltmeter-Ammeter-Wattmeter Method
- B215 Practices for Sampling Metal Powders
- B243 Terminology of Powder Metallurgy
- B312 Test Method for Green Strength of Specimens Compacted from Metal Powders
- B331 Test Method for Compressibility of Metal Powders in Uniaxial Compaction
- B438 Specification for Bronze-Base Powder Metallurgy (PM) Bearings (Oil-Impregnated)
- B439 Specification for Iron-Base Powder Metallurgy (PM) Bearings (Oil-Impregnated)
- B528 Test Method for Transverse Rupture Strength of Powder Metallurgy (PM) Specimens
- B595 Specification for Sintered Aluminum Structural Parts
- B610 Test Method for Measuring Dimensional Changes Associated with Processing Metal Powders

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.

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