



Standard Practices for Production and Preparation of Powder Metallurgy (P/M) 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 P/M test specimens and in ASTM P/M 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 (P/F) or metal injection molding (MIM). They do not pertain to cemented carbide materials.

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

1.6 Test specimen and die cavity dimensions shown in inch-pound units are to be regarded as standard and are applicable to the referenced ASTM test methods and material specifications. Values in SI units are shown in parentheses and result from conversion in accordance with IEEE/ASTM Standard SI-10. They may be approximate and are only for information.

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.*

2. Referenced Documents

2.1 ASTM Standards:

- A 34/A 34M Practice for Sampling and Procurement Testing of Magnetic Materials²
- A 341/A 341M Test Method for Direct-Current Magnetic Properties of Materials Using D-C Permeameters and the Ballistic Test Methods²
- A 596/A 596M Test Method for Direct-Current Magnetic Properties of Materials Using the Ballistic Method and Ring Specimens²
- A 773/A 773M Test Method for dc Magnetic Properties of Materials Using Ring and Permeameter Procedures with Electronic Hysteresigraphs²
- A 811 Specification for Soft Magnetic Iron Parts Fabricated by Powder Metallurgy (P/M) Techniques²
- A 839/A 839M Specification for Iron Phosphorus Powder Metallurgy (P/M) Parts for Soft Magnetic Applications²
- A 904 Specification for 50 Nickel-50 Iron Powder Metallurgy (P/M) Soft Magnetic Alloys²
- A 927/A 927M Test Method for Alternating-Current Magnetic Properties of Torroidal Core Specimens Using the Voltmeter-Ammeter-Wattmeter Method²
- B 215 Practices for Sampling Finished Lots of Metal Powder³
- B 243 Terminology of Powder Metallurgy³
- B 312 Test Method for Green Strength for Compacted Metal Powder Specimens³
- B 328 Test Method for Density, Oil Content, and Interconnected Porosity of Sintered Metal Structural Parts and Oil-Impregnated Bearings³
- B 331 Test Method for Compressibility of Metal Powders in Uniaxial Compaction³
- B 438/B 438M Specification for Sintered Bronze Bearings (Oil-Impregnated)³
- B 439 Specification for Iron-Base Sintered Bearings (Oil-Impregnated)³
- B 528 Test Method for Transverse Rupture Strength of Metal Powder Specimens³
- B 595 Specification for Sintered Aluminum Structural Parts³
- B 610 Test Method for Measuring Dimensional Changes of

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 Annual Book of ASTM Standards, Vol 03.04.

³ Annual Book of ASTM Standards, Vol 02.05.