



Designation: B 783 – 99^{ε1}

Standard Specification for Materials for Ferrous Powder Metallurgy (P/M) Structural Parts¹

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^{ε1} NOTE—Editorial changes were made to this standard in March 2000.

1. Scope

1.1 This specification covers a variety of ferrous P/M structural materials and includes a classification system or material designation code. The classification system used in this specification includes chemical composition, minimum tensile yield strength for parts in the as-sintered condition, and minimum ultimate tensile strength for materials in the heat-treated condition.

1.2 Property values stated in inch-pound units are the standard. Conversion factors to SI units may be approximate.

NOTE 1—Paragraphs 5.1 and 7.1 will govern material classification by the designation code. The classification system is explained in Appendix X1.

2. Referenced Documents

2.1 ASTM Standards:

B 243 Terminology of Powder Metallurgy²

B 328 Test Method for Density, Oil Content, and Interconnected Porosity of Sintered Powder Metal Structural Parts and Oil-Impregnated Bearings²

E 8 Test Methods for Tension Testing of Metallic Materials³

2.2 Other Standard:

MPIF Standard 35 Materials Standard for P/M Structural Parts⁴

3. Terminology

3.1 *Definitions*—Definitions of powder metallurgy terms can be found in Terminology B 243. Additional descriptive information is available in the Related Materials section of Vol 02.05 of the *Annual Book of ASTM Standards*.

¹ This specification is under the jurisdiction of ASTM Committee B-9 on Metal Powder and Metal Powder Products and is the direct responsibility of Subcommittee B09.05 on Structural Parts.

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² *Annual Book of ASTM Standards*, Vol 02.05.

³ *Annual Book of ASTM Standards*, Vol 03.01.

⁴ Available from MPIF, 105 College Road East, Princeton, NJ 08540.

4. Ordering Information

4.1 Materials for parts to this specification shall be ordered by materials designation code.

4.2 Orders for parts under this specification may include the following information:

4.2.1 Certification, if required (see Section 11),

4.2.2 Test methods and mechanical properties other than strength (see 8.2 and 8.3),

4.2.3 Density (see 7.1),

4.2.4 Porosity or oil content (see 7.2), and

4.2.5 Special packaging if required.

5. Materials and Manufacture

5.1 Structural parts shall be made by pressing and sintering metal powders with or without subsequent heat treating. Parts may also be made by repressing or repressing and resintering sintered parts, if necessary, with or without subsequent heat treatment to produce finished parts conforming to the requirements of this specification.

6. Chemical Composition

6.1 The material shall conform to the requirements of Table 1.

6.2 Chemical analysis, if required, shall be made by any method agreed upon by the manufacturer and the purchaser.

7. Physical Properties

7.1 Density:

7.1.1 The buyer and seller may agree upon a minimum average density for the part and minimum densities for specific regions of the part.

7.1.2 Density shall be determined in accordance with Test Method B 328.

7.2 Porosity:

7.2.1 The buyer and seller should agree upon a minimum volume oil content for parts that are to be self-lubricating.

7.2.2 The buyer and seller may agree upon a functional test for porosity in parts that are to be self-lubricating, or for permeability where fluid flow must be restricted.