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Standard Specification for Sintered Nickel Silver Structural Parts[1]

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ε1 NOTE—Keywords were added editorially in October 1995.

1. Scope

1.1 This specification covers nickel silver sintered metal powder structural parts of two copper-nickel-zinc compositions and of two types depending on density.

1.2 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

NOTE 1—Definitions of powder metallurgy terms can be found in Terminology B 243 and additional useful information is available in the Related Material section of Vol 02.05 of the *Annual Book of ASTM Standards*.

2. Referenced Documents

2.1 *ASTM Standards:*

B 243 Terminology of Powder Metallurgy[2]

B 328 Test Method for Density, Oil Content, and Interconnected Porosity of Sintered Powder Metal Structural Parts and Oil-Impregnated Bearings[2]

E 8 Test Methods for Tension Testing of Metallic Materials[3]

3. Ordering Information

3.1 Orders for parts under this specification shall include the following information:

3.1.1 Dimensions (see Section 8),

3.1.2 Chemical composition (see Section 5 and Table 1),

3.1.3 Density (see 6.1 and Table 2),

3.1.4 Mechanical properties (see Section 7), and

3.1.5 Certification (see Section 13).

4. Materials and Manufacture

4.1 Structural parts shall be made by molding and sintering metal powders followed by repressing and resintering, if necessary, to produce finished parts conforming to the requirements of this specification.

5. Chemical Composition

5.1 The material shall conform to the requirements of Table 1 as to chemical composition.

5.2 The chemical analysis shall be made in accordance with the methods prescribed in Vol 03.05 in the *Annual Book of ASTM Standards*, or by any other approved method agreed upon between the manufacturer and the purchaser.

6. Physical Properties

6.1 *Density:*

6.1.1 If the density does not vary more than 0.3 g/cm^3 from one section of the structural part to any other section, the overall density shall be within the limits prescribed in Table 2.

6.1.2 If the density varies more than 0.3 g/cm^3 from one section of the part to any other, the manufacturer and the purchaser shall agree upon the critical section of the part where the stresses are highest. The density of this critical section, rather than the average density, shall be a minimum of 7.5 g/cm^3 for Type 1, and shall be a minimum of 8.0 g/cm^3 for Type II.

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

7. Mechanical Properties

7.1 The manufacturer and the purchaser shall agree on qualification tests for the determination of mechanical properties.

7.2 These tests shall be performed on production parts.

7.3 The tests shall be determined after consideration of the function of the part.

7.4 The limits shall be agreed upon between the manufacturer and purchaser.

7.5 All shipments of parts subsequent to the establishment of testing conditions shall conform to the limits agreed upon.

NOTE 2—The mechanical properties in tension and compression that may be expected from standard specimens molded to size are given in the Appendix to this specification.

8. Permissible Variations in Dimensions

8.1 Permissible variations in dimensions shall be within the limits specified on the drawings describing the structural parts accompanying the order or shall be within the limits specified in the order.

9. Workmanship

9.1 Structural parts shall be uniform in composition.

9.2 When parts are cut or fractured, the exposed surface shall be of uniform appearance.

10. Sampling

10.1 *Lot*—Unless otherwise specified, a lot shall consist of parts of the same form and dimensions, made from powder

[1] This specification is under the jurisdiction of ASTM Committee B-9 on Metal Powders 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.