



Standard Specification for Stainless Anti-Friction Bearing Steel¹

This standard is issued under the fixed designation A 756; 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 covers the requirements for chromium-carbon bearing quality stainless steel to be used in the manufacture of anti-friction bearings.

1.2 Supplementary Requirements of an optional nature are provided and when desired shall be so stated in the order.

1.3 The values stated in inch-pound units are to be regarded as the standard.

2. Referenced Documents

2.1 ASTM Standards:

A 484/A484M Specification for General Requirements for Stainless and Heat-Resisting Bars, Billets and Forgings²

A 751 Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products²

E 45 Practice for Determining the Inclusion Content of Steel³

E 381 Test Method for Macroetch Testing, Inspection, and Rating Steel Products, Comprising Bars, Billets, Blooms, and Forgings³

E 1019 Test Methods for Determination of Carbon, Sulfur, Nitrogen, Oxygen, and Hydrogen in Steel and in Iron, Nickel, and Cobalt Alloys⁴

E 1077 Test Method for Estimating the Depth of Decarburization of Steel Specimens³

2.2 Other Standard:

SAE J 418a Grain Size Determination of Steel⁵

3. Ordering Information

3.1 Orders for material under specification should include the following information:

3.1.1 Quantity,

3.1.2 Grade identification,

3.1.3 Specification designation and year of issue,

3.1.4 Dimensions, shape, and

3.1.5 Supplementary Requirements, if desired.

4. Process

4.1 The steel shall be made by a process that is capable of providing a high-quality product meeting the requirements of this specification.

5. Chemical Composition

5.1 Typical examples of chemical compositions are shown in Table 1. Other compositions may be specified.

5.2 An analysis of each heat of steel shall be made by the steel manufacturer in accordance with Test Methods A 751. The chemical composition thus determined shall conform to the requirements specified in Table 1 for the ordered grade or to requirements agreed upon between the manufacturer and the purchaser.

5.3 Product analysis may be made by the purchaser in accordance with Test Methods A 751. Permissible variations in product analysis shall be made in accordance with Specification A 484/A 484M.

6. Dimensions, Mass, and Permissible Variations

6.1 The size and shape of the material shall be agreed upon between manufacturer and purchaser.

6.2 Dimensional tolerances for hot-rolled or hot-rolled and annealed bars, in straight lengths or coils, and cold-finished bars 0.500 in. (12.7 mm) and larger in diameter furnished under this specification shall conform to the requirements specified in the latest edition of Specification A 484/A 484M.

6.3 Dimensional tolerances for cold-finished coils for ball and roller material shall be as shown in Table 2.

6.4 Coil tolerances also apply to cold-finished straight lengths under 0.500 in. (12.7 mm) in diameter.

7. Quality Tests

7.1 The supplier shall be held responsible for the quality of the material furnished and shall make the necessary tests to ensure this quality. The supplier shall be required to report on the results of the macroetch and microinclusion rating tests detailed below. Quality tests shown in 7.2 through 7.4 are based upon procedures established in Practice E 45.

7.2 *Sampling*—Samples taken in accordance with the following paragraphs shall be obtained from 4 by 4-in. (102 by 102-mm) rolled billets or forged sections. Tests may be made on smaller or larger sections by agreement with the purchaser. A minimum 3 to 1 reduction of rolled billets or forged sections is required for strand cast products.

7.2.1 For top poured products, a minimum of six samples

¹ This specification is under the jurisdiction of ASTM Committee A-1 on Steel, Stainless Steel and Related Alloys and is the direct responsibility of Subcommittee A01.28 on Bearings Steels

Current edition approved June 15, 1994. Published August 1994. Originally published as A 756 – 78. Last previous edition A 756 – 93.

² Annual Book of ASTM Standards, Vol 01.03.

³ Annual Book of ASTM Standards, Vol 03.01.

⁴ Annual Book of ASTM Standards, Vol 03.06.

⁵ Available from Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096.