



Designation: B 752 – 97

Standard Specification for Castings, Zirconium-Base, Corrosion Resistant, for General Application¹

This standard is issued under the fixed designation B 752; 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 zirconium and zirconium-alloy castings for general corrosion-resistant and industrial applications.

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

2. Referenced Documents

2.1 ASTM Standards:

A 802/A802M Practice for Steel Castings, Surface Acceptance Standards, Visual Examination²

E 8 Test Methods for Tension Testing of Metallic Materials³

E 10 Test Method for Brinell Hardness of Metallic Materials³

E 18 Test Methods for Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials³

E 94 Guide for Radiographic Testing⁴

E 142 Method for Controlling Quality of Radiographic Testing⁴

E 146 Methods for Chemical Analysis of Zirconium and Zirconium Alloys⁵

E 165 Test Method for Liquid Penetrant Examination⁴

E 446 Reference Radiographs for Steel Castings Up to 2 in. (51 mm) in Thickness⁴

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *lot*—shall consist of all castings of the same design produced from the same pour.

3.1.2 *pour*—shall consist of all material melted and cast at one time.

4. Ordering Information

4.1 Orders for castings to this specification shall include the following, as required to describe the requirements adequately.

4.1.1 Description of the castings by pattern number or drawing (dimensional tolerances shall be included on the casting drawing),

4.1.2 Quantity,

4.1.3 Grade Designation (see Table 1),

4.1.4 Options in the specification, and

4.1.5 Supplementary requirements desired, including the standards of acceptance.

5. Materials and Manufacture

5.1 Material for this specification shall be melted by conventional processes used for reactive metals. Typical methods include the consumable electrode and inductoslag melting processes.

6. Chemical Composition

6.1 *Pour Analysis*—An analysis of each pour shall be made by the producer from a sample such as a casting or test bar that is representative of the pour. The chemical composition determined shall conform to the requirements specified for the relevant grade in Table 1.

6.1.1 The elements listed in Table 1 are intentional alloying additions of elements which are inherent to the manufacture of primary zirconium, zirconium sponge, mill product or castings.

6.1.1.1 Elements other than those listed in Table 1 are deemed to be capable of occurring in the grades listed in Table 1 by and only by way of unregulated or unanalyzed scrap additions to the pour. Therefore, pour analysis for elements not listed in Table 1 shall be considered to be in excess of the intent of this specification.

6.2 When agreed upon by producer and purchaser and requested by the purchaser in his written purchase order, chemical analysis shall be completed for specific residual elements not listed in this specification.

6.3 *Product Analysis*—A product analysis may be made by the purchaser on a representative casting from any lot. Because of the possibility of oxygen or other interstitial contamination, samples for oxygen, carbon, hydrogen, and nitrogen analysis shall be taken no closer than ¼ in. [6.3 mm] to a cast surface except that castings too thin for this shall be analyzed on representative material. The chemical composition determined shall conform to the analysis in Table 1 within the check analysis variations shown in Table 2 or shall be subject to rejection by the purchaser.

¹ This specification is under the jurisdiction of ASTM Committee B-10 on Reactive and Refractory Metals and Alloys and is the direct responsibility of Subcommittee B10.05 on Castings.

Current edition approved Oct. 10, 1997. Published February 1998. Originally published as B 752 – 85. Last previous edition B 752 – 91 (1995).

² Annual Book of ASTM Standards, Vol 01.02.

³ Annual Book of ASTM Standards, Vol 03.01.

⁴ Annual Book of ASTM Standards, Vol 03.03.

⁵ Discontinued—see 1990 Annual Book of ASTM Standards, Vol 03.05.