



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

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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 either inch-pound units or SI units are to be regarded separately as standard. Within the text, the SI units are shown in brackets. The values stated in each system are not exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in nonconformance with the specification.

2. Referenced Documents

2.1 ASTM Standards:

A 802/A 802M 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 23 Test Methods for Notched Bar Impact Testing of Metallic Materials³

E 94 Guide for Radiographic Testing⁴

E 142 Method for Controlling Quality of Radiographic Testing⁴

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

3.2 Lot Definitions:

3.2.1 *castings*—a lot shall consist of all castings produced from the same pour.

3.2.2 *ingot*—no definition required.

3.2.3 *rounds, flats, tubes, and wrought powder metallurgical products (single definition, common to nuclear and non-nuclear standards)*—a lot shall consist of a material of the same size, shape, condition, and finish produced from the same ingot or powder blend by the same reduction schedule and the same heat treatment parameters. Unless otherwise agreed between manufacturer and purchaser, a lot shall be limited to the product of an 8 h period for final continuous anneal, or to a single furnace load for final batch anneal.

3.2.4 *sponge*—a lot shall consist of a single blend produced at one time.

3.2.5 *weld fittings*—definition is to be mutually agreed upon between manufacturer and the purchaser.

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

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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.