



Designation: B 352 – 97

Standard Specification for Zirconium and Zirconium Alloy Sheet, Strip, and Plate for Nuclear Application¹

This standard is issued under the fixed designation B 352; 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 hot- and cold-rolled zirconium and zirconium alloy sheet, strip, and plate.

1.2 One unalloyed and three alloys for use in nuclear applications are described.

1.3 The products covered in this specification include the following forms and sizes:

1.3.1 *Sheet*, 24 in. (600 mm) or more in width; under 0.187 in. (4.8 mm) in thickness,

1.3.2 *Strip*, less than 24 in. (600 mm) in width; under 0.187 in. (4.8 mm) in thickness, and

1.3.3 *Plate*, over 10 in. (250 mm) in width; 0.187 in. (4.8 mm) and over in thickness.

NOTE 1—Material over 0.187 in. (4.8 mm) in thickness and less than 10 in. (250 mm) wide is covered as bar in Specification B 351.

1.4 Unless a single unit is used, for example corrosion mass gain in mg/dm², the values stated in either inch-pound or SI units are to be regarded separately as standard. The values stated in each system are not exact equivalents; therefore each system must be used independently of the other. SI values cannot be mixed with inch-pound values.

1.5 The following precautionary caveat pertains only to the test method portions of this specification. *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

B 350 Specification for Zirconium and Zirconium Alloy Ingots for Nuclear Application²

B 351 Specification for Hot-Rolled and Cold-Finished Zirconium and Zirconium Alloy Bars, Rod, and Wire for Nuclear Application²

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 B10.02 on Zirconium and Hafnium.

Current edition approved Oct. 10, 1997. Published April 1998. Originally published as B 352–60 T. Last previous edition B 352–92.

² Annual Book of ASTM Standards, Vol 02.04.

E 8 Test Methods of Tension Testing of Metallic Materials³

E 21 Practice for Elevated Temperature Tension Tests of Metallic Materials³

E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications⁴

E 114 Practice for Ultrasonic Pulse-Echo Straight-Beam Examination by the Contact Method⁵

E 214 Practice for Immersed Ultrasonic Examination by the Reflection Method Using Pulsed Longitudinal Waves⁵

G 2 Test Method for Corrosion Testing of Products of Zirconium, Hafnium, and Their Alloys in Water at 680°F or in Steam at 750°F⁶

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *annealed*—denotes material that exhibits a recrystallized grain structure.

3.1.2 *lot*—a lot shall consist of all material of the same size, shape, condition, and finish produced from the same ingot by the same reduction schedule and heat treatment with the final heat treatment in the same furnace charge, if a batch type furnace is used, or in the same furnace run, if a continuous type furnace is used.

4. Ordering Information

4.1 Purchase orders for material under this specification should include the following information as required to adequately describe the desired material:

4.1.1 Quantity (weight or number of pieces),

4.1.2 Name of material,

4.1.3 Condition (Section 6),

4.1.4 Finish (Section 14),

4.1.5 Form (Sheet, strip, plate),

4.1.6 Edge (Section 15),

4.1.7 Dimensions (size, thickness, width and length),

4.1.8 Grade designation (Table 1), and

4.1.9 ASTM designation and year of issue.

NOTE 2—A typical ordering description is as follows: _ 5000 lb reactor grade zirconium alloy, cold-rolled, vacuum annealed strip, 4.750 by 0.065 by 72 in., ASTM Specification B 352, dated _____, Grade R60804.

³ Annual Book of ASTM Standards, Vol 03.01.

⁴ Annual Book of ASTM Standards, Vol 14.02.

⁵ Annual Book of ASTM Standards, Vol 03.03

⁶ Annual Book of ASTM Standards, Vol 03.02