Designation: B352/B352M – 11 (Reapproved 2016)

Standard Specification for Zirconium and Zirconium Alloy Sheet, Strip, and Plate for Nuclear Application[1]

This standard is issued under the fixed designation B352/B352M; 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 B351/B351M.

1.4 Unless a single unit is used, for example corrosion mass gain in mg/dm^2, 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:*[2]

B350/B350M Specification for Zirconium and Zirconium Alloy Ingots for Nuclear Application

B351/B351M Specification for Hot-Rolled and Cold-Finished Zirconium and Zirconium Alloy Bars, Rod, and Wire for Nuclear Application

E8/E8M Test Methods for Tension Testing of Metallic Materials

E21 Test Methods for Elevated Temperature Tension Tests of Metallic Materials

E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

E114 Practice for Ultrasonic Pulse-Echo Straight-Beam Contact Testing

G2/G2M Test Method for Corrosion Testing of Products of Zirconium, Hafnium, and Their Alloys in Water at 680°F (360°C) or in Steam at 750°F (400°C)

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

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

3.2 *Lot Definition:*

3.2.1 Sheet, strip, and plate products (single definition, common to nuclear and non-nuclear standards), n—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.

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),

[1] This specification is under the jurisdiction of ASTM B10 on Reactive and Refractory Metals and Alloys and is the direct responsibility of B10.02 on Zirconium and Hafnium.

Current edition approved Oct. 1, 2016. Published October 2016. Originally approved in 1960. Last previous edition approved in 2011 as B352/B352M – 11. DOI: 10.1520/B0352_B0352M-11R16.

[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

Copyright © ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959. United States