ASME BPV II Part B Specification Review Form

*** This form is a coversheet that is for information only ***

<table>
<thead>
<tr>
<th>Record No: 17-3298</th>
<th>Adoption of: ASTM B861-19</th>
<th>As: ASME SB-861</th>
</tr>
</thead>
</table>


<table>
<thead>
<tr>
<th>Previous ASTM Version adopted by ASME:</th>
<th>ASTM Version(s) reviewed:</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>10, 13, 14, 19</td>
</tr>
</tbody>
</table>

Review Checklist

### Part I – Material Addition/Deletion

Has a new grade, type, or class of material(s) been added or deleted to the specification since the last ASME adoption?  
YES ☒  NO ☐

If a new grade, type, or class of material(s) has been added or deleted, then will the specification adoption result in the need for a revision to either an ASME BPV Code Volume or an ASME Code Case?  
YES ☐  NO ☐  NA ☒

Reason for answer:

### Part II – Property Change to Existing Material

Have any of the following items changed for a material(s) that, as of the last ASME adoption, was already in the ASTM specification:

- A mechanical property?  
  YES ☐  NO ☒

- A scope or thickness range?  
  YES ☒  NO ☐

- A chemical composition and/or physical property?  
  YES ☒  NO ☐

- A heat treatment temperature or range?  
  YES ☒  NO ☐

If ANY of the above answers is YES, then does the material(s) with the changed property appear in either an ASME BPV Code Volume or an ASME Code Case?  
YES ☐  NO ☐  NA ☒

If the material(s) with the changed property appears in an ASME BPV Code Volume(s)/Code Case(s), then will the adoption of this specification result in the need for the Volume/Code Case to be revised?  
YES ☐  NO ☐  NA ☒

Reason for answer:

### Part III – Other Changes

Has any other significant change(s) been made to the ASTM specification that was not identified in Parts I-II and of which BPV II needs to be aware?  
YES ☐  NO ☒

Were any changes in the ASTM specification made as a result of an ASME request?  
YES ☒  NO ☐
Review Checklist

<table>
<thead>
<tr>
<th>Has any change(s) been made to the ASTM specification that was not already identified in Parts I-II and which is objectionable to ASME?</th>
<th>YES ☐ NO ☒</th>
</tr>
</thead>
<tbody>
<tr>
<td>Will any of the proposed changes make any grade, type, or class of material(s) obsolete?</td>
<td>YES ☐ NO ☒</td>
</tr>
</tbody>
</table>

List any editorial changes to the ASTM Specification (since the last ASME Spec Adoption) of which BVP II needs to be aware:

-13: Increased the allowable hydrogen in Ti Grade 36 from 35ppm to 150ppm – Note: Ti Grade 36 is not an ASME approved construction material
-14: Added UNS Numbers under Scope and in Table 1
-14: Included metric equivalent UTS for H Grades in Scope
-14: Combined standard numeric grade and corresponding H grade chemistry on a single line in Table 1
-14: Deleted note detailing the historical rational for the H Grades in Scope
-19: On Referenced Documents: ASTM E8, E2994 were added and ASTM E2626 was deleted.

Part IV – Necessary Revisions for ASME Adoption

List any additional revisions necessary for adoption into ASME Code Volume BPV II:

NOTE: ASME editors will remove ASTM proprietary footnotes and logo; and then add the ASME logo.

Part V – BPV IIB Mandatory Appendix II, Table II-200

Will this adoption result in Table II-200-1 restricting the usage of certain versions of this ASTM specification?  (If yes, state why:)

YES ☐ NO ☒

Respectfully submitted: Rick Sutherlin  Monday, August 31, 2020, 12:16 PM
Phone 541-990-6814  email rsuther223@comcast.net
SPECIFICATION FOR TITANIUM AND TITANIUM ALLOY SEAMLESS PIPE

SB-861

(Identical with ASTM Specification B861-10 except para. 22.1.2, Product Marking shall show “this specification designation”)

Designation: B861 – 19

Standard Specification for Titanium and Titanium Alloy Seamless Pipe

This standard is issued under the fixed designation B861; 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 (e) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

1.1 This specification covers the requirements for 34 grades of titanium and titanium alloy seamless pipe intended for
general corrosion resisting and elevated temperature service as follows:

1.1.1 Grade 1—UNS R50250. Unalloyed titanium,
1.1.2 Grade 2—UNS R50400. Unalloyed titanium,
1.1.2.1 Grade 2H—UNS R50400. Unalloyed titanium (Grade 2 with 58 ksi (400 MPa) minimum UTS),
1.1.3 Grade 3—UNS R50550. Unalloyed titanium,
1.1.4 Grade 5—UNS R56400. Titanium alloy (6 % aluminum, 4 % vanadium),
1.1.5 Grade 7—UNS R52400. Unalloyed titanium plus 0.12
to 0.25 % palladium,
1.1.5.1 Grade 7H—UNS R52400. Unalloyed titanium plus 0.12 to 0.25 % palladium (Grade 7 with 58 ksi (400 MPa) minimum UTS),
1.1.6 Grade 9—UNS R56320. Titanium alloy (3 %
aluminum, 2.5 % vanadium),
1.1.7 Grade 11—UNS R52250. Unalloyed titanium plus 0.12
to 0.25 % palladium,
1.1.8 Grade 12—UNS R53400. Titanium alloy (0.3 %
molybdenum, 0.8 % nickel),
1.1.9 Grade 13—UNS R53413. Titanium alloy (0.5 %
nickel, 0.05 % ruthenium),
1.1.10 Grade 14—UNS R53414. Titanium alloy (0.5 %
nickel, 0.05 % ruthenium),
1.1.11 Grade 15—UNS R53415. Titanium alloy (0.5 %
nickel, 0.05 % ruthenium),
1.1.12 Grade 16—UNS R52402. Unalloyed titanium plus 0.04
to 0.08 % palladium,
1.1.12.1 Grade 16H—UNS R52402. Unalloyed titanium plus 0.04 to 0.08 % palladium (Grade 16 with 58 ksi (400 MPa) minimum UTS),
1.1.13 Grade 17—UNS R52252. Unalloyed titanium plus 0.04
to 0.08 % palladium,
1.1.14 Grade 18—UNS R56322. Titanium alloy (3 %
aluminum, 2.5 % vanadium plus 0.04 to 0.08 % palladium),
1.1.15 Grade 19—UNS R58640. Titanium alloy (3 %
aluminum, 8 % vanadium, 6 % chromium, 4 % zirconium, 4 %
molybdenum),
1.1.16 Grade 20—UNS R58645. Titanium alloy (3 %
aluminum, 8 % vanadium, 6 % chromium, 4 % zirconium, 4 %
molybdenum) plus 0.04 to 0.08 % palladium,
1.1.17 Grade 21—UNS R58210. Titanium alloy (15 %
molybdenum, 3 % aluminum, 2.7 % niobium, 0.25 % silicon),
1.1.18 Grade 23—UNS R56407. Titanium alloy (6 %
aluminum, 4 % vanadium, extra low interstitial, ELI),
1.1.19 Grade 24—UNS R56405. Titanium alloy (6 %
aluminum, 4 % vanadium) plus 0.04 to 0.08 % palladium,
1.1.20 Grade 25—UNS R56403. Titanium alloy (6 %
aluminum, 4 % vanadium) plus 0.3 to 0.8 % nickel and 0.04 to
0.08 % palladium,
1.1.21 Grade 26—UNS R52404. Unalloyed titanium plus 0.08 to 0.14 % ruthenium,
1.1.21.1 Grade 26H—UNS R52404. Unalloyed titanium plus 0.08 to 0.14 % ruthenium (Grade 26 with 58 ksi (400 MPa) minimum UTS),
1.1.22 Grade 27—UNS R52254. Unalloyed titanium plus 0.08 to 0.14 % ruthenium,
1.1.23 Grade 28—UNS R56323. Titanium alloy (3 %
aluminum, 2.5 % vanadium plus 0.08 to 0.14 % ruthenium),
1.1.24 Grade 29—UNS R56404. Titanium alloy (6 %
aluminum, 4 % vanadium, extra low interstitial, ELI plus 0.08
to 0.14 % ruthenium),
1.1.25 Grade 33—UNS R53442. Titanium alloy (0.4 %
nickel, 0.015 % palladium, 0.025 % ruthenium, 0.15 %
chromium),
1.1.26 Grade 34—UNS R53445. Titanium alloy (0.4 %
nickel, 0.015 % palladium, 0.025 % ruthenium, 0.15 %
chromium),
1.1.27 Grade 35—UNS R56340. Titanium alloy (4.5 %
aluminum, 2 % molybdenum, 1.6 % vanadium, 0.5 % iron, 0.3 % silicon),
1.1.28 Grade 36—UNS R58450. Titanium alloy (45 %
niobium),
1.1.29 Grade 37—UNS R52815. Titanium alloy (1.5 %
aluminum), and

1 This specification is under the jurisdiction of ASTM Committee B10 on
Reactive and Refractory Metals and Alloys and is the direct responsibility of Subcommittee B10.01 on Titanium.

10.1520/B0861-19.

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3. Terminology

3.1 Definitions:

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.

### TABLE 1 Chemical Requirements

<table>
<thead>
<tr>
<th>Grade Number</th>
<th>UNS Number</th>
<th>Carbon, max.</th>
<th>Oxygen range or max.</th>
<th>Nitrogen, max.</th>
<th>Hydrogen, max.</th>
<th>Iron range or max.</th>
<th>Aluminum</th>
<th>Vanadium</th>
<th>Palladium</th>
<th>Ruthenium</th>
<th>Nickel</th>
<th>Molybdenum</th>
<th>Chromium</th>
<th>Cobalt</th>
<th>Zirconium</th>
<th>Niobium</th>
<th>Tin</th>
<th>Silicon</th>
<th>Other Elements, max. each</th>
<th>Other Elements, max. total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 R50250 0.08 0.18 0.03 0.015 0.20 - - - - - - - - - - - - - - - - - - - - - - - - 0.1 0.4</td>
<td>2/2H R50400 0.08 0.25 0.03 0.015 0.30 - - - - - - - - - - - - - - - - - - - - - - - - 0.1 0.4</td>
<td>3 R50550 0.08 0.35 0.05 0.015 0.30 - - - - - - - - - - - - - - - - - - - - - - - - 0.1 0.4</td>
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<tr>
<td>5 R56400 0.08 0.20 0.05 0.015 0.40 5.5- 3.5- 6.75 4.5</td>
<td>6 R56401 0.08 0.25 0.03 0.015 0.30 - - - - - - - - - - - - - - - - - - - - - - - - 0.1 0.4</td>
<td>7/7H R52400 0.08 0.25 0.03 0.015 0.30 - - - - 0.12- 0.25</td>
<td>9 R56320 0.08 0.15 0.03 0.015 0.25 2.5- 3.5- 3.0</td>
<td>11 R52250 0.08 0.18 0.03 0.015 0.20 - - - - - - - - - - - - - - - - - - - - - - - - 0.1 0.4</td>
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<tr>
<td>12 R53400 0.08 0.25 0.03 0.015 0.30 - - - - - - - - - - - - - - - - - - - - - - - - 0.1 0.4</td>
<td>13 R53413 0.08 0.10 0.03 0.015 0.20 - - - - - - - - - - - - - - - - - - - - - - - - 0.1 0.4</td>
<td>14 R53414 0.08 0.15 0.03 0.015 0.30 - - - - - - - - - - - - - - - - - - - - - - - - 0.1 0.4</td>
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<td>15 R53415 0.08 0.25 0.03 0.015 0.30 - - - - - - - - - - - - - - - - - - - - - - - - 0.1 0.4</td>
<td>16/16H R52402 0.08 0.25 0.03 0.015 0.30 - - - - 0.04- 0.08</td>
<td>17 R52252 0.08 0.18 0.03 0.015 0.20 - - - - - - - - - - - - - - - - - - - - - - - - 0.1 0.4</td>
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<td>18 R56322 0.08 0.15 0.03 0.015 0.25 2.5- 3.5- 3.0- 0.08</td>
<td>19 R56640 0.05 0.12 0.03 0.02 0.30 3.0- 7.5- 4.0 8.5</td>
<td>20 R56645 0.05 0.12 0.03 0.02 0.30 3.0- 7.5- 4.0 8.5</td>
<td>21 R58210 0.05 0.17 0.03 0.015 0.40 2.5- 3.5- 4.0 5.5- 14.0- 16.0</td>
<td>22 R56407 0.08 0.13 0.03 0.0125 0.25 5.5- 3.5- 4.0 5.5- 6.5- 8.5 14.0- 22.0</td>
<td>32 R55111 0.08 0.11 0.03 0.015 0.25 5.5- 3.5- 6.5 4.5 0.06- 0.14</td>
<td>33 R53442 0.08 0.25 0.03 0.015 0.30 - - - - 0.01- 0.02- 0.35- 0.02 0.04 0.55 0.2</td>
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</tr>
</tbody>
</table>
### TABLE 1

**Composition, Weight Percent**

<table>
<thead>
<tr>
<th>Grade</th>
<th>UNS Number</th>
<th>Carbon, max.</th>
<th>Oxygen range or max.</th>
<th>Nitrogen, max.</th>
<th>Hydrogen, max.</th>
<th>Iron range or max.</th>
<th>Aluminum</th>
<th>Vanadium</th>
<th>Palladium</th>
<th>Ruthenium</th>
<th>Nickel</th>
<th>Molybdenum</th>
<th>Chromium</th>
<th>Cobalt</th>
<th>Zirconium</th>
<th>Niobium</th>
<th>Tin</th>
<th>Silicon</th>
<th>Other Elements, max. each</th>
<th>Other Elements, max. total</th>
</tr>
</thead>
<tbody>
<tr>
<td>34</td>
<td>R53445</td>
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<td>0.015</td>
<td>0.30</td>
<td>--</td>
<td>0.01-</td>
<td>0.02-</td>
<td>0.35-</td>
<td>--</td>
<td>0.1-</td>
<td>--</td>
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<td>35</td>
<td>R56340</td>
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<td>0.015</td>
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<td>5.0</td>
<td>1.1-</td>
<td>0.04</td>
<td>0.55</td>
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</tbody>
</table>

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**Notes:**

A At minimum, the analysis of samples from the top and bottom of the ingot shall be completed and reported for all elements listed for the respective grade in this table.

B Final product hydrogen shall be reported. Ingot hydrogen need not be reported. Lower hydrogen may be obtained by negotiation with the manufacturer.

C Single values are maximum. The percentage of titanium is determined by difference.

D Other elements need not be reported unless the concentration level is greater than 0.1% each, or 0.4% total. Other elements may not be added intentionally. Other elements may be present in titanium or titanium alloys in small quantities and are inherent to the manufacturing process. In titanium these elements typically include aluminum, vanadium, tin, chromium, molybdenum, niobium, zirconium, hafnium, bismuth, ruthenium, palladium, yttrium, copper, silicon, cobalt, tantalum, nickel, boron, manganese, and tungsten.

E The purchaser may, in the written purchase order, request analysis for specific elements not listed in this specification.
**TABLE 2 Dimensions of Pipe**

**Note 1**—Schedule sizes conform to ANSI/ASME B36.19M-1985 (for “S” sizes) or B36.10 (for non-S sizes).

**Note 2**—The decimal thickness listed for the respective pipe sizes represent their nominal wall dimensions.

<table>
<thead>
<tr>
<th>NPS Design</th>
<th>Outside Dia. (in mm)</th>
<th>Schedule 5S</th>
<th>Schedule 5A</th>
<th>Schedule 10S</th>
<th>Schedule 10A</th>
<th>Schedule 40S</th>
<th>Schedule 40</th>
<th>Schedule 80S</th>
<th>Schedule 80</th>
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<tr>
<td>5/8</td>
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<td>1.900</td>
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<td>0.109</td>
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A murderer not permitted in accordance with ANSI B.1.20.1.
7. Product Analysis

7.1 When requested by the purchaser and stated in the purchase order, an analysis of chemical composition shall be made on the finished product.

7.2 The product analysis tolerances, listed in Table 4 do not broaden the specified analysis requirements, but cover variations between different laboratories in the measurement of chemical content. The manufacturer shall not ship finished product outside of the limits specified in Table 1 for the applicable grade.

8. Tensile Requirements

8.1 The tensile properties of the pipe, in the condition specified, shall conform to the room temperature requirements of Table 5. Mechanical properties for other conditions may be established by written agreement between the manufacturer and the purchaser.

9. Permissible Variations in Dimensions

9.1 A system of standard pipe sizes approved by ANSI as American National Standard for Stainless Steel Pipe (ANSI/ASME B36.19M-1985) reproduced as Table 2 shall apply.

9.2 Diameter—Variations in outside diameter shall not exceed those prescribed in Table 3.

9.3 Thickness—The variation in thickness at any point shall not be more than ±12.5% of the nominal wall thickness specified.

9.4 Length—Pipe shall be furnished in lengths as specified in the purchase order. No pipe shall be under the specified length and not more than ¼ in. (6.4 mm) over that specified.

9.5 Straightness—The pipe shall be free of kinks and bends and the maximum bow of lengths up to 10 ft (3 m) shall not exceed 1:500. For lengths greater than 10 ft, the maximum bow shall not exceed 1:400.

10. Finish

10.1 The finished pipe shall have smooth ends, be free of burrs, and shall be free of injurious external and internal imperfections of a nature that will interfere with the purpose for which it is intended. Minor defects may be removed providing the dimensional tolerances of Section 9 are not exceeded. Unless otherwise specified, the pipe shall be furnished free of scale.

11. Number of Tests

11.1 Samples for test shall be taken from one pipe for each 1000 ft (300 m), but in no case shall less than one pipe be tested, selected at random, from each lot. Results of the following tests shall be reported to the purchaser or his representative.

11.1.1 One tension test from each pipe selected.

11.1.2 The flattening test specified in 15.1.

11.1.3 The bend test, required by 14.1, when specified by the purchaser.

11.2 If any test specimen shows defective machining or develops flaws due to the preparation, the specimen may be discarded and another substituted.

11.3 If the percentage of elongation of any tension test specimen is less than that specified in 8.1, and any part of the fracture is more than ¼ in. (19 mm) from the center of the gage...
length as indicated by scratches marked on the specimen being testing, the specimen may be discarded and another substituted.

11.4 Each length of pipe shall be subjected to the hydrostatic test specified in 16.1 and 16.2.

12. Retests

12.1 If the chemical or mechanical test results of any lot are not in conformance with the requirements of this specification, the lot may be retested at the option of the manufacturer. The
frequency of the retest will be double the initial number of tests. If the results of the retest conform to the specification, then the retest values will become the test values for certification. Only original conforming test results or conforming retest results shall be reported to the purchaser. If the results for the retest fail to conform to the specification, the material will be rejected in accordance with Section 20.

13. Test Specimens and Methods of Testing

13.1 The test specimens and the tests required by this specification shall conform to those described in Test Methods and Definitions A370.

13.2 All routine mechanical tests shall be made at room temperature.

13.3 The chemical analysis shall normally be conducted using the ASTM standard test methods referenced in 2.1. Other industry standard methods may be used where the ASTM test methods in 2.1 do not adequately cover the elements in the material or by agreement between the producer and purchaser.

14. Bending Test

14.1 Pipe 2 in. (51 mm) and under in nominal diameter, shall be capable of being bent cold through 90° around a cylindrical mandrel which is twelve times the nominal diameter of the pipe, without developing cracks.

14.1.1 Grade 5, Grade 23, Grade 24, Grade 25, Grade 29, Grade 35, Grade 36, and Grade 38 are exempt from this requirement.

15. Flattening Test

15.1 Seamless pipe shall be capable of withstanding, without cracking, flattening under a load applied gradually at room temperature until the distance between the load platens is \( H \) inches. \( H \) is calculated as follows:

\[
H, \text{ in. (mm)} = \frac{(1 + e)t}{e + (t/D)}
\]

where:

\( t = \text{nominall wall thickness, in. (mm) and} \)

\( D = \text{nominall pipe diameter, in. (mm) (not pipe size), and} \)

\( e = \text{0.04 through 1 in. pipe size, and} \)

\( e = \text{0.06 over 1 in. pipe size.} \)

For grades not shown above, the requirements for the flattening test shall be negotiated between the manufacturer and purchaser.

15.1.1 When low D-to-t ratio tubular products are tested, because the strain imposed due to geometry is unreasonably high on the inside surface at the six and twelve o’clock locations, cracks at these locations shall not be cause for rejection if the D-to-t ratio is less than ten (10).

15.2 All calculations are rounded to two decimal places. Examination for cracking shall be by the unaided eye.

16. Hydrostatic Test

16.1 Each length of pipe shall withstand, without showing bulges, leaks, or other defects, an internal hydrostatic pressure that will produce in the pipe wall a stress of 50% of the minimum specified yield strength at room temperature. This pressure shall be determined by the equation:

\[
P = S/E(\frac{R_o - 0.4t}{D})
\]

where:

\( P = \text{minimum hydrostatic test pressure, psi (or MPa),} \)

\( S = \text{allowable fiber stress of one-half the minimum yield strength, psi (or MPa),} \)

\( t = \text{wall thickness, in. (or mm),} \)

\( R_o = \text{outside tube radius, in. (or mm), and} \)

\( E = 1.0 \text{ seamless pipe.} \)

16.2 The maximum hydrostatic test pressure shall not exceed 2500 psi (17.2 MPa) for sizes 3 in. (76 mm) and under, or 2800 psi (19.3 MPa) for sizes over 3 in. (76 mm). Hydrostatic pressure shall be maintained for not less than 5 s. When requested by the purchaser and so stated in the order, pipe in sizes 14 in. (356 mm) in diameter and smaller, shall be tested to one and one-half times the specified working pressure, provided the fiber stress corresponding to those test pressures does not exceed one-half the minimum specified yield strength of the material, as determined by the equation given in 16.1. When one and one-half times the working pressure exceeds 2800 psi (19.3 MPa), the hydrostatic test pressure shall be a matter of agreement between the manufacturer and the purchaser.

17. Referee Test and Analysis

17.1 In the event of disagreement between the manufacturer and the purchaser on the conformance of the material to the requirements of this specification, a mutually acceptable referee shall perform the tests in question using the ASTM standard methods in 2.1. The referee’s testing shall be used in determining conformance of this material to this specification.

18. Rounding-Off Procedure

18.1 For purposes of determining conformance with the specifications contained herein, an observed or a calculated value shall be rounded off to the nearest unit in the last right-hand significant digit used in expressing the limiting value. This is in accordance with the round-off method of Practice E29.

19. Inspection

19.1 All tests and inspection shall be made prior to shipment and at the manufacturer’s expense unless otherwise specified, and shall be so conducted as not to interfere unnecessarily with the operation of the works. When specified in the order, the manufacturer shall notify the purchaser in time so that the purchaser may have his inspector present to witness any part of the tests that may be desired.

20. Rejection

20.1 Material not conforming to this specification or to authorized modifications shall be subject to rejection. Unless
otherwise specified, rejected materials may be returned to the manufacturer at the manufacturer’s expense, unless the purchaser receives, within three weeks of notice of rejection, other instructions for disposition.

21. Certification

21.1 The manufacturer shall supply at least one copy of the report certifying that the material supplied has been manufactured, inspected, sampled, and tested in accordance with the requirements of this specification and that the results of chemical analysis, tensile, and other tests meet the requirements of this specification for the grade specified. The report shall include results of all chemical analysis, tensile tests, and all other tests required by the specification.

22. Product Marking

22.1 Each length of pipe 3/8 in. (9.5 mm) nominal diameter and larger, manufactured in accordance with this specification, shall be legibly marked, either by stenciling, stamping or rolling the following data:

22.1.1 Manufacturer’s private identification mark,
22.1.2 ASTM designation and revision date,
22.1.3 Grade of titanium,
22.1.4 Pipe size and schedule, and
22.1.5 Ingot and lot number.

22.2 On smaller than 3/8 in. (9.5 mm) nominal diameter pipe which is bundled, the same information may be legibly stamped on a metal tag securely attached to each bundle.

23. Packaging

23.1 The pipe shall be packaged in agreement with the manufacturer’s standard practice, unless otherwise agreed to between the manufacturer and purchaser and so stated in the purchase order.

24. Keywords

24.1 pipe; seamless pipe; titanium; titanium alloy

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### Table II-200-1

**Other Acceptable ASTM Editions (Cont’d)**

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### Table II-200-2

**Other Acceptable Non-ASTM Specifications**

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**GENERAL NOTE:** The date of publication of the European Standards considered in this Guideline is the year of approval of the standard by CEN. This date appears in the body of the standard on the page starting with EN; dates appearing on the front page of an XX EN standard (e.g. XX = BS or NF or DIN or...) correspond only to the date of adoption by each member country.

**NOTE:**
(1) "Other Acceptable Editions" refers exclusively to non-ASTM and non-ASME specifications listed.