Standard Specification for
UNS N08925, UNS N08354, and UNS N08926 Welded Pipe

This standard is issued under the fixed designation B673; 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 (´) indicates an editorial change since the last revision or reapproval.

NOTE—Table 3 heading for Tensile Strength and Yield Strength was editorially corrected from psi to ksi in May 2012.

1. Scope

1.1 This specification covers UNS N08925, UNS N08354, and UNS N08926 weld pipe for general corrosion applications.

1.2 This specification covers pipe sizes in schedules shown in Table 1.

1.3 ASTM International has adopted definitions whereby some grades, such as UNS N08904, previously in this specification were recognized as stainless steels, because those grades have iron as the largest element by mass percent. Such grades are under the oversight of ASTM Committee A01 and its subcommittees. The products of N08904 previously covered in this specification are now covered by Specification A312/A312M.

1.4 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.5 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 become familiar with all hazards including those identified in the appropriate Material Safety Data Sheet (MSDS) for this product/material as provided by the manufacturer, to establish appropriate safety and health practices, and determine the applicability of regulatory limitations prior to use.

2. Referenced Documents

2.1 ASTM Standards:

A312/A312M Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes
B775 Specification for General Requirements for Nickel and Nickel Alloy Welded Pipe
E527 Practice for Numbering Metals and Alloys in the Unified Numbering System (UNS)

2.2 ANSI Standards:

B2.1 Pipe Threads
B31.10 Power Piping
B36.10 Welded and Seamless Wrought Steel Pipe
B36.19 Stainless Steel Pipe

3. Classification

3.1 Class 1—Welded, cold worked, solution treated, and nondestructively tested in accordance with 8.3.1.

3.2 Class 2—Welded, cold worked, solution treated, and nondestructively tested in accordance with 8.3.2.

3.3 Class 3—As welded, solution treated, and nondestructively tested in accordance with 8.3.1.

4. General Requirement

4.1 Material furnished under this specification shall conform to the applicable requirements of Specification B775 unless otherwise provided herein.

5. Ordering Information

5.1 Orders for material under this specification should include the following information:

5.1.1 Alloy name or UNS number,

5.1.2 Class,

5.1.3 Quantity (feet or number of lengths),

5.1.4 Size (nominal size or outside diameter and schedule number or average wall thickness),

5.1.5 Length—Specify cut length or random,

5.1.6 Certification—State if certification or a report of test results is required,

5.1.7 Purchaser Inspection—State which tests or inspections are to be witnessed,

A312/A312M Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes
B775 Specification for General Requirements for Nickel and Nickel Alloy Welded Pipe
E527 Practice for Numbering Metals and Alloys in the Unified Numbering System (UNS)


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5.1.8 Ends—Plain ends cut and deburred will be furnished, unless otherwise specified, and

5.1.9 Samples for Product (Check) Analysis—State whether samples shall be furnished.

6. Materials and Manufacture

6.1 Pipe shall be made from flat-rolled alloy by an automatic welding process with no addition of filler metal. Subsequent to welding and before final solution treatment, Class 1 and Class 2 material shall be cold worked either in both weld and base metal or in weld metal only.

Note 1—The recommended heat treatment shall consist of heating to a temperature of 1975 to 2150°F (1080 to 1180°C) for UNS N08354, or 2010 to 2100°F (1100 to 1150°C) for UNS N08925 and UNS N08926, followed by quenching in water or rapid cooling by other means.

6.2 Pipe shall be furnished with oxide removed. When solution treatment is performed in a protective atmosphere, descaling is not necessary.

Note 2—Pipe produced with the addition of filler metal is available. The manufacturer must be consulted for applicable requirements.

7. Chemical Composition

7.1 The material shall conform to the requirements as to chemical composition prescribed in Table 2.

<table>
<thead>
<tr>
<th>Element</th>
<th>UNS N08925 †</th>
<th>UNS N08354</th>
<th>UNS N08926</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon, max</td>
<td>0.020</td>
<td>0.030</td>
<td>0.020</td>
</tr>
<tr>
<td>Manganese, max</td>
<td>1.0</td>
<td>1.0</td>
<td>2.00</td>
</tr>
<tr>
<td>Phosphorus, max</td>
<td>0.045</td>
<td>0.030</td>
<td>0.03</td>
</tr>
<tr>
<td>Sulfur, max</td>
<td>0.030</td>
<td>0.010</td>
<td>0.01</td>
</tr>
<tr>
<td>Silicon, max</td>
<td>0.50</td>
<td>1.0</td>
<td>0.5</td>
</tr>
<tr>
<td>Nickel</td>
<td>24.0 to 26.0</td>
<td>34.0 to 36.0</td>
<td>24.00 to 26.0</td>
</tr>
<tr>
<td>Chromium</td>
<td>19.0 to 21.0</td>
<td>22.0 to 24.0</td>
<td>19.00 to 21.0</td>
</tr>
<tr>
<td>Molybdenum</td>
<td>6.0 to 7.0</td>
<td>7.0 to 8.0</td>
<td>6.0 to 7.0</td>
</tr>
<tr>
<td>Copper</td>
<td>0.8 to 1.5</td>
<td>...</td>
<td>0.5 to 1.5</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>0.1 to 0.2</td>
<td>0.17 to 0.24</td>
<td>0.15 to 0.25</td>
</tr>
<tr>
<td>Iron</td>
<td>balance</td>
<td>balance</td>
<td>balance</td>
</tr>
</tbody>
</table>

Note 1—Iron shall be determined arithmetically by difference.

† UNS N08925 was editorially corrected.

7.2 If a product (check) analysis is performed by the purchaser, the material shall conform to the product (check) analysis variations prescribed in Specification B775.

8. Mechanical Properties and Other Requirements

8.1 Tension Test—The tensile properties of the material at room temperature shall conform to those shown in Table 3.
8.1.1 One tension test shall be made on each lot of pipe.

8.2 Flattening Test—One flattening test shall be made on a specimen from one end of one pipe from each lot.

8.3 Nondestructive Tests:

8.3.1 Class 1 and Class 3—Each piece in each lot shall be subjected to one of the following four tests: hydrostatic, pneumatic (air underwater), eddy-current, or ultrasonic.

8.3.2 Class 2—Each piece in each lot shall be subjected to a leak test and an electric test as follows:

8.3.2.1 Leak Test—Hydrostatic or pneumatic (air underwater).

8.3.2.2 Electric Test—Eddy-current or ultrasonic.

8.3.3 The manufacturer shall have the option to test Class 1 or Class 2 and select the nondestructive test methods, if not specified by the purchaser.

9. Dimensions and Permissible Variations

9.1 The outside diameter and nominal wall thickness shall not exceed the permissible variations prescribed in Specification B775.

10. Keywords

10.1 UNS N08925; UNS N08354; UNS N08926; welded pipe

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**TABLE 3 Mechanical Properties**

<table>
<thead>
<tr>
<th>Alloy</th>
<th>Temper</th>
<th>Tensile Strength, min, ksi†(MPa)</th>
<th>Yield Strength, 0.2 % offset, min, ksi†(MPa)</th>
<th>Elongation in 2 in. or 50 mm, (or 4D), min, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNS N08925</td>
<td>solution annealed</td>
<td>87 (600)</td>
<td>43 (300)</td>
<td>40</td>
</tr>
<tr>
<td>UNS N08354</td>
<td>solution annealed</td>
<td>93 (640)</td>
<td>43 (295)</td>
<td>40</td>
</tr>
<tr>
<td>UNS N08926</td>
<td>solution annealed</td>
<td>94 (650)</td>
<td>43 (295)</td>
<td>35</td>
</tr>
</tbody>
</table>

†Editorially corrected.

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