



Standard Specification for UNS N08925, UNS N08354, and UNS N08926 Welded Pipe¹

This standard is issued under the fixed designation B 673; 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 reappraisal. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reappraisal.

^{ε1} NOTE—Table 2 was editorially corrected in October 2006.

1. Scope

1.1 This specification covers UNS N08925, UNS N08354, and UNS N08926* welded 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 A 312/A 312M.

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 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:*²

A 312/A 312M Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes

¹ This specification is under the jurisdiction of ASTM Committee B02 on Nonferrous Metals and Alloys and is the direct responsibility of Subcommittee B02.07 on Refined Nickel and Cobalt and Their Alloys.

Current edition approved June 1, 2005. Published July 2005. Originally approved in 1980. Last previous edition approved in 2004 as B 673 – 04.

* New designation established in accordance with ASTM E 527 and SAE J1086, Practice for Numbering Metals and Alloys (UNS).

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.

B 775 Specification for General Requirements for Nickel and Nickel Alloy Welded Pipe

E 527 Practice for Numbering Metals and Alloys (UNS)

2.2 *ANSI Standards:*³

B2.1 Pipe Threads

B31.10 Power Piping

B36.10 Welded and Seamless Wrought Steel Pipe

B36.19 Stainless Steel Pipe³

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 B 775 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,

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.

³ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, http://www.ansi.org.

TABLE 1 Dimensions of Welded Pipe

NOTE 1—The following table is a partial reprint of Table 1 of ANSI B36.19.

NOTE 2—The decimal thicknesses listed for the respective pipe sizes represent their nominal wall dimensions.

NOTE 3—1 in. = 25.4 mm.

Nominal Pipe Size, in.	Outside Diameter		Nominal Wall Thickness, in.									
			Schedule	5S ^A	Schedule	10S ^A	Schedule	40S	Schedule	80S	Schedule	160S
1/8	0.405	10.29	...	...	0.049	1.25	0.068	1.73	0.095	2.41	...	...
1/4	0.540	13.72	...	...	0.065	1.65	0.088	2.24	0.119	3.02	...	...
3/8	0.675	17.15	...	...	0.065	1.65	0.091	2.31	0.126	3.20	...	...
1/2	0.840	21.34	0.065	1.65	0.083	2.11	0.109	2.77	0.147	3.73	0.187	4.75
3/4	1.050	26.67	0.065	1.65	0.083	2.11	0.113	2.87	0.154	3.91	0.218	5.54
1	1.315	33.40	0.065	1.65	0.109	2.77	0.133	3.38	0.179	4.46	0.250	6.35
1 1/4	1.660	42.16	0.065	1.65	0.109	2.77	0.140	3.56	0.191	4.85	0.250	6.35
1 1/2	1.900	48.26	0.065	1.65	0.109	2.77	0.145	3.68	0.200	5.08	0.281	7.14
2	2.375	60.33	0.065	1.65	0.109	2.77	0.154	3.91	0.218	5.54	0.343	8.71
2 1/2	2.875	73.03	0.083	2.11	0.120	3.05	0.203	5.16	0.276	7.01	0.375	9.52
3	3.500	88.90	0.083	2.11	0.120	3.05	0.216	5.49	0.300	7.62	0.438	11.12
3 1/2	4.000	101.60	0.083	2.11	0.120	3.05	0.226	5.74	0.318	8.08	...	...
4	4.500	114.30	0.083	2.11	0.120	3.05	0.237	6.02	0.337	8.56	0.581	13.41
5	5.563	141.30	0.109	2.77	0.134	3.40	0.258	6.55	0.375	9.52	0.625	15.88
6	6.625	168.30	0.109	2.77	0.134	3.40	0.280	7.11	0.432	10.97	0.718	18.24
8	8.625	219.07	0.109	2.77	0.148	3.76	0.322	8.18	0.500	12.70	0.906	23.01
10	10.750	273.05	0.134	3.40	0.165	4.19	0.365	9.27	0.500 ^B	12.70 ^B	1.125	28.58
12	12.75	323.85	0.156	3.96	0.180	4.57	0.375	9.52	0.500 ^B	12.70 ^B	1.312	33.32
14	14.00	355.60	0.156 ^C	3.96	0.188	4.78	0.375	9.52	0.500	12.70	...	...
16	16.00	406.40	0.165 ^C	4.19	0.188	4.78	0.375	9.52	0.500	12.70	...	...
18	18.00	457.20	0.165 ^C	4.19	0.188	4.78	0.375	9.52	0.500	12.70	...	...
20	20.00	508.00	0.188 ^C	4.78	0.218 ^C	5.54	0.375	9.52	0.500	12.70	...	...
22	22.00	558.80	0.188 ^C	4.78	0.218 ^C	5.54	0.375	9.52	0.500	12.70	...	...
24	24.00	609.60	0.218 ^C	5.54	0.250	6.35	0.375	9.52	0.500	12.70	...	...
30	30.00	762.00	0.250 ^C	6.35	0.312	7.92	0.375	9.52	0.500	12.70	...	...

^A Schedule 5S and 10S wall thicknesses do not permit threading in accordance with ANSI B2.1.

^B These do not conform to ANSI B31.10.

^C These do not conform to ANSI for Welded and Seamless Wrought Steel Pipe (ANSI B36.10).

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.

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 B 775.

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.

TABLE 2 Chemical Requirements

Element	UNS N08925 †	UN N08354	UNS N08926
Carbon, max	0.020	0.030	0.020
Manganese, max	1.0	1.00	2.00
Phosphorus, max	0.045	0.030	0.03
Sulfur, max	0.030	0.010	0.01
Silicon, max	0.50	1.00	0.5
Nickel	24.0 to 26.0	34.0 to 36.0	24.00 to 26.00
Chromium	19.0 to 21.0	22.0 to 24.0	19.00 to 21.00
Molybdenum	6.0 to 7.0	7.0 to 8.0	6.0 to 7.0
Copper	0.8 to 1.5	...	0.5 to 1.5
Nitrogen	0.1 to 0.2	0.17 to 0.24	0.15 to 0.25
Iron ^A	balance	balance	balance

^A Iron shall be determined arithmetically by difference.

† UNS N08925 was editorially corrected.

TABLE 3 Mechanical Properties

Alloy	Temper	Tensile Strength, min, psi [MPa]	Yield Strength, 0.2 % offset, min, psi [MPa]	Elongation in 2 in. or 50 mm, (or 4D), min, %
UNS N08925	solution annealed	87 [600]	43 [300]	40
UNS N08354	solution annealed	93 [640]	43 [295]	40
UNS N08926	solution annealed	94 [650]	43 [295]	35

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 **B 775**.

10. Keywords

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

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