



Designation: B725 – 22

Standard Specification for Welded Nickel and Nickel Copper Alloy Pipe¹

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1. Scope*

1.1 This specification covers nickel (UNS N02200), low carbon nickel (UNS N02201) and nickel copper alloy (UNS N04400) in the form of welded and annealed or welded and stress relieved pipe intended for general corrosive service and for mechanical applications.

1.2 This specification covers outside diameter and nominal wall pipe in Schedules 5S, 10S, and 40S through 30-in. nominal pipe size shown in ANSI B36.19 (see [Table 1](#)) and Specification [B775](#) (see [Table 1](#)). Pipe having other dimensions may be furnished provided such pipe complies with all other requirements of this specification.

1.3 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.

1.4 The following precautionary caveat pertains only to the test methods portion, Section [13](#), of this specification: *This standard does not purport to address all of the safety problems, 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 Safety Data Sheet (SDS) for this product/material as provided by the manufacturer; to establish appropriate safety, health, and environmental practices, and determine the applicability of regulatory limitations prior to use.*

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

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.

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2. Referenced Documents

2.1 ASTM Standards:²

[B775](#) Specification for General Requirements for Nickel and Nickel Alloy Welded Pipe

[E8/E8M](#) Test Methods for Tension Testing of Metallic Materials

[E29](#) Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

[E39](#) Methods for Chemical Analysis of Nickel (Withdrawn 1995)³

[E213](#) Practice for Ultrasonic Testing of Metal Pipe and Tubing

[E571](#) Practice for Electromagnetic (Eddy-Current) Examination of Nickel and Nickel Alloy Tubular Products

2.2 ANSI Standards:⁴

[B 1.20.1](#) Pipe Threads

[B 36.10](#) Welded and Seamless Wrought Steel Pipe

[B 36.19](#) Stainless Steel Pipe

2.3 ASME Boiler and Pressure Vessel Code:⁵

[Section IX](#) Welding and Brazing Qualifications

3. Ordering Information

3.1 Orders for material under this specification shall include the following information:

3.1.1 Alloy name or UNS number,

3.1.2 ASTM designation and date of issue,

3.1.3 Condition (temper) ([Table 2](#)),

3.1.4 Dimensions:

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.

³ The last approved version of this historical standard is referenced on www.astm.org.

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

⁵ Available from American Society of Mechanical Engineers (ASME), ASME International Headquarters, Three Park Ave., New York, NY 10016-5990, <http://www.asme.org>.

*A Summary of Changes section appears at the end of this standard

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 size represent their nominal wall dimensions.

Nominal Pipe Size, in.	Outside Diameter		Nominal Wall Thickness							
			Schedule 5S ^A		Schedule 10S ^A		Schedule 40S		Schedule 80S	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
1/8	0.405	10.29	...	...	0.049	1.245	0.068	1.727	0.095	2.41
1/4	0.540	13.72	...	...	0.065	1.651	0.088	2.235	0.119	3.02
3/8	0.675	17.15	...	...	0.065	1.651	0.091	2.311	0.126	3.20
1/2	0.840	21.34	0.065	1.651	0.083	2.108	0.109	2.768	0.147	3.73
3/4	1.050	26.67	0.065	1.651	0.083	2.108	0.113	2.870	0.154	3.91
1	1.315	33.40	0.065	1.651	0.109	2.768	0.133	3.378	0.179	4.55
1 1/4	1.660	42.16	0.065	1.651	0.109	2.768	0.140	3.556	0.191	4.85
1 1/2	1.900	48.26	0.065	1.651	0.109	2.768	0.145	3.683	0.200	5.08
2	2.375	60.33	0.065	1.651	0.109	2.768	0.154	3.912	0.218	5.54
2 1/2	2.875	73.03	0.083	2.108	0.120	3.048	0.203	5.156	0.276	7.01
3	3.500	88.90	0.083	2.108	0.120	3.048	0.216	5.486	0.300	7.62
3 1/2	4.000	101.6	0.083	2.108	0.120	3.048	0.226	5.740	0.318	8.08
4	4.500	114.3	0.083	2.108	0.120	3.048	0.237	6.020	0.337	8.56
5	5.563	141.30	0.109	2.77	0.134	3.40	0.258	6.55	0.375	9.52
6	6.625	168.28	0.109	2.77	0.134	3.40	0.280	7.11	0.432	10.97
8	8.625	219.08	0.109	2.77	0.148	3.76	0.322	8.18	0.500	12.70
10	10.750	273.05	0.134	3.40	0.165	4.19	0.365	9.27	0.500 ^B	12.70 ^B
12	12.750	323.85	0.156	3.96	0.180	4.57	0.375 ^B	9.52 ^B	0.500 ^B	12.70 ^B
14	14.000	355.60	0.156	3.96	0.188 ^B	4.78 ^B	...	...	...	...
16	16.000	406.40	0.165	4.19	0.188 ^B	4.78 ^B	...	...	...	...
18	18.000	457.20	0.165	4.19	0.188 ^B	4.78 ^B	...	...	...	...
20	20.000	508.00	0.188	4.78	0.218 ^B	5.54 ^B	...	...	...	...
22	22.000	558.80	0.188	4.78	0.218 ^B	5.54 ^B	...	...	...	...
24	24.000	609.60	0.218	5.54	0.250	6.35	...	...	...	...
30	30.000	762.00	0.250	6.35	0.312	7.92	...	...	...	...

^A Schedules 5S and 10S wall thicknesses do not permit threading in accordance with ANSI B1.20.1.

^B These do not conform to ANSI B36.10.

TABLE 2 Mechanical Properties of Pipe and Tube

Condition and Size	Tensile Strength, min, psi (MPa)			Yield Strength (0.2 % offset), min, psi (MPa)			Elongation in 2 in. or 50 mm (or 4D), min, %		
	Nickel	Low- Carbon Nickel	UNS N04400	Nickel	Low- Carbon Nickel	UNS N04400	Nickel	Low- Carbon Nickel	UNS N04400
Annealed									
5 in. (127 mm) and under outside diameter	55 000 (380)	50 000 (345)	70 000 (480)	15 000 (105)	12 000 (80)	28 000 (195)	35	35	35
Over 5 in. (127 mm) in outside diameter	55 000 (380)	50 000 (345)	70 000 (480)	12 000 (80)	10 000 (70)	25 000 (170)	40	40	35
Stress-relieved									
All sizes	65 000 (450)	60 000 (415)	85 000 (585)	40 000 (275)	30 000 (205)	55 000 (380)	15	15	15

3.1.4.1 Nominal pipe size or outside diameter and schedule number or nominal wall thickness (**Table 1**),

3.1.4.2 Length (specific or random),

3.1.5 *Quantity*—Feet or metres, or number of pieces,

3.1.6 *Certification*—State if certification is required (**Section 16**),

3.1.7 *Samples for Product (Check) Analysis*—State whether samples for product (check) analysis should be furnished (**10.2**),

3.1.8 *Purchaser Inspection*—If the purchaser wishes to witness tests or inspection of material at the place of manufacture, the purchase order must so state indicating which tests or inspections are to be witnessed (**Section 14**),

3.1.9 *Nondestructive Tests (see 7.4)*—Specify either Test Category 1 or 2. If Test Category 1 is required, specify if either a hydrostatic, eddy-current or ultrasonic test is to apply. If Test Category 2 is required, specify if either an eddy-current or ultrasonic test is to apply. See **Section S1**.