



Designation: B 619 – 04

Standard Specification for Welded Nickel and Nickel-Cobalt Alloy Pipe¹

This standard is issued under the fixed designation B 619; 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.

1. Scope*

1.1 This specification² covers welded pipe of nickel and nickel-cobalt alloys (UNS N10001; UNS N10242; UNS N10665; UNS N12160; UNS N10624; UNS N10629; UNS N10675; UNS N10276; UNS N06455; UNS N06007; UNS N06975; UNS N08320; UNS N06002; UNS N06022; UNS N06035; UNS N06058; UNS N06059; UNS N06200; UNS N06985; UNS N06030; UNS R30556; UNS N08031; UNS N06230; UNS N06686; UNS N06210; and UNS R20033)* as shown in **Table 1**.

1.2 This specification covers pipe in Schedules 5S, 10S, 40S, and 80S through 8-in. nominal pipe size as set forth in **ANSI B36.19** (see **Table 2**).

1.3 Two classes of pipe are covered as follows:

1.3.1 *Class I*—As welded and solution annealed or welded and sized and solution annealed.

1.3.2 *Class II*—Welded, cold worked, and solution annealed.

1.4 All pipe shall be furnished in the solution annealed and descaled condition. When atmosphere control is used, descaling is not necessary.

1.5 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

1.6 *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*:³

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

2.2 *ANSI Standards*:

B36.19 Stainless Steel Pipe⁴

B2.1 Pipe Threads⁴

3. General Requirement

3.1 Material furnished under this specification shall conform to the applicable requirements of Specification **B 775** unless otherwise provided herein.

4. Ordering Information

4.1 It is the responsibility of the purchaser to specify all requirements that are necessary for material ordered under this specification. Examples of such requirements include, but are not limited to the following:

4.1.1 *Alloy* (**Table 1**),

4.1.2 *Class* (see **1.3**),

4.1.3 *Quantity* (feet or number of lengths),

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

4.1.5 *Length*—Specify cut length or random, 9-04

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

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

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

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

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 Feb. 1, 2004. Published February 2004. Originally approved in 1981. Last previous edition approved in 2000 as B 619 –00.

² For ASME Boiler and Pressure Vessel Code applications see related Specification SB-619 in Section II of that Code.

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

³ 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.

⁴ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

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

TABLE 1 Chemical Requirements

	Composition Limits, %																								
	Ni	Cr	Mo	Fe	W	C	Si max	Co	Mn	V	P max	S max	Ti	Cu	Cb (Nb) +Ta	Al	Zr	La	N	B	Cb (Nb)	Ta	Ni+Mo	Mg	
Ni-Mo Alloys N10001	remainder ^A	1.0 max	26.0-30.0	4.0-6.0	...	0.05 max	1.0	2.5 max	1.0 max	0.2-0.4	0.04	0.03	...	...	...	...	...	...	...	...	...	...	...	...	...
N10665	remainder ^A	1.0 max	26.0-30.0	2.0 max	...	0.02 max	0.10	1.0 max	1.0 max	...	0.04	0.03	...	...	...	...	...	...	...	...	...	...	...	...	...
N10675	65.0 min	1.0-3.0	27.0-32.0	1.0-3.0	3.0 max	0.01 max	0.10	3.0 max	3.0 max	0.20 max	0.030	0.010	0.20 max	0.20 max	0.20 max	0.50 max	0.10 max	...	...	...	0.20 max	0.20 max	94.0-98.0	...	
N10629	remainder ^A	0.5-3.0	26.0-30.0	1.0-6.0	...	0.01 max	0.05	2.5 max	1.5 max	...	0.04	0.01	...	0.5 max	...	0.1-0.5	...	...	...	...	...	...	...	...	...
N10624	remainder ^A	6.0-10.0	21.0-25.0	5.0-8.0	...	0.01 max	0.10	1.0 max	1.0 max	...	0.025	0.01	...	0.5 max	...	...	...	...	...	...	...	...	...	...	...
Ni-Mo-Cr-Fe Alloy N10242	remainder ^A	7.0-9.0	24.0-26.0	2.0 max	...	0.03 max	0.80	1.00 max	0.80 max	...	0.030	0.015	...	0.50 max	...	0.50 max	...	...	...	0.006 max	...	...	...	...	...
Low C Ni-Cr-Mo Alloys N10276	remainder ^A	14.5-16.5	15.0-17.0	4.0-7.0	3.0-4.5	0.010 max	0.08	2.5 max	1.0 max	0.35 max	0.04	0.03	...	...	...	...	...	...	...	...	...	...	...	...	...
N06022	remainder ^A	20.0-22.5	12.5-14.5	2.0-6.0	2.5-3.5	0.015 max	0.08	2.5 max	0.5 max	0.35 max	0.02	0.02	...	...	...	...	...	...	...	...	...	...	...	...	...
N06035	remainder ^A	32.25-34.25	7.60-9.00	2.00 max	0.60 max	0.050 max	0.60	1.00 max	0.50 max	0.20 max	0.030	0.015	...	0.30 max	...	0.40 max	...	...	...	...	...	...	...	...	...
N06455	remainder ^A	14.0-18.0	14.0-17.0	3.0 max	...	0.015 max	0.08	2.0 max	1.0 max	...	0.04	0.03	0.70 max	...	...	...	...	...	...	...	...	...	...	...	...
Ni-Cr-Fe-Mo-Cu Alloys N06007	remainder ^A	21.0-23.5	5.5-7.5	18.0-21.0	1.0 max	0.05 max	1.0	2.5 max	1.0-2.0	...	0.04	0.03	...	1.5-2.5	1.75-2.5	...	...	...	...	...	...	...	...	...	...
N06975	47.0-52.0	23.0-26.0	5.0-7.0	remainder	...	0.03 max	1.0	...	1.0 max	...	0.03	0.03	0.70-1.50	0.70-1.20	...	...	...	...	...	...	...	...	...	...	...
N06985	remainder ^A	21.0-23.5	6.0-8.0	18.0-21.0	1.5 max	0.015 max	1.0	5.0 max	1.0 max	...	0.04	0.03	...	1.5-2.5	0.50 max	...	...	...	...	...	...	...	...	...	...
N06030	remainder ^A	28.0-31.5	4.0-6.0	13.0-17.0	1.5-4.0	0.03 max	0.8	5.0 max	1.5 max	...	0.04	0.02	...	1.0-2.4	0.30-1.50	...	...	...	...	...	...	...	...	...	...
Ni-Fe-Cr-Mo Alloys N08320	25.0-27.0	21.0-23.0	4.0-6.0	remainder	...	0.05 max	1.0	...	2.5 max	...	0.04	0.03	4xC min	...	...	...	...	...	...	...	...	...	...	...	...
Ni-Cr-Mo-Fe Alloy N06002	remainder ^A	20.5-23.0	8.0-10.0	17.0-20.0	0.20-1.0	0.05-0.15	1.0	0.5-2.5	1.0 max	...	0.04	0.03	...	...	...	...	...	...	...	...	...	...	...	...	...
Ni-Fe-Cr-Co Alloy R30556	19.0-22.5	21.0-23.0	2.5-4.0	remainder	2.0-3.5	0.05-0.15	0.20-0.80	16.0-21.0	0.50-2.00	...	0.04	0.015	...	...	...	0.10-0.50	0.001-0.10	0.005-0.10	0.10-0.30	0.02 max	0.30 max	0.3-1.25	...	...
Ni-Cr-W-Mo Alloy N06230	remainder ^A	20.0-24.0	1.0-3.0	3.0 max	13.0-15.0	0.05-0.15	0.25-0.75	5.0 max	0.30-1.00	...	0.03	0.015	...	...	...	0.20-0.50	...	0.005-0.050	...	0.015 max	...	...	...	...	...

TABLE 1 Continued

	Composition Limits, %																							
	Ni	Cr	Mo	Fe	W	C	Si max	Co	Mn	V	P max	S max	Ti	Cu	Cb (Nb) +Ta	Al	Zr	La	N	B	Cb (Nb)	Ta	Ni+ Mo	Mg
Low C-Ni-Cr-Mo Alloy N06058	balance	20.0-23.0	19.0-21.0	1.5 max	0.3 max	0.010 max	0.10 max	0.3 max	0.50 max	...	0.015	0.010	...	0.50 max	...	0.40 max	...	...	0.02-0.15	...	...	...	...	...
N06059	balance	22.0-24.0	15.0-16.5	1.5 max	...	0.010 max	0.010	0.3 max	0.5 max	...	0.015	0.010	...	0.50 max	...	0.1-0.4	...	...	...	...	...	...	...	...
Low C-Ni-Cr-Mo-Cu Alloy N06200	remainder ^A	22.0-24.0	15.0-17.0	3.0 max	...	0.010 max	0.08	2.0 max	0.50 max	...	0.025	0.010	...	1.3-1.9	...	0.50 max	...	...	...	...	...	...	...	...
Low C-Ni-Fe-Cr-Mo-Cu Alloy N08031	30.0-32.0	26.0-28.0	6.0-7.0	balance	...	0.015 max	0.3	...	2.0 max	...	0.020	0.010	...	1.0-1.4	...	...	...	...	0.15-0.25	...	...	...	...	...
Low C-Ni-Cr-Mo-W Alloy N06686	remainder ^A	19.0-23.0	15.0-17.0	5.0 max	3.0-4.4	0.010 max	0.08	...	0.75 max	...	0.04	0.02	0.02-0.25	...	...	...	...	...	...	...	...	...	...	...
Ni-Co-Cr-Si Alloy N12160	remainder ^A	26.0-30.0	1.0 max	3.5 max	1.0 max	0.15 max	2.4-3.0	27.0-33.0	1.5 max	...	0.030	0.015	0.20-0.80	...	...	...	...	...	...	...	1.0 max	...	...	...
Cr-Ni-Fe-N Alloy R20033	30.0-33.0	31.0-35.0	0.50-2.0	balance	...	0.015 max	0.050	...	2.0 max	...	0.02	0.01	...	0.3-1.20	...	...	...	...	0.35-0.60	...	...	...	...	...
Low C-Ni-Mo-Cr-Ta Alloy N06210	remainder ^A	18.0-20.0	18.0-20.0	1.0 max	...	0.015 max	0.08	1.0 max	0.5	0.95 max	0.02	0.02	...	...	...	...	...	...	...	...	...	1.5-2.2	...	...

^AThe composition of the remainder shall be determined arithmetically by difference.