Designation: ~~B626 – 10$^{\varepsilon 2}$~~ B626 – 14

Standard Specification for Welded Nickel and Nickel-Cobalt Alloy Tube[1]

This standard is issued under the fixed designation B626; 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 (ε) indicates an editorial change since the last revision or reapproval.

~~ε^1 NOTE—The Si max for N06059 in Table 1 was corrected editorially in January 2012.~~
~~ε^2 NOTE—The Si max for R20033 in Table 1 was corrected editorially in March 2014.~~

1. Scope*

1.1 This specification covers welded tubes made from the nickel and nickel-cobalt alloys (UNS N10001, UNS N10242, UNS N10665, UNS N12160, UNS N10629, UNS N10624, UNS N10675, UNS N10276, UNS N06455, UNS N06007, UNS N06975, UNS N08320, UNS N06985, UNS N06002, UNS N06022, UNS N06030, UNS N06035, UNS N06058, UNS N06059, UNS N06200, UNS N06617, UNS N10362, UNS N06210, UNS N08031, UNS R30556, UNS N06230, UNS N06686, and UNS R20033)[2] listed in Table 1 intended for heat exchanger and condenser tubes and tubes for general corrosive service for heat-resisting applications.

1.2 This specification covers tube ⅛ to 3½ in. (3.2 to 88.9 mm) in outside diameter and 0.015 to 0.148 in. (0.41 to 3.7 mm) inclusive, in wall thickness.

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 *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:*[3]

B751 Specification for General Requirements for Nickel and Nickel Alloy Welded Tube

E527 Practice for Numbering Metals and Alloys in the Unified Numbering System (UNS)

3. General Requirements

3.1 Material furnished in accordance with this specification shall conform to the applicable requirements of the current edition of Specification B751 unless otherwise provided herein.

4. Classification

4.1 Five classes of tube are covered as follows:

4.1.1 *Class IA*—Welded, sized, solution annealed, and nondestructively tested in accordance with 4.2.1.

4.1.2 *Class IB*—Welded, sized, and solution annealed.

4.1.3 *Class IIA*—Welded, cold worked, solution annealed, and nondestructively tested in accordance with 4.2.1.

4.1.4 *Class IIB*—Welded, cold worked, and solution annealed.

4.1.5 *Class III*—Welded, cold worked, solution annealed, and nondestructively tested in accordance with 4.2.2.

4.2 *Nondestructive Tests:*

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[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] New designations established in accordance with Practic E527 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.

***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	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	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	...	0.50 max	0.10 max	...	...	...	0.20 max	0.20 max	94.0-98.0	
N10629	remainder	0.5-1.5	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	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	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	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	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	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	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	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	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	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	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	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	...	...	...	0.50 max	...	0.005-0.050	...	0.015 max	...	...		
Low C-Ni-Cr-Mo Alloy																								

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																								
N06058	balance	20.0-																						