Designation: A 478 – 97 (Reapproved 2008)

Standard Specification for Chromium-Nickel Stainless Steel Weaving and Knitting Wire[1]

This standard is issued under the fixed designation A 478; 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.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This specification covers the more commonly used types of round stainless steel wire intended especially for weaving and knitting.

1.2 The values stated in inch-pound units are to be regarded as the standard.

2. Referenced Documents

2.1 *ASTM Standards:* [2]

A 555/A 555M Specification for General Requirements for Stainless Steel Wire and Wire Rods

A 751 Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products

3. Ordering Information

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

3.1.1 Quantity (weight),
3.1.2 Name of material (stainless steel),
3.1.3 Condition (see Section 5),
3.1.4 Finish (see Section 7),
3.1.5 Cross section (round),
3.1.6 Form (wire),
3.1.7 Applicable dimensions (diameter),
3.1.8 Type designation (see Table 1),
3.1.9 ASTM designation and date of issue, and
3.1.10 Special requirements.

3.2 If possible, the intended end use of the item should be given on the purchase order especially when the item is ordered for a specific end use or uses.

NOTE 1—A typical ordering description is as follows: 1000 lb; stainless steel, dead soft, bright annealed wire, 0.015 in. diameter, spools, Type 304, ASTM Specification A 478 dated _____, End Use Wire Screen.

4. Chemical Composition

4.1 The steel shall conform to the requirements as to chemical composition specified in Table 1.

4.2 Methods and practices relating to chemical analysis required by this specification shall be in accordance with Test Methods, Practices, and Terminology A 751.

5. Conditions

5.1 Wire may be furnished in one of the following conditions:

5.1.1 Annealed,
5.1.2 Bright annealed, or
5.1.3 Cold drawn.

6. Mechanical Requirements

6.1 The material shall conform to the requirements as to mechanical properties specified in Table 2.

7. Finish

7.1 The types of finish procurable are as follows:

7.1.1 Pickled finish and
7.1.2 Bright finish.

8. General Requirements for Delivery

8.1 In addition to the requirements of this specification, all requirements of the current edition of Specification A 555/A 555M shall apply. Failure to comply with the general requirements of Specification A 555/A 555M constitutes nonconformance with this specification.

9. Packaging

9.1 Each coil or spool shall be one continuous length of wire. Each coil shall be firmly tied and each spool shall be tightly wound. Unless otherwise specified, coils shall be placed in drums or shall be paper wrapped, and spools shall be boxed in such a manner as to ensure safe delivery to their destination when properly transported by any common carrier.

[1] This specification is under the jurisdiction of ASTM Committee A01 on Steel, Stainless Steel and Related Alloys and is the direct responsibility of Subcommittee A01.17 on Flat-Rolled and Wrought Stainless Steel.

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[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.

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TABLE 1 Chemical Requirements

UNS Designation[A]	Type	Composition, %									
		Carbon, max	Manganese, max	Phosphorus, max	Sulfur, max	Silicon, max	Chromium	Nickel	Molybdenum	Nitrogen, max	Other Elements
S 30200	302	0.15	2.00	0.045	0.030	1.00	17.00–19.00	8.00–10.00	. . .	0.10	. . .
S 30400	304	0.08	2.00	0.045	0.030	1.00	18.00–20.00	8.00–10.50	. . .	0.10	. . .
S 30403	304L	0.03	2.00	0.045	0.030	1.00	18.00–20.00	8.00–12.00	. . .	0.10	. . .
S 30500	305	0.12	2.00	0.045	0.030	1.00	17.00–19.00	10.5–13.0	. . .	0.10	. . .
S 30908	309S	0.08	2.00	0.045	0.030	0.75	22.00–24.00	12.00–15.00	. . .	. . .	. . .
S 30940	309Cb	0.08	2.00	0.045	0.030	1.00	22.00–24.00	12.00–16.00	. . .	0.10	Cb+Ta 10×C-1.10
S 31040	310Cb	0.08	2.00	0.045	0.030	1.50	24.00–26.00	19.00–22.00	. . .	0.10	Cb+Ta 10×C-1.10
S 31600	316	0.08	2.00	0.045	0.030	1.00	16.00–18.00	10.00–14.00	2.00–3.00	0.10	. . .
S 31603	316L	0.03	2.00	0.045	0.030	1.00	16.00–18.00	10.00–14.00	2.00–3.00	0.10	. . .
S 31640	316Cb	0.08	2.00	0.045	0.030	1.00	16.00–18.00	10.00–14.00	2.00–3.00	0.10	Cb+Ta 10×C-1.10
S 31635	316Ti	0.08	2.00	0.045	0.030	1.00	16.00–18.00	10.00–14.00	2.00–3.00	0.10	Ti 5×(C+N)-0.70
S 31700	317	0.08	2.00	0.045	0.030	1.00	18.00–20.00	11.00–15.00	3.00–4.00	0.10	. . .

TABLE 2 Mechanical Requirements

Condition	Diameter, in. (mm)	Tensile Strength, psi (MPa)	Elongation in 10 in. or 254 mm, min, %
Annealed or bright annealed[A]	0.002 (0.05) to 0.005 (0.13), incl	145 000 (1000), max	30
	Over 0.005 (0.13) to 0.009 (0.23), incl	135 000 (930), max	30
	Over 0.009 (0.23) to 0.015 (0.38), incl	130 000 (900), max	35
	Over 0.015 (0.38) to 0.020 (0.51), incl	125 000 (860), max	40
	Over 0.020 (0.51) to 0.025 (0.64), incl	120 000 (830), max	40
	Over 0.025 (0.64) to 0.035 (0.89), incl	115 000 (790), max	40
	Over 0.035 (0.89) to 0.043 (1.09), incl	110 000 (760), max	45
	Over 0.043 (1.09)	105 000 (720), max	45
Cold drawn[B]	0.030 (0.76) to 0.125 (3.18), incl	120 000 (830) to 150 000 (1030)	15
	Over 0.125 (3.18)	110 000 (760) to 140 000 (970)	15

[A] In the annealed or bright annealed condition, for Type 302 and Type 304, tensile strength maximum is 10 000 psi (70 MPa) higher.
[B] Wire ordered in the cold-drawn condition can be supplied to higher tensile strength levels as specified by the purchaser.

10. Keywords

10.1 knitting wire; stainless steel; weaving wire

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