Designation: A 492 – 95 (Reapproved 2004)

Standard Specification for Stainless Steel Rope Wire[1]

This standard is issued under the fixed designation A 492; 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 stranding into wire rope.

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 (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, cold-drawn, bright-finish, wire, 0.009-in. diameter, spools. Type 304, ASTM Specification A 492 dated , End Use .

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. Condition

5.1 The wire is cold drawn and furnished in the finish (see Section 7) specified on the purchase order.

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 pickled finish and bright finish (available only in sizes that can be diamond drawn, which are generally 0.045 in. (1.14 mm) and smaller).

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 and Package Marking

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 paper wrapped and spools shall be boxed in such a manner as to assure safe delivery to their designation when properly transported by any common carrier.

9.2 Each coil or spool of wire shall be properly tagged showing heat number, grade, condition, ASTM specification number, and size.

10. Keywords

10.1 austenitic stainless steel; stainless steel rope wire

[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	Type	Composition, %								
		Carbon, max	Manganese	Phosphorus, max	Sulfur, max	Silicon, max	Chromium	Nickel	Molybdenum	Nitrogen[A]
S 21600	XM-17	0.08	7.50–9.00	0.045	0.030	1.00	17.50–22.00	5.00–7.00	2.00–3.00	0.25–0.50
S 21603	XM-18	0.03	7.50–9.00	0.045	0.030	1.00	17.50–22.00	5.00–7.00	2.00–3.00	0.25–0.50
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 30500	305	0.12	2.00	0.045	0.030	1.00	17.00–19.00	10.50–13.00	. . .	. . .
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

[A] Maximum unless otherwise indicated.

TABLE 2 Tensile Strength Requirements

Diameter, in. (mm)	For Types XM-17, XM-18, 302, and 304				For Types 305 and 316	
	min		max		min	
	psi	MPa	psi	MPa	psi	MPa
0.007 (0.18) and smaller	320 000	2210	355 000	2450	245 000	1690
Over 0.007 (0.18) to 0.010 (0.25), incl	312 000	2150	350 000	2410	245 000	1690
Over 0.010 (0.25) to 0.015 (0.38), incl	310 000	2140	345 000	2380	240 000	1650
Over 0.015 (0.38) to 0.019 (0.48), incl	305 000	2100	340 000	2340	240 000	1650
Over 0.019 (0.48) to 0.025 (0.64), incl	295 000	2030	330 000	2280	235 000	1620
Over 0.025 (0.64) to 0.030 (0.76), incl	285 000	1960	315 000	2170	235 000	1620
Over 0.030 (0.76) to 0.035 (0.89), incl	275 000	1900	310 000	2140	235 000	1620
Over 0.035 (0.89) to 0.040 (1.02), incl	260 000	1790	300 000	2070	235 000	1620
Over 0.040 (1.02) to 0.050 (1.27), incl	255 000	1760	285 000	1970	230 000	1590
Over 0.050 (1.27) to 0.060 (1.52), incl	250 000	1720	280 000	1930	225 000	1550
Over 0.060 (1.52) to 0.070 (1.78), incl	245 000	1690	275 000	1900	220 000	1520
Over 0.070 (1.78) to 0.080 (2.03), incl	240 000	1650	270 000	1860	210 000	1450
Over 0.080 (2.03) to 0.090 (2.29), incl	240 000	1650	270 000	1860	210 000	1450
Over 0.090 (2.29) to 0.100 (2.54), incl	235 000	1620	265 000	1830	205 000	1410

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