Designation: ~~A493 – 16~~ A493 – 23

Standard Specification for Stainless Steel Wire and Wire Rods for Cold Heading and Cold Forging[1]

This standard is issued under the fixed designation A493; 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 U.S. Department of Defense.

1. Scope*

1.1 This specification covers cold-finished and hot-finished stainless steel wire and wire rods for cold heading or cold forging for applications, such as fasteners, where corrosion resistance is a factor.

1.2 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.

1.3 *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.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

A262 Practices for Detecting Susceptibility to Intergranular Attack in Austenitic Stainless Steels

A555/A555M Specification for General Requirements for Stainless Steel Wire and Wire Rods

A751 Test Methods and Practices 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 Size (diameter),

3.1.3 Type or UNS number (see Table 1),

3.1.4 Name (wire or wire rods),

[1] This specification is under the jurisdiction of ASTM Committee A01 on Steel, Stainless Steel and Related Alloysand 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.

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

TABLE 1 Chemical Requirements

Grade		Composition, %[A]										
UNS Designation	AISI Type	Carbon	Manganese	Phosphorus	Sulfur	Silicon	Chromium	Nickel	Copper	Molybdenum	Nitrogen	Other Elements
Austenitic Grades												
S 17710	. . .	0.15	2.00	0.045	0.030	1.00	17.0–19.0	8.0–10.0	. . .	. . .	. . .	Al 0.90–1.40
S 30200	302	0.15	2.00	0.045	0.030	1.00	17.0–19.0	8.0–10.0	1.00		0.10	
S 30400	304	0.08	2.00	0.045	0.030	1.00	18.0–20.0	8.0–10.5	1.00		0.10	
S 30403	304L	0.030	2.00	0.045	0.030	1.00	18.0–20.0	8.0–12.0	1.00		0.10	
S 30430		0.10	2.00	0.045	0.030	1.00	17.0–19.0	8.0–10.0	3.0–4.0			
S 30433		0.03	2.00	0.045	0.030	1.00	17.0–19.0	8.0–10.0	3.0–4.0			
S 30500	305	0.04	2.00	0.045	0.030	1.00	17.0–19.0	10.5–13.0	1.00			
S 31600	316	0.08	2.00	0.045	0.030	1.00	16.0–18.0	10.0–14.0		2.00–3.00	0.10	
S 31603	316L	0.030	2.00	0.045	0.030	1.00	16.0–18.0	10.0–14.0		2.00–3.00	0.10	
S 38400	384	0.04	2.00	0.045	0.030	1.00	15.0–17.0	17.0–19.0				
Ferritic Grades												
S 40940		0.06	1.00	0.045	0.040	1.00	10.5–11.7	0.50				Cb 10XC–0.75
S 42900	429	0.12	1.00	0.040	0.030	1.00	14.0–16.0					
S 43000	430	0.04	1.00	0.040	0.030	1.00	16.0–18.0					
S 44401	. . .	0.025	1.00	0.040	0.030	. . .	17.5–19.5	1.00		1.75–2.50	0.035	Ti+Cb 0.20+4× (C+N)–0.80
S 44625[B]	. . .	0.010[B]	0.40	0.020	0.020	0.40	25.0–27.5	0.50	0.2	0.75–1.50	0.015[B]	Ni+Cu 0.5
S 44700[B]	. . .	0.010[B]	0.30	0.025	0.020	0.20	28.0–30.0	0.15	0.15	3.5–4.2	0.020[B]	C+N 0.025
S 44800[B]	. . .	0.010[B]	0.30	0.025	0.020	0.20	28.0–30.0	2.00–2.50	0.15	3.5–4.2	0.020[B]	C+N 0.025
Martensitic Grades												
S 41000	410	0.15	1.00	0.040	0.030	1.00	11.5–13.5					
S 42010	. . .	0.15–0.30	1.00	0.040	0.030	1.00	13.5–15.0	0.35–0.85		0.40–0.85		
S 42030	. . .	0.30	1.00	0.040	0.030	1.00	12.0–14.0		2.00–3.00	1.00–3.00		
S 43100	431	0.20	1.00	0.040	0.030	1.00	15.0–17.0	1.25–2.50				
S 44004	440C	0.95–1.20	1.00	0.040	0.030	1.00	16.0–18.0			0.75 max		

[A] Maximum, unless range or minimum is indicated. Where ellipses (. . .) appear in this table, there is no requirement and the element need not be determined or reported.
[B] Product analysis tolerance over the maximum limit for carbon and nitrogen to be 0.002 %.

3.1.5 ASTM designation and issue date,

3.1.6 Condition (see 5.2),

3.1.7 Coating (see 5.3),

3.1.8 Coil size (inside and outside diameter),

3.1.9 Special requirements, and

3.1.10 Supplementary requirements.

4. General Requirements for Delivery

4.1 In addition to the requirements of this specification, all requirements of the current editions of Specification A555/A555M shall apply. Failure to comply with the general requirements of Specification A555/A555M constitutes nonconformance with this specification.

NOTE 1—A typical ordering description is as follows: 5000 lb (2268 kg) 0.225 in. (5.72 mm) round Type 305 cold heading wire, lightly drafted, copper coated, 32 in. (813 mm) max OD—22 in. (559 mm) min ID, coils, ASTM Specification A493 – XX. End use: hex head machine bolts.