Designation: A 496 – 02

Standard Specification for Steel Wire, Deformed, for Concrete Reinforcement[1]

This standard is issued under the fixed designation A 496; 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 deformed steel wire which has been cold-worked by drawing, rolling, or both drawing and rolling, to be used as produced, or in fabricated form, for the reinforcement of concrete in sizes having nominal cross-sectional areas not less than 6.45 mm^2 (0.01 $in.^2$).

1.2 Supplement S1 describes high-strength wire, which shall be furnished when specifically ordered. It shall be permissible to furnish high-strength wire in place of regular wire if mutually agreed to by the purchaser and supplier.

1.3 The values stated in either inch-pound units or SI units are to be regarded as standard. Within the text the inch-pound units are shown in brackets. The value stated in each system are not exact equivalents; therefore, each system must be used independently of the other. Combining values may result in nonconformance with the specification.

2. Referenced Documents

2.1 *ASTM Standards:*

A 370 Test Methods and Definitions for Mechanical Testing of Steel Products[2]

A 497 Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete[3]

A 700 Practices for Packaging, Marking, and Loading Methods for Steel Products for Domestic Shipment[4]

E 83 Practice for Verification and Classification of Extensometers[5]

2.2 *Military Standards:*

MIL-STD-129 Marking for Shipment and Storage[6]

MIL-STD-163 Steel Mill Products Preparation for Shipment and Storage[6]

2.3 *Federal Standard:*

Fed. Std. No. 123 Marking for Shipments (Civil Agencies)[6]

2.4 *Other Standard:*

ACI 318 Building Code Requirements for Structural Concrete[7]

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *deformed steel wire for reinforcement—as used within the scope and intent of this specification*, shall mean any cold-worked, deformed steel wire intended for use as reinforcement in concrete construction, the wire surface having deformations that: (1) inhibit longitudinal movement of the wire in such construction; and (2) conform to the provisions of Section 5. It shall be permissible for the deformations to be raised indented.

3.1.2 *size number—as used in this specification*, refers to the numerical designation of the wire as tabulated in Table 1 and Table 2 under the column headed Deformed Wire Size Number, or a number indicating the nominal cross-sectional area of the deformed wire in hundredths of a square inch.

4. Ordering Information

4.1 When deformed wire is ordered by size number, the dimensional requirements shall be as given in Table 1. When deformed wire is ordered to dimensions other than the sizes shown, the nominal dimensions shall be developed from the applicable unit weight per foot of the section.

4.2 Orders for material to this specification should include the following information:

4.2.1 Quantity (weight),

4.2.2 Name of material (deformed steel wire for concrete reinforcement),

4.2.3 Wire diameter (see Table 1 and Table 2),

4.2.4 Packaging (see Section 16), and

4.2.5 ASTM designation and year of issue.

4.2.6 Special requirements, if any. (See Supplement S1.)

NOTE 1—A typical ordering description is as follows: 50 000 lb

[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 A01.05 on Steel Reinforcement.

Current edition approved Sept. 10 2002. Published June 2003. Originally approved in 1964. Last previous edition approved in 2001 as A 496 – 01.

[2] *Annual Book of ASTM Standards*, Vol 01.03

[3] *Annual Book of ASTM Standards*, Vol 01.04

[4] *Annual Book of ASTM Standards*, Vol 01.05

[5] *Annual Book of ASTM Standards*, Vol 03.01

[6] Available from Standardization Documents Order Desk, Building 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111–5094

[7] Available from American Concrete Institute, P.O. Box 9094, Farmington Hills, MI 48333-9094.

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

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TABLE 1 Dimensional Requirements for Deformed Wire for Concrete Reinforcement in SI Units

Nominal Dimensions						Deformation Requirements									
Deformed Wire Size[A,B,C]	(D in.^{2}) (× 100)	Unit Wt.		Diameter[D]		Cross-Sectional Area[2E]		Perimeter		Spacing, Maximum		Spacing, Minimum		Min. Avg. Height of Deformations	
		kg/m	(lbs/ft.)	mm	(in.)	mm^2	(in.^{2})	mm	(in.)	mm	(in.)	mm	(in.)	mm[F]	(in.)
MD 25	(D 3.9)	0.1962	(0.133)	5.60	(0.220)	25	(0.039)	17.59	(0.692	7.24	(0.285)	4.62	(0.182)	0.252	(0.010)
MD 30	(D 4.6	0.2355	(0.156)	6.20	(0.244)	30	(0.046)	19.48	(0.767)	7.24	(0.285)	4.62	(0.182)	0.279	(0.011)
MD 35	(D 5.4)	0.2747	(0.184)	6.70	(0.264)	35	(0.054)	21.05	(0.829)	7.24	(0.285)	4.62	(0.182)	0.302	(0.012)
MD 40	(D 6.2)	0.3140	(0.211)	7.10	(0.280)	40	(0.062)	22.31	(0.878)	7.24	(0.285)	4.62	(0.182)	0.320	(0.013)
MD 45	(D 7.0)	0.3532	(0.238)	7.60	(0.299)	45	(0.070)	23.88	(0.940)	7.24	(0.285)	4.62	(0.182)	0.342	(0.014)
MD 50	(D 7.7)	0.3925	(0.262)	8.00	(0.315)	50	(0.077)	25.13	(0.989)	7.24	(0.285)	4.62	(0.182)	0.360	(0.014)
MD 55	(D 8.5)	0.4317	(0.289)	8.40	(0.331)	55	(0.085)	26.39	(1.039)	7.24	(0.285)	4.62	(0.182)	0.378	(0.015)
MD 60	(D 9.3)	0.4709	(0.316)	8.70	(0.343)	60	(0.093)	27.33	(1.076)	7.24	(0.285)	4.62	(0.182)	0.392	(0.015)
MD 65	(D 10.1)	0.5102	(0.343)	9.10	(0.358)	65	(0.101)	28.59	(1.126)	7.24	(0.285)	4.62	(0.182)	0.455	(0.018)
MD 70	(D 10.8)	0.5494	(0.367)	9.40	(0.370)	70	(0.108)	29.53	(1.163)	7.24	(0.285)	4.62	(0.182)	0.470	(0.018)
MD 80	(D 12.4)	0.6279	(0.422)	10.10	(0.397)	80	(0.124)	31.70	(1.248)	7.24	(0.285)	4.62	(0.182)	0.505	(0.020)
MD 90	(D 13.9)	0.7064	(0.473)	10.70	(0.421)	90	(0.139)	33.62	(1.324)	7.24	(0.285)	4.62	(0.182)	0.535	(0.021)
MD 100	(D 15.5)	0.7849	(0.527)	11.30	(0.445)	100	(0.155)	35.50	(1.398)	7.24	(0.285)	4.62	(0.182)	0.565	(0.022)
MD 120	(D 18.6)	0.9419	(0.632)	12.40	(0.488)	120	(0.186)	38.96	(1.534)	7.24	(0.285)	4.62	(0.182)	0.620	(0.024)
MD 130	(D 20.1)	1.0204	(0.683)	12.90	(0.508)	130	(0.201)	40.53	(1.596)	7.24	(0.285)	4.62	(0.182)	0.645	(0.025)
MD 200	(D 31.0)	1.5700	(1.054)	15.95	(0.628)	200	(0.310)	50.27	(1.979)	7.24	(0.285)	4.62	(0.182)	0.800	(0.031)
MD 290	(D 45.0)	2.27	(1.530)	19.22	(0.757)	290	(0.450)	60.37	(2.378)	7.24	(0.285)	4.62	(0.182)	0.961	(0.0379)

[A] The number following the prefix indicates the nominal cross-sectional area of the deformed wire in square millimeters.

[B] For sizes other than those shown above, the Size Number shall be the number of one hundredths of a square inch in the nominal area of the deformed wire cross section, prefixed by the letters MD.

[C] These sizes represent the most readily available sizes in the welded wire reinforcement industry. Other wire sizes are available and many manufacturers can produce them in 1–mm^2 (0.0015–in.^{2}) increments.

[D] The nominal diameter of a deformed wire is equivalent to the diameter of a plain wire having the same mass per metre as the deformed wire.

[E] The cross-sectional area is based on the nominal diameter. The area in square millimetres may be calculated by dividing the unit mass in kg/mm by 7×10^{-6} (mass of 1 mm^3 of steel or by dividing the unit mass in kg/m by 0.007849 (mass of steel 1 mm square and 1 m long).

[F] The minimum average height of the deformations shall be determined from measurements made on not less than two typical deformations from each line of deformations on the wire. Measurements shall be made at the center of indentation as described in 7.7.

TABLE 2 Dimensional Requirements for Deformed Steel Wire for Concrete Reinforcement—US Customary Units Wire Sizes

	Nominal Dimensions			Deformation Requirements			
Deformed Wire Size Number[A,B]	Unit Weight, lb/ft(kg/m)	Diameter, in.(mm)[C]	Cross-sectional Area, in.^{2} (mm^2)[D]	Perimeter, in.(mm)	Maximum, in.(mm)	Minimum, in.(mm)	Minimum Average Height of Deformations, in.(mm)[E,F]
D-1	0.034 (0.0510)	0.113 (2.87)	0.01 (6.45)	0.355 (9.02)	0.285 (7.24)	0.182 (4.62)	0.0045 (0.114)
D-2	0.068 (0.1013)	0.159 (4.04)	0.02 (12.90)	0.499 (12.67)	0.285 (7.24)	0.182 (4.62)	0.0063 (0.160)
D-3	0.102 (0.1523)	0.195 (4.95)	0.03 (19.35)	0.162 (15.54)	0.285 (7.24)	0.182 (4.62)	0.0078 (0.198)
D-4	0.136 (0.2025)	0.225 (5.72)	0.04 (25.81)	0.706 (17.93)	0.285 (7.24)	0.182 (4.62)	0.0101 (0.257)
D-5	0.170 (0.2532)	0.252 (6.40)	0.05 (32.26)	0.791 (20.09)	0.285 (7.24)	0.182 (4.62)	0.0113 (0.287)
D-6	0.204 (0.3038)	0.276 (7.01)	0.06 (38.71)	0.867 (22.02)	0.285 (7.24)	0.182 (4.62)	0.0124 (0.315)
D-7	0.238 (0.3548)	0.299 (7.57)	0.07 (45.16)	0.936 (23.77)	0.285 (7.24)	0.182 (4.62)	0.0134 (0.304)
D-8	0.272 (0.4051)	0.319 (8.10)	0.08 (51.61)	1.002 (25.45)	0.285 (7.24)	0.182 (4.62)	0.0143 (0.363)
D-9	0.0306 (0.4561)	0.338 (8.59)	0.09 (58.96)	1.061 (26.95)	0.285 (7.24)	0.182 (4.62)	0.0152 (0.386)
D-10	0.340 (0.5063)	0.356 (9.04)	0.10 (64.52)	1.118 (28.40)	0.285 (7.24)	0.182 (4.62)	0.0160 (0.406)
D-11	0.374 (0.5574)	0.374 (9.50)	0.11 (70.97)	1.174 (29.82)	0.285 (7.24)	0.182 (4.62)	0.0187 (0.475)
D-12	0.408 (0.6076)	0.390 (9.91)	0.12 (77.42)	1.225 (31.13)	0.285 (7.24)	0.182 (4.62)	0.0195 (0.495)
D-13	0.442 (0.6586)	0.406 (10.31)	0.13 (83.87)	1.275 (32.39)	0.285 (7.24)	0.182 (4.62)	0.0203 (0.516)
D-14	0.476 (0.7089)	0.422 (10.72)	0.14 (90.32)	1.325 (33.66)	0.285 (7.24)	0.182 (4.62)	0.0211 (0.536)
D-15	0.510 (0.7599)	0.437 (11.10)	0.15 (96.77)	1.372 (34.85)	0.285 (7.24)	0.182 (4.62)	0.0218 (0.554)
D-16	0.544 (0.8101)	0.451 (11.46)	0.16 (103.23)	1.416 (35.97)	0.285 (7.24)	0.182 (4.62)	0.0225 (0.572)
D-17	0.578 (0.8611)	0.465 (11.81)	0.17 (109.68)	1.460 (37.08)	0.285 (7.24)	0.182 (4.62)	0.0232 (0.589)
D-18	0.612 (0.9114)	0.478 (12.14)	0.18 (116.13)	1.501 (38.13)	0.285 (7.24)	0.182 (4.62)	0.0239 (0.607)
D-19	0.646 (0.9624)	0.491 (12.47)	0.19 (122.58)	1.542 (37.17)	0.285 (7.24)	0.182 (4.62)	0.0245 (0.622)
D-20	0.680 (1.0127)	0.504 (12.80)	0.20 (129.03)	1.583 (40.21)	0.285 (7.24)	0.182 (4.62)	0.0252 (0.604)
D-21	0.714 (1.0637)	0.517 (13.13)	0.21 (135.48)	1.624 (41.25)	0.285 (7.24)	0.182 (4.62)	0.0259 (0.658)
D-22	0.748 (1.1139)	0.529 (13.44)	0.22 (141.94)	1.662 (42.21)	0.285 (7.24)	0.182 (4.62)	0.0265 (0.673)
D-23	0.782 (1.1649)	0.541 (13.74)	0.23 (148.39)	1.700 (43.18)	0.285 (7.24)	0.182 (4.62)	0.0271 (0.688)
D-24	0.816 (1.2152)	0.553 (14.05)	0.24 (154.84)	1.737 (44.12)	0.285 (7.24)	0.182 (4.62)	0.0277 (0.704)
D-25	0.850 (1.2662)	0.564 (14.33)	0.25 (161.29)	1.772 (45.01)	0.285 (7.24)	0.182 (4.62)	0.0282 (0.716)
D-26	0.884 (1.3164)	0.575 (14.61)	0.26 (167.74)	1.806 (45.87)	0.285 (7.24)	0.182 (4.62)	0.0288 (0.732)
D-27	0.918 (1.3675)	0.586 (14.88)	0.27 (174.19)	1.841 (48.76)	0.285 (7.24)	0.182 (4.62)	0.0293 (0.744)
D-28	0.952 (1.4177)	0.597 (15.16)	0.28 (180.64)	1.876 (47.65)	0.285 (7.24)	0.182 (4.62)	0.0299 (0.759)
D-29	0.986 (1.4687)	0.608 (15.44)	0.29 (187.10)	1.910 (48.51)	0.285 (7.24)	0.182 (4.62)	0.0304 (0.772)
D-30	1.020 (1.5190)	0.618 (15.70)	0.30 (193.55)	1.942 (49.33)	0.285 (7.24)	0.182 (4.62)	0.0309 (0.785)
D-31	1.054 (1.5700)	0.628 (15.95)	0.31 (200.00)	1.973 (50.11)	0.285 (7.24)	0.182 (4.62)	0.0314 (0.798)
D-45	1.530 (2.276)	0.757 (19.23)	0.45 (290.32)	2.378 (60.40)	0.285 (7.24)	0.182 (4.62)	0.0379 (0.961)

[A] The number following the prefix indicates the nominal cross-sectional area of the deformed wire in square inches (square millimeters).

[B] For sizes other than those shown above, the Size Number shall be the number of one hundredths of a square inch in the nominal area of the deformed wire cross section, prefixed by the letter D.

[C] The nominal diameter of a deformed wire is equivalent to the diameter of a plain wire having the same weight per foot as the deformed wire.

[D] The cross-sectional area is based on the nominal diameter. The area in square inches may be calculated by dividing the unit weight in pounds by 0.2833 (weight of 1 in.^{3} of steel), or by dividing the unit weight per linear foot of specimen in pounds by 3.4 (weight of steel 1 in. square and 1 foot long).

[E] The minimum average height of the deformations shall be determined from measurements made on not less than two typical deformations from each line of deformations on the wire. Measurements shall be made at the center of indentation as described in 6.2.

[F] These sizes represent the most readily available sizes in the welded wire reinforcement industry. Other wire sizes are available and many manufacturers can produce them in 0.0015–in^2 (1–mm^2) increments.

deformed steel wire for concrete reinforcement, size No. D-12, on pipe carriers, polyethylene shrouded, the ASTM A 496 –____ .

5. Materials and Manufacture

5.1 The steel shall be made by one of the following processes: open-hearth, electric furnace, or basic oxygen.

5.2 The deformed steel wire shall be produced from rods or bars that have been hot rolled from billets.

6. Requirements

6.1 Deformations shall be spaced along the wire at a substantially uniform distance and shall be symmetrically disposed around the perimeter of the section. The deformations on all longitudinal lines of the wire shall be similar in size and shape. A minimum of 25 % of the total surface area shall be deformed by measurable deformations.

6.2 Deformed wire shall have two or more lines of deformations.

6.3 The average longitudinal spacing of deformations shall be not less than 3.5 nor more than 5.5 deformations per inch in each line of deformations on the wire.

6.4 The minimum average height of the center of typical deformations based on the nominal wire diameters shown in Table 1 and Table 2 shall be as follows:

Wire Sizes	Minimum Average Height of Deformations, Percent of Nominal Wire Diameter
D-3 and finer	4
Coarser than D-3 through D–10	4 ½
Coarser than D-10	5

6.5 The deformations shall be placed in respect to the axis of the wire so that the included angle is not less than 45°; or if deformations are curvilinear, the angle formed by the transverse axis of the deformation and the wire axis shall be not less than 45°. Where the line of deformations forms an included angle with the axis of the wire from 45 to 70° inclusive, the deformations shall alternately reverse in direction on each side,

or those on one side shall be reversed in direction from those on the opposite side. Where the line of deformations is over 70°, a reversal in direction is not required.

7. Dimensions

7.1 The average spacing of deformations shall be determined by dividing a measured length of the wire specimen by the number of individual deformations in any one row of deformations on any side of the wire specimens. A measured length of the wire specimen shall be considered the distance from a point on a deformation to a corresponding point on any other deformation in the same line of deformations on the wire.

7.2 The minimum average height of deformations shall be determined from measurements made on not less than two typical deformations from each line of deformations on the wire. Measurements shall be made at the center of indentations.

8. Mechanical Property Requirements

8.1 *Tension Tests*:

8.1.1 When tested as described in Test Methods and Definitions A 370, the material, except as specified in 8.1.2 shall conform to the tensile property requirements in Table 3, based on nominal area of wire.

8.1.2 The yield strength shall be determined as described in Test Methods and Definitions A 370 at an extension of 0.5 % of gage length. The manufacturer is not required to test for yield strength, but is responsible for supplying a product that will meet the stipulated limit when tested in conformance with the provisions of 13.3. For determining the yield strength use a Class B-1 extensometer as described in Practice E 83. The extensometer should be removed from the specimen after the yield strength has been determined.

8.1.3 For material to be used in the fabrication of welded wire reinforcement, the tensile and yield strength properties shall conform to the requirements given in Table 4, based on nominal area of the wire.

8.1.4 The material shall not exhibit a definite yield point as evidenced by a distinct drop of the beam or halt in the gage of the testing machine prior to reaching ultimate tensile load. The purchase may, at his option, accept this feature as sufficient evidence of compliance with the specified minimum yield strength tests covered in 13.3

8.2 *Bend Test*—The bend test specimen shall stand being bent at room temperature through 90° without cracking on the outside of the bent portion, as prescribed in Table 5.

9. Permissible Variation in Weight

9.1 The permissible variation in weight of any deformed wire is ±6 % of its nominal weight. The theoretical weights shown in Table 1, or similar calculations on unlisted sizes, shall be used to establish the variation.

TABLE 3 Tension Test Requirements

	psi (MPa) min
Tensile strength	85 000 (585)
Yield strength	75 000 (515)

TABLE 4 Tension Test Requirements (Material for Welded Wire Reinforcement)

	psi (MPa) min
Tensile strength	80 000 (550)
Yield strength	70 000 (485)

TABLE 5 Bend Test Requirements

Size Number of Wire	Bend Test
D-6 and smaller	Bend around a pin the diameter that is equal to twice the diameter of the specimen
Coarser than D-6	Bend around a pin the diameter that is equal to four times the diameter of the specimen

10. Workmanship, Finish, and Appearance

10.1 The wire shall be free of detrimental imperfections and shall have a workmanlike finish.

10.2 Rust, surface seams, or surface irregularities shall not be a cause for rejection provided the requirements of 10.3 are met, and the minimum dimensions and mechanical properties of a hand wire-brushed test specimen are not less than the requirements of this specification.

10.3 Wire intended for welded wire reinforcement shall be sufficiently free of rust and drawing lubricant, so as not to interfere with electric resistance welding.

11. Sampling

11.1 Test specimens for testing mechanical properties shall be full wire sections and shall be obtained from the ends of the wire product as drawn or rolled, or both drawn and rolled. The specimens shall be of sufficient length to perform testing described in 8.1 and 8.2.

11.2 If any test specimen exhibits obvious isolated imperfections not representative of the product, it may be discarded and another specimen substituted.

12. Number of Tests

12.1 One tension and one bend test shall be made from each 9072 kg (10 tons) or less of each size of wire or fraction thereof in a lot, or a total of seven samples, whichever is less. A lot shall consist of all the coils of a single size offered for delivery at the same time.

13. Inspection

13.1 The inspector representing the purchaser shall have free entry, at all times while work on the contract of the purchaser is being performed, to all parts of the manufacturer's works that concern the manufacture of the material ordered. The manufacturer shall afford the inspector all reasonable facilities to satisfy him that the material is being furnished in accordance with this specification.

13.2 Except for yield strength, all tests and inspection shall be made at the place of manufacture prior to shipment, unless otherwise specified. Such tests shall be so conducted as not to interfere unnecessarily with the operation of the works.

13.3 If the purchaser considers it desirable to determine compliance with the yield strength requirements in 8.1.3, yield strength tests may be made in a recognized laboratory, or their

representative may make the test at the mill if such tests do not interfere unnecessarily with the mill operations.

13.4 *For U.S. Government Procurement Only*—Except as otherwise specified in the contract, the contractor is responsible for the performance of all inspection and test requirements specified herein. Except as otherwise specified in the contract, the contractor may use his own or any other suitable facilities for the performance of the inspection and test requirements specified herein, unless disapproved by the purchaser at the time of purchase. The purchaser shall have the right to perform any of the inspections and tests at the same frequency as set forth in this specification where such inspection are deemed necessary to assure that material conforms to prescribed requirements.

14. Rejection and Retests

14.1 Material that shows detrimental imperfections subsequent to its acceptance at the manufacturer's works will be rejected, and the manufacturer shall be notified.

14.2 *Rehearing*—Rejected materials shall be preserved for a period of at least two weeks from the date of inspection, during which time the manufacturer may make claim for a rehearing and retesting.

15. Certification

15.1 When specified in the purchase order or contract, a producer's or supplier's certification shall be furnished to the purchaser that the material was manufactured, sampled, tested, and inspected in accordance with this specification and has been found to meet the requirements. When specified in the purchase order or contract, a report of the test results shall be furnished. The certification shall include the specification number, year-date of issue and revision letter, if any.

15.2 A Material Test Report, Certificate of Inspection, or similar document printed from or used in electronic form from an electronic data interchange (EDI) transmission shall be regarded as having the same validity as a counterpart printed in the certifier's facility. The content of the EDI transmitted document must meet the requirements of the invoked ASTM standard(s) and conform to any existing EDI agreement between the purchaser and the supplier. Notwithstanding the absence of a signature, the organization submitting the EDI transmission is responsible for the content of the report.

NOTE 2—The industry definition as invoked here is: EDI is the computer-to-computer exchange of business information in a standard format such as ANSI ASC X12.

16. Packaging and Marking

16.1 The size of the wire, ASTM designation, and name or mark of the manufacturer shall be marked on a tag securely attached to each coil of wire.

16.2 Unless otherwise specified, packaging, marking, and loading for shipment shall be in accordance with Practices A 700.

16.3 When specified in the contract or order, and for direct procurement by or direct shipment to the U.S. government, when Level A is specified, preservation, packaging, and packing shall be in accordance with the Level A requirement of MIL-STD-163.

16.4 When specified in the contract or order, and for the direct procurement by or direct shipment to the U.S. government, marking for shipment, in addition to requirements specified in the contract or order, shall be in accordance with MIL-STD-129 for U.S. military agencies and in accordance with Fed. Std. No. 123 or U.S. government civil agencies.

17. Keywords

17.1 concrete reinforcement; deformations (indentations); steel wire

SUPPLEMENTARY REQUIREMENTS

S1. High-Strength Wire

S1.1 *Scope:*

S1.1.1 This supplement delineates only those details that are relative to high-strength wire and to the mechanical requirements for wire having properties generally as described in this specification.

NOTE S1.1—Building codes, for example, ACI 318 permit the use of reinforcement with a yield strength up to 550 MPa (80 000 psi). For compatibility with the codes' design provisions for high-strength reinforcement, this supplement prescribes requirements for the mechanical properties of wire that exceed the minimum values for yield strength and tensile strength in Table 3 and Table 4 of this specification

S1.2 *Mechanical Property Requirements:*

S1.2.1 Minimum yield strength shall be specified in the purchase order in increments of 17.5 MPa (2500 psi). When tested the yield strength shall be determined at an extension under load of 0.35 %.

NOTE S1.2—To conform to the limit on yield strength in building codes, the minimum yield strength specified in the purchase order should not be greater than 80 000 psi (55 MPa).

S1.2.2 Minimum tensile strength shall be 70 MPa (10 000 psi) greater than the minimum specified yield strength.

NOTE S1.3—A typical order entry line for minimum yield strength is, "72 500 psi minimum yield strength" or "500 MPa minimum yield strength."

S1.3 *Certification:*

S1.3.1 Certification for material produced to this supplement shall include a report of the test results for yield strength, tensile strength, and bend tests. Frequency of testing shall conform to Section 12 of this specification and Section 12 of Specification A 497 as applicable.

SUMMARY OF CHANGES

Committee A01 has identified the location of the following changes to this standard since A 496–01 that may impact the use of this standard.

(1) Added Section 15.2 and Note 2.

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