



Designation: A496/A496M – 07

Standard Specification for Steel Wire, Deformed, for Concrete Reinforcement¹

This standard is issued under the fixed designation A496/A496M; 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 mm² [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 manufacturer.

1.3 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard. (The inch-pound units are shown in brackets except in Table 1).

2. Referenced Documents

2.1 ASTM Standards:²

A370 Test Methods and Definitions for Mechanical Testing of Steel Products

A497/A497M Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete

A700 Practices for Packaging, Marking, and Loading Methods for Steel Products for Shipment

E83 Practice for Verification and Classification of Extensometer Systems

2.2 Military Standards:³

MIL-STD-129 Marking for Shipment and Storage

2.3 Federal Standard:³

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

2.4 ACI Standard:⁴

ACI 318 Building Code Requirements for Structural Concrete

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 or 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 square millimeters [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 mass per meter [weight per foot] of the section.

4.2 It shall be the responsibility of the purchaser to specify all requirements that are necessary for the manufacture and delivery of the wire under this specification. Such requirements to be considered include, but are not limited to, the following:

4.2.1 Quantity (mass [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 Yield strength measurement (see 8 and 13.3),

4.2.5 Packaging (see Section 17), and

¹ This specification is under the jurisdiction of ASTM A01 on Steel, Stainless Steel and Related Alloys and is the direct responsibility of A01.05 on Steel Reinforcement.

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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.

³ Available from Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098, http://www.dodssp.daps.mil.

⁴ Available from American Concrete Institute (ACI), P.O. Box 9094, Farmington Hills, MI 48333-9094, http://www.aci-int.org.

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



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

Deformed Wire Size ^{A,B,C}	Nominal Dimensions			Deformation Requirements										
	[D in ²] [x 100]	Unit Wt.	Diameter ^D	Cross-Sectional Area ^{2E}		Perimeter		Spacing, Maximum		Spacing, Minimum		Min. Avg. Height of Deformations		
				mm ²	[in. ²]	mm	[in.]	mm	[in.]	mm	[in.]	mm ^F	[in.]	
MD 25	[D 3.9]	0.196	5.64	[0.222]	25	[0.039]	17.7	[0.698]	7.24	[0.285]	4.62	[0.182]	0.252	[0.010]
MD 30	[D 4.7]	0.235	6.18	[0.243]	30	[0.047]	19.4	[0.764]	7.24	[0.285]	4.62	[0.182]	0.279	[0.011]
MD 35	[D 5.4]	0.275	6.68	[0.263]	35	[0.054]	21.0	[0.826]	7.24	[0.285]	4.62	[0.182]	0.302	[0.012]
MD 40	[D 6.2]	0.314	7.14	[0.281]	40	[0.062]	22.4	[0.883]	7.24	[0.285]	4.62	[0.182]	0.320	[0.013]
MD 45	[D 7.0]	0.353	7.57	[0.298]	45	[0.070]	23.8	[0.936]	7.24	[0.285]	4.62	[0.182]	0.342	[0.014]
MD 50	[D 7.8]	0.392	7.98	[0.314]	50	[0.078]	25.1	[0.987]	7.24	[0.285]	4.62	[0.182]	0.360	[0.014]
MD 55	[D 8.5]	0.432	8.37	[0.329]	55	[0.085]	26.3	[1.04]	7.24	[0.285]	4.62	[0.182]	0.378	[0.015]
MD 60	[D 9.3]	0.471	8.74	[0.346]	60	[0.093]	27.5	[1.08]	7.24	[0.285]	4.62	[0.182]	0.392	[0.015]
MD 65	[D 10.1]	0.510	9.10	[0.358]	65	[0.101]	28.6	[1.13]	7.24	[0.285]	4.62	[0.182]	0.455	[0.018]
MD 70	[D 10.9]	0.549	9.44	[0.369]	70	[0.109]	29.7	[1.17]	7.24	[0.285]	4.62	[0.182]	0.470	[0.018]
MD 80	[D 12.4]	0.628	10.1	[0.397]	80	[0.124]	31.7	[1.25]	7.24	[0.285]	4.62	[0.182]	0.505	[0.020]
MD 90	[D 14.0]	0.706	10.7	[0.421]	90	[0.140]	33.6	[1.32]	7.24	[0.285]	4.62	[0.182]	0.535	[0.021]
MD 100	[D 15.5]	0.785	11.3	[0.444]	100	[0.155]	35.4	[1.40]	7.24	[0.285]	4.62	[0.182]	0.565	[0.022]
MD 120	[D 18.6]	0.942	12.4	[0.487]	120	[0.186]	38.8	[1.53]	7.24	[0.285]	4.62	[0.182]	0.620	[0.024]
MD 130	[D 20.2]	1.02	12.9	[0.686]	130	[0.202]	40.4	[1.59]	7.24	[0.285]	4.62	[0.182]	0.645	[0.025]
MD 200	[D 31.0]	1.57	16.0	[0.628]	200	[0.310]	50.1	[1.97]	7.24	[0.285]	4.62	[0.182]	0.800	[0.031]
MD 290	[D 45.0]	2.28	19.2	[0.757]	290	[0.450]	60.4	[2.38]	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-mm² [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 [inches] is calculated by dividing the unit mass [weight] in kg/mm [lbs./in.] by 7x10⁻⁶ (mass of 1 mm³ of steel [0.2833 weight of 1 in.³ of steel]) or by dividing the unit mass [weight] in kg/m [lbs./ft.] by 0.007849 (mass of steel 1 mm square and 1 m long) [3.4 (weight of steel 1 in. square and 1 ft. long)].

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