



Designation: A955/A955M – 12

Standard Specification for Deformed and Plain Stainless-Steel Bars for Concrete Reinforcement¹

This standard is issued under the fixed designation A955/A955M; 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.

1. Scope*

1.1 This specification covers deformed and plain stainless-steel bars for concrete reinforcement in cut lengths and coils used in applications requiring resistance to corrosion or controlled magnetic permeability. The standard sizes and dimensions of deformed bars and their numerical designation shall be those listed in **Table 1**. The text of this specification references notes and footnotes which provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of the specification.

1.1.1 Supplementary requirement (S1) of an optional nature is provided. It shall apply only when specified by the purchaser. In order to obtain a controlled magnetic permeability product, steel conforming to Supplementary Requirement S1 should be ordered.

1.2 The chemical composition of the stainless steel alloy shall be selected for suitability to the application involved by agreement between the manufacturer and the purchaser. This is an important consideration in achieving the desired corrosion resistance or controlled magnetic permeability, or both, because these properties are not provided by all stainless steels.

NOTE 1—The alloys shown in **Table 2** have found the most use in North America. Other alloys may also provide desired properties; consult with the manufacturer for stainless steel alloy properties and availability.

1.3 Requirements for the relative deformation area of three-sided deformed bars are contained in **Annex A4**.

1.4 Bars are of two minimum yield strength levels, namely, 60 000 [420 MPa] and 75 000 psi [520 MPa], designated as Grade 60 [420] and Grade 75 [520], respectively.

1.5 Plain bars in sizes up to and including 2 in. [50.8 mm] in diameter in coils or cut lengths, when ordered, shall be furnished under this specification in Grade 60 [420] and Grade 75 [520], respectively. Bending properties, when required, shall be by agreement between the manufacturer and purchaser.

Requirements providing for deformations and marking shall not be applicable to plain bars.

1.6 Weldability of most stainless steel compositions is generally good, however, pre-weld or post-weld procedures, or both, are necessary. Where material is to be welded, a welding procedure suitable for the chemical composition and intended use or service shall be used. Retesting of physical properties should be considered following welding procedures depending upon the steel composition and welding operation involved.

NOTE 2—It is recommended that the user consult the manufacturer for information available from the Nickel Development Institute (NIDI) (Toronto, Canada).

1.7 This specification is applicable for orders in either inch-pound units (as Specification A955) or in SI units (as Specification A955M).

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

1.9 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

A6/A6M Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling
A276 Specification for Stainless Steel Bars and Shapes
A342/A342M Test Methods for Permeability of Feebly Magnetic Materials
A370 Test Methods and Definitions for Mechanical Testing of Steel Products

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.

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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 Deformed Bar Designation Numbers, Nominal Weights [Masses], Nominal Dimensions, and Deformation Requirements

Bar Designation No.	Nominal Weight, lb/ft [Nominal Mass, kg/m] ^A		Nominal Dimensions ^B			Deformation Requirements, in. [mm]			
	400 Series; Duplex Alloys	300 Series	Diameter, in. [mm]	Cross-Sectional Area, in. ² [mm ²]	Perimeter, in. [mm]	Maximum Average Spacing	Minimum Average Height	Maximum Gap per Side ^C	
								Two-Sided Bar	Three-Sided Bar
3 [10]	0.374 [0.556]	0.378 [0.562]	0.375 [9.5]	0.11 [71]	1.178 [29.9]	0.262 [6.7]	0.015 [0.38]	0.143 [3.6]	0.097 [2.5]
4 [13]	0.679 [1.011]	0.686 [1.021]	0.500 [12.7]	0.20 [129]	1.571 [39.9]	0.350 [8.9]	0.020 [0.51]	0.191 [4.9]	0.129 [3.3]
5 [16]	1.048 [1.559]	1.058 [1.575]	0.625 [15.9]	0.31 [199]	1.963 [49.9]	0.437 [11.1]	0.028 [0.71]	0.239 [6.1]	0.162 [4.1]
6 [19]	1.495 [2.225]	1.511 [2.248]	0.750 [19.1]	0.44 [284]	2.356 [59.8]	0.525 [13.3]	0.038 [0.97]	0.286 [7.3]	0.194 [4.9]
7 [22]	2.038 [3.032]	2.059 [3.064]	0.875 [22.2]	0.60 [367]	2.749 [69.8]	0.612 [15.5]	0.044 [1.12]	0.334 [8.5]	0.226 [5.8]
8 [25]	2.685 [3.995]	2.713 [4.037]	1.000 [25.4]	0.79 [510]	3.142 [79.8]	0.700 [17.8]	0.050 [1.27]	0.383 [9.7]	0.259 [6.6]
9 [29]	3.396 [5.053]	3.441 [5.106]	1.128 [28.7]	1.00 [645]	3.544 [90.0]	0.790 [20.1]	0.056 [1.42]	0.431 [10.9]	0.292 [7.4]
10 [32]	4.312 [6.416]	4.358 [6.484]	1.270 [32.3]	1.27 [819]	3.990 [101.3]	0.889 [22.6]	0.064 [1.63]	0.487 [12.4]	0.329 [8.3]
11 [36]	5.296 [7.880]	5.352 [7.964]	1.410 [35.8]	1.56 [1006]	4.430 [112.5]	0.987 [25.1]	0.071 [1.80]	0.540 [13.7]	0.365 [9.3]
14 [43]	7.64 [11.37]	7.72 [11.49]	1.693 [43.0]	2.25 [1452]	5.32 [135.1]	1.185 [30.1]	0.085 [2.16]	0.648 [16.5]	0.438 [11.1]
18 [57]	13.59 [20.22]	13.72 [20.43]	2.257 [57.3]	4.00 [2581]	7.09 [180.1]	1.58 [40.1]	0.102 [2.59]	0.864 [21.9]	0.584 [14.8]

^A The 400 and Duplex-Alloy Series is based on a density of 489.59 lb/ft³ [7833.4 kg/m³]. The 300 Series is based on a density of 494.78 lb/ft³ [7916.5 kg/m³]. Density varies with alloy content which may result in a variation of several percent.

^B The nominal dimensions of a deformed bar are equivalent to those of a round bar having the same weight [mass] per foot [metre] as the deformed bar.

^C The maximum gap (measured as a chord) between the ends of the deformations shall not exceed 25 %/n of the nominal perimeter of the bar, where n is the number of longitudinal gaps or longitudinal ribs around the perimeter of the bar.