Designation: A 793 – 96 (Reapproved 2001)

Standard Specification for Rolled Floor Plate, Stainless Steel[1]

This standard is issued under the fixed designation A 793; 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 stainless steel floor plates ½ in. and under for use in galley spaces, washrooms, engine rooms, and machinery spaces, and for ladder treads, gun platforms, and deck treads. For these uses, Patterns A, B, and C are considered interchangeable (see Fig. 1, Fig. 2, and Fig. 3).

1.2 The values stated in inch-pound units are to be regarded as the standard.

2. Referenced Documents

2.1 *ASTM Standards:*

A 340 Terminology of Symbols and Definitions Relating to Magnetic Testing[2]

A 370 Test Methods and Definitions for Mechanical Testing of Steel Products[3]

A 480/A 480M Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip[3]

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

2.2 *Military Standards:*

MIL-I-17214 Indicator, Permeability; Low Mu (Go-NoGo)[5]

MIL-STD-163 Preservation of Steel Products for Domestic Shipment (Storage and Overseas Shipment)[5]

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—number of pieces,

3.1.2 Dimensions (thickness, width, and length, see Table 1),

3.1.3 Name of material (stainless steel floor plate),

3.1.4 Grade (see Table 2),

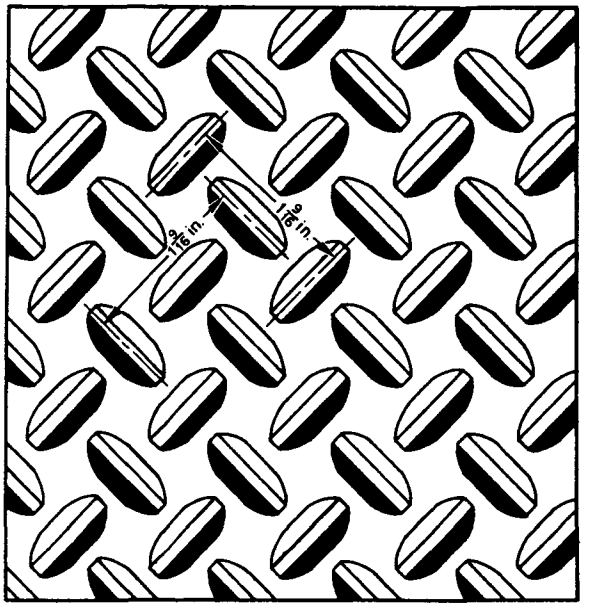

FIG. 1 Pattern A (percent of reduction, 61 %)

3.1.5 Flat back or hollow back (See Table 1),

3.1.6 Surface finish (see Specification A 480/A 480M),

3.1.7 Special requirements, such as magnetic permeability test (see 6.3),

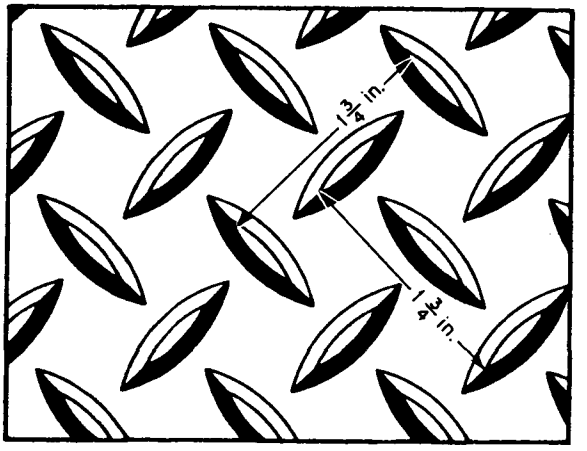

FIG. 2 Pattern B (original of raised figures approximately 1¼ in., percent of reduction 61 %)

[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] *Annual Book of ASTM Standards*, Vol 03.04.

[3] *Annual Book of ASTM Standards*, Vol 01.03.

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

[5] Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

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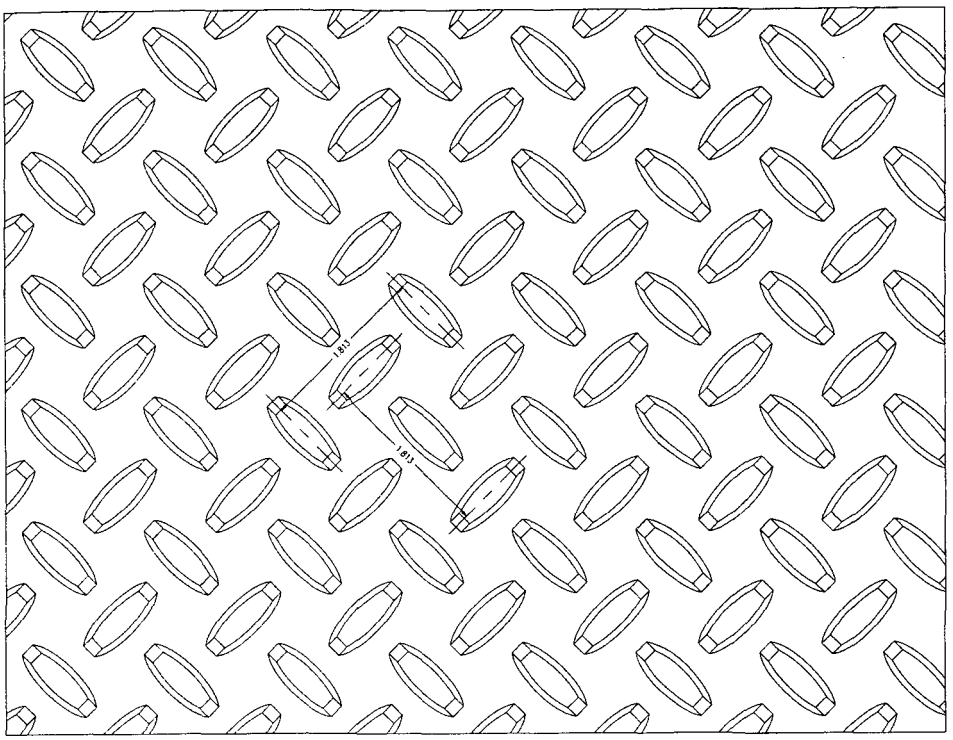

FIG. 3 Pattern C

TABLE 1 Dimensions, Weights, and Special Characteristics of Patterns A, B, and C

Thickness of Plate at Base of Raised Figure (Nominal), in. (mm)	Thickness of Plate at Base of Raised Figure, min, in. (mm)	Hollow Back		Flat Back	
		Weight (Approximate), lb/ft^2(kg/m^2)[A]	Height of Raised Figures, min, in. (mm)	Weight (Approximate), lb/ft^2(kg/m^2)[A]	Height of Raised Figures, min, in. (mm)
0.025 (0.64)	0.015 (0.38)	1.10 (5.37)	0.025 (0.64)	...	...
0.03125 (0.79)	0.02125 (0.54)	1.40 (6.84)	0.025 (0.64)	...	...
0.0375 (0.95)	0.027 (0.69)	1.65 (5.69)	0.025 (0.64)	...	...
0.05 (1.27)	0.039 (0.99)	2.30 (11.23)	0.035 (0.89)	...	...
0.0625 (1.59)	0.051 (1.30)	2.90 (14.16)	0.035 (0.89)	...	...
0.078 (1.98)	0.063 (1.60)	3.50 (17.09)	0.035 (0.89)	...	...
0.09375 (2.38)	0.079 (2.01)	3.938 (19.23)	0.035 (0.89)	4.875 (23.80)	0.035 (0.89)
0.109 (2.77)	0.096 (2.44)	4.59 (22.41)	0.030 (0.76)	5.50 (26.85)	0.045 (1.14)
0.125 (3.18)	0.110 (2.79)	5.25 (25.64)	0.030 (0.76)	6.125 (23.90)	0.055 (1.40)
0.140 (3.56)	0.126 (3.20)	...	...	6.75 (32.96)	0.055 (1.40)
0.156 (3.96)	0.141 (3.58)	...	...	7.375 (36.01)	0.055 (1.40)
0.172 (4.37)	0.157 (3.99)	...	...	8.000 (39.06)	0.055 (1.40)
0.1875 (4.76)	0.173 (4.39)	...	...	8.625 (42.11)	0.060 (1.52)
0.203 (5.16)	0.189 (4.80)	...	...	9.25 (45.16)	0.060 (1.52)
0.218 (5.54)	0.204 (5.18)	...	...	9.875 (48.21)	0.060 (1.52)
0.234 (5.94)	0.219 (5.56)	...	...	10.50 (51.27)	0.060 (1.52)
0.250 (6.35)	0.235 (5.97)	...	...	11.125 (54.32)	0.060 (1.52)

[A] Approximate weights are shown for estimating convenience.

TABLE 2 Heat Chemical Composition, %

Type	UNS Designation	C, max	Mn, max	P, max	S, max	Si, max	N, max	Ni	Cr	Mo
304	S30400	0.08	2.00	0.045	0.030	0.75	0.10	8.00–10.50	18.00–20.00	...
304L	S30403	0.030	2.00	0.045	0.030	0.75	0.10	8.00–12.00	18.00–20.00	...
316	S31600	0.08	2.00	0.045	0.030	0.75	0.10	10.00–14.00	16.00–18.00	2.00–3.00
316L	S31603	0.030	2.00	0.045	0.030	0.75	0.10	10.00–14.00	16.00–18.00	2.00–3.00

3.1.8 ASTM designation and date of issue,

3.1.9 Preparation for delivery, if different from Specification A 480/A 480M, and

3.1.10 Marking requirements, if different from Specification A 480/A 480M.

NOTE 1—A typical ordering description is as follows: 100 pieces, stainless steel floor plates, 0.1875 by 60 by 120 in., Type 304 (S30400), ASTM 793 – XX.

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4. Materials and Manufacture

4.1 The steel floor plate material shall conform to the requirements of one of the grades listed in Table 2.

4.2 Annealing shall be the last heat treatment to which the material is subjected by the manufacturer.

4.3 The stainless steel floor plate shall be of the following patterns, at the option of the manufacturer:

4.3.1 *Pattern A*—Angular (see Fig. 1).

4.3.2 *Pattern B*—Angular (see Fig. 2).

4.3.3 *Pattern C*—Angular (see Fig. 3).

5. Chemical Composition

5.1 The heat chemical composition shall be reported to the purchaser, or his representative, and shall conform to the requirements for the specified grade as listed in Table 2.

5.2 For the purpose of chemical analysis, a lot shall consist of all floor plates and sheets made from the same heat. In case the material cannot be identified by melt or heat, a lot shall consist of not more than 25 tons (22.7 Mg) of floor plates and sheets offered for delivery at the same time.

5.3 One sample of suitable size shall be selected from each lot identified by heat. When the material cannot be identified by melt or heat, five separate samples from each lot shall be selected. Samples may be taken from bend test specimens representative of the lot. The chemical compositions thus determined shall conform to the expanded tolerances for product analysis shown in Table 2 of Specification A 480/A 480M. If any sample fails to conform, this shall be cause for rejection of the lot represented by the sample.

6. Mechanical Properties

6.1 *Lot Size*—A lot shall consist of all floor plates of the same thickness made from the same heat. In case the material cannot be identified by melt, a lot shall consist of not more than 25 tons (22.7 Mg) of floor plates of the same thickness.

6.2 *Bend Test*:

6.2.1 From each lot, two longitudinal cold bend test specimens, 18 in. long by 2 in. wide (457 by 51 mm), shall be selected. When a lot cannot be identified by melt, five longitudinal cold bend test specimens, 18 in. long by 2 in. wide, shall be selected. Each of the specimens shall be taken from a different plate.

6.2.2 The specimens shall be bent cold, with the figures in the inside of the bend test specimens, through an angle of 180° flat on itself. The raised figures shall not be removed and the material shall not fracture nor develop cracks or flaws when subjected to the cold bend test. In the case of failure of any of the bend test specimens to conform, this shall be cause for rejection of the lot represented by the sample (see Test Methods and Definitions A 370).

6.3 *Magnetic Permeability Test*:

6.3.1 When magnetic permeability is specified, a lot shall consist of all floor plates of the same thickness made from the same melt. In case the material cannot be identified by melt, a lot shall consist of not more than 25 tons (22.7 Mg) of floor plates of the same thickness.

6.3.2 Specimen for magnetic permeability test shall be a minimum of 1 3/16 in. wide by 2 in. by not more than ½ in. thick (30 by 50 by 13 mm). The samples shall be large enough that any cold work induced by cutting the sample from the master plate shall not affect the magnetic permeability test. The sample shall be tested in the as mill annealed condition.

6.3.3 The magnetic permeability shall not exceed 1.20 when the magnetic permeability indicator of MIL-I-17214 is used. In case of failure of the specimen to comply, this shall be cause for rejection of the lot represented by the sample (see Terminology A 340).

7. Permissible Variations in Dimensions

7.1 Dimensions, weights, and special characteristics of Patterns A, B, and C shall be as specified in Table 1. The stainless steel floor plates shall have raised figures on one surface of the floor plate. The reverse side shall be flat, except that the portion below the raised figure on plates having a nominal weight below 5.25 lb/ft^2(25.5 kg/m^2) may be hollow.

7.2 Plates shall not exceed the respective weight specified in Table 1 by more than 8 %.

7.3 Variations over the specified width and length shall not exceed the amounts permitted in Table 3. Variations under the specified width and length shall not exceed ¼ in. (6.3 mm).

7.4 The thickness of the floor plates shall conform to the requirements of Table 1 and shall be measured at least ⅜ in. (9.5 mm) from the edge of the plate exclusive of the raised figures.

7.5 *Camber Tolerances*—The camber tolerance for like raised figures of rolled floor plates shall be determined by the following equation:

$$\text{Camber tolerance, in.} = \frac{3/8 \times \text{number of feet of length}}{5}$$

NOTE 2—Length shall be taken as the direction along which the camber is to be measured.

7.6 Floor plates of stainless steel shall have figures not less than ⅝ in. (15.9 mm) nor more than 1½ in. (38.1 mm) long at the base. The figures shall have a uniform pitch from center to center as indicated by the dimensions shown in Fig. 1 and Fig. 2. A variation of ±1/32 in. (0.8 mm) will be permitted. Angular pattern plates and sheets shall have the figures arranged so that they are in an angular position from a vertical or horizontal

TABLE 3 Permissible Variations over Specified Width and Length of Regular Sheared Plates, in. (mm)

NOTE 1—Any other ordered thickness may be subject to agreement between purchaser and seller.

Specified Dimensions		Variations over Specified Width and Length for Given Width, Length, and Thickness			
		Thickness Under ⅜		Thickness ⅜ to ½, incl	
Width	Length	Width	Length	Width	Length
48 (1219) and under	240 (6096) and under	⅛ (3.2)	3/16 (4.8)	3/16 (4.8)	¼ (6.4)
Over 48 to 60 (1219 to 1524), incl	240 (6096) and under	3/16 (4.8)	¼ (6.4)	¼ (6.4)	5/16 (7.9)

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line. Plates shall have a raised figure, and raised portion of the plates shall cover at least 30 % of the total surface of one side of the plate. (Fig. 1 and Fig. 2 approximate actual horizontal dimensions and show the plates acceptable as to pattern of raised figures.)

8. Workmanship

8.1 Floor plates of stainless steel shall be uniform in quality and condition, free of injurious defects, that, due to their nature or severity, may detrimentally affect the suitability for the service intended.

8.2 Floor plates shall be sheared on a line of approximately 45° to the axis of the figures and located so far as practicable in such position as to cut through the minimum amount of raised figure.

9. General Requirements for Delivery

9.1 Material furnished under this specification shall conform to applicable requirements of the current edition of Specification A 480/A 480M.

10. Inspection

10.1 Inspection of the material by the purchaser's representative at the producing plant shall be made as agreed upon between the purchaser and the seller as part of the purchase order.

11. Packaging, Marking, and Loading

11.1 Unless otherwise specified, packaging, marking, and loading shall be in accordance with those procedures recommended by Practices A 700.

11.2 *For Government Procurement*—When specified in the contract or order, marking or preparation for shipment shall be in accordance with MIL-STD-163.

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