

Tolerances
Corrosion and Heat Resistant Steel, Iron Alloy,
Titanium, and Titanium Alloy Sheet, Strip, and Plate

1. SCOPE:

This specification covers established manufacturing tolerances applicable to sheet, strip, and plate of corrosion and heat resistant steels, iron alloys, titanium, and titanium alloys ordered to inch dimensions. These tolerances apply to all conditions, unless otherwise noted. The term "excl" is used to apply only to the higher figure of the specified range.

1.1 MAM 2242 is the metric version of this AMS.**2. THICKNESS:**

Thickness for sheet and strip is measured at any place on widths less than 1 inch, at any place 0.375 inch and over from an edge on widths 1 inch and over, and for plate at least 0.375 inch but not over 3 inches from an edge.

2.1 Sheet:

Table 1 includes crown tolerances.

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TABLE 1

Specified Thickness Inch	Thickness Tolerance, Inch Plus and Minus For Width Ranges Shown Inches	Thickness Tolerance, Inch Plus and Minus For Width Ranges Shown Inches
	24 to 48, incl	Over 48
0.005	0.001	--
Over 0.005 to 0.007, incl	0.0015	--
Over 0.007 to 0.016, incl	0.002	--
Over 0.016 to 0.026, incl	0.003	0.003
Over 0.026 to 0.040, incl	0.004	0.004
Over 0.040 to 0.058, incl	0.004	0.005
Over 0.058 to 0.072, incl	0.005	0.006
Over 0.072 to 0.083, incl	0.005	0.007
Over 0.083 to 0.098, incl	0.006	0.008
Over 0.098 to 0.114, incl	0.007	0.009
Over 0.114 to 0.130, incl	0.008	0.010
Over 0.130 to 0.145, incl	0.010	0.012
Over 0.145 to 0.1875, excl	0.012	0.014

2.2 Strip:

Table 2 includes crown tolerances.

TABLE 2

Specified Thickness Inch	Thickness Tolerance Inch Plus and Minus For Width Ranges Shown		Thickness Tolerance Inch Plus and Minus For Width Ranges Shown		Thickness Tolerance Inch Plus and Minus For Width Ranges Shown	
	Inches 3/16 to 6, incl		Inches Over 6 to 12, incl		Inches Over 12 to 24 excl	
0.005 to 0.010, incl	0.10T		0.10T		0.10T	
Over 0.010 to 0.011, incl	0.0015		0.0015		0.0015	
Over 0.011 to 0.013, incl	0.0015		0.0015		0.002	
Over 0.013 to 0.017, incl	0.0015		0.002		0.002	
Over 0.017 to 0.020, incl	0.0015		0.002		0.0025	
Over 0.020 to 0.029, incl	0.002		0.0025		0.0025	
Over 0.029 to 0.035, incl	0.002		0.003		0.003	
Over 0.035 to 0.050, incl	0.0025		0.0035		0.0035	
Over 0.050 to 0.069, incl	0.003		0.0035		0.0035	
Over 0.069 to 0.100, incl	0.003		0.004		0.005	
Over 0.100 to 0.125, incl	0.004		0.0045		0.005	
Over 0.125 to 0.161, incl	0.0045		0.0045		0.005	
Over 0.161 to 0.1875, excl	0.005		0.005		0.006	

2.3 Plate:

Minus tolerances shall be 0.010 inch for all widths for all thicknesses up to 10.000 inches, inclusive, in all alloys; plus tolerances shall be as in Table 3. For circles, the plus thickness tolerances in Table 3 apply to the diameter of the circle corresponding to the width ranges shown. For plates of irregular shape, the plus thickness tolerances apply to the greatest width corresponding to the width ranges shown.

TABLE 3

Specified Thickness Inches	Thickness Tolerance, Inch, Plus For Width Ranges Shown Inches Over 10 to 84, incl	Thickness Tolerance, Inch, Plus For Width Ranges Shown Inches Over 84 to 120, incl	Thickness Tolerance, Inch, Plus For Width Ranges Shown Inches Over 120 to 144, incl	Thickness Tolerance, Inch, Plus For Width Ranges Shown Inches Over 144
0.1875 to 0.375, excl	0.045	0.050	--	--
0.375 to 0.750, excl	0.055	0.060	0.075	0.090
0.750 to 1.000, excl	0.060	0.065	0.085	0.100
1.000 to 2.000, excl	0.070	0.075	0.095	0.115
2.000 to 3.000, excl	0.125	0.150	0.175	0.200
3.000 to 4.000, excl	0.175	0.210	0.245	0.280
4.000 to 6.000, excl	0.250	0.300	0.350	0.400
6.000 to 8.000, excl	0.350	0.420	0.490	0.560
8.000 to 10.000, incl	0.450	0.540	0.630	--

3. WIDTH:

3.1 Sheet:

3.1.1 Stretcher Levelled, Resquared:

TABLE 4

Specified Thickness Inch	Width Tolerance Inch, Plus Only For Width Ranges Shown Inches 24 to 48, excl	Width Tolerance Inch, Plus Only For Width Ranges Shown Inches 48 and Over
Up to 0.131, excl	1/16	1/8
0.131 to 0.150, incl	1/8	1/8
Over 0.150 to 0.170, incl	3/16	3/16
Over 0.170 to 0.1875, excl	1/4	1/4

3.1.2 Not Resquared, Flat or in Coils:

TABLE 5

Specified Width Inches	Width Tolerance, Inch Plus Only
24 to 48, excl	1/16
48 and over	1/8

3.2 Strip:

3.2.1 Rolled Edge or Approximately Square Edge Produced by Rolling or Filing After Slitting:

TABLE 6

Specified Width Inches	Specified Thickness Inch	Width Tolerance, Inch Plus and Minus
Up to 0.28125, incl	Up to 0.0625, incl	0.005
Over 0.28125 to 0.750, incl	Up to 0.09375, incl	0.005
Over 0.750 to 5.000, incl	Up to 0.125, incl	0.005
Over 5.000 to 9.000, incl	0.008 to 0.125, incl	0.010
Over 9.000 to 20.000, incl	0.015 to 0.105, incl	0.010
Over 20.000	0.023 to 0.080, incl	0.015

3.2.2 Slit Edge:

TABLE 7

Specified Width Inches	Width Tolerance, Inch Plus and Minus For Thickness Ranges Shown Inch Up to 0.068, incl	Width Tolerance, Inch Plus and Minus For Thickness Ranges Shown Inch Over 0.068 to 0.099, incl	Width Tolerance, Inch Plus and Minus For Thickness Ranges Shown Inch Over 0.099 to 0.160, incl	Width Tolerance, Inch Plus and Minus For Thickness Ranges Shown Inch Over 0.160 to 0.1875, excl
0.1875 to 0.500, incl	0.005	0.008	0.010	--
Over 0.500 to 6.000, incl	0.005	0.008	0.010	0.016
Over 6.000 to 9.000, incl	0.005	0.010	0.016	0.020
Over 9.000 to 12.000, incl	0.010	0.010	0.016	0.020
Over 12.000 to 20.000, incl	0.016	0.016	0.020	0.031
Over 20.000 to 24.000, incl	0.020	0.020	0.020	0.031

3.3 Plate:

Minus tolerance shall be 1/4 inch for all widths and lengths in all thicknesses up to 1.000 inch, inclusive; plus tolerances shall be as shown in Table 8.

TABLE 8

Specified Width Inches		Specified Length Inches	Width Tolerance, Inches Plus For Thickness Ranges Shown	Width Tolerance, Inches Plus For Thickness Ranges Shown	Width Tolerance, Inches Plus For Thickness Ranges Shown
			Inch 3/16 to 3/8 excl	Inch 3/8 to 1/2, incl	Inch Over 1/2 to 1, incl
Over 10 to 48,	incl	Up to	1/8	3/16	5/16
Over 48 to 60,	incl	144	3/16	1/4	3/8
Over 60 to 84,	incl	incl	1/4	5/16	7/16
Over 84 to 108,	incl		5/16	3/8	1/2
Over 108			3/8	7/16	5/8
Over 10 to 48,	incl	Over	3/16	1/4	5/16
Over 48 to 60,	incl	144 to	1/4	5/16	3/8
Over 60 to 84,	incl	240	3/8	7/16	1/2
Over 84 to 108,	incl	incl	7/16	1/2	5/8
Over 108			1/2	5/8	11/16
Over 10 to 48,	incl	Over	1/4	5/16	3/8
Over 48 to 60,	incl	240 to	5/16	3/8	1/2
Over 60 to 84,	incl	360	7/16	1/2	5/8
Over 84 to 108,	incl	incl	9/16	5/8	3/4
Over 108			5/8	11/16	7/8
Over 10 to 60,	incl	Over	7/16	1/2	5/8
Over 60 to 84,	incl	360	1/2	5/8	3/4
Over 84 to 108,	incl	480,	9/16	3/4	7/8
Over 108		incl	3/4	7/8	1
Over 10 to 60,	incl	Over	7/16	1/2	5/8
Over 60 to 84,	incl	480 to	1/2	5/8	3/4
Over 84 to 108,	incl	600,	5/8	3/4	7/8
Over 108		incl	3/4	7/8	1
Over 10 to 60,	incl	Over	1/2	5/8	3/4
Over 60 to 108,	incl	600	5/8	3/4	7/8
Over 108			7/8	1	1-1/8

4. LENGTH:

4.1 Sheet:

4.1.1 Stretcher Leveled, Resquared:

TABLE 9

Specified Thickness Inch	Specified Length Inches	Length Tolerance Inch Plus Only
Up to 0.131, incl	Up to 120, excl	1/16
Up to 0.131, excl	120 and over	1/8
0.131 to 0.150, incl	All	1/8
Over 0.150 to 0.170, incl	All	3/16
Over 0.170 to 0.1875, excl	All	1/4

4.1.2 Not Resquared:

TABLE 10

Specified Length Inches	Length Tolerance, Inch Plus Only
Up to 120, incl	1/4
Over 120 to 240, incl	1/2

4.2 Strip:

TABLE 11

Specified Length Inches	Length Tolerance, Inch Plus Only
Up to 60, incl	3/8
Over 60 to 120, incl	1/2
Over 120 to 240, incl	5/8

4.3 Plate:

Minus tolerances shall be 1/4 inch for all lengths and widths in all thicknesses up to 1 inch, inclusive; plus tolerances shall be as shown in Table 12.

TABLE 12

Specified Width Inches		Specified Length Inches	Length Tolerance, Inches Plus For Thickness Ranges Shown Inch 3/16 to 3/8 excl	Length Tolerance, Inches Plus For Thickness Ranges Shown Inch 3/8 to 1/2, incl	Length Tolerance, Inches Plus For Thickness Ranges Shown Inch Over 1/2 to 1, incl
Over 10 to 48, incl	Up to 144, incl		3/16	1/4	3/8
Over 48 to 60, incl			1/4	5/16	7/16
Over 60 to 84, incl			5/16	3/8	1/2
Over 84 to 108, incl			3/8	7/16	9/16
Over 108			7/16	1/2	11/16
Over 10 to 48, incl	Over 144 to 240, incl		3/8	1/2	5/8
Over 48 to 60, incl			7/16	5/8	3/4
Over 60 to 84, incl			1/2	11/16	3/4
Over 84 to 108, incl			9/16	3/4	7/8
Over 108			5/8	7/8	1
Over 10 to 48, incl	Over 240 to 360, incl		1/2	5/8	3/4
Over 48 to 60, incl			5/8	3/4	3/4
Over 60 to 84, incl			11/16	3/4	7/8
Over 84 to 108, incl			3/4	7/8	1
Over 108			7/8	1	1
Over 10 to 60, incl	Over 360 to 480, incl		1-1/8	1-1/4	1-3/8
Over 60 to 108, incl			1-1/4	1-3/8	1-1/2
Over 108			1-3/8	1-1/2	1-5/8
Over 10 to 60, incl	Over 480 to 600, incl		1-1/4	1-1/2	1-5/8
Over 60 to 108, incl			1-3/8	1-1/2	1-5/8
Over 108			1-1/2	1-5/8	1-3/4
Over 10 to 108, incl	Over 600		1-3/4	1-7/8	1-7/8
Over 108			1-3/4	2	2-1/4

5. STRAIGHTNESS:

5.1 Sheet and Strip:

TABLE 13

Specified Width Inches	Camber Tolerance, Inch, in Any 8 ft of Length
Up to 1.500, incl	1/2
Over 1.500 to 24.000, excl	1/4
24.000 to 36.000, incl	1/8
Over 36.000	3/32

5.2 Plate:

Shall be of such straightness that the maximum edgewise curvature (depth of arc) shall not exceed 1/8 inch in any 5 ft of length.

6. FLATNESS:

The following tolerances do not apply to strip, dead soft sheet, or deep drawing sheet for which there are no established tolerances. In all cases, the "Variation from Flat" is the maximum deviation from a horizontal flat surface.

6.1 Sheet, Not Stretcher Levelled:

The following table does not apply to cold worked tempers of austenitic grades.

TABLE 14

Specified Thickness Inch	Specified Width Inches	Variation from Flat, Inch
Up to 0.062, excl	24 to 36, incl	1/2
	Over 36 to 60, incl	3/4
	Over 60	1
0.062 to 0.1875, excl	24 to 60, incl	1/2
	Over 60 to 72, incl	3/4
	Over 72	1

6.2 Cold Worked Austenitic Sheet, 1/4 and 1/2 Hard Tempers: