



AEROSPACE MATERIAL SPECIFICATION

AMS2232™**REV. H**

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Reaffirmed 2021-09

Superseding AMS2232G

(R) Tolerances
Carbon Steel, Sheet, Strip, and Plate

RATIONALE

AMS2232H is a Five-Year review and update of this specification that includes the addition of and alignment with relevant ASTM standard tolerance tables.

1. SCOPE

This specification covers established inch/pound manufacturing tolerances applicable to carbon steel sheet, strip, and plate ordered to inch/pound 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. Tolerances for product sizes not listed herein shall be as agreed upon by purchaser and vendor.

1.1 MAM2232, the metric version of this AMS, has been cancelled and superseded by this specification.

2. THICKNESS

Tolerances apply to measurements made at any point on widths less than 1 inch, at any point not less than 3/8 inch from a cut edge, or not less than 3/4 inch from a mill edge on widths 1 inch and over, and at a point 3/8 to 3/4 inch from the longitudinal edge of rectangular sheared plates. Regardless of whether thickness tolerances for sheet and strip are specified equally or unequally, plus and minus, the total tolerance shall be equal to the arithmetic sum of the tabular plus and minus tolerances (twice the tabular tolerances when specified equally plus and minus).

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2.1 Cold Rolled Sheet, Coils and Cut Lengths (see 2.1.1)

See Table 1 (equivalent to ASTM A568-15 Table 15).

Table 1 - Thickness tolerances, inch, plus and minus for width ranges, inches

Specified Thickness Inch	2 to 15, incl	Over 15 to 72, incl	Over 72
0.014 to 0.019, incl	0.002	0.002	--
Over 0.019 to 0.039, incl	0.003	0.003	0.003
Over 0.039 to 0.057, incl	0.004	0.004	0.004
Over 0.057 to 0.071, incl	0.005	0.005	0.005
Over 0.071 to 0.098, incl	0.005	0.005	0.006
Over 0.098 to 0.142, incl	0.005	0.006	0.007

2.1.1 Tolerances in Table 1 for nominal widths of 2 to 12 inches, inclusive, in nominal thicknesses of 0.0142 to 0.0821 inch, inclusive, apply to product slit from wider sheet.

2.2 Hot Rolled Sheet

2.2.1 Coils and Cut Lengths

See Table 2 (equivalent to one-half of the tolerance values in ASTM A568-15 Table S1.1).

Table 2 - Thickness tolerances, inch, plus and minus for width ranges, inches

Specified Thickness Inch	Over 12 to 20, incl	Over 20 to 40, incl	Over 40 to 48, incl	Over 48 to 60, incl	Over 60 to 72, incl	Over 72
0.0449 to 0.051, incl	0.005	0.005	0.005	--	--	--
Over 0.051 to 0.057, incl	0.005	0.005	0.006	0.006	0.007	--
Over 0.057 to 0.071, incl	0.006	0.006	0.006	0.007	0.007	--
Over 0.071 to 0.098, incl	0.006	0.007	0.007	0.007	0.008	0.008
Over 0.098 to 0.180, incl	0.007	0.007	0.008	0.008	0.008	0.008
Over 0.180 to 0.230, incl	0.007	0.008	0.009	0.010	0.011	0.012

2.2.2 Coils Only

See Table 3.

Table 3 - Thickness tolerances, inch, plus and minus for width ranges, inches

Specified Thickness Inch	Over 12 to 20, incl	Over 20 to 40, incl	Over 40 to 48, incl	Over 48 to 60, incl	Over 60 to 72, incl	Over 72
Over 0.1800 to 0.2299, incl	--	--	--	0.010	0.011	0.012
Over 0.2299 to 0.3130, incl	0.010	0.011	0.012	0.012	0.013	0.015
Over 0.3130 to 0.3750, incl	0.012	0.012	0.013	0.014	0.015	0.016
Over 0.3750 to 0.5000, incl	0.014	0.014	0.014	0.015	0.016	0.018

2.2.3 Tolerances in Table 2 and Table 3 do not apply to the uncropped ends of mill edge coils.

2.3 Cold Rolled Strip, Coils and Cut Lengths

See Table 4 (comparable to ASTM A109-15 Table 5 and ASTM A684-15 Table 7).

Table 4 - Thickness tolerances, inch, plus and minus for width ranges, inches

Specified Thickness Inch	0.500 to 1, excl	1 to 3, Excl	3 to 6, incl	Over 6 to 9, incl	Over 9 to 12, incl	Over 12 to 16, incl	Over 16 to 20, incl	Over 20 to 23-15/16, incl
Up to 0.007, excl	0.0005	0.0005	0.0005	--	--	--	--	--
0.007 to 0.009, excl	0.00075	0.00075	0.00075	--	--	--	--	--
0.009 to 0.013, excl	0.00075	0.00075	0.00075	0.001	0.001	0.001	0.001	0.001
0.013 to 0.020, excl	0.00075	0.00075	0.00075	0.001	0.001	0.0015	0.0015	0.0015
0.020 to 0.023, excl	0.001	0.001	0.001	0.0015	0.0015	0.0015	0.0015	0.0015
0.023 to 0.026, excl	0.001	0.001	0.001	0.0015	0.0015	0.002	0.002	0.002
0.026 to 0.029, excl	0.001	0.0015	0.0015	0.002	0.002	0.002	0.002	0.002
0.029 to 0.032, excl	0.0015	0.0015	0.0015	0.002	0.002	0.002	0.002	0.002
0.032 to 0.035, excl	0.0015	0.0015	0.002	0.002	0.002	0.002	0.002	0.002
0.035 to 0.040, excl	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
0.040 to 0.050, excl	0.002	0.002	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025
0.050 to 0.069, excl	0.002	0.002	0.0025	0.0025	0.0025	0.003	0.003	0.003
0.069 to 0.100, excl	0.002	0.002	0.0025	0.003	0.003	0.0035	0.0035	0.0035
0.100 to 0.161, excl	0.002	0.002	0.003	0.003	0.003	0.0035	0.0045	0.005
0.161 to 0.200, excl	0.0025	0.0035	0.004	0.004	0.0045	0.0045	0.005	0.005
0.200 to 0.250, excl	0.003	0.004	0.0045	0.0045	0.005	0.0055	0.0055	0.0055

2.4 Hot Rolled Strip, Coils and Cut Lengths (see 2.4.1)

See Table 5 (comparable to ASTM A749-14 Table 2).

Table 5 - Thickness tolerances, inch, plus and minus for width ranges, inches

Specified Thickness Inch	Up to 3-1/2, incl	Over 3-1/2 to 6, incl	Over 6 to 8, incl	Over 8 to 12, incl
0.0255 to 0.0343, incl	0.003	--	--	--
Over 0.0343 to 0.0448, incl	0.003	0.003	--	--
Over 0.0448 to 0.0570, incl	0.003	0.003	0.004	0.004
Over 0.0570 to 0.1180, incl	0.004	0.005	0.005	0.005
Over 0.1180 to 0.1870, incl	0.005	0.005	0.005	0.005
Over 0.1870 to 0.2030, incl	0.006	0.006	0.006	0.006
Over 0.2030 to 0.2299, incl	--	--	0.006	0.006
Over 0.2299 to 0.3124, incl	--	--	--	0.008
Over 0.3124 to 0.3750, incl	--	--	--	0.009
Over 0.3750 to 0.5000, incl	--	--	--	0.010

2.4.1 Tolerances in Table 5 do not include crown; the tolerances shown in Table 6 are in addition to those shown in Table 5.

2.5 Crown (see 2.4.1)

See Table 6 (comparable to ASTM A749-14 Table 4).

Table 6 - Crown tolerances, inch; for width ranges, inches

Specified Thickness Inch	Over 1 to 3-1/2, incl	Over 3-1/2 to 6, incl	Over 6 to 12, incl
0.0255 to 0.0343, incl	0.002	--	--
Over 0.0343 to 0.0448, incl	0.002	0.003	--
Over 0.0448 to 0.1180, incl	0.002	0.003	0.004
Over 0.1180 to 0.1870, incl	0.002	0.002	0.003
Over 0.1870 to 0.2030, incl	0.001	0.002	0.003
Over 0.2030 to 0.2299, incl	--	--	0.002

2.5.1 Strip may be thicker at the center than at a point 3/8 inch from the edge by the amounts shown in Table 6.

2.6 Rectangular Sheared Plates

See Table 7 (comparable to ASTM A6-16 Table 1).

Table 7 - Thickness tolerances, inch, plus only for width ranges, inches

Specified Thickness Inches	Up to 48, incl	Over 48 to 60, excl	60 to 72, excl	72 to 84, excl	84 to 96, excl	96 to 108, excl	108 to 120, incl
Up to 0.250, excl	0.030	0.030	0.030	0.030	0.030	0.030	0.030
0.250 to 0.312, excl	0.030	0.030	0.030	0.030	0.030	0.030	0.030
0.312 to 0.375, excl	0.030	0.030	0.030	0.030	0.030	0.030	0.030
0.375 to 0.437, excl	0.030	0.030	0.030	0.030	0.030	0.030	0.040
0.437 to 0.500, excl	0.030	0.030	0.030	0.030	0.030	0.030	0.040
0.500 to 0.625, excl	0.030	0.030	0.030	0.030	0.030	0.030	0.040
0.625 to 0.750, excl	0.030	0.030	0.030	0.030	0.030	0.040	0.040
0.750 to 1.000, excl	0.030	0.030	0.030	0.030	0.040	0.040	0.050
1.000 to 1.250, excl	0.040	0.044	0.048	0.048	0.048	0.052	0.056
1.250 to 1.500, excl	0.052	0.052	0.056	0.056	0.056	0.064	0.068
1.500 to 1.750, excl	0.060	0.060	0.060	0.060	0.060	0.070	0.080
1.750 to 2.000, incl	0.060	0.060	0.060	0.060	0.060	0.070	0.080

2.6.1 Minus tolerance for all sizes shall be 0.010 inch; plus, tolerances shall be as shown in Table 7.

2.6.2 For thickness measured at any location other than that specified in Section 2, the permissible maximum plus tolerance shall be increased by 75%, rounded to the nearest 0.01 inch.

3. WIDTH

3.1 Cold Rolled Sheet Over 12 inches in Width and Hot Rolled, Cut Edge Sheet Not Resquared, Coils, and Cut Lengths
See Table 8 (equivalent to ASTM A568-15 Table 7).

Table 8 - Width tolerances

Specified Width Inches	Tolerance, Inch Plus Only
Over 12 to 30, incl	1/8
Over 30 to 48, incl	3/16
Over 48 to 60, incl	1/4
Over 60 to 80, incl	5/16
Over 80	3/8

3.1.1 For hot rolled sheet, tolerances apply only to thicknesses 0.2299 inch and under.

3.2 Cold Rolled Sheet 2 to 12 inches in Width, Produced by Slitting Wider Sheet, Not Resquared, Coils, and Cut Lengths
See Table 9 (comparable to ASTM A568-15 Table 18).

Table 9 - Width tolerances, inch, plus and minus for thickness ranges, inch

Specified Width Inches	0.0142 to 0.0680, incl	Over 0.0680 to 0.0821, incl
2 to 6, incl	0.008	0.012
Over 6 to 9, incl	0.016	0.016
Over 9 to 12, incl	0.032	0.032

3.3 Cold Rolled Strip, Coils, and Cut Lengths

3.3.1 Mill Edge

See Table 10 equivalent to ASTM A109-15 Table 7 and ASTM A684-15 Table 9).

Table 10 - Width tolerances

Specified Width Inches	Tolerance, Inch Plus and Minus
Over 1/2 to 2, incl	1/32
Over 2 to 5, incl	3/64
Over 5 to 10, incl	5/64
Over 10 to 15, incl	3/32
Over 15 to 20, incl	1/8
Over 20 to 24, excl	5/32