SAE Aerospace
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AEROSPACE MATERIAL SPECIFICATION

SAE MAM 2242C

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Noncurrent MAR 2003

Superseding MAM 2242B

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

NONCURRENCY NOTICE

This specification has been declared "NONCURRENT" by the Aerospace Materials Division, SAE, as of March, 2003. It is recommended, therefore, that this specification not be specified for new designs.

AMS 2242 covers the same requirements.

"NONCURRENT" refers to those materials which have been widely used and which may be required on some existing designs in the future. The Aerospace Materials Division, however, does not recommend these as standard materials for future use in new designs.

"NONCURRENT" specifications are available from SAE.

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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 metric 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 These tables are based upon logical metric values and preferred metric sizes.

1.2 Throughout this specification the term "metric" is intended to refer to the SI system.

1.3 AMS 2242 is the inch/pound version of this MAM.

2. THICKNESS:

Thickness for sheet and strip is measured at any place on widths less than 25 mm, at any place 10 mm and over from an edge on widths 25 mm and over, and for plate at least 10 mm but not more than 75 mm from an edge.

2.1 Sheet:

Table 1 includes crown tolerances.

TABLE 1

Specified Thickness Millimeters	Thickness Tolerance, Millimeter Plus and Minus For Width Ranges Shown Millimeters 600 to 1200, incl	Thickness Tolerance, Millimeter Plus and Minus For Width Ranges Shown Millimeters Over 1200
0.12	0.03	--
Over 0.12 to 0.20, incl	0.04	--
Over 0.20 to 0.40, incl	0.05	--
Over 0.40 to 0.60, incl	0.08	0.08
Over 0.60 to 1.00, incl	0.10	0.10
Over 1.00 to 1.60, incl	0.10	0.13
Over 1.60 to 1.80, incl	0.13	0.15
Over 1.80 to 2.00, incl	0.13	0.18
Over 2.00 to 2.50, incl	0.15	0.20
Over 2.50 to 3.00, incl	0.18	0.23
Over 3.00 to 3.50, incl	0.20	0.25
Over 3.50 to 4.00, incl	0.25	0.30
Over 4.00 to 5.00, excl	0.30	0.36

2.2 Strip:

Table 2 includes crown tolerances.

TABLE 2

Specified Thickness Millimeters	Thickness Tolerance Millimeter Plus and Minus For Width Ranges Shown Millimeters 5.00 to 150, incl	Thickness Tolerance Millimeter Plus and Minus For Width Ranges Shown Millimeters Over 150 to 300, incl	Thickness Tolerance Millimeter Plus and Minus For Width Ranges Shown Millimeters Over 300 to 600 excl
0.12 to 0.25, incl	10%	10%	10%
Over 0.25 to 0.30, incl	0.04	0.04	0.04
Over 0.30 to 0.35, incl	0.04	0.04	0.05
Over 0.35 to 0.45, incl	0.04	0.05	0.05
Over 0.45 to 0.50, incl	0.04	0.05	0.065
Over 0.50 to 0.75, incl	0.05	0.065	0.065
Over 0.75 to 0.90, incl	0.05	0.08	0.08
Over 0.90 to 1.25, incl	0.065	0.09	0.09
Over 1.25 to 1.75, incl	0.08	0.09	0.09
Over 1.75 to 2.50, incl	0.08	0.10	0.13
Over 2.50 to 3.20, incl	0.10	0.115	0.13
Over 3.20 to 4.10, incl	0.115	0.115	0.13
Over 4.10 to 5.00, excl	0.13	0.13	0.15

2.3 Plate:

Minus tolerances shall be 0.25 mm for all widths for all thicknesses up to 250 mm, inclusive, in 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 Millimeters	Thickness Tolerances, Millimeters, Plus For Width Ranges Shown Millimeters Over 120 to 2140, incl	Thickness Tolerances, Millimeters, Plus For Width Ranges Shown Millimeters Over 2140 to 3050, incl	Thickness Tolerances, Millimeters, Plus For Width Ranges Shown Millimeters Over 3050 to 3650, incl	Thickness Tolerances, Millimeters, Plus For Width Ranges Shown Millimeters Over 3650
5 to 10, excl	1.15	1.25	1.90	--
10 to 20, excl	1.40	1.50	2.15	2.30
20 to 25, excl	1.50	1.65	2.40	2.55
25 to 50, excl	1.80	1.90	4.45	2.90
50 to 75, excl	3.20	3.80	6.20	5.10
75 to 100, excl	4.45	5.35	8.90	7.10
100 to 150, excl	6.35	7.60	8.90	10.15
150 to 200, excl	8.90	10.15	12.15	14.20
200 to 250, incl	11.45	13.70	16.00	--

3. WIDTH:

3.1 Sheet:

3.1.1 Stretcher Leveled, Resquared:

TABLE 4

Specified Thickness Millimeters	Width Tolerances Millimeters, Plus Only For Width Ranges Shown Millimeters 600 to 1200, excl	Width Tolerances Millimeters, Plus Only For Width Ranges Shown Millimeters 1200 and Over
Up to 3.30, excl	1.6	3.2
3.30 to 3.80, incl	3.2	3.2
Over 3.80 to 4.39, incl	4.8	4.8
Over 4.30 to 5.00, excl	6.4	6.4

3.1.2 Not Resquared, Flat or in Coils:

TABLE 5

Specified Width Millimeters	Width Tolerance, Millimeters Plus Only
600 to 1200, excl	1.6
1200 and over	3.2

3.2 Strip:

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

TABLE 6

Specified Width Millimeters	Specified Thickness Millimeters	Width Tolerance, Millimeter Plus and Minus
Up to 7.0, incl	Up to 1.6, incl	0.13
Over 7.0 to 20.0, incl	Up to 2.5, incl	0.13
Over 20.0 to 120, incl	Up to 3.5, incl	0.13
Over 120 to 250, incl	0.20 to 3.5, incl	0.25
Over 250 to 500, incl	0.40 to 3.0, incl	0.25
Over 500	0.60 to 2.0, incl	0.40

3.2.2 Slit Edge:

TABLE 7

Specified Width Millimeters	Width Tolerance, Millimeter Plus and Minus For Thickness Ranges Shown Millimeters Up to 1.75, incl	Width Tolerance, Millimeter Plus and Minus For Thickness Ranges Shown Millimeters Over 1.75 to 2.50, incl	Width Tolerance, Millimeter Plus and Minus For Thickness Ranges Shown Millimeters Over 2.50 to 4.00, incl	Width Tolerance, Millimeter Plus and Minus For Thickness Ranges Shown Millimeters Over 4.00 to 5.00, excl
5.0 to 12.5, incl	0.1	0.2	0.3	–
Over 12.5 to 150, incl	0.1	0.2	0.3	0.4
Over 150 to 225, incl	0.1	0.3	0.4	0.5
Over 225 to 300, incl	0.3	0.3	0.4	0.5
Over 300 to 500, incl	0.4	0.4	0.5	0.8
Over 500 to 600, incl	0.5	0.5	0.5	0.8

3.3 Plate:

Minus tolerance shall be 6 mm for all widths and lengths in all thicknesses up to 25 mm, inclusive; plus tolerances shall be as shown in Table 8.

TABLE 8

Specified Width Millimeters	Specified Length Millimeters	Width Tolerance, Millimeters Plus For Thickness Ranges Shown Millimeters 4.8 to 9.5 excl	Width Tolerance, Millimeters Plus For Thickness Ranges Shown Millimeters 9.5 to 12.5, incl	Width Tolerance, Millimeters Plus For Thickness Ranges Shown Millimeters Over 12.5 to 25, incl
Over 250 to 1220, incl	Up to 3,650, incl	3	5	8
Over 1220 to 1525, incl		5	6	10
Over 1525 to 2140, incl		6	8	11
Over 2140 to 2750, incl		8	10	13
Over 2750		10	11	16
Over 250 to 1220, incl	Over 3,650 to 6,100 incl	5	6	8
Over 1220 to 1525, incl		6	8	10
Over 1525 to 2140, incl		10	11	13
Over 2140 to 2750, incl		11	13	16
Over 2750		13	16	18
Over 250 to 1220, incl	Over 6,100 to 9,150 incl	6	8	10
Over 1220 to 1525, incl		8	10	13
Over 1525 to 2140, incl		11	13	16
Over 2140 to 2750, incl		14	16	19
Over 2750		16	18	22
Over 250 to 1525, incl	Over 9,150 12,200, incl	11	13	16
Over 1525 to 2140, incl		13	16	19
Over 2140 to 2750, incl		14	19	22
Over 2750		19	22	25
Over 250 to 1525, incl	Over 12,200 to 15,200, incl	11	13	16
Over 1525 to 2140, incl		13	16	19
Over 2140 to 2750, incl		16	19	22
Over 2750		19	22	25
Over 250 to 1525, incl	Over 15,200	13	16	19
Over 1525 to 2750, incl		16	19	22
Over 2750		22	25	29

4. LENGTH:

4.1 Sheet:

4.1.1 Stretcher Leveled, Resquared:

TABLE 9

Specified Thickness Millimeters	Specified Length Millimeters	Length Tolerance Millimeters Plus Only
Up to 3.0, excl	Up to 3000, excl	1.6
Up to 3.0, excl	3000 and over	3.2
3.0 to 3.5, incl	All	3.2
Over 3.5 to 4.5, incl	All	4.8
Over 4.5 to 5.0, incl	All	6.4

4.1.2 Not Resquared:

TABLE 10

Specified Length Millimeters	Length Tolerances, Millimeters Plus Only
Up to 3000, incl	6.4
Over 3000 to 6000, incl	12.5

4.2 Strip:

TABLE 11

Specified Length Millimeters	Length Tolerances, Millimeters Plus Only
Up to 1500, incl	9.5
Over 1500 to 3000, incl	12.5
Over 3000 to 6100, incl	16.0

4.3 Plate:

Minus tolerances shall be 6 mm for all lengths and widths in all thicknesses up to 25 mm, inclusive; plus tolerances shall be as shown in Table 12.

TABLE 12

Specified Width Millimeters					Specified Length Millimeters	Length Tolerance, Millimeters Plus For Thickness Ranges Shown Millimeters 4.8 to 9.5 excl	Length Tolerance, Millimeters Plus For Thickness Ranges Shown Millimeters 9.5 to 12.5, incl	Length Tolerance, Millimeters Plus For Thickness Ranges Shown Millimeters Over 12.5 to 25, incl
Over	250	to	1220,	incl	Up to 3,650, incl	5	6	10
Over	1220	to	1525,	incl		6	8	11
Over	1525	to	2140,	incl		8	10	13
Over	2140	to	2750,	incl		10	11	14
Over	2750					11	13	18
Over	250	to	1220,	incl	Over 3,650 to 6,100 incl	10	13	16
Over	1220	to	1525,	incl		11	16	19
Over	1525	to	2140,	incl		13	18	19
Over	2140	to	2750,	incl		14	19	22
Over	2750					16	22	25
Over	250	to	1220,	incl	Over 6,100 to 9,150 incl	13	16	19
Over	1220	to	1525,	incl		16	19	19
Over	1525	to	2140,	incl		18	19	22
Over	2140	to	2750,	incl		19	22	25
Over	2750					22	25	25
Over	250	to	1525,	incl	Over 9,150 12,200, incl	29	32	35
Over	1525	to	2750,	incl		32	35	38
Over	2750					35	38	41
Over	250	to	1525,	incl	Over 12,200 to 15,200, incl	32	38	41
Over	1525	to	2750,	incl		35	38	41
Over	2750					38	41	44
Over	250	to	2750,	incl	Over 15,200	44	48	48
Over	2750					44	51	57

5. STRAIGHTNESS:

5.1 Sheet and Strip:

TABLE 13

Specified Width Millimeters	Camber Tolerance, Millimeters, in Any 2500 Millimeters of Length
Up to 40, incl	13.0
Over 40 to 600, excl	6.6
600 to 910, incl	3.3
Over 910	2.5

5.2 Plate:

Shall be of such straightness that the maximum edgewise curvature (depth of arc) shall not exceed 3.1 mm in any 1500 mm 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 Leveled:

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

TABLE 14

Specified Thickness Millimeters	Specified Width Millimeters	Variation from Flat, Millimeters
Up to 1.6, excl	600 to 910, incl	12.5
	Over 910 to 1525, incl	19.0
	Over 1525	25.5
1.6 to 5.0, excl	600 to 1525, incl	12.5
	Over 1525 to 1825, incl	19.0
	Over 1825	25.5