



AEROSPACE MATERIAL SPECIFICATION

AMS2242™**REV. G**

Issued 1945-10
Revised 2008-06
Reaffirmed 2020-10

Superseding AMS2242F

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

RATIONALE

AMS2242G has been reaffirmed to comply with the SAE five-year review policy.

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.

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.

TABLE 1

Specified Thickness Inch	Thickness Tolerance, Inch Plus and Minus For Width Ranges Shown	Thickness Tolerance, Inch Plus and Minus For Width Ranges Shown
	Inches 24 to 48 incl	Inches Over 48
Up to 0.005, incl	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

SAE Technical Standards Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be revised, reaffirmed, stabilized, or cancelled. SAE invites your written comments and suggestions.

Copyright © 2020 SAE International

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of SAE.

TO PLACE A DOCUMENT ORDER: Tel: 877-606-7323 (inside USA and Canada)
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
http://www.sae.org

SAE WEB ADDRESS:

For more information on this standard, visit
<https://www.sae.org/standards/content/AMS2242G>

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	Thickness Tolerance, Inch, Plus For Width Ranges Shown	Thickness Tolerance, Inch, Plus For Width Ranges Shown	Thickness Tolerance, Inch, Plus For Width Ranges Shown
	Inches Over 10 to 84, incl	Inches Over 84 to 120, incl	Inches Over 120 to 144, incl	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	Width Tolerance Inch, Plus Only For Width Ranges Shown Inches
	24 to 48, excl	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	Width Tolerance, Inch Plus and Minus For Thickness Ranges Shown Inch	Width Tolerance, Inch Plus and Minus For Thickness Ranges Shown Inch	Width Tolerance, Inch Plus and Minus For Thickness Ranges Shown Inch
	Up to 0.068, incl	Over 0.068 to 0.099, incl	Over 0.099 to 0.160, incl	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; 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	Width Tolerance, Inches Plus For Thickness Ranges Shown
		3/16 to 3/8 excl Inch	3/8 to 1/2 incl Inch	Over 1/2 to 1 incl Inches	Over 1 Inches
Up to 48, incl	Up to 144	1/8	3/16	5/16	7/16
Over 48 to 60, incl	144 to 240	3/16	1/4	3/8	1/2
Over 60 to 84, incl	240 to 360	1/4	5/16	7/16	9/16
Over 84 to 108, incl	360 to 480	5/16	3/8	1/2	5/8
Over 108	480 to 600	3/8	7/16	5/8	3/4
Up to 48, incl	Over 600	3/16	1/4	5/16	7/16
Over 48 to 60, incl	600 to 720	1/4	5/16	3/8	1/2
Over 60 to 84, incl	720 to 840	3/8	7/16	1/2	5/8
Over 84 to 108, incl	840 to 960	7/16	1/2	5/8	3/4
Over 108	960 to 1080	1/2	5/8	11/16	13/16
Up to 48, incl	Over 1080	1/4	5/16	3/8	1/2
Over 48 to 60, incl	1080 to 1200	5/16	3/8	1/2	5/8
Over 60 to 84, incl	1200 to 1320	7/16	1/2	5/8	3/4
Over 84 to 108, incl	1320 to 1440	9/16	5/8	3/4	7/8
Over 108	1440 to 1560	5/8	11/16	7/8	1
Up to 60, incl	Over 1560	7/16	1/2	5/8	3/4
Over 60 to 84, incl	1560 to 1680	1/2	5/8	3/4	7/8
Over 84 to 108, incl	1680 to 1800	9/16	3/4	7/8	1
Over 108	1800 to 1920	3/4	7/8	1	1-1/8
Up to 60, incl	Over 1920	7/16	1/2	5/8	3/4
Over 60 to 84, incl	1920 to 2040	1/2	5/8	3/4	7/8
Over 84 to 108, incl	2040 to 2160	5/8	3/4	7/8	1
Over 108	2160 to 2280	3/4	7/8	1	1-1/8
Up to 60, incl	Over 2280	1/2	5/8	3/4	7/8
Over 60 to 108, incl	2280 to 2400	5/8	3/4	7/8	1
Over 108	2400 to 2520	7/8	1	1-1/8	1-1/4

4. LENGTH

4.1 Sheet

4.1.1 Stretcher Levelled, 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; 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	Length Tolerance, Inches Plus For Thickness Ranges Shown Inch Over 1
Up to 48, incl	Up to	3/16	1/4	3/8	1/2
Over 48 to 60, incl	144,	1/4	5/16	7/16	9/16
Over 60 to 84, incl	incl	5/16	3/8	1/2	5/8
Over 84 to 108, incl		3/8	7/16	9/16	11/16
Over 108		7/16	1/2	11/16	13/16
Up to 48, incl	Over	3/8	1/2	5/8	3/4
Over 48 to 60, incl	144 to	7/16	5/8	3/4	7/8
Over 60 to 84, incl	240,	1/2	11/16	3/4	7/8
Over 84 to 108, incl	incl	9/16	3/4	7/8	1
Over 108		5/8	7/8	1	1-1/8
Up to 48, incl	Over	1/2	5/8	3/4	7/8
Over 48 to 60, incl	240 to	5/8	3/4	3/4	7/8
Over 60 to 84, incl	360,	11/16	3/4	7/8	1
Over 84 to 108, incl	incl	3/4	7/8	1	1-1/8
Over 108		7/8	1	1	1-1/8
Up to 60, incl	Over	1-1/8	1-1/4	1-3/8	1-1/2
Over 60 to 108, incl	360 to	1-1/4	1-3/8	1-1/2	1-5/8
Over 108	480, incl	1-3/8	1-1/2	1-5/8	1-3/4
Up to 60, incl	Over	1-1/4	1-1/2	1-5/8	1-3/4
Over 60 to 108, incl	480 to	1-3/8	1-1/2	1-5/8	1-3/4
Over 108	600, incl	1-1/2	1-5/8	1-3/4	1-7/8
Up to 108, incl	Over	1-3/4	1-7/8	1-7/8	2
Over 108	600	1-3/4	2	2-1/4	2-3/8

5. STRAIGHTNESS

5.1 Sheet and Strip

TABLE 13

Specified Width Inches	Camber Tolerance, Inch, in Any 8 feet 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 feet 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 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

TABLE 15

Specified Thickness Inch	Specified Width Inches	Variation from Flat Inches 1/4 Hard	Variation from Flat Inches 1/2 Hard
Up to 0.016, incl	24 to 36, excl	1/2	3/4
Over 0.016 to 0.030, incl		5/8	7/8
Over 0.030 to 0.1875, excl		3/4	7/8
Up to 0.016, incl	36 to 48, incl	5/8	1
Over 0.016 to 0.030, incl		3/4	1-1/8
Over 0.030 to 0.1875, excl		1	1-1/8

6.3 Sheet, Stretcher Leveled

TABLE 16

Specified Width Inches	Specified Length Inches	Variation From Flat, Inch
24 to 48, incl	Up to 96, incl	1/8
	Over 96	1/4
Over 48	All	1/4

6.4 Plate

The requirements of Table 17 apply to plate up to 15 feet, inclusive, in length, or to any 15 feet of longer plates. If the longer dimension is under 3 feet, the variation from flat shall be not greater than 1/4 inch in any direction.

- 6.4.1 Titanium plate, when specified to have "Special Flatness", shall be creep flattened in a stress-free condition with deviation from flat not exceeding 0.060 inch in any 12 inches, with total deviation not exceeding 0.125 inch.

SAENORM.COM : Click to view the full PDF of AMS2242