

SAE Aerospace <i>An SAE International Group</i>	AEROSPACE MATERIAL SPECIFICATION	SAE MAM 2245C	
		Issued JAN 1983 Revised OCT 1989 Noncurrent MAR 2003 Cancelled AUG 2007	
		Superseded by AMS 2245	
Tolerances, Metric Titanium and Titanium Alloy Tubing			

RATIONALE

MAM 2245B has been designated cancelled and superseded because AMS 2245 provides equivalent technical requirements.

CANCELLATION NOTICE

This specification has been declared "CANCELLED" by the Aerospace Materials Division, SAE, as of August, 2007, and has been superseded by AMS 2245. The requirements of the latest issue of AMS 2245 shall be fulfilled whenever reference is made to the cancelled MAM 2245B. By this action, this document will remain listed in the Numerical Section of the Index of Aerospace Material Specifications noting that it is superseded by AMS 2245.

Cancelled specifications are available from SAE.

SAENORM.COM : Click to view the Index of mam2245C

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 reaffirmed, revised, or cancelled. SAE invites your written comments and suggestions.

Copyright © 2007 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: 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
SAE WEB ADDRESS: http://www.sae.org

SAENORM.COM : Click to view the full PDF of mam2245c

AEROSPACE MATERIAL SPECIFICATION

Issued JAN 1983
Revised OCT 1989
Noncurrent MAR 2003

Superseding MAM 2245A

Tolerances, Metric
Titanium and Titanium Alloy Extruded Bars, Rods, and Shapes

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 2245 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.

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 reaffirmed, revised, or cancelled. SAE invites your written comments and suggestions.

Copyright 2003 Society of Automotive Engineers, Inc.

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: 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: custsvc@sae.org
http://www.sae.org

SAE WEB ADDRESS:

1. SCOPE: This specification covers established manufacturing tolerances applicable to titanium and titanium alloy extruded bars, rods, and shapes ordered to metric dimensions. These tolerances apply to all conditions, unless otherwise noted. The term "excl" applies only to the higher figure of the specified range.

1.1 AMS 2245, specified in inch/pound units, is the equivalent of this MAM.

2. DIAMETER OR THICKNESS:

TABLE I

Specified Diameter or Distance
Between Parallel Sides
Millimetres

Tolerance, Millimetres, Plus and Minus
(See 11.2)

Up to 12.50, excl	0.50
12.50 to 25.00, excl	0.75
25.00 to 50.00, excl	1.00
50.00 to 75.00, excl	1.25
75.00 to 125.00, excl	1.50
125.00 and over	3.20

3. CORNER AND FILLET RADII:3.1 Bars and Shapes (See Figure 1):TABLE II

Specified Radius Millimetres	Tolerance, Millimetres, Plus and Minus	
	Difference Between Specified Radius and Corner Radius (A)	Difference Between Specified Radius and Fillet Radius (B)
A11	0.80	1.60

4. ANGULARITY (See 11.3):4.1 Shapes (See Figure 2):TABLE III

Specified Nominal Leg or Metal Thickness	Tolerance (Allowable Deviation from Specified Angle) Degrees, Plus and Minus	
	(Ratio:	Leg or surface length shall not exceed 14 times the leg or metal thickness.)
A11		2

5. TRANSVERSE FLATNESS:5.1 Bars and Shapes (See Figure 3):TABLE IV

Surface Width (W) Millimetres	(Allowable	Tolerance Deviation from Flat) Millimetres
Up to 25.00, excl		0.25
25.00 and over		0.25 x W
In any 25.00 mm of width		0.25

6 . STRAIGHTNESS (See Figure 4):TABLE V

Specified Diameter (Rod) Specified Width (Bar) Circumscribing Circle Diameter (See 11.5) Millimetres	<u>Tolerance, Millimetres (See 11.4)</u>	
	In any 300 mm or Less of Length	In Total Length Of Piece
All	0.65	0.65 per 300 mm of length

7 . TWIST (See 11.6):7.1 Bars and Shapes (See Figure 5):TABLE VI

Specified Width (Bars) Circumscribing Circle Diameter (See 11.5) Millimetres	Minimum Thickness Millimetres	<u>Tolerance, Degrees</u>	
		In Any 300 mm or Less of Length	In Total Length of Piece
All	All	1	1 per 300 mm of length; 3 maximum

8 . LENGTH:TABLE VII

Circumscribing Circle Diameter (Shapes); Specified Diameter (Rod); Specified Width (Bar) Millimetres (See 11.5)	<u>Tolerance, Millimetres, Plus Only</u> <u>Length Ranges, Metres</u>		
	up to 3.0, Incl	Over 3.0 to 6.0, Incl	Over 6.0
Up to 75.00, excl	6.2	7.8	9.4
75.00 to 125.00, excl	7.8	10.9	12.5
125.00 to 225.00, excl	9.4	12.5	15.6

9 . SQUARENESS OF CUT ENDS: Ends shall not deviate from square by more than 3 degrees.

10. SURFACE ROUGHNESS:TABLE VIII

Specified Section Thickness Millimetres	Depth of Imperfection Millimetre, maximum (See 11.7, 11.8)
Up to 6.25, incl	0.20
Over 6.25 to 12.50, incl	0.25
Over 12.50	0.38

11. NOTES:

- 11.1 Marginal Indicia: This revision contains only editorial changes from the previous issue of this specification and, therefore, no phi ($\emptyset$) symbols indicating technical change are required.
- 11.2 Allowable deviation from specified dimension when diameter of circumscribing circle is less than 175 millimetres.
- 11.3 Angles are measured with protractors or with gauges. As illustrated, a four point contact system is used, two contact points being as close to the angle vertex as practical, and the others near the ends of the respective surfaces forming the angle. Between these points of measurement, surface flatness is the controlling tolerance.
- 
- 11.4 When weight of piece on flat surface minimizes deviation.
- 11.5 The circumscribing circle diameter is the smallest circle that will completely enclose the cross-section of the extruded product.
- 11.6 Twist is normally measured by placing the extruded section on a flat surface and measuring the maximum distance at any point along its length between the bottom surface of the section and the flat surface. From this measurement, the deviation from true straightness of the section is subtracted. The remainder is the twist. To convert the standard twist tolerance to an equivalent linear value, the tangent of the standard tolerance is multiplied by the width of the surface of the section that is on the flat surface.
- 11.7 The depth of local defects, such as gouges, dents, die lines, laps, and handling marks shall be included within the minimum dimensions permitted by the tolerances of Table I.

- 11.8 A maximum roughness equivalent approximately to 6.2 μm will be permitted. This value should be used as a guide only because surface texture standards are established primarily for machined surfaces. The surface texture standard may not be directly applicable in all respects to extruded surfaces.
- 11.9 This specification is under the jurisdiction of AMS Committee "G".

SAENORM.COM : Click to view the full PDF of mam2245c