

**AEROSPACE
MATERIAL
SPECIFICATION**

SAE

MAM 2243C

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Tolerances, Metric
Corrosion and Heat Resistant Steel Tubing

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1. SCOPE:

This specification covers manufacturing tolerances applicable to seamless and welded tubing of corrosion and heat resistant steel ordered to metric dimension. These tolerances apply to all conditions and are based on individual measurements, unless otherwise noted. Tubing may be specified by two dimensions only (OD and wall thickness, ID and wall thickness, or OD and ID).

- 1.1 These tables are based on 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 2243, specified in inch/pound units, is the equivalent of this MAM.

2. DIAMETER:

- 2.1 Tubing Other than Pressure Tubing; Welded (See 2.1.1) or Seamless (See 2.1.2):

TABLE I

Specified OD or ID Millimetres	Tolerance, Millimetre Including Ovality (See 2.3) Plus and Minus
Up to 14, excl	0.10
14 to 38, excl	0.10
38 to 90, excl	0.20
90 to 140, excl	0.30
140 and over	0.75

- 2.1.1 Welded Tubing: Shall be bead-reduced or shall be cold finished by tube-reducing, cold-drawing, machining, or grinding.
- 2.1.2 Seamless Tubing: Shall be cold-finished by tube-reducing, cold-drawing, machining, or grinding.
- 2.2 Pressure Tubing (See 6.1.5); Cold Drawn or Cold Reduced (Seamless or Welded):

TABLE II

Specified OD or ID Millimetres	OD or ID Tolerance, Millimetres Including Ovality (See 2.3) Plus and Minus
Up to 14, incl	0.08
Over 14 to 25, excl	0.10
25 to 38, excl	0.13
38 to 50, excl	0.15
50 to 65, excl	0.18
65 to 90, excl	0.25
90 to 140, excl	0.40
140 to 200, excl	0.75
200 to 215, incl	1.12

2.2.1 Half Tolerances: When half tolerances are specified, the tolerances of Table II shall be plus only; the minus side of the tolerance range shall not be applicable.

2.3 Ovality, All Tubing:

All of the tolerances shown in Tables I and II include ovality except on light-walled tubing where the specified wall thickness is 3% or less of the specified OD. On such light-walled tubing, there is an additional ovality tolerance (in addition to the tabular tolerances) equal to $\pm 0.5\%$ of the specified OD (or ID); however, the average diameter shall be within the tabular tolerances.

3. WALL THICKNESS:

3.1 Tubing Other than Pressure Tubing; Welded or Seamless:

TABLE III

Wall Thickness Tolerance, %
Plus and Minus

Specified OD or ID Millimetres	For Wall Thickness, Millimetres, Shown	
	Under 6.0	6.0 and Over
Up to 14, excl	15	15
14 to 38, excl	12.5	10
38 to 90, excl	12.5	10
90 to 140, excl	12.5	10
140 and Over	12.5	10

3.2 Pressure Tubing (See 6.1.5); Seamless and Welded:

Shall be $\pm 10\%$ for all specified diameters.

3.2.1 Half Tolerances: When half tolerances are specified, tolerance shall be $\pm 10\%$, -0% .

4. LENGTH:

When cut lengths are specified, the following tolerances apply to straight tubing in lengths up to 8 metres, inclusive. For each 3 metres of fraction thereof beyond 8 metres, an additional ± 3 millimetres tolerance is permitted up to a maximum of 14 millimetres.

TABLE IV

Specified OD or ID Millimetres	Tolerance, Millimetres
	Plus Only
Up to 50, excl	3
50 and over	5

5. STRAIGHTNESS:

The maximum allowable deviation from a straight edge shall be as shown in Table V. These tolerances apply to all types of tubing to which this specification applies.