

**AEROSPACE
MATERIAL
SPECIFICATION**

MAM2222

Issued 7-1-82

Revised

**TOLERANCES, METRIC
Copper and Copper Alloy Sheet, Strip, and Plate**

1. **SCOPE:** This specification covers established metric manufacturing tolerances applicable to copper and copper alloy sheet, strip, and plate ordered to metric (SI) dimensions. These tolerances apply to all conditions, unless otherwise noted. The term "excl" is used to apply only to the higher figure of a specified range.

2. **THICKNESS:**

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2.1 Non-Refractory:

TABLE I

Nominal Thickness Millimetres		Thickness Tolerance, Millimetres, Plus and Minus Width Ranges, Millimetres											
		Over 200.0 to 300.0, incl	Over 300.0 to 350.0, incl	Over 350.0 to 500.0, incl	Over 500.0 to 700.0, incl	Over 700.0 to 900.0, incl	Over 900.0 to 1200.0, incl	Over 1200.0, to 1500.0, incl	Over 1500.0, to 1800.0, incl	Over 1800.0, to 2000.0, incl	Over 2000.0, to 2200.0, incl	Over 2200.0, to 2400.0, incl	Over 2400.0, to 2600.0, incl
Over	Up to 0.10, incl	0.008	0.015	0.015	--	--	--	--	--	--	--	--	--
Over	0.10 to 0.15, incl	0.010	0.020	0.020	0.032	0.032	0.032	0.032	0.032	0.032	0.032	0.032	0.032
Over	0.15 to 0.22, incl	0.015	0.025	0.025	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038
Over	0.22 to 0.32, incl	0.020	0.032	0.032	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045
Over	0.32 to 0.42, incl	0.025	0.038	0.038	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
Over	0.42 to 0.52, incl	0.032	0.045	0.045	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062
Over	0.52 to 0.65, incl	0.038	0.050	0.050	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075
Over	0.65 to 0.92, incl	0.050	0.062	0.062	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088
Over	0.92 to 1.25, incl	0.062	0.075	0.075	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
Over	1.25 to 1.82, incl	0.075	0.088	0.088	0.112	0.112	0.112	0.112	0.112	0.112	0.112	0.112	0.112
Over	1.82 to 3.25, incl	0.088	0.100	0.100	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125
Over	3.25 to 4.70, incl	0.100	0.112	0.112	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150
Over	4.70 to 5.12, incl	--	--	--	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.175
Over	5.12 to 7.50, incl	--	--	--	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
Over	7.50 to 12.50, incl	--	--	--	0.225	0.225	0.225	0.225	0.225	0.225	0.225	0.225	0.225
Over	12.50 to 18.75, incl	--	--	--	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
Over	18.75 to 25.00, incl	--	--	--	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275
Over	25.00 to 37.50, incl	--	--	--	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
Over	37.50 to 50.00, incl	--	--	--	0.325	0.325	0.325	0.325	0.325	0.325	0.325	0.325	0.325

2.2 Refractory:

TABLE II
Thickness Tolerance, Millimetres, Plus and Minus
Width Ranges, Millimetres

		Width Ranges, Millimetres											
		Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over	Over
		200.0	300.0	350.0	500.0	700.0	900.0	1200.0	1500.0	2000.0	3000.0	4000.0	5000.0
Up to	0.10, incl	0.010	0.020	0.038	0.075	0.125	0.200	0.300	0.400	0.500	0.600	0.700	0.800
Over	0.10 to 0.15, incl	0.015	0.025	0.038	0.075	0.125	0.200	0.300	0.400	0.500	0.600	0.700	0.800
Over	0.15 to 0.22, incl	0.020	0.032	0.050	0.088	0.160	0.250	0.350	0.450	0.550	0.650	0.750	0.850
Over	0.22 to 0.32, incl	0.025	0.038	0.062	0.100	0.175	0.250	0.350	0.450	0.550	0.650	0.750	0.850
Over	0.32 to 0.42, incl	0.032	0.050	0.062	0.100	0.175	0.250	0.350	0.450	0.550	0.650	0.750	0.850
Over	0.42 to 0.52, incl	0.038	0.062	0.075	0.125	0.200	0.300	0.400	0.500	0.600	0.700	0.800	0.900
Over	0.52 to 0.65, incl	0.050	0.062	0.075	0.125	0.200	0.300	0.400	0.500	0.600	0.700	0.800	0.900
Over	0.65 to 0.92, incl	0.062	0.075	0.088	0.125	0.200	0.300	0.400	0.500	0.600	0.700	0.800	0.900
Over	0.92 to 1.25, incl	0.075	0.088	0.100	0.125	0.150	0.175	0.200	0.250	0.300	0.350	0.400	0.450
Over	1.25 to 1.82, incl	0.088	0.100	0.112	0.125	0.150	0.175	0.200	0.250	0.300	0.350	0.400	0.450
Over	1.82 to 3.25, incl	0.100	0.112	0.125	0.150	0.175	0.200	0.250	0.300	0.350	0.400	0.450	0.500
Over	3.25 to 4.70, incl	0.112	0.125	0.150	0.175	0.200	0.250	0.300	0.350	0.400	0.450	0.500	0.550
Over	4.70 to 5.12, incl	--	--	--	--	--	--	--	--	--	--	--	--
Over	5.12 to 7.50, incl	--	--	--	--	--	--	--	--	--	--	--	--
Over	7.50 to 12.50, incl	--	--	--	--	--	--	--	--	--	--	--	--
Over	12.50 to 18.75, incl	--	--	--	--	--	--	--	--	--	--	--	--
Over	18.75 to 25.00, incl	--	--	--	--	--	--	--	--	--	--	--	--
Over	25.00 to 37.50, incl	--	--	--	--	--	--	--	--	--	--	--	--
Over	37.50 to 50.00, incl	--	--	--	--	--	--	--	--	--	--	--	--

3. WIDTH:

3.1 General Purpose (Including Square Sheared Metal): Applicable to all lengths up to 3000 mm, inclusive.

TABLE III

Nominal Width Millimetres	Width Tolerance, Millimetres, Plus and Minus Thickness Ranges, Millimetres		
	Up to	Over	
	1.56, incl	1.56 to 3.12, incl	Over 3.12
Up to 500.0, incl	0.78	1.17	1.56
Over 500.0 to 900.0, incl	1.17	1.17	1.56
Over 900.0 to 3000.0, incl	1.56	1.56	1.56

3.2 Slit Metal and Slit Metal With Rolled Edges:

TABLE IV

Nominal Width Millimetres	Width Tolerance, Millimetres, Plus and Minus Thickness Ranges, Millimetres			
		Over	Over	Over
	0.10 to 0.80, incl	0.80 to 3.12, incl	3.12 to 4.70, incl	4.70 to 12.50, incl
Up to 50.0, incl	0.125	0.250	0.300	0.375
Over 50.0 to 200.0, incl	0.200	0.325	0.375	0.375
Over 200.0 to 600.0, incl	0.400	0.400	0.400	0.775

3.3 Rolled (Not Previously Slit) or Drawn Edge Metal: When the tolerance is expressed as a percentage of a nominal dimension, the tolerance so calculated shall be rounded to the nearest 0.025 mm to obtain the permissible tolerance.

TABLE V

Nominal Width Millimetres		Width Tolerance, Millimetre Plus and Minus	
		Non-Refractory	Refractory
Up to	1.25, incl	0.032	0.038
Over	1.25 to 2.25, incl	0.038	0.050
Over	2.25 to 3.25, incl	0.050	0.075
Over	3.25 to 4.70, incl	0.075	0.100
Over	4.70 to 12.50, incl	0.088	0.125
Over	12.50 to 31.25, incl	0.125	0.175
Over	31.25 to 50.00, incl	0.200	0.250
Over	50.00 to 100.00, incl	0.300	0.375
Over	100.00 to 300.00, incl	0.30%	0.50%

3.4 Sawed Metal:

TABLE VI

Nominal Width Millimetres		Width Tolerance, Millimetres Plus and Minus	
		Thickness Ranges, Millimetres	
	Nominal Length Millimetres	37.5 and Under	Over 37.5
Up to 300, incl	Up to 3000, incl	0.8	1.6
Over 300 to 3000, incl	Up to 3000, incl	1.6	1.6
Up to 300, incl	Over 3000	1.6	1.6
Over 300 to 3000, incl	Over 3000	1.6	1.6

4. LENGTH:

4.1 Square Sheared Metal: Not applicable to lengths over 3000 millimetres.

TABLE VII

Nominal Length Millimetres		Length Tolerance, Millimetres Plus and Minus		
		Thickness Ranges, Millimetres		
		Over		
		Up to 1.56, incl	1.56 to 3.12, incl	Over 3.12
Up to 500, incl		0.8	1.2	1.6
Over 500 to 900, incl		1.2	1.2	1.6
Over 900 to 3000, incl		1.6	1.6	1.6