AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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AMS 4151A

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ALUMINUM ALLOY
Copper Manganese Magnesium (17S-T)
Extruded

1. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

2. FORM: Rods, bars, or shapes.

3. COMPOSITION:

Copper	3.5 - 4.5
Manganese	0.4 - 1.0
Magnesium	0.2 - 0.8
Iron	1.0 max
Silicon	0.8 max
Chromium	0.25 max
Zinc	0.10 max
Other elements, each	0.05 max
Other elements, total	0.15 max
Aluminum	remainder

4. CONDITION: (a) Heat treated conforming to the following minimum physical properties:

Form	Tensile Strength	Yield Strength (0.2% Offset) or at Extension Indicated		Elongation	Brinell Hardness	
	psi	psi	Extension Under Load inch in 2"	% in 4D	500kg	1000kg
Bars & Rods	55,000	32,000	0.0102	12	90	96
Shapes	50,000	32,000	0.0102	12	90	96

Note: In cases where significant portions of cross-sections are indicated on the drawing, test specimens shall be taken from the indicated portion, and physical properties shall meet the foregoing requirements.

(b) Material which conforms to the minimum tensile requirements shall not be rejected on the basis of hardness.

(c) The physical properties specified apply to rounds, squares, hexagons and octagons from 0.125 to 8.000 inches in diameter or least thickness and to rectangles up to 3.000 inches in least thickness.

5. QUALITY: The material shall be uniform in quality and temper, free from blisters, fins, seams, laps, cracks, segregations and other defects which adversely affect its strength, use, or machinability. It is subject to coarse etching, and any other tests necessary to insure high quality. If material defects are revealed during fabrication, the material is subject to rejection.

6. TOLERANCES: The following variations in diameter or thickness are permissible:

(a) Rods and bars.-

Diameter or Least Thickness inches	Tolerance, inch	
	Rounds	Squares, Hexagons, Octagons, Rectangles
Up to 0.0359 incl.	± 0.0005	--
0.036 to 0.064 incl.	± 0.001	± 0.0015
0.065 to 0.500 incl.	± 0.0015	± 0.002
0.501 to 1.000 incl.	± 0.002	± 0.0025
1.001 to 1.500 incl.	± 0.0025	± 0.003
1.501 to 3.499 incl.	± 0.008	--
3.500 to 5.000 incl.	+ 1/32 - 1/64	--
5.001 to 8.000 incl.	+ 1/16 - 1/32	--

(b) Shapes.-

Dimensions inches	Tolerance inch, plus and minus
Up to 0.125 incl.	0.010
0.126 to 0.500 incl.	0.015
0.501 to 1.000 incl.	0.020
1.001 to 2.000 incl.	0.025
2.001 to 3.000 incl.	0.030
3.001 to 4.000 incl.	0.035
4.001 to 5.000 incl.	0.040
5.001 to 6.000 incl.	0.045
6.001 to 7.000 incl.	0.050
7.001 to 8.000 incl.	0.055
8.001 to 9.000 incl.	0.060
9.001 to 10.000 incl.	0.065
10.001 to 11.000 incl.	0.070
11.001 to 12.000 incl.	0.080

7. REPORTS: (a) The material manufacturer shall furnish three copies of a notarized report stating that the physical properties and chemical composition of the material are within the requirements specified. This report shall include the purchase order number, material specification number, size, and quantity.

(b) Unless otherwise specified, the parts manufacturer shall furnish with each shipment three copies of a notarized report showing the purchase order number, material specification number, part number, and quantity. When material for making parts is supplied by the parts manufacturer, the parts manufacturer shall inspect each lot of material to determine conformance with this specification and shall include in the report a certification that the material conforms to the specification.