

AEROSPACE MATERIAL SPECIFICATIONS

AMS 4152G

SOCIETY OF AUTOMOTIVE ENGINEERS, Inc. 485 Lexington Ave., New York 17, N.Y.

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ALUMINUM ALLOY EXTRUSIONS 4.5Cu - 1.5Mg - 0.60Mn (2024-T4)

1. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.
- ∅ 2. FORM: Bars, rods, wire shapes, and tubing.
- ∅ 3. APPLICATION: Primarily for parts requiring good strength and whose fabrication does not involve welding. Certain design and processing procedures may cause this material to be susceptible to stress corrosion cracking; ARP 823 recommends practices to minimize such conditions.
4. COMPOSITION:

	min	max
Copper	3.8	- 4.9
Magnesium	1.2	- 1.8
Manganese	0.30	- 0.9
Iron	--	0.50
Silicon	--	0.50
Zinc	--	0.25
Chromium	--	0.10
Other Impurities, each	--	0.05
Other Impurities, total	--	0.15
Aluminum	remainder	
5. CONDITION: Solution heat treated.
 - 5.1 Unless otherwise specified, extrusions shall be supplied with the as-extruded surface finish; light polishing to remove minor surface imperfections is permissible provided such imperfections can be removed within the dimensional tolerances.
6. TECHNICAL REQUIREMENTS:
 - 6.1 Tensile Properties:

Section 8.3 of the SAE Technical Board rules provides that: "All technical reports, including standards approved and practices recommended, are advisory only. Their use by anyone engaged in industry or trade is entirely voluntary. There is no obligation to adhere to any SAE standard or recommended practice, and no commitment to conform to or be guided by any technical report. In formulating and approving technical reports, the Board and its Committees will not investigate or consider patents which may apply to the subject matter. Prospective users of the report are responsible for protecting themselves against liability for infringement of patents."

6.1.1 Bars, Rods, Wire, and Shapes:

Nominal Diameter or Thickness, and Area Inches	Tensile Strength psi, min	Yield Strength at 0.2% Offset or at Extension Indicated (E = 10,500,000)		Elongation % in 2 in. or 4D min
		psi, min	Extension Under Load in. in 2 in.	
Up to 0.249, incl, all areas	57,000	42,000	0.0120	12
Over 0.249 to 0.749, incl, all areas	60,000	44,000	0.0124	12
Over 0.749 to 1.499, incl, all areas	65,000	46,000	0.0128	10
Over 1.499				
Area 25 sq in. and under	70,000	52,000	0.0139	10
Area over 25 to 30 sq in., incl	68,000	48,000	0.0131	8

6.1.1.1 For material of such thickness that a standard test specimen cannot be taken, or for material under 0.062 in. in thickness, the test for elongation is not required.

6.1.1.2 The tensile property requirements shall be based on the thickness of the portion of the extrusion from which the test specimens are taken. Specimens from sections over 1.5 in. in diameter or thickness shall be taken midway between center and surface.

6.1.2 Tubing:

Nominal Wall Thickness and Area Inches	Tensile Strength psi, min	Yield Strength at 0.2% Offset or at Extension Indicated (E = 10,500,000)		Elongation % in 2 in. or 4D (a) min
		psi, min	Extension Under Load in. in 2 in.	
Up to 0.249, incl, all areas	57,000	42,000	0.0120	10
Over 0.249 to 0.749, incl, all areas	60,000	44,000	0.0124	10
Over 0.749 to 1.499, incl, all areas	65,000	46,000	0.0128	10
Over 1.499				
Area up to 25 sq in., incl	70,000	48,000	0.0131	10
Area over 25 to 32 sq in. incl	68,000	46,000	0.0128	8

(a) Elongation of full section and cut-out sheet type specimens shall be measured on a 2 in. gage length; for cut-out round specimens, elongation shall be measured on a gage length of 4D where D represents diameter of specimen.

6.1.3 When a dispute occurs between purchaser and vendor over the yield strength value, yield strength determined by the offset method shall apply.

6.1.4 If sizes other than those shown are ordered, tensile properties shall be as agreed upon by purchaser and vendor.

6.2 Hardness: Material should have hardness not lower than Brinell 100 using 500 kg load and 10 mm ball or 1000 kg load and 9/16 in. ball, or not lower than Brinell 106 using 1000 kg load and 10 mm ball, but shall not be rejected on the basis of hardness if the tensile property requirements are met.