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

AMS 4154F

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ALUMINUM ALLOY EXTRUSIONS
5.6Zn - 2.5Mg - 1.6Cu - 0.3Cr (7075-T6)

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, shapes, and tubing.

3. APPLICATION: Primarily for parts requiring high strength and whose fabrication does not usually involve welding or forming.

4. COMPOSITION:

Zinc	5.1 - 6.1
Magnesium	2.1 - 2.9
Copper	1.2 - 2.0
Chromium	0.18 - 0.40
Iron	0.7 max
Silicon	0.50 max
Manganese	0.30 max
Titanium	0.20 max
Other Impurities, each	0.05 max
Other Impurities, total	0.15 max
Aluminum	remainder

5. CONDITION: Solution and precipitation heat treated.

5.1 Unless otherwise specified, extrusions shall be supplied with an 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 Longitudinal Tensile Properties:

6.1.1 Rods, Bars, and Shapes:

Nominal Diameter or Thickness, and Area Inches	Tensile Strength psi, min	Yield Strength at 0.2% Offset or at Extension Indicated (E = 10,300,000) Extension Under Load		Elongation % in 2 in. or 4D min
		psi, min	in. in 2 in.	
Under 0.250, all areas	78,000	70,000	0.0176	7
0.250 to 0.499, incl, all areas	81,000	73,000	0.0182	7
Over 0.499 to 2.999, incl, all areas	81,000	72,000	0.0180	7
Over 2.999 to 4.499, incl				
Area 20 sq in. and under	81,000	71,000	0.0178	7
Area over 20 to 32 sq in., incl	78,000	70,000	0.0176	6
Over 4.499 to 5.000, incl				
Area 32 sq in. and under	78,000	68,000	0.0172	6

6.1.1.1 For material of such thickness that a standard test specimen cannot be taken, or for material under 0.062 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 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 = 10,300,000) Extension Under Load		Elongation % in 2 in. or 4D min
		psi, min	in. in 2 in.	
Under 0.250	78,000	70,000	0.0176	7
0.250 to 0.499, incl	81,000	73,000	0.0182	7
Over 0.499 to 2.999, incl				
Area 32 sq in. and under	81,000	72,000	0.0180	7

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 above are ordered, tensile properties shall be as agreed upon by purchaser and vendor.

6.2 Long Transverse Tensile Properties: Rods, bars, and shapes, when tested in the long transverse direction, shall be capable of meeting the following properties:

Nominal Diameter or Thickness, and Area Inches	Tensile Strength psi, min	Yield Strength at 0.2% Offset or at Extension Indicated (E = 10,300,000)		Elongation % in 2 in. or 4D(a) min
		psi, min	Extension Under Load in. in 2 in.	
Under 0.250 Area 20 sq in. and under	76,000	64,000	0.0164	5
0.250 to 0.499, incl Area 20 sq in. and under	77,000	66,000	0.0168	5
Over 0.499 to 0.749, incl Area 20 sq in. and under	73,000	63,000	0.0162	4
Over 0.749 to 1.499, incl Area 20 sq in. and under	72,000	62,000	0.0160	3
Over 1.499 to 2.999, incl Area 20 sq in. and under	66,000	56,000	0.0149	1
Over 2.999 to 4.499, incl Area 32 sq in. and under	62,000	54,000	0.0145	1
Over 4.499 to 5.000, incl Area 32 sq in. and under	60,000	53,000	0.0143	1

(a) Elongation of full section and cut-out sheet type specimens; for cut-out round specimens D represents diameter of specimen.

6.3 Hardness: Material should have hardness not lower than Brinell 135 using 500 kg load and 10 mm ball or 1000 kg load and 9/16 in. ball, or not lower than Brinell 140 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.

7. QUALITY: Material shall be uniform in quality and condition, clean, sound, and free from foreign materials and from internal and external imperfections detrimental to fabrication or to performance of parts.

8. TOLERANCES: Unless otherwise specified, tolerances shall conform to all applicable requirements of the latest issue of AMS 2205.

9. REPORTS:

9.1 Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a report stating that the chemical composition and Ø tensile properties of the product conform to the requirements specified. This report shall include the purchase order number, material specification number, size or section identification number, and quantity.

9.2 Unless otherwise specified, the vendor of finished or semi-finished parts shall furnish with each shipment three copies of a report showing the purchase order number, material specification number, contractor or other direct supplier of material, part number, and quantity. When material for making parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of material to determine conformance to the requirements of this specification, and shall include in the report a statement that the material conforms, or shall include copies of laboratory reports showing the results of tests to determine conformance.