AERONAUTICAL MATERIAL SPECIFICATIONS

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

AMS 4082E

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ALUMINUM ALLOY TUBING, SEAMLESS, DRAWN
1Mg - 0.6Si - 0.25Cu - 0.25Cr (6061-T6)

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

2. APPLICATION: Primarily for parts and assemblies, such as brackets, conduits, and low pressure liquid lines, where high strength is required.

3. COMPOSITION:

Magnesium	0.8 - 1.2
Silicon	0.40 - 0.8
Copper	0.15 - 0.40
Chromium	0.15 - 0.35
Iron	0.7 max
Zinc	0.25 max
Manganese	0.15 max
Titanium	0.15 max
Other Impurities, each	0.05 max
Other Impurities, total	0.15 max
Aluminum	remainder

4. CONDITION: Solution and precipitation heat treated.

5. TECHNICAL REQUIREMENTS:

5.1 Tensile Properties:

Nominal Wall Thickness Inches	Tensile Strength psi, min	Yield Strength at 0.2% Offset or at Extension Indicated (E = 9,900,000)		Elongation % in 2 in. min.	
		psi, min	Extension Under Load in. in 2 in.	Strip	Full Section
0.025 to 0.049, incl	42,000	35,000	0.0111	8	10
Over 0.049 to 0.259, incl	42,000	35,000	0.0111	10	12
Over 0.259 to 0.500, incl	42,000	35,000	0.0111	12	14

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

5.2 Hardness: Tubing should have hardness not lower than Rockwell B 50 or equivalent, but shall not be rejected on the basis of hardness if the tensile property requirements are met.

5.3 Flattening: Tubing having nominal wall thickness less than 10% of the nominal OD shall be capable of withstanding, without cracking, flattening sideways under a load applied gradually at room temperature until the outside dimension under load is equal to 8 times the nominal wall thickness.

5.3.1 If tubing does not pass the flattening test of 5.3 a section of the tube not less than 1/2 in. in length and embracing 1/3 to 1/2 the circumference of the tube shall be capable of withstanding, without cracking, bending at room temperature through an angle of 180 deg around a diameter equal to 6 times the nominal wall thickness of the tubing with axis of bend parallel to axis of tube and with inside of tube on inside of bend.

6. QUALITY: Tubing 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.

7. TOLERANCES: Unless otherwise specified, tolerances shall conform to the latest issue of AMS 2203 as applicable and as specified below:

7.1 Diameter: Table I, column headed "Mean Diameter".

8. REPORTS:

8.1 Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a report stating that the product conforms to the chemcial composition and technical requirements of this specification. This report shall include the purchase order number, material specification number, size, and quantity.

8.2 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.

9. IDENTIFICATION:

9.1 Unless otherwise specified, each tube 0.25 in. and over in OD shall be marked with the manufacturer's identification and, in addition, the alloy name or number and temper, or AMS 4082. The characters shall be of such size as to be clearly legible, shall be applied recurring at intervals not exceeding 2 ft using a suitable marking fluid, and shall not be obliterated by normal handling or heat treatment.

9.2 Tubing less than 0.25 in. in OD shall be identified as agreed upon by purchaser and vendor.