Society of Automotive Engineers, Inc.
TWO PENNSYLVANIA PLAZA, NEW YORK, N.Y. 10000

AEROSPACE MATERIAL SPECIFICATION

AMS 4082G
Superseding AMS 4082F
Issued 9-19-40
Revised 11-1-68

ALUMINUM ALLOY TUBING, SEAMLESS, DRAWN
1.0Mg - 0.60Si - 0.30Cu - 0.20Cr (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:

	min	max
Magnesium	0.8	1.2
Silicon	0.40	0.8
Copper	0.15	0.40
Chromium	0.04	0.35
Iron	--	0.7
Zinc	--	0.25
Manganese	--	0.15
Titanium	--	0.15
Other Impurities, each	--	0.05
Other Impurities, total	--	0.15
Aluminum	remainder	

4. CONDITION: Solution and precipitation heat treated.

5. TECHNICAL REQUIREMENTS: The product shall conform to the following requirements; tensile properties shall be determined in accordance with the latest issue of AMS 2355.

5.1 Tensile Properties: The following requirements apply to tubing having nominal wall thickness of 0.025 to 0.500 in., inclusive:

Nominal Wall Thickness Inch	Tensile Strength psi, min	Yield Strength at 0.2% Offset or at Extension Indicated (E = 9,900,000)		Elongation % in 2 in. or 4D, 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 Tensile properties shall be as agreed upon by purchaser and vendor for tubing having nominal wall thickness under 0.025 inch.

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

5.2 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.

5.2.1 If tubing does not pass the flattening test of 5.2, a section of 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:

6.1 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. A polished Ø and etched cross-section of a tube shall show no evidence of cracks, seams, or folds when examined at a magnification of 100 diameters.

6.1.1 Detrimental imperfections include, but are not limited to, any cracks, splits, seams, inclusions, or Ø severe crosshatching (surface breaks) that cannot be removed by lightly hand sanding, using 180 grit or finer sandpaper.

7. TOLERANCES: Unless otherwise specified, tolerances shall conform to all applicable requirements of the latest issue of AMS 2203.

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 chemical composition and technical requirements of this specification. This report shall include the purchase order number, material specification number and its revision letter, 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 and its revision letter, 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: Unless otherwise specified, tubing shall be identified as follows:

9.1 Straight Tubes 0.029 In. and Over in Wall Thickness and 0.500 In. and Over in OD, Minor Axis, or Least Width of Flat Surface: Shall be marked in a row of characters recurring at intervals not greater than 3 ft with the alloy number and temper, AMS 4082G or applicable Federal or Military specification Ø designation, and manufacturer's identification. The characters shall be of such size as to be clearly legible, shall be applied using a suitable marking fluid, and shall be sufficiently stable to withstand normal handling.

9.2 Straight Tubes Under 0.029 In. in Wall Thickness or Under 0.500 In. in OD, Minor Axis, or Least Width of Flat Surface: Shall be securely bundled, boxed, or secured on lifts and identified by two tags marked Ø with the information 9.1 and attached, not farther than 2 ft from each end, to the tubes in each bundle, box, or lift.

9.3 Coiled Tubing: Shall be securely bundled and identified with information of 9.1 by a tag attached to each Ø coil or on the tape used to bind the coil.