AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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AMS 4071C

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ALUMINUM ALLOY TUBING, HYDRAULIC
2.5Mg - 0.25Cr (52S)

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 aircraft hydraulic systems up to 1500 psi operating pressure.

3. COMPOSITION:

Magnesium	2.2 - 2.8
Chromium	0.15 - 0.35
Iron + Silicon	0.45 max
Manganese	0.10 max
Copper	0.10 max
Zinc	0.10 max
Other Impurities, each	0.05 max
Other Impurities, total	0.15 max
Aluminum	remainder

4. CONDITION: Annealed, then drawn if required to meet dimensional tolerances.

4.1 Unless otherwise specified, tubing shall be supplied unground with an as-drawn surface finish.

5. TECHNICAL REQUIREMENTS:

5.1 Tensile Properties: Unless otherwise specified, tubing shall conform to the following requirements:

Tensile Strength, psi	Yield Strength at 0.2% Offset or at Extension Indicated (E=10,100,000)	
	psi	Extension Under Load, in. in 2 in.
26,000 min	10,000 min	0.0060
35,000 max	20,000 max	0.0079

5.2 Flattening:

5.2.1 Tubing having nominal wall thickness less than 10% of the nominal outside diameter shall be capable of being flattened sideways under a gradually applied load, without cracking, to an outside dimension 3 times the nominal wall thickness, while under load.

5.2.1.1 If tubing does not pass the flattening test of 5.2.1, a section of the tubing not less than 1/2 in. in length and embracing 1/3 to 1/2 the circumference of the tube shall be capable of being bent around a mandrel having a diameter equal to the nominal wall thickness, without cracking, until the specimen encloses at least 180 degrees of the pin circumference. The test shall be made with the axis of bend parallel to the axis of the tube and with inside of tube on inside of bend.

5.3 Flarability: Tubing with nominal OD of 0.375 in. and under shall be capable of being double-flared and tubing with nominal OD over 0.375 in. shall be capable of being single-flared without formation of cracks or other visible defects. Specimens for flaring may be cut from any portion of the tube, or an entire tube may be used as a specimen. The end of the specimen to be flared shall be cut square, with the cut end smooth and free from burrs, but not rounded except for sizes 0.375 in. and under. The specimen shall, at room temperature, be forced axially with steady pressure over a hardened and polished tapered steel pin having a 74-degree included angle, to produce a flare having the permanent expanded OD specified in the following table:

Nominal OD Inch	Expanded OD Inch, min	Nominal OD Inch	Expanded OD Inch, min
0.125	0.224	0.750	0.937
0.188	0.302	1.000	1.187
0.250	0.359	1.250	1.500
0.312	0.421	1.500	1.721
0.375	0.484	1.750	2.106
0.500	0.656	2.000	2.356
0.626	0.781		

5.3.1 Tubing with intermediate nominal OD shall take the same percentage flare as that for the next larger OD.

5.3.2 Tubing with nominal OD greater than 2.00 in. shall have flarability as agreed upon by purchaser and vendor.

6. QUALITY:

6.1 Tubing shall be uniform in quality and condition, clean, sound, and free from foreign materials and from internal and external defects detrimental to fabrication or to performance of parts. A polished and etched cross-section of a tube shall show no evidence of cracks, seams, or folds when examined at a magnification of 100 diameters.

6.2 Cleanliness of Tubing: Tubing shall be free from grease or other foreign matter and shall have a good workmanlike finish. No metallic flakes or particles shall be collected by a clean white cloth when it is drawn through the length of the bore of a test sample. The presence of metallic flakes or particles on the cloth will be cause for rejection. Discoloration of the cloth, without the presence of flakes or grit, will not be cause for rejection.