AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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AMS 4067

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ALUMINUM ALLOY TUBING
Aluminum-Manganese, (3S-1/2 H)

1. ACKNOWLEDGMENT: A vendor must mention this specification number in all quotations and when acknowledging purchase orders.

2. COMPOSITION:

Manganese	1.0 - 1.5
Copper	0.2 Max.
Aluminum	97.0 Min.

3. CONDITION: Unless otherwise specified, the tubing shall be supplied in the half hard condition having physical properties in accordance with Para. 4 of this specification.

4. PHYSICAL PROPERTIES: (a) The tubing when tested shall conform to the following physical properties:

Ultimate Tensile Strength ----------19,500 Minimum

(b) The tubing of less than 1/8 wall shall be capable of being crushed flat upon itself under a gradually applied load without cracking.

(c) The tubing shall be capable of being flared sufficiently for use in standard compression type fittings using usual shop equipment and practices.

(d) In case there is reason to believe any tube contains defects not revealed in other tests, particularly such defects as longitudinal seams, crushing tests may be made as described herein. A test piece having a lehgth 1.5 times the diameter of the tubing being tested and its ends machined perpendicular to the longitudinal axis of the tubing shall withstand crushing endwise under a gradually applied load until the outside diameter is increased 25.0 percent in any area, or until one complete fold is formed, or the specimen is reduced to two-thirds the original length. Material submitted to crushing test shall be fully annealed.

5. QUALITY: The material shall be seamless, uniform in quality and temper, clean, smooth, and free from seams, laminations, blisters, and other injurious defects.

6. TOLERANCES: (a) Outside Diameter. Tubing ordered to the following nominal outside diameters shall be within the following respective tolerances:

Nominal Outside Diameter	Tolerance in nominal diameter (plus or minus)	Tolerance in out of round (Maximum)
Inches	Inch	Inch
1/4 to 1/2, inclusive	0.003	0.003
Over 1/2 to 1, inclusive	.004	.004
Over 1 to 2, inclusive	.005	.005
Over 2 to 3, inclusive	.006	.006
Over 3 to 5, inclusive	.008	.008
Over 5 to 6, inclusive	.010	.010
Over 6 to 8, inclusive	.015	.015
Over 8 to 10, inclusive	.020	.020

Notes: a. The tolerances given in second column above apply to the mean of two readings taken at right angles to each other at any point along the tubing.
b. The nominal diameter is the specified diameter.
c. The maximum and minimum outside diameters (out of round) of any tube shall not differ more than the tolerances given in third column of the above table.

(b) Wall Thickness. Tubing shall be of the specified wall thickness at any point along the tubing within the following respective tolerances:

Wall Thickness	Tolerance (plus or minus)
Inch	Inch
0.035 and under	0.002
Over 0.035 to 0.049, inclusive	.003
Over 0.049 to 0.120, inclusive	.004
Over 0.120 to 0.203, inclusive	.005
Over 0.203 to 0.300, inclusive	.008
Over 0.300 to 0.375, inclusive	.012
Over 0.375 to 0.500, inclusive	.032

If so specified, a "plus only" or a "minus only" tolerance will be allowed, in which case the tolerance shall be double the respective "plus or minus" tolerance.

(c) Length. Standard lengths shall be 12 feet unless otherwise specified.

(d) Straightness. Tubes 3/8 inch or greater in diameter shall be straight within a tolerance of 0.1 inch in 10 feet or 1 part in 1200 parts of length. Tubes less than 3/8 inch in diameter shall be free of kinks and sharp bends and shall be commercially straight.