AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
29 West 39th Street
New York City

AMS 4082 A

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ALUMINUM ALLOY TUBING
Magnesium Silicon Copper (61S-T)

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

2. COMPOSITION:

Magnesium	0.8 - 1.2
Silicon	0.4 - 0.8
Copper	0.15 - 0.40
Chromium	0.35 max
Iron	0.7 max
Manganese	0.15 max
Titanium	0.15 max
Zinc	0.10 max
Other Impurities, each	0.05 max
Other Impurities, total	0.15 max
Aluminum	remainder

3. CONDITION: Heat treated (quenched and aged), unless otherwise specified, conforming to the following minimum physical properties:

Diameter inches	Wall Thickness inches	Tensile Strength lb per sq in.	Yield Strength at 0.2% Set or at Extension Indicated lb per sq in.	Extension Under Load inch in 2 in.	Elongation % in 2 in.
1/4 to 2	0.025 - 0.049	42,000	35,000	0.0108	10
	0.050 - 0.259	42,000	35,000	0.0108	12
	0.260 - 0.500	42,000	35,000	0.0108	14
Over 2 to 8	0.025 - 0.049	42,000	35,000	0.0108	8
	0.050 - 0.259	42,000	35,000	0.0108	10
	0.260 - 0.500	42,000	35,000	0.0108	12

Note: The material shall have a minimum hardness of Rockwell B50 but shall not be rejected on the basis of hardness if it conforms to the minimum tensile requirements.

4. QUALITY: The material shall be seamless, uniform in quality and temper, commercially straight, clean, smooth, and free from seams, laminations, blisters, and other injurious defects. Material revealing defects during fabrication is subject to rejection.

5. TOLERANCES: (a) Diameter.- The outside diameter of the tubing at any section shall not vary from the nominal diameter by more than the following tolerances;

Nominal Outside Diameter	Tolerance, plus or minus	
	Mean Diameter Measurement	Individual* Diameter Measurement
3/8 to 1/2, incl.	0.003	0.006
Over 1/2 to 1 "	0.004	0.008
Over 1 to 2 "	0.005	0.010
Over 2 to 3 "	0.006	0.012
Over 3 to 5 "	0.008	0.016
Over 5 to 6 "	0.010	0.020
Over 6 to 8 "	0.015	0.030
Over 8 to 10 "	0.020	0.040
Over 10 to 12 "	0.025	0.050

*Note: The tolerance of individual measurements shall not apply to tubes in which the wall thickness is less than 2.5 per cent of the diameter or less than 0.020 in. Such thin wall tubes shall be commercially round.

(b) Wall Thickness.- Individual readings for the various nominal wall thicknesses shall not vary more than the following:

NOMINAL	INDIVIDUAL READINGS		NOMINAL	INDIVIDUAL READINGS	
	Min	Max		Min	Max
0.022	0.020	0.025	0.109	0.098	0.120
0.025	0.023	0.028	0.120	0.108	0.132
0.028	0.025	0.031	0.134	0.120	0.148
0.032	0.029	0.036	0.148	0.133	0.163
0.035	0.032	0.039	0.165	0.148	0.182
0.042	0.038	0.047	0.180	0.162	0.198
0.049	0.044	0.054	0.203	0.182	0.223
0.058	0.052	0.064	0.220	0.198	0.242
0.065	0.059	0.072	0.238	0.214	0.262
0.072	0.065	0.080	0.259	0.233	0.285
0.083	0.075	0.092	0.284	0.255	0.312
0.095	0.085	0.105	0.300	0.270	0.330

6. REPORTS: The manufacturer shall furnish three copies of a notarized report stating that the physical properties and chemical composition of the material are within the requirements specified. This report shall include the purchase order number, material specification number, size, quantity, and part number if parts are supplied.

7. IDENTIFICATION: (a) Unless otherwise specified, each tube 5/8 inch in diameter and over shall be marked with the manufacturer's identification, and, in addition, the alloy name or number or AMS 4082, and the temper. The characters shall be not less than 1/8 inch in height and shall be applied continuously at intervals not exceeding 2 feet. The characters shall be clearly legible and applied to the material by suitable means and suitable marking fluid, and shall not be obliterated by normal handling or heat treatment.

(b) Tubes less than 5/8 inch in diameter may be identified by other means as agreed upon by the vendor and purchaser.