AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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AMS 5077

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STEEL TUBING (WELDED)
.22 - .28 Carbon

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

2. TYPE: The tubing shall be made from flat rolled steel by an approved continuous welding process without any extraneous additions of weld metal.

3. COMPOSITION:

		Individual Tube Check Analysis Over or Under
Carbon	0.22 - 0.28	0.01
Manganese	0.30 - 0.50	0.03
Phosphorus	0.04 max	0.008
Sulphur	0.05 max	0.008

4. GRAIN SIZE: Shall be fine and uniform in all parts of the tubing.

5. CONDITION: (a) "As-welded", or normalized, or sufficiently stress relieved if cold drawn, to conform to the following minimum physical properties:

Tensile Strength, lb per sq in.	55,000
Yield Strength (0.2% set), lb per sq in.	36,000
Equivalent Extension Under Load, inch in 2 in.	0.0064
Elongation, % in 2 in.	22

For each 2000 pounds per square inch in excess of 55,000 pounds per square inch tensile strength, a reduction in elongation of one per cent, to a minimum elongation of 10 per cent, will be allowed.

(b) The tubing shall be capable of developing the minimum physical properties specified in (a) when normalized by heating to 1625° -1675°F and cooling in still air.

6. QUALITY: (a) This tubing must be aircraft quality, uniform in temper and must not reveal defects during the fabrication processes.

(b) The tubing shall have a good workmanlike finish conforming to the best practice for high quality aircraft material. It shall be smooth, clean, and free from heavy scale or oxide, burrs, seams, tears, grooves, laminations, slivers, pits, and other injurious defects. Surface imperfections such as handling marks, straightening marks, light mandrel and die marks, shallow pits, and scale pattern will not be considered as injurious defects, provided the imperfections are removable within the tolerances specified herein for diameter and wall thickness. The removal of surface imperfections is not required.

(c) The maximum height of the inside welding flash shall not exceed 60% of the nominal wall thickness, and in no case shall it be greater than 3/64".

(d) On tubing ordered with flash removed the following flash height tolerances shall apply:

Nominal Outside Diameter	Wall Thickness	Flash Height
Up to 3/8, incl.	0.028 to 0.033, incl.	3/64
1/2	0.028 to 0.095, incl.	"
5/8	0.028 to 0.065, incl.	"
3/4 to 1 , incl.	0.028 to 0.049, incl.	"
3/4 to 1 , incl.	0.065 to 0.109, incl.	"
1 1/8 to 2 , incl.	0.035 to 0.049, incl.	.010
1 1/8 to 2 , incl.	0.065 to 0.109, incl.	.010
2 1/8 to 2 1/2 incl.	0.035 to 0.109, incl.	.010
2 5/8 to 3 , incl.	0.049 to 0.109, incl.	.010

7. TOLERANCES: (a) The following variations in nominal outside diameter for the available standard sizes listed are permissible; all dimensions are in inches:

Nominal Outside Diameter	Wall Thickness	Tolerance, plus or minus
Up to 3/8, incl.	0.028 to 0.083, incl.	0.003
1/2	0.028 to 0.095, incl.	0.004
5/8	0.028 to 0.065, incl.	0.005
3/4 to 1, incl.	0.028 to 0.049, incl.	0.005
3/4 to 1, incl.	0.065 to 0.109, incl.	0.004
1 1/8 to 2, incl.	0.065 to 0.109, incl.	0.005
1 1/8 to 2, incl.	0.035 to 0.049, incl.	0.006
2 1/8 to 2 1/2, incl.	0.035 to 0.109, incl.	0.007
2 5/8 to 3, incl.	0.049 to 0.109, incl.	0.010

(b) The following variations in nominal wall thickness for the outside diameter ranges indicated are permissible; all dimensions are in inches:

Nominal Wall Thickness	Outside Diameter	Tolerance, plus or minus
0.028 to 0.049, incl.	3/8 to 7/8, incl.	0.003
0.058 to 0.083, incl.	3/8 to 7/8, incl.	0.004
0.028 to 0.035, incl.	1 to 2 , incl.	0.003
0.049 to 0.083, incl.	1 to 2 , incl.	0.004
0.095 to 0.109, incl.	1 to 2 , incl.	0.005
0.095 to 0.109, incl.	2 to 3 , incl.	0.006
0.035 to 0.083, incl.	2 to 3 , incl.	0.004

(c) In no portion of any piece of tubing shall the departure from straightness exceed one part in 800 parts of length.