AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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AMS6441

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STEEL TUBING - SEAMLESS
1.45 Chromium (0.95-1.10C)

1. ACKNOWLEDGMENT: Vendor shall mention this specification number in all quotations and when acknowledging purchase orders.

2. COMPOSITION:

		Individual Tube Check Analysis Over or Under
Carbon	0.95 - 1.10	0.03
Manganese	0.25 - 0.45	0.03
Phosphorus	0.025 max	0.005
Sulphur	0.025 max	0.005
Silicon	0.20 - 0.35	0.02
Chromium	1.30 - 1.60	0.05
Nickel	0.35 max	0.03
Copper	0.25 max	0.02
Molybdenum	0.08 max	0.00

3. HARDENABILITY: Hardenability test specimens shall be full sections of the tubing having a length of 5/8 inch after grinding both faces normal to the axis. Specimens having wall thicknesses 1/2 inch or less, wall thicknesses over 1/2 inch being turned to 1/2 inch, shall, after copper plating, be placed in a furnace which is at 1525°F, allowed to heat to 1525°F, held 20 minutes at heat and quenched in commercial paraffin oil (100 S.U.V. at 100°F) at room temperature. The treated specimens shall, after removal of copper plating, have a uniform cross-sectional hardness of not less than Rockwell C 63.

4. CONDITION: (a) Tubing shall be supplied cold finished, in a machinable condition, with a hardness not greater than Brinell 248 and with microstructure of well spheroidized cementite.

(b) Decarburization shall be kept to a minimum. After being properly hardened, a test piece shall show full hardness when not more than 0.025 inch has been removed from a side.

5. QUALITY: (a) The steel shall be aircraft quality. Tubing shall be uniform in quality and condition, clean, sound, and free from foreign materials and from internal and external defects which adversely affect its strength or machinablity. Tubing revealing defects during fabrication shall be subject to rejection.

(b) Tubing and parts made therefrom shall be subject to inspection by any method which will reveal defects.

5. QUALITY: (continued)

(c) 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.

6. TOLERANCES: Unless otherwise specified, tolerances shall conform to AMS 2253 as applicable and/or as specified below:

(a) Diameter - Table I, column headed "Annealed or Normalized".

(b) Wall thickness - paragraph 4(a).

(c) Straightness - paragraph 6(a).

7. REPORTS: (a) Unless otherwise specified, the vendor of tubing shall furnish three copies of a notarized report of the chemical composition of each heat in each shipment. This report shall include the purchase order number, heat number, material specification number, size, and quantity in each heat.

(b) Unless otherwise specified, the vendor of finished or semi-finished machined parts shall furnish with each shipment three copies of a notarized report showing the purchase order number, material specification number, contractor or other direct supplier of tubing, part number, and quantity. When tubing for making parts is supplied by the machined parts vendor, the vendor shall inpsect each lot of tubing to determine conformance to the requirements of this specification, and shall include in the above report a certification that the tubing conforms, or shall include copies of the laboratory report showing the results of tests to determine conformance.

8. IDENTIFICATION: (a) Unless otherwise specified, each tube in sizes 1/2 inch in diameter or over shall be marked with AMS 6441 and the condition at intervals not greater than two feet between centers. The heat number shall be marked on one or both ends. The characters shall be not less than 1/4 inch in height. The characters shall be clearly legible and applied to the tube by suitable means and suitable marking fluid, and shall not be obliterated by normal handling, nor by grease nor oil.

(b) Tubes less than 1/2 inch in diameter may be securely bundled and identified by a metal tag stamped with the above information and attached to each bundle, or boxed and the identification tag enclosed.

(c) Tubes that cannot be identified at destination shall be subject to rejection.