AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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New York City

AMS 5050B

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STEEL TUBING (SEAMLESS)
Low Carbon (Annealed)

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

2. COMPOSITION:

		Individual Tube Check Analysis Over or Under
Carbon	0.05 - 0.15	0.01
Manganese	0.30 - 0.60	0.03
Phosphorus	0.040 max	0.008
Sulphur	0.050 max	0.008

CONDITION: (a) Normalized or annealed conforming to the following minimum elongation:

Nominal Outside Diameter inches	Elongation % in 2 in.	
	Full Tube	Strip
0.50 and less	32	--
Over 0.50 to 5.5, incl.	35	25

(b) The tubing shall be capable of being 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. The specimen shall, at room temperature, be forced axially with steady pressure over a hardened and polished, tapered steel pin having a 60° included angle, until the end of the specimen has been enlarged not less than the percentages of outside diameter shown in the following table. The specimen and pin shall be clean and dry during test.

Nominal Wall Thickness	OD Increase
Up to and including 7% of OD	35%
Over 7% of OD	45%

A tube shall be judged to meet the test if no crack or other visible defect is found in specimens during the above flaring.

(c) When specified, each tube shall be flared by the mill to reveal defects on the inside diameter.

4. QUALITY: (a) The tubing shall be suitable for use in aircraft shall be uniform in temper and shall not reveal defects during the fabrication processes.

(b) The tubing shall have a good workmanship 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.

5. TOLERANCES: (a) The following variations in nominal outside diameter are permissible; all dimensions are in inches:

Nominal Outside Diameter	Tolerance, Individual Diameter Measurement
Less than 1.5	± 0.005
1.5 to 3.0, incl.	± 0.010
Over 3.0 to 5.5, incl.	± 0.015

Note: If so specified in the purchase order, the tolerances for outside diameter shall apply to the inside diameter instead, but not to both inside and outside diameter of the same lot of tubing.

(b) The wall thickness of tubes 0.5 inch or larger nominal inside diameter shall not vary more than plus or minus 10% from the thickness specified; smaller sizes may vary plus or minus 15%.

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

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

(b) Unless otherwise specified, the parts manufacturer shall furnish with each shipment three copies of a notarized report showing the purchase order number, material specification number, part number, and quantity. When tubing for making parts is supplied by the parts manufacturer, the parts manufacturer shall inspect each lot of tubing to determine conformance with this specification and shall include in the report a certification that the tubing conforms to the specification.

7. IDENTIFICATION: (a) Unless otherwise specified, each tube in sizes 5/8 inch in diameter or over shall be marked with AMS 5050 at intervals not greater than two feet between centers. The characters shall be not less than 1/4 inch in height. 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, nor by grease nor oil, and shall not interfere with welding procedures.

(b) Tubes less than 5/8 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) Material that cannot be identified at destination is subject to rejection.