# AERONAUTICAL MATERIAL SPECIFICATION

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

**AMS5050C**

Issued 12-4-39
Revised 3-1-49

## STEEL TUBING, SEAMLESS
Low Carbon (SAE 1010)
Annealed

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

2. APPLICATION: Oil lines and other parts requiring superior quality tubing suitable for severe forming and for welding and brazing.

3. COMPOSITION:

| | | Check Analysis | |
|---|---|---|---|
| | | Under Min or | Over Max |
| Carbon | 0.05 - 0.15 | 0.01 | 0.01 |
| Manganese | 0.30 - 0.60 | 0.03 | 0.03 |
| Phosphorus | 0.040 max | -- | 0.005 |
| Sulfur | 0.050 max | -- | 0.005 |

4. CONDITION: Cold drawn and annealed.

4.1 Fabrication: Any surface finishing operation applied to remove objectionable pits and surface blemishes shall be performed prior to the last annealing. A light polish to improve surface appearance may be employed after annealing.

5. TECHNICAL REQUIREMENTS:

5.1 Elongation:

| Nominal Outside Diameter Inches | Elongation % in 2 in. | |
|---|---|---|
| | Full Tube | Strip |
| 0.50 and under | 32 | -- |
| Over 0.50 to 5.50, incl | 35 | 25 |

5.2 Flarability: 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 74-degree included angle, to produce a flare having the permanent percentage OD increase specified in the following table. The specimen and pin shall be clean and dry during test.

| Nominal Wall Thickness | % OD Increase |
|---|---|
| 7% of OD and under | 35 min |
| Over 7% of OD | 45 min |

6. QUALITY:

6.1 Tubing shall be suitable for use in aircraft, shall be uniform in condition, and shall not reveal defects during fabrication processes.

6.2 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 for diameter and wall thickness. The removal of surface imperfections is not required.

7. TOLERANCES: Unless otherwise specified, tolerances shall conform to the latest issue of AMS 2253 as applicable to Aircraft Type - Seamless. Diameter and straightness tolerances shall be as specified below:

7.1 Diameter: Table I, column headed "Annealed, Normalized or Stress relieved".

7.2 Straightness: Table VIII.

8. REPORTS:

8.1 Unless otherwise specified, the vendor of tubing shall furnish with each shipment three copies of a notarized report of the results of tests for the chemical composition of each heat in the shipment. This report shall include the purchase order number, heat number, material specification number, size, and quantity from each heat.

8.2 Unless otherwise specified, the vendor of finished or semi-finished 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 produced or purchased by the parts vendor, that vendor shall inspect each lot of tubing to determine conformance to the requirements of this specification, and shall include in the report a certification that the tubing conforms, or shall include copies of laboratory reports showing the results of tests to determine conformance.

9. IDENTIFICATION:

9.1 Unless otherwise specified, each tube 0.50 inch and over in outside diameter shall be marked with AMS 5050C and the manufacturer's identification, at intervals not greater than 2 feet between centers. The characters shall be not less than 1/4 inch in height, shall be applied using a suitable marking fluid and shall be capable of being removed in hot alkaline cleaning solution without rubbing. The markings shall have no deleterious effect on the material or its performance. The characters shall be sufficiently stable to withstand ordinary handling.

9.2 Tubes less than 0.50 inch in outside 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 box marked with the same information.