

AERONAUTICAL MATERIAL SPECIFICATION

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

AMS 5568

Issued 5-1-54

Revised

STEEL TUBING, WELDED, CORROSION RESISTANT
17Cr - 7Ni - 1Al Precipitation Hardening

1. ACKNOWLEDGMENT: A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.
2. APPLICATION: Primarily for parts requiring corrosion resistance and high strength up to 600 F, and where such parts may require welding during fabrication.
3. COMPOSITION:

		Check Analysis	
		Under Min	or Over Max
Carbon	0.09 max	--	0.01
Manganese	1.00 max	--	0.03
Silicon	1.00 max	--	0.05
Phosphorus	0.040 max	--	0.005
Sulfur	0.030 max	--	0.005
Chromium	16.00 - 18.00	0.20	0.20
Nickel	6.50 - 7.75	0.10	0.10
Aluminum	0.75 - 1.50	0.10	0.10

4. CONDITION: Annealed and descaled.

5. TECHNICAL REQUIREMENTS:

5.1 Tensile Properties:

Tensile Strength, psi 150,000 max
Yield Strength at 0.2% Offset or at 0.0078 in.
in 2 in. Extension Under Load (E = 29,000,000), psi 55,000 max
Elongation, % in 2 in. 20 min

- 5.2 Hardness: Shall be not higher than Rockwell B 92 or equivalent.

- 5.3 Flarability: Shall be as agreed upon by purchaser and vendor.

- 5.4 Properties After Heat Treatment: Material shall conform to the following requirements after transformation and precipitation heat treatment consisting of heating to 1400 F $\pm$ 25, holding at heat for 1½ hr, cooling to 60 F or below, reheating to 1050 F $\pm$ 10 and holding at heat for 1½ hr followed by air cooling.

5.4.1 Tensile Properties:

Tensile Strength, psi 180,000 min
Yield Strength at 0.2% Offset or at 0.0143 in.
in 2 in. Extension Under Load (E = 29,000,000), psi 150,000 min
Elongation, % in 2 in. 6 min

Section 7C of the SAE Technical Board rules provides that: "All technical reports, including standards approved and practices recommended, are advisory only. The use by anyone engaged in industry or trade is entirely voluntary. There is no obligation to conform to or be guided by any technical report. In formulating and approving technical reports, the Board and its Committees will not investigate or consider patents which may apply to the subject matter. Prospective users of the report are responsible for protecting themselves against liability for infringement of patents."

5.4.2 Hardness: Shall be not lower than Rockwell C 38 or equivalent.

5.5 Pressure Test: The tubing shall show no bulges, leaks, or other defects when subjected to an internal hydrostatic pressure, based on nominal dimensions, sufficient to cause a tensile stress of 20,000 psi in the tubing wall.

6. QUALITY:

6.1 Tubing shall have a good workmanlike finish conforming to the best practice for high quality aircraft material. Tubing shall be uniform in quality and condition, clean, sound, and free from grease and other foreign matter, and from internal and external defects detrimental to fabrication or to performance of parts.

6.2 If beads are present at the welds on the inner surfaces of the tubing, such beads shall not be thicker than 0.010 in., unless otherwise specified. The outer surfaces of the tubing shall be free from beads.

7. TOLERANCES: Unless otherwise specified, tolerances shall conform to the latest issue of AMS 2243 as applicable. Diameter tolerances shall conform to Table III.

8. REPORTS:

8.1 Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a report of the results of tests for chemical composition of each heat in the shipment and the results of tests on each size from each heat to determine conformance to the technical requirements of this specification. 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 report showing the purchase order number, material specification number, contractor or other direct supplier of material, part number, and quantity. When material for making parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of material to determine conformance to the requirements of this specification, and shall include in the report a statement that the material 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 in. and over in outside diameter shall be marked with AMS 5568 and the manufacturer's identification, the characters recurring at intervals not greater than 2 feet. The heat number shall be marked near one end. The characters shall be not less than 1/4 in. 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.