AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
29 West 39th Street
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AMS 5573

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Revised

TUBING, SEAMLESS, CORROSION AND HEAT RESISTANT
17.5Cr - 12.5Ni - 2.3Mo (SAE 30316)

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

2. APPLICATION: Parts and assemblies requiring both corrosion and heat resistance up to 1600 F. At high temperatures, strength of this steel is slightly higher than, and oxidation resistance similar to, that of 18-8 types.

3. COMPOSITION:

		Check Analysis Under Min or Over Max	
Carbon	0.08 max	--	0.01
Manganese	1.50 - 2.00	0.04	0.04
Silicon	1.00 max	--	0.05
Phosphorus	0.040 max	--	0.005
Sulfur	0.030 max	--	0.005
Chromium	16.00 - 19.00	0.20	0.20
Nickel	11.00 - 14.00	0.15	0.15
Molybdenum	2.00 - 2.50	0.10	0.10
Copper	0.50 max	--	0.03

4. CONDITION: Solution heat treated and pickled, or as ordered.

4.1 Fabrication: Any surface finishing operation applied to remove objectionable pits and surface blemishes shall be performed prior to the last solution heat treatment. A light polish to improve surface appearance may be employed after solution heat treatment. Passivation treatment shall follow any polishing treatment.

5. TECHNICAL REQUIREMENTS:

5.1 Tensile Properties:

Tensile Strength, psi	100,000 max
Elongation, % in 2 in.	
Strip	35 min
Full Section	40 min

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 expanded OD specified in the following table.

Nominal OD Inch	Expanded OD Inch, min	Nominal OD Inch	Expanded OD Inch, min
0.188	0.290	0.750	0.937
0.250	0.359	1.000	1.187
0.312	0.421	1.250	1.500
0.375	0.484	1.500	1.721
0.500	0.656	1.750	2.106
0.625	0.781	2.000	2.356

Note 1: Tubing with intermediate nominal OD shall take the same percentage flare as that for the next larger OD.

Note 2: Tubing with nominal OD greater than 2.00 inches, flarability shall be as agreed upon by purchaser and vendor.

6. QUALITY: 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 or other foreign matter, and from internal and external defects detrimental to fabrication or to performance of parts.

7. TOLERANCES: Unless otherwise specified, tolerances shall conform to the latest issue of AMS 2243 as applicable. Diameter tolerances shall conform to Table I, columns headed "Annealed or Solution Heat Treated".

8. REPORTS:

8.1 Unless otherwise specified, the vendor of tubing 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 tensile properties of each size from each heat. 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 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 statement 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 5573 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 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.