AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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AMS 6281

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Revised

STEEL TUBING - SEAMLESS (MECHANICAL)
.55 Ni .5 Cr .2 Mo (.27 -.33C)

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

2. TYPE: Heavy wall for machining.

3. COMPOSITION:

		Individual Tube Check Analysis Over or Under
Carbon	0.27 - 0.33	0.02 (under only)
Manganese	0.70 - 0.90	0.03
Phosphorus	0.040 max	0.005
Sulphur	0.040 max	0.005
Silicon	0.20 - 0.35	0.02
Nickel	0.40 - 0.70	0.03
Chromium	0.40 - 0.60	0.03
Molybdenum	0.15 - 0.25	0.02

4. GRAIN SIZE: 5 or finer as determined on the billet, ASTM E19-39T, method a, unless otherwise ordered. A heat of steel predominately 5 or finer with grains as large as 3 is permissible.

5. HARDENABILITY: Tubing having wall thickness up to 0.249 inch, when quenched in oil from 1550°F and tempered at not less than 900°F, shall develop a tensile strength of not less than 125,000 psi.

6. CONDITION: Unless otherwise specified, tubing shall be supplied cold finished. Both hot and cold finished tubing shall be supplied in a machinable condition, with hardness of not more than Rockwell B100.

7. DECARBURIZATION: (a) Tubing ordered ground or turned shall not be decarburized on the outside.

(b) Allowable decarburization of tubing or pierced billets for redrawing shall be as agreed between purchaser and vendor.

(c) Decarburization of all tubing to which (a) or (b) above is not applicable shall be not greater than the following:

Nominal Wall Thickness Inch	Maximum Depth of Decarburization, Inch	
	Inside	Outside
To 0.109, incl.	0.008	0.015
Over 0.109 to 0.203, incl.	0.010	0.020
Over 0.203 to 0.40, incl.	0.012	0.025
Over 0.40 to 0.60, incl.	0.015	0.030
Over 0.60 to 1.00, incl.	0.017	0.035
Over 1.00	0.020	0.040

7. DECARBURIZATION: (cont'd)

(d) Decarburization as allowed in (c) does not apply to tubing in which definite microstructural requirements must be met. The allowable decarburization of such tubing shall be as agreed between purchaser and vendor.

(e) Decarburization shall be measured by the microscopic method.

8. 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 machinability. 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.

9. TOLERANCES: Unless otherwise specified, tolerances shall conform to AMS 2253 as applicable to Mechanical Type.

10. REPORTS: (a) Unless otherwise specified, the vendor of tubing shall furnish three copies of a notarized report of the chemical composition and grain size of each 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 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, the vendor shall inspect 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.

11. IDENTIFICATION: (a) Unless otherwise specified, each tube in sizes 1/2 inch or over in diameter shall be marked with AMS 6281 and vendor's name or trade mark. The characters shall be not less than 1/4 inch in height and applied to the tube by suitable means and marking fluid. The characters shall be clearly legible and shall not be obliterated by normal handling nor by grease or 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) The heat number, in addition to the above information, shall be applied to tubes as follows:

(1) If tubes are shipped loose, each tube shall be marked with the heat number within 2 inches of one end.

(2) If tubes are shipped bundled or boxed, each tube may be marked with the heat number or the heat number may be stamped on the metal tag attached to each bundle or enclosed in each box.

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