

# AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.  
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## AMS 6413

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Revised

STEEL TUBING (SEAMLESS FOR MACHINED PARTS)  
Nickel Chromium Molybdenum (.35-.42 Carbon)  
Hot Finish and Cold Finish

1. ACKNOWLEDGMENT: A vendor must 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	0.35 - 0.40	0.02
Manganese	0.60 - 0.80	0.03
Phosphorus	0.040 max	0.005
Sulphur	0.040 max	0.005
Silicon	0.20 - 0.35	0.02
Nickel	1.65 - 2.00	0.05
Chromium	0.70 - 0.90	0.03
Molybdenum	0.20 - 0.30	0.03

3. 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.

4. CONDITION: (a) Unless otherwise ordered the tubing shall be supplied in the annealed condition (Rockwell C-25 maximum).

(b) When normalized condition is ordered the hardness shall be Rockwell C-30 (Max).

5. QUALITY: (a) This material must be aircraft quality, uniform in temper and must not reveal injurious defects during the fabrication processes.

(b) Finished parts may be subject to magnetic inspection.

(c) The tubing shall have a good workman-like finish consistent with established commercial practice.

6. TOLERANCES FOR ROUND SEAMLESS TUBING:

(a) Hot Finish Tubing

<u>Nominal Outside Diameter, Inches</u>	<u>Outside Diameter Tolerance, Inch</u>	<u>Wall Thickness Tolerance, Percent</u>
Less than 3.0	± 0.023	± 12½%
3.0 to 5.5	± 0.031	± 12½%
5.5 to 8.0	± 0.047	± 12½%
8.0 to 10.75	± 0.047	± 12½%
10.75 to 12.75	± 0.063	± 12½%