

AERONAUTICAL MATERIAL SPECIFICATION

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STEEL TUBING, SEAMLESS (MECHANICAL)
0.55Ni - 0.5Cr - 0.2Mo (0.27-0.33C) (SAE 8630)

1. **ACKNOWLEDGMENT:** A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.
2. **FORM:** Heavy wall tubing for machining.
3. **APPLICATION:** Parts with sections 0.50 in. or less in thickness at the time of heat treatment which require a through-hardening steel capable of developing hardness as high as Rockwell C35 when properly hardened and tempered.
4. **COMPOSITION:**

		Check Analysis	
		Under	Min or Over Max
Carbon	0.27 - 0.33	0.02	0.00
Manganese	0.70 - 0.90	0.03	0.03
Silicon	0.20 - 0.35	0.02	0.02
Phosphorus	0.040 max	---	0.005
Sulfur	0.040 max	---	0.005
Chromium	0.40 - 0.60	0.03	0.03
Nickel	0.40 - 0.70	0.03	0.03
Molybdenum	0.15 - 0.35	0.02	0.02

5. **CONDITION:** Unless otherwise specified, tubing shall be supplied cold finished in a machinable condition with hardness not higher than Rockwell B100. If hot finished tubing is ordered, it shall be supplied in a machinable condition with hardness not higher than Rockwell B98.

6. **TECHNICAL REQUIREMENTS:**

- 6.1 **Hardenability:** The hardenability shall be J35=5 min when determined by the standard end-quench test specimen in accordance with the SAE Method of Determining Hardenability published in the latest issue of the SAE Handbook, except that the steel shall be normalized at 1700 F \pm 10 and the test specimen austenitized at 1525 F \pm 10. The hardenability test is not required on tubing which will not yield a suitable specimen but the steel from which the tubing is made shall conform to the hardenability specified in this paragraph.
- 6.2 **Grain Size:** Five or finer as determined on the billet, ASTM E19-46, method a. A heat of steel predominantly five or finer with grains as large as three is permissible.
- 6.3 **Decarburization:**
 - 6.3.1 Tubing ordered ground, turned, or polished shall be free from decarburization on such ground, turned or polished surfaces. Inside decarburization shall not exceed the maximum depth specified in 6.3.3.

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