

AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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Revised

STEEL

1.85Ni - 0.5Cr - 0.25Mo - 0.05V - 0.004B

1. **ACKNOWLEDGMENT:** A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.
2. **FORM:** Bars, billets, forgings, and mechanical tubing.
3. **APPLICATION:** Carburized parts, including gears, which require high minimum core hardness with narrow range and in which the core is machinable after hardening.
4. **COMPOSITION:**

Check Analysis

Under Min or Over Max

Carbon	0.08 - 0.13	0.01	0.01
Manganese	0.75 - 1.00	0.03	0.03
Silicon	0.20 - 0.40	0.05	0.05
Phosphorus	0.040 max	—	0.005
Sulfur	0.040 max	—	0.005
Chromium	0.40 - 0.60	0.03	0.03
Nickel	1.65 - 2.00	0.05	0.05
Molybdenum	0.20 - 0.30	0.02	0.02
Vanadium	0.03 - 0.08	0.01	0.01
Boron	0.001 - 0.007	—	—

5. **CONDITION:** Unless otherwise specified, the product shall be supplied in the following condition:
 - 5.1 **Bars and Tubing:** In a machinable condition with hardness not higher than Brinell 229, except that if cold-finished stock is ordered, hardness as high as Brinell 248 is permissible.
 - 5.2 **Forgings:** As ordered.
 - 5.3 **Forging Stock:** As ordered by the forging manufacturer.
6. **TECHNICAL REQUIREMENTS:**
 - 6.1 **Hardenability:** The hardenability shall be J41 max and J35=8 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 + 10 and the specimen austenitized at 1555 F + 5. The hardenability test is not required on a product which will not yield a suitable specimen, but the steel from which the product is made shall conform to the hardenability specified in this section.
 - 6.2 **Grain Size:** Five or finer, ASTM E19-46, method a. A heat of steel predominantly five or finer with grains as large as three is permissible.

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