

AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
29 West 39th Street
New York City

AMS6266A

Issued 3-1-49

Revised 6-1-51

STEEL

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

1. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.
2. FORM: Bars, forgings, forging stock, and mechanical tubing.
3. APPLICATION: Carburized parts, including gears, which require high minimum core hardness with narrow range. 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 | 0.04 | 0.04 |
| 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:
 - 5.1 Bars: In a machinable condition having hardness not higher than Brinell 229 or equivalent, except that, if ordered cold finished, hardness may be as high as Brinell 248 or equivalent.
 - 5.2 Tubing: In a machinable condition.
 - 5.3 Forgings: As ordered.
 - 5.4 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 \pm 10 and the test specimen austenitized at 1555 F \pm 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 paragraph.
 - 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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