# AERONAUTICAL MATERIAL SPECIFICATION

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

**AMS 6342**

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Revised

## S T E E L
## 1 Ni .8 Cr .25 Mo (.38 - .43 C)



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

2. FORM: Bars, billets, forgings, or as ordered.

3. COMPOSITION:

| | | Individual Bar Check Analysis Over or Under |
|---|---|---|
| Carbon | 0.38 - 0.43 | 0.02 |
| 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 | 0.85 - 1.15 | 0.05 |
| Chromium | 0.70 - 0.90 | 0.03 |
| Molybdenum | 0.20 - 0.30 | 0.03 |

4. GRAIN SIZE: 5 or finer, 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: The hardenability shall be measured on the end quench test bar in accordance with ASTM A255-42T. After normalizing at approximately 1675°F and hardening from 1525°F ± 10°F, the hardness of the standard bar shall be not less than Rockwell C 50 at 12/16 inch from the water cooled end.

6. CONDITION: (a) Bar stock shall be supplied in a machinable condition with a hardness of not more than Brinell 229, unless otherwise ordered.

(b) Stock ordered for forging shall be supplied in the condition and finish ordered by the forging manufacturer.

(c) Forgings shall be supplied as ordered.

(d) Cold-finished material shall not be decarburized to depths greater than the following:

| Diameter or Thickness, inches | Allowable Decarburization, inch |
|---|---|
| Up to 1.0, incl. | 0.012 |
| Over 1.0 to 1.5, incl. | 0.018 |
| Over 1.5 to 2.0, incl. | 0.021 |
| Over 2.0 | 0.030 |

(e) All sizes of material ordered ground, turned, polished, etc., shall not be decarburized.

7. QUALITY: (a) This material shall be aircraft quality. It shall be sound, clean, commercially straight and shall not reveal injurious defects during forging, heat treating, or machining.

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(b) Visual examination of deep acid etched bars in the as furnished condition shall show no evidence of abnormal segregation, pipes, cracks, seams, or abnormal change in structure from the surface to the center.

(c) Unless otherwise stated, finished parts are subject to magnetic inspection.

8. TOLERANCES: Unless otherwise ordered, the following tolerances shall apply:

(a) Cold-finished round bars and all hexagons shall be in accordance with the following:

| Diameter or Thickness, inches | Tolerance, inch | |
|---|---|---|
| | plus | minus |
| Up to 2, incl. | 0.000 | 0.004 |
| Over 2 to 3, incl. | 0.000 | 0.006 |
| Over 3 to 6, incl. | 0.000 | 0.008 |

(b) Other shapes of cold-finished bars shall be in accordance with commercial tolerances.

(c) All hot-rolled bars, other than hexagons, shall be in accordance with commercial tolerances.

9. REPORTS: (a) The supplier shall furnish three copies of a notarized report of the chemical composition, grain size, hardenability results, and physical properties when specified in the order, of each heat and size in each shipment. This report shall include the purchase order number, heat number, material specification number, size, and quantity in each heat. If forgings are supplied, the part number and size of steel used to make the forgings shall also be included.

(b) The parts manufacturer shall furnish with each shipment three copies of a notarized report showing the purchase order number, material specification number, part number and quantity. When material for making parts is supplied by the parts manufacturer, the parts manufacturer shall inspect each lot of material to determine conformance to the requirements of this specification and shall include in the report a certification that the material conforms to the specification.

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10. SHIPMENTS: More than one heat of steel shall not be supplied on a purchase order without permission, unless the order is for more than 5 tons.

11. IDENTIFICATION: (a) Bar stock 2 inches or larger shall be stamped with the heat number within 2 inches of one end. Smaller bars may either be stamped with the heat number or securely bundled and identified by a metal tag stamped with the purchase order number, AMS 6342, and heat number.

(b) Forgings shall be identified in accordance with AMS 2808.

(c) Material that cannot be identified at destination is subject to rejection.