# AERONAUTICAL MATERIAL SPECIFICATION

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

**AMS5667A**

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## ALLOY, CORROSION AND HEAT RESISTANT
## Nickel Base - 15Cr - 7Fe - 2.5Ti - 1Cb - 0.7Al

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

2. FORM: Bars, billets, and forgings.

3. APPLICATION: Primarily parts, such as bolts and turbine rotors, requiring high strength at 800-1100 F.

4. COMPOSITION:

| | |
|---|---|
| Carbon | 0.08 max |
| Manganese | 0.30 - 1.00 |
| Silicon | 0.50 max |
| Sulfur | 0.01 max |
| Chromium | 14.00 - 16.00 |
| Nickel | 70.00 min |
| Columbium | 0.70 - 1.20 |
| Titanium | 2.25 - 2.75 |
| Aluminum | 0.40 - 1.00 |
| Iron | 5.00 - 9.00 |
| Copper | 0.20 max |

5. CONDITION: Unless otherwise specified, the product shall be supplied in the following condition:

5.1 Bars: Hot finished and ground or turned, then heated to 1625 F ± 25, held at heat 24 hr and air cooled.

5.2 Forgings: Heated to 1625 F ± 25, held at heat 24 hr and cooled as required.

5.3 Forging Stock: As ordered by the forging manufacturer.

6. TECHNICAL REQUIREMENTS:

6.1 Bars:

6.1.1 Hardness as received:

6.1.1.1 Diameter 2.5 in. and less: Not higher than Brinell 277 or equivalent.

6.1.1.2 Diameter over 2.5 in.: Not higher than Brinell 300 or equivalent.

6.1.2 Properties after Aging: Specimens taken from bars, and from parts if practicable, shall, after aging at 1300 F ± 10 for 20 hr and air cooling, be capable of meeting the following requirements:

| | |
|---|---|
| Tensile Strength, psi | 165,000 min |
| Yield Strength at 0.2% offset or at 0.0111 inch in 2 in. extension under load, psi | 110,000 min |
| Elongation, % in 4D | 20 min |
| Reduction of Area, % | 35 min |
| Hardness, Brinell | 302-363 |

6.2 Forgings:

6.2.1 Hardness as received:

6.2.1.1 Maximum Section Thickness 2.5 in. and less: Not higher than Brinell 277 or equivalent.

6.2.1.2 Maximum Section Thickness over 2.5 in.: Not higher than Brinell 300 or equivalent.

6.2.2 Hardness after Aging: Forgings shall, after aging at 1300 F ± 10 for 20 hr and air cooling, have hardness of Brinell 302-363.

7. QUALITY: Material shall be uniform in quality and condition, clean, sound, and free from foreign materials and from internal and external defects detrimental to fabrication or to performance of parts.

8. TOLERANCES: Unless otherwise specified, tolerances for bars shall conform to the latest issue of AMS 2261 as applicable. Diameter and straightness tolerances shall be as specified below:

8.1 Diameter: Table VI.

8.2 Straightness: 6.4.

9. REPORTS:

9.1 Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a notarized report of the results of tests for chemical composition of each heat in the shipment. This report shall include the purchase order number, heat number, material specification number, size, and quantity from each heat. If forgings are supplied, the part number and size of stock used to make the forgings shall also be included.

9.2 Unless otherwise specified, the vendor of finished or semi-finished parts shall furnish with each shipment three copies of a notarized report showing the purchase order number, material specification number, contractor or other direct supplier of material, part number, and quantity. When material for making parts is produced or purchased by the parts vendor, that vendor 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, or shall include copies of laboratory report showing the results of tests to determine conformance.