

AERONAUTICAL MATERIAL SPECIFICATIONS

AMS 5665D

SOCIETY OF AUTOMOTIVE ENGINEERS, Inc. 485 Lexington Ave., New York 17, N.Y.

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ALLOY, CORROSION AND HEAT RESISTANT
Nickel Base - 15.5Cr - 8Fe

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, flash welded rings, and stock for forgings or flash ϕ welded rings.
3. APPLICATION: Primarily for parts and assemblies requiring both corrosion and oxidation resistance, and where such parts may require welding during fabrication. Parts and assemblies requiring oxidation resistance up to approximately 2000 F, but useful at the higher temperatures only when stresses are low. Strength at elevated temperatures is similar to that of the 18-8 type of steel.
4. COMPOSITION:

Carbon	0.15	max
Manganese	1.0	max
Silicon	0.50	max
Sulfur	0.015	max
Chromium	14.0 - 17.0	
Nickel + Cobalt	72.0	min
Cobalt, if determined	1.0	max
Iron	6.0 - 10.0	
Copper	0.50	max

5. CONDITION:

5.1 Bars:

5.1.1 Rounds 2.5 in. and Less in Diameter: Cold drawn.

5.1.2 Rounds Over 2.5 in. in Diameter: Hot finished. They may be turned, and shall be turned when specified.

5.1.3 Squares and Rectangles: Hot finished.

ϕ 5.2 Forgings and Flash Welded Rings: Annealed.

5.2.1 Flash welded rings shall not be supplied unless specified or permitted on purchaser's part drawing. When supplied, they shall be manufactured in accordance with latest issue of AMS 7490, unless otherwise specified.

5.3 Stock for Forging or Flash Welded Rings: As ordered by the forging or flash ϕ welded ring manufacturer.

Section 7C of the SAE Technical Board rules provides that: "All technical reports, including standards approved and practices recommended, are advisory only. They are not to be used by anyone engaged in industry or trade as a standard of practice, and no commitment to conform to or be guided by any technical report, in formulating and approving technical reports, the Board and its Committees will not investigate or consider patents which may apply to the subject matter. Prospective users of the report are responsible for protecting themselves against infringement of patents."

6. TECHNICAL REQUIREMENTS:

- ∅ 6.1 Heat Treatment: Forgings and flash welded rings shall be annealed by heating uniformly to 1925 F ± 25 and air cooling.
- 6.2 Hardness:
- 6.2.1 Bars: Shall have hardness as follows or equivalent when taken approximately ∅ midway between surface and center.
- ∅ 6.2.1.1 Rounds 2.5 in. and Less in Diameter: Brinell 207 - 286.
- 6.2.1.2 Rounds Over 2.5 in. in Diameter: Brinell 134 - 217.
- ∅ 6.2.1.3 Squares and Rectangles: Brinell 134 - 217.
- ∅ 6.2.2 Forgings and Flash Welded Rings: Shall have hardness not higher than Brinell 187 or equivalent.

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

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

8.1 Diameter (Rounds 2.5 in. and Less in Diameter): Table II.

8.2 Diameter (Rounds Over 2.5 in. in Diameter): Table IV.

8.3 Thickness and Width (Squares and Rectangles): Table IV.

8.4 Straightness: Section 6 as applicable.

9. REPORTS:

9.1 Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a 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 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 copies of laboratory reports showing the results of tests to determine conformance.