AEROSPACE
MATERIAL SPECIFICATIONS

SOCIETY OF AUTOMOTIVE ENGINEERS, Inc. 485 Lexington Ave., New York, N.Y. 10017

AMS 5754E

Issued 5-1-54
Revised 9-1-65

ALLOY BARS, FORGINGS, AND RINGS, CORROSION AND HEAT RESISTANT
Nickel Base - 22Cr - 1.50Co - 9Mo - 0.60W - 18.5Fe

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 welded rings.

3. APPLICATION: Primarily for parts and assemblies, such as turbine rotors, shafts, flanges, buckets, and bolts, requiring oxidation resistance up to 2200 F (1204 C) and relatively high strength above 1500 F (816 C).

4. COMPOSITION:

	min	max
Carbon	0.05	0.15
Manganese	--	1.00
Silicon	--	1.00
Phosphorus	--	0.040
Sulfur	--	0.030
Chromium	20.50	23.00
Cobalt	0.50	2.50
Molybdenum	8.00	10.00
Tungsten	0.20	1.00
Iron	17.00	20.00
Nickel	remainder	

4.1 Check Analysis: Composition variations shall meet the requirements of the latest issue of AMS 2269.

5. CONDITION:

5.1 Bars, Forgings, and Flash Welded Rings: Solution heat treated.

5.1.1 Bars less than 0.75 in. in diameter or distance between parallel sides shall be descaled.

Ø 5.1.2 Round bars 0.75 in. and over in diameter shall be ground.

5.1.3 Bars other than round 0.75 in. and over in distance between parallel sides shall be descaled, unless Ø otherwise specified.

5.1.4 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 the latest issue of AMS 7490, unless otherwise specified.

5.2 Stock for Forgings or Flash Welded Rings: As ordered by the forging or flash welded ring manufacturer.

6. TECHNICAL REQUIREMENTS:

6.1 Bars, Forgings, and Flash Welded Rings:

6.1.1 Heat Treatment: The product shall be solution heat treated by heating to 2150 F ± 25 (1176.7 C ± 14), ø holding at heat for not less than 20 min., and either quenching in water or rapid air cooling.

6.1.2 Hardness:

6.1.2.1 Bars: Shall have hardness not higher than Brinell 241 or equivalent when taken approximately midway between surface and center.

6.1.2.2 Forgings and Flash Welded Rings: Shall have hardness not higher than Brinell 241 or equivalent.

6.1.3 Stress-Rupture Test at 1500 F (815.6 C): Specimens taken from bars and forgings, and from parent metal of flash welded rings, shall be capable of meeting the following requirements:

6.1.3.1 A tensile specimen maintained at 1500 F ± 5 (815.6 C ± 2.8) while an axial stress of 15,000 psi is applied continuously shall not rupture in less than 24 hours. The test shall be continued, after the 24 hr, until the specimen ruptures, either maintaining the same stress or increasing the stress to not over 25,000 psi as necessary to produce rupture. In either case, the elongation after rupture, measured at room temperature, shall be not less than 10% in 4D.

6.2 Forging Stock: When a sample of stock is forged to a test coupon and heat treated as in 6.1.1, specimens taken from the heat treated coupon shall conform to the requirements of 6.1.2 and 6.1.3. If specimens ø taken from the stock after heat treatment as in 6.1.1 conform to the requirements of 6.1.2 and 6.1.3, the test shall be accepted as equivalent to tests of the forged coupon.

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 agreed upon by purchaser and vendor, tolerances for bars shall conform to all applicable requirements of the latest issue of AMS 2261.

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 in the report a statement that the material conforms, or shall include copies of laboratory reports showing the results of tests to determine conformance.