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

AEROSPACE MATERIAL SPECIFICATIONS

AMS 5722B
Supersedes AMS 5722A
Issued 7-1-48
Revised 9-30-66

STEEL BARS, FORGINGS, AND RINGS, CORROSION AND HEAT RESISTANT
19.5Cr - 9.5Ni - 1.4Mo - 1.4W - 0.42(Cb + Ta) - 0.22Ti

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

Ø 2. FORM: Bars, forgings, flash welded rings, and stock for forgings or flash welded rings.

3. APPLICATION: Parts and assemblies, such as bolts, dowels, fittings, turbine rotor wheels and discs, and turbine nozzle assemblies, requiring high strength up to 1200 F (649 C).

4. COMPOSITION:

	min	max
Carbon	0.28	0.35
Manganese	0.75	1.50
Silicon	0.30	0.80
Phosphorus	--	0.040
Sulfur	--	0.030
Chromium	18.00	21.00
Nickel	8.00	11.00
Molybdenum	1.00	1.75
Tungsten	1.00	1.75
Columbium + Tantalum	0.25	0.60
Titanium	0.10	0.35
Copper	--	0.50

4.1 Check Analysis: Composition variations shall meet the requirements of the latest issue of AMS 2248.

5. CONDITION:

5.1 Bars, Forgings, and Stock for Flash Welded Rings: Hot worked, with final working done at a temperature not lower than 1400 F (760 C) and stress relieved at not lower than 1200 F (649 C) for not less than 4 hours.

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Ø 5.2 Flash Welded Rings: Stress relieved at not lower than 1200 F (649 C) for not less than 4 hours.

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

Ø 5.3 Forging Stock: As ordered by the forging manufacturer.

6. TECHNICAL REQUIREMENTS: When ASTM methods are specified for determining conformance to the Ø following requirements, tests shall be conducted in accordance with the issue of the ASTM method listed in the latest issue of AMS 2350.

6.1 Bars and Flash Welded Rings: Specimens taken from bars and from parent metal of flash welded rings shall conform to the requirements of 6.1.1 and 6.1.2 and shall be capable of meeting the requirements of 6.1.3.

6.1.1 Tensile Properties:

Nominal Diameter or Distance Between Parallel Sides (Bars) or Radial Thickness (Flash Welded Rings) Inches	Tensile Strength psi, min	Yield Strength at 0.2% Offset or at Extension Indicated (E = 29,000,000) psi, min	Extension Under Load in. in 2 in.	Elongation % in 2 in. or 4D, min	Reduction of Area, %, min (Round Specimens)
Up to 2.625, incl	100,000	70,000	0.0088	20	40
Over 2.625 to 4.000, incl	100,000	60,000	0.0081	20	40
Over 4.000 to 5.000, incl	100,000	50,000	0.0074	20	40
Over 5.000	95,000	45,000	0.0071	20	40

6.1.2 Hardness:

Nominal Diameter or Distance Between Parallel Sides (Bars) or Radial Thickness (Flash Welded Rings) Inches	Hardness, Brinell
Up to 4.00, incl	228 - 285
Over 4.00 to 5.00, incl	217 - 277
Over 5.00	207 - 269

6.1.3 Stress-Rupture Test at 1200 F (648.9 C): A tensile test specimen, maintained at 1200 F ± 3 (648.9 C ± 1.7) while an axial stress of 40,000 psi is applied continuously, shall not rupture in less than 100 hours. The test shall be continued to rupture. The elongation after rupture, measured at room temperature, shall be not less than 15% in 4D. Test shall be conducted in accordance with ASTM E139.

6.1.3.1 The test of 6.1.3 may be conducted at a stress higher than 40,000 psi but stress shall not be changed while test is in process, unless otherwise specified or allowed. Time to rupture and elongation requirements shall be as specified in 6.1.3.

6.2 Forgings: Shall conform to the requirements of 6.2.1 and shall be capable of meeting the requirements of 6.2.2.

6.2.1 Hardness: Brinell 207 - 277 or equivalent.

6.2.2 Stress-Rupture Test at 1200 F (648.9 C): A tensile test specimen, maintained at 1200 F ± 3 (648.9 C ± 1.7) while an axial stress of 31,000 psi when axis of specimen is across the forging flow lines, or 40,000 psi when axis of specimen is approximately parallel to the forging flow lines, is applied continuously, shall not rupture in less than 100 hours. The test shall be continued to rupture. The elongation after rupture, measured at room temperature, shall be not less than 12% in 4D. Test shall be conducted in accordance with ASTM E139.

6.2.2.1 The test of 6.2.2 may be conducted at a stress higher than 31,000 psi when axis of specimen is across the forging flow lines, or higher than 40,000 psi when axis of specimen is parallel to forging flow lines, but stress shall not be changed while test is in process, unless otherwise specified or allowed. Time to rupture and elongation requirements shall be as specified in 6.2.2.

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.