

# AEROSPACE MATERIAL SPECIFICATIONS

## AMS 5665G

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

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### ALLOY BARS, FORGINGS, AND RINGS, CORROSION & HEAT RESISTANT Nickel Base - 15.5Cr - 8.0Fe

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 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 (1095 C), 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:** Product shall conform to the following:

	min	max
Carbon	--	0.15
Manganese	--	1.00
Silicon	--	0.50
Sulfur	--	0.015
Chromium	14.00 - 17.00	
Nickel + Cobalt	72.00	--
Cobalt, if determined	--	1.00
Columbium + Tantalum, if determined	--	1.00
Titanium, if determined	--	0.50
Aluminum, if determined	--	0.35
Iron	6.00 - 10.00	
Copper		0.50

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

#### 5. **CONDITION:**

##### 5.1 **Bars:**

- 5.1.1 **Round 2.5 in. and Less in Diameter:** Cold drawn unless ordered hot finished.
- 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.

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 welded ring manufacturer.

6. TECHNICAL REQUIREMENTS:

6.1 Tensile Properties: Tensile test specimens taken from round bars over 2.50 in. to 4.50 in., incl, in diameter and from forgings over 2-1/2 in. in thickness and tested at room temperature shall conform to the following requirements:

Form	Tensile Strength psi, min	Yield Strength at 0.2% Offset or at Extension Indicated (E = 31,000,000)		Elongation % in 2 in. or 4D, min
		psi, min	Extension Under Load in. in 2 in.	
∅ Bars	85,000	35,000	0.0063	30
Forgings	80,000	30,000	0.0059	35

6.2 Hardness:

6.2.1 Bars: Shall have hardness as follows or equivalent when taken approximately midway between surface and center.

Nominal Diameter or Thickness Inches	Hardness, Brinell
<b>Rounds, Cold Finished:</b>	
Up to 1.0, incl	229 - 311
Over 1.0 to 2.5, incl	207 - 285
Over 2.5	134 - 217
<b>Rounds, Squares, Hexagons, and Rectangles, Hot Finished:</b>	
Up to 0.5, incl	134 - 241
Over 0.5	134 - 217

6.2.2 Forgings: Shall have hardness not higher than Brinell 187 or equivalent.

∅ 6.2.3 Flash Welded Rings: Shall have hardness not higher than Brinell 217 or equivalent.