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

AMS 5635

Issued 1-31-64
Revised

STEEL BARS AND FORGINGS, CORROSION RESISTANT
18Cr - 9Ni (303Pb)
Free Machining

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

2. FORM: Bars, forgings, and forging stock.

3. APPLICATION: Parts on which the amount of machining warrants use of a free machining grade of steel requiring corrosion resistance similar to the 18-8 type of steel but not subjected to temperatures exceeding 700 F (370 C) during fabrication or in service.

4. COMPOSITION:

	min	max
Carbon	--	0.15
Manganese	--	2.00
Silicon	--	1.00
Phosphorous	--	0.040
Sulfur	0.12	0.30
Chromium	17.00	19.00
Nickel	8.00	10.00
Molybdenum	--	0.60
Copper	--	0.50
Lead	0.12	0.30

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

5. CONDITION:

5.1 Bars and Forgings: Solution heat treated free from continuous carbide network.

5.1.1 Unless otherwise specified, all hexagons and other bars 2.75 in. and less in diameter or distance between parallel sides shall be cold finished.

5.1.2 Forgings shall not be supplied except when specified on the drawing or purchase order.

5.2 Forging Stock: As ordered by the forging manufacturer.

6. TECHNICAL REQUIREMENTS:

6.1 Hot Finished Bars:

6.1.1 Tensile Properties:

Tensile Strength, psi	75,000 min
Yield Strength at 0.2% Offset or at 0.0061 in. in 2 in. Extension Under Load (E = 28,000,000), psi	30,000 min
Elongation, % in 2 in. or 4D	40 min
Reduction of area, %	50 min

6.2 Cold Finished Bars:

6.2.1 Tensile Properties:

Nominal Diameter or Least Thickness Inches	Tensile Strength psi, min	Yield Strength at 0.2% Offset or at Extension Indicated (E = 28,000,000) psi, min	Extension Under Load in. in 2 in.	Elongation % in 2 in. or 4D min	Reduction of Area % min
Up to 0.500, incl	90,000	45,000	0.0072	35	45
Over 0.500	75,000	30,000	0.0061	40	50

6.3 Hardness:

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

Nominal Diameter or Distance Between Parallel Sides Inches	Hardness, Brinell
Up to 0.750, incl	170 - 255
Over 0.750	140 - 241

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

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

8. TOLERANCES: Unless otherwise specified, tolerances for bars shall conform to all applicable requirements of the latest issue of AMS 2241.