The Engineering Resource For Advancing Mobility®

400 COMMONWEALTH DRIVE, WARRENDALE, PA 15096

AEROSPACE MATERIAL SPECIFICATION

AMS 5619

Issued 11-1-70
Revised 7-1-81

STEEL BARS AND FORGINGS, CORROSION RESISTANT
14Cr - 4.0Mo (1.00 - 1.10C)

This specification has been declared "NONCURRENT" by the Aerospace Materials Division, SAE, as of l0-13-80. It is recommended that this specification not be specified for new designs.

This cover sheet should be attached to the initial issue of the subject specification.

AN AMERICAN NATIONAL STANDARD

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

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

3. APPLICATION: Primarily for parts requiring resistance to both corrosion and wear with hardness retained during exposure to temperatures up to 600 F (316 C).

4. COMPOSITION:

	min	max
Carbon	1.00	1.10
Manganese	- -	1.00
Silicon	- -	1.00
Phosphorus	- -	0.030
Sulfur		0.025
Chromium	13.00	15.00
Molybdenum	3.50	4.50
Nickel	- -	0.75

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

5. CONDITIONS: Unless otherwise ordered, the product shall be supplied in the following condition:

5.1 Bars: Annealed, in a machinable condition, having hardness not higher than Brinell 255 or equivalent.

5.1.1 All hexagons and other bars 2.75 in. and under in diameter or distance between parallel sides shall be cold finished.

5.2 Wire: Annealed and cold finished having a tensile strength not higher than 130,000 psi.

5.3 Forgings: As ordered.

5.4 Forging Stock: As ordered by the forging manufacturer.

6. TECHNICAL REQUIREMENTS:

6.1 Heat Treat Response: Specimens, cut from bars, wire, or forgings, shall have hardness not lower than Rockwell C 58 or equivalent after being heated to 1950 F ± 25 (1065.6 C ± 14), held at heat for 1 hr, quenched in oil, cooled to a temperature not higher than -100 F (-73.3 C), held at that temperature for 1 hr, and tempered by heating to 1000 F ± 25 (537.8 C ± 14), holding at heat for 1 hr, and cooling in still air.

6.2 Decarburization:

6.2.1 Bars and wire ordered ground, turned, or polished shall be free from decarburization on the ground, turned, or polished surfaces.

6.2.2 Allowable decarburization of bars, wire, and billets ordered for redrawing or forging or to specified microstructural requirements shall be as agreed upon by purchaser and vendor.

6.2.3 Decarburization of bars and wire to which 6.2.1 or 6.2.2 is not applicable shall be not greater than the following:

Nominal Diameter or Distance Between Parallel Sides Inches	Depth of Decarburization Inch
Up to 0.50, incl	0.015
Over 0.50 to 1.00, incl	0.020
Over 1.00 to 1.50, incl	0.025
Over 1.50 to 2.00, incl	0.030
Over 2.00 to 2.50, incl	0.035
Over 2.50 to 3.00, incl	0.040
Over 3.00	0.045

6.2.4 Unless otherwise agreed upon by purchaser and vendor, decarburization shall be measured by the microscopic method or by Rockwell Superficial 30-N scale hardness method, or equivalent hardness testing method, on hardened but untempered specimens protected during heat treatment to prevent changes in surface carbon content. Depth of decarburization, when measured by a hardness method, is defined as the perpendicular distance from the surface to the depth under that surface below which there is no further increase in hardness. Such measurements shall be far enough away from any adjacent surface to be uninfluenced by any decarburization or lack of decarburization thereon.

6.2.4.1 When determining depth of decarburization, it is permissible to disregard local areas provided the decarburization of such areas does not exceed the above limits by more than 0.005 in. and the width is 0.065 in. or less.

7. QUALITY: The product 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. SAMPLING: Shall be in accordance with the following:

8.1 Bars and Wire: The latest issue of AMS 2371.

8.2 Forgings and Forging Stock: As agreed upon by purchaser and vendor.

9. TOLERANCES: Unless otherwise specified, tolerances for bars and wire shall conform to all applicable requirements of the latest issue of AMS 2241; for sizes not covered by AMS 2241, tolerances shall be as agreed upon by purchaser and vendor.

10. REPORTS:

10.1 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 and the results of tests on each size from each heat to determine conformance to the technical requirements of this specification. 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.