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

AMS 5653

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Revised

STEEL BARS, FORGINGS, AND RINGS, CORROSION AND HEAT RESISTANT 17Cr - 13Ni - 2.5Mo (316L)

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

2. FORM: Bars, wire, forgings, flash welded rings, mechanical tubing, and stock for forgings or flash welded rings.

3. APPLICATION: Primarily for parts and assemblies requiring both corrosion and heat resistance up to 1600 F (870 C). At high temperatures, strength of this steel is slightly higher than, and oxidation resistance is similar to, that of 18-8 types.

4. COMPOSITION:

Carbon	0.03 max
Manganese	1.25 - 2.00
Silicon	1.00 max
Phosphorus	0.040 max
Sulfur	0.030 max
Chromium	16.00 - 18.00
Nickel	12.00 - 14.00
Molybdenum	2.00 - 3.00
Copper	0.50 max

4.1 When mechanical tubing is ordered, nickel may be as low as 11.00.

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

5. CONDITION:

5.1 Bars, Wire, Forgings, Flash Welded Rings, and Mechanical Tubing: Solution heat treated free from continuous carbide network.

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

5.1.2 Flash welded rings shall not be supplied unless specified or permitted by 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.

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6. TECHNICAL REQUIREMENTS:

6.1 Hardness:

6.1.1 Bars, Wire, and Mechanical Tubing: Shall have hardness as follows or equivalent when taken approximately midway between outer surface and center or inner surface as applicable.

6.1.1.1 Bars and Wire:

Nominal Diameter or Distance Between Parallel Sides Inches	Hardness, Brinell
Up to 0.75, incl	170 - 255
Over 0.75	140 - 241

6.1.1.2 Mechanical Tubing: Not higher than Rockwell B 90.

6.2 Forgings and Flash Welded Rings: Shall have hardness not higher than Brinell 187 or equivalent.

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 specified, tolerances shall conform to all applicable requirements of the following:

8.1 Bars and Wire: The latest issue of AMS 2241.

8.2 Mechanical Tubing: The latest issue of AMS 2243.

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.