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

AMS 5743

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Revised

STEEL, CORROSION AND MODERATE HEAT RESISTANT
15.5Cr - 4.5Ni - 2.9Mo - 0.1N

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

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

3. APPLICATION: Primarily for parts and assemblies requiring high strength and oxidation resistance up to 800 F.

4. COMPOSITION:

		Check Analysis Under Min or Over Max	
Carbon	0.10 - 0.15	0.01	0.01
Manganese	0.50 - 1.25	0.04	0.04
Silicon	0.50 max	--	0.05
Phosphorus	0.040 max	--	0.005
Sulfur	0.030 max	--	0.005
Chromium	15.00 - 16.00	0.20	0.20
Nickel	4.00 - 5.00	0.07	0.07
Molybdenum	2.50 - 3.25	0.10	0.10
Nitrogen	0.07 - 0.13	0.01	0.01

5. CONDITION:

5.1 Bars:

5.1.1 Rounds: Annealed, and ground, turned, or polished.

5.1.2 Shapes: Cold drawn, annealed, and descaled.

5.1.3 Flats: Hot finished, annealed, and descaled.

5.2 Tubing: Cold drawn, annealed, and descaled.

5.3 Forgings: Annealed and descaled.

5.4 Forging Stock: As ordered by the forging manufacturer.

6. TECHNICAL REQUIREMENTS:

6.1 Heat Treatment: Unless otherwise specified, material shall be annealed by heating to 1850 - 1975 F, holding at heat for not less than 1 hr per in. of cross section, and quenching in water or otherwise cooling as rapidly as possible to room temperature.

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6.2 Hardness: Shall be not higher than Brinell 321 or equivalent for bars and forgings 3 in. and under in diameter or equivalent cross section and for tubing, and shall be not higher than Brinell 363 or equivalent for bars and forgings over 3 in. in diameter or equivalent cross section.

6.3 Properties After Re-Annealing, Sub-Zero Cooling, and Tempering: Material re-annealed by heating to 1710 F ± 25, holding at heat for not less than 1 hr per in. of cross section, and quenching in water or otherwise cooling as rapidly as possible to room temperature, cooled to not higher than -100 F, held at this temperature for not less than 3 hr, warmed in air to room temperature, heated to 850 F ± 25, held at heat for not less than 3 hr, and cooled in air, shall be capable of meeting the following requirements:

6.3.1 Tensile Properties:

Tensile Strength, psi	190,000 min
Yield Strength at 0.2% Offset or at 0.0150 in. in 2 in. Extension Under Load (E = 30,000,000), psi	165,000 min
Elongation, % in 4D	10 min
Reduction of Area, %	20 min

6.3.2 Hardness: Shall be Rockwell C 40 - 50 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 the following:

8.1 Bars: The latest issue of AMS 2241 as applicable and as specified below.

8.1.1 All hexagons, and other bars 1.0 in. and under in diameter or distance between parallel sides, Table I.

8.1.2 Bars, other than hexagons, over 1.0 in. in diameter or distance between parallel sides, Table II.

8.2 Tubing: The latest issue of AMS 2243 as applicable. Diameter tolerances shall conform to Table I, column headed "Annealed or Solution Heat Treated".

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 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, material specification number, heat number, size, and quantity from each heat. If forgings are supplied, serial number of each forging when required 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