AERONAUTICAL MATERIAL SPECIFICATIONS

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

AMS 6485

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Revised

STEEL
5Cr - 1.3Mo - 0.5V (0.38 - 0.43C)

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: Primarily for parts requiring relatively high levels of strength, fatigue resistance, toughness, ductility, and thermal stability for operation between -100 F and 1000 F, and where such parts may require welding.

4. COMPOSITION:

		Check Analysis Under Min	Check Analysis Over Max
Carbon	0.38 - 0.43	0.02	0.02
Manganese	0.20 - 0.40	0.03	0.03
Silicon	0.80 - 1.00	0.05	0.05
Phosphorus	0.020 max	--	0.005
Sulfur	0.020 max	--	0.005
Chromium	4.75 - 5.25	0.10	0.10
Molybdenum	1.20 - 1.40	0.04	0.04
Vanadium	0.40 - 0.60	0.03	0.03

5. CONDITION:

5.1 Bars: In a machinable condition having hardness not higher than Brinell 202 or equivalent, except that, if ordered cold finished, hardness may be as high as Brinell 248 or equivalent.

5.2 Forgings: As ordered.

5.3 Forging Stock: As ordered by the forging manufacturer.

6. TECHNICAL REQUIREMENTS:

6.1 Decarburization:

6.1.1 Bars ordered ground, turned, or polished shall be free from decarburization.

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

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6.1.3 Decarburization of bars to which 6.1.1 or 6.1.2 is not applicable shall be not greater than the following:

Nominal Diameter or Distance Between Parallel Sides Inches	Depth of Decarburization Inch
0.375 and under	0.010
Over 0.375 to 0.500, incl	0.012
Over 0.500 to 0.625, incl	0.014
Over 0.625 to 1.000, incl	0.017
Over 1.000 to 1.500, incl	0.020
Over 1.500 to 2.000, incl	0.025
Over 2.000 to 2.500, incl	0.030
Over 2.500 to 3.000, incl	0.035
Over 3.000 to 3.500, incl	0.040
Over 3.500	0.063

6.1.4 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 specimens. Depth of decarburization, when measured by a hardness method, is defined as the distance measured from the nearest original surface to the point at which no increase in hardness is found.

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

6.2 Properties After Heat Treatment: Specimens austenitized by heating to 1850 F ± 25, holding at heat for 15 - 45 min., and cooling in air to room temperature and then tempered three times by heating to not lower than 1000 F, holding at heat for 2 - 3 hr, and cooling in air, shall conform to the following requirements:

6.2.1 Longitudinal Tensile Properties:

Tensile Strength, psi	260,000 min
Yield Strength at 0.2% Offset or at 0.0181 in. in 2 in. Extension Under Load (E = 30,400,000), psi	215,000 min
Elongation, % in 4D	8 min
Reduction of Area, %	30 min

6.2.2 Hardness: Rockwell C 50 - 56 or equivalent, but hardness shall not be cause for rejection if tensile requirements are met.

6.2.3 Grain Size: Unless otherwise specified, grain size shall be predominantly 7 or finer with grains as large as 5 permissible, as determined by comparison of a polished and etched specimen with the chart in ASTM E112-55T.

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