AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
29 West 39th Street
New York City

AMS 6280B

Issued 9-1-42
Revised 8-1-49

STEEL
0.55Ni - 0.5Cr - 0.2Mo (0.27 - 0.33C) (SAE 8630)

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

2. FORM: Bars, billets, and forgings.

3. APPLICATION: Parts with sections 0.50 in. or less in thickness which require a through-hardening steel capable of developing hardness of Rockwell C 35 when properly hardened and tempered and also parts with thicker sections but requiring proportionately lower hardness.

4. COMPOSITION:

		Check Analysis Under Min	Check Analysis Over Max
Carbon	0.27 - 0.33	0.02	0.00
Manganese	0.70 - 0.90	0.03	0.03
Silicon	0.20 - 0.35	0.02	0.02
Phosphorus	0.040 max	--	0.005
Sulfur	0.040 max	--	0.005
Nickel	0.40 - 0.70	0.03	0.03
Chromium	0.40 - 0.60	0.03	0.03
Molybdenum	0.15 - 0.25	0.02	0.02

5. CONDITION:

5.1 Bars: In a machinable condition having hardness not higher than Brinell 229 or equivalent, except that, if ordered cold finished, bars may have hardness as high as Brinell 241 or equivalent.

5.2 Forgings: As ordered.

5.3 Forging Stock: As ordered by the forging manufacturer.

6. TECHNICAL REQUIREMENTS:

6.1 Hardenability: The hardenability shall be J38=5 min when determined by the standard end-quench test specimen in accordance with the SAE Method of Determining Hardenability published in the latest issue of the SAE Handbook, except that the steel shall be normalized at 1700 F ± 10 and the test specimen austenitized at 1525 F ± 10.

6.2 Grain Size: Five or finer, ASTM E19-46, method a. A heat of steel predominantly five or finer with grains as large as three is permissible.

6.3 Decarburization:

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

Printed in U.S.A.

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

6.3.3 Decarburization of all bars to which 6.3.1 or 6.3.2 is not applicable shall be not greater than the following:

Nominal Diameter or Distance Between Parallel Sides Inches	Maximum 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

6.3.4 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 is defined as the distance measured from the nearest original surface to the point at which no increase in hardness is found.

7. QUALITY: Steel shall be aircraft quality. It shall be uniform in quality and condition, clean, sound, and free from foreign materials and from internal and external defects detrimental to fabrication or to performance of parts.

8. TOLERANCES: Unless otherwise specified, tolerances for bars shall conform to the latest issue of AMS 2251 as applicable. Diameter or thickness tolerances for cold finished bars and all hexagons shall conform to Table I, column headed "Mean of Carbon 0.45% and less".

9. REPORTS:

9.1 Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a notarized report of the results of tests for chemcial composition, hardenability, and grain size 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 the 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 notarized 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 certification that the material conforms, or shall include copies of laboratory reports showing the results of tests to determine conformance.