AERONAUTICAL MATERIAL SPECIFICATION

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

AMS6274C

Issued 9-1-42
Revised 5-1-45

STEEL - CARBURIZING
.55 Ni .5 Cr .2 Mo (.17 - .22 C)

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

2. FORM: Bars, billets, forgings, or as ordered.

3. COMPOSITION:

		Individual Bar Check Analysis Over or Under
Carbon	0.17 - 0.22	0.01
Manganese	0.75 - 1.00	0.04
Phosphorus	0.040 max	0.005
Sulphur	0.040 max	0.005
Silicon	0.20 - 0.35	0.02
Nickel	0.40 - 0.70	0.03
Chromium	0.40 - 0.60	0.03
Molybdenum	0.15 - 0.25	0.02

4. GRAIN SIZE: 5 or finer, ASTM E19-39T, method a, unless otherwise specified. A heat of steel predominately 5 or finer, with grains as large as 3, is permissible.

5. HARDENABILITY: The steel shall conform to the hardness of paragraph (a) below unless the purchaser stipulates that the hardenability of paragraph (b) below shall apply:

(a) Specimens with sections 1/8 inch and 3/8 inch in thickness and not greater than two (2) square inches in area shall be cut from the bar or forging after normalizing at 1700°F ± 10. The specimens shall be ground and then protected by suitable means, or treated in an atmosphere, to minimize scaling and eliminate either carburization or decarburization during heat treatment. The specimens shall be placed in a furnace which is at 1550°F ± 10 allowed to heat to 1550°F ± 10, held 25 minutes and quenched in commercial paraffin oil (100 S.U.V. at 100°F) at room temperature. Each specimen when tested shall have an average hardness within the limits of Rockwell C 32-47.

(b) The hardenability shall be J48 max. and J29-4 min. when determined by the standard end-quench test specimen in accordance with the SAE Method of Determining Hardenability published in the latest revision of the SAE Handbook, except that the steel shall be normalized at 1700°F ± 10 and the test specimen austenitized at 1550°F ± 10.

6. CONDITION: (a) Unless otherwise specified, bar stock shall be supplied in a machinable condition with a hardness of not more than Brinell 229.

(b) Stock ordered for forging shall be supplied in the condition and finish ordered by the forging manufacturer.

6. CONDITION: (cont'd)

(c) Forgings shall be supplied as ordered.

7. QUALITY: (a) This steel shall be aircraft quality. It shall be uniform in quality and condition, clean, sound, and free from foreign material and from internal and external defects which adversely affect its strength or machinability. Material revealing defects during fabrication shall be subject to rejection.

(b) Visual examination of deep acid etched bars in the as-furnished condition shall show no evidence of abnormal segregation, pipes, cracks, seams, or abnormal change in structure from the surface to the center.

(c) Unless otherwise stated, finished parts are subject to magnetic inspection.

8. TOLERANCES: Unless otherwise specified, tolerances shall conform to AMS 2251 as applicable and/or as specified below:

(a) Cold finished and all hexagons shall conform to Table I, column headed "Mean of Carbon .45% and less".

9. REPORTS: (a) Unless otherwise specified, the supplier of raw material shall furnish three copies of a notarized report of the chemical composition, grain size and hardenability results of each heat in each shipment. This report shall include the purchase order number, heat number, material specification number, size, and quantity in each heat. If forgings are supplied, the part number and size of steel used to make the forgings shall also be included.

(b) Unless otherwise specified, the vendor of finished or semi-finished machined 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 supplied by the machined parts vendor, the vendor shall inspect each lot of material to determine conformance to the requirements of this specification, and shall include in the above report a certification that the material conforms, or shall include copies of the laboratory report showing the results of tests to determine conformance.

10. SHIPMENTS: More than one heat of steel shall not be supplied on a purchase order without permission of purchaser, unless the order is for more than 5 tons, in which case not more than one additional heat shall be supplied for each additional 5 tons.

11. IDENTIFICATION: (a) Bar stock 2 inches or larger shall be stamped with the heat number within 2 inches of one end. Smaller bars may either be stamped with the heat number or securely bundled and identified by a metal tag stamped with the purchase order number, AMS 6274C, and heat number.

(b) Forgings shall be identified in accordance with AMS 2808.

(c) Material that cannot be identified at destination is subject to rejection.