

# AEROSPACE MATERIAL SPECIFICATIONS

## AMS 6356

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

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Revised

STEEL SHEET, STRIP, AND PLATE  
0.95Cr - 0.2Mo (0.30 - 0.35C)

1. ACKNOWLEDGMENT: A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.
2. APPLICATION: A weldable grade alloy steel intended primarily for heat treated parts which require through hardening to minimum tensile strength of 180,000 psi in sections up to 0.375 in. thick and proportionately lower strength in heavier thicknesses.
3. COMPOSITION:

Carbon	0.30 - 0.35
Manganese	0.40 - 0.60
Silicon	0.20 - 0.50
Phosphorus	0.025 max
Sulfur	0.025 max
Chromium	0.80 - 1.10
Molybdenum	0.15 - 0.25
Nickel	0.25 max

- 3.1 Check Analysis: Composition variations shall meet the requirements of the latest issue of AMS 2259, paragraph titled "Low Alloy Steels."

4. CONDITION:

- 4.1 Sheet and Strip: Hot or cold rolled, annealed, descaled, and oiled, having hardness not higher than Rockwell B 95 or equivalent.
- 4.2 Plate: Hot rolled, annealed, descaled, and oiled, having hardness not higher than Rockwell B 95 or equivalent.
- 4.3 If material is ordered spheroidized, the degree of spheroidization shall be as agreed upon by purchaser and vendor.

5. TECHNICAL REQUIREMENTS:

- 5.1 Grain Size: Shall be predominantly 5 or finer, with occasional grains as large as 3 permissible, as determined in accordance with ASTM E112-60T, Appendix III, Section A(1), Treatment 1 (McQuaid-Ehn test).
- 5.2 Decarburization:
  - 5.2.1 Thickness under 0.045 in.: The method of test and the tolerances shall be as agreed upon by purchaser and vendor.

Section 8.3 of the SAE Technical Board rules provides that: "All technical reports, including standards approved and practices recommended, are advisory only. Their use by anyone engaged in industry or trade is entirely voluntary. There is no obligation to conform to or be guided by any technical report. In formulating and approving technical reports, the Board and its Committees will not investigate or consider patents which may apply to the subject matter. Prospective users of the report are responsible for protecting themselves against liability for infringement of patents."

- 5.2.2 Thickness 0.045 in. and over: Material shall be free from complete decarburization and from partial decarburization to the extent that the difference in hardness between the surface and a non-decarburized depth below the surface of a hardened but untempered specimen, protected during heat treatment to prevent changes in surface carbon content, shall be not more than shown below.

Nominal Thickness Inches	Rockwell Scale	Variation
0.045 to 0.249, incl	A	2
Over 0.249	A	3

- 5.3 Hardenability: The steel shall have hardenability of J57 = 1 max and J46 = 3 min when determined 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 1600 F + 10. The hardenability test is not required on a product which will not yield a suitable specimen, but the steel from which the product is made shall conform to the hardenability specified in this paragraph.
- 5.4 Bending: Material shall withstand, without cracking, bending at room temperature through the angle indicated below around a diameter equal to the nominal thickness of the material, with axis of bends both perpendicular and parallel to the direction of rolling.

Nominal Thickness Inch	Angle degrees, min
0.249 and under	180
Over 0.249 to 0.749, incl	90

6. QUALITY: Product shall be suitable for use in aircraft and missiles. It 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.
7. TOLERANCES: Unless otherwise specified, tolerances shall conform to all applicable requirements of the latest issue of AMS 2252, except that tolerances for thickness of hot rolled strip shall conform to Table II.
8. REPORTS:
- 8.1 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, grain size, and hardenability 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.
- 8.2 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.