SOCIETY OF AUTOMOTIVE ENGINEERS, Inc. 485 Lexington Ave., New York, N.Y. 10017

AEROSPACE MATERIAL SPECIFICATIONS

AMS 6358B
Supersedes AMS 6358A
Issued 10-1-43
Revised 9-30-66

STEEL SHEET, STRIP, AND PLATE
0.50Cr - 0.55Ni - 0.25Mo (0.38 - 0.43C) (SAE 8740)

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

2. APPLICATION: Primarily for heat treated parts requiring through-hardening to minimum tensile ø strength of 200,000 psi in section thicknesses up to 0.375 in. and proportionately lower strength in heavier thicknesses.

3. COMPOSITION:

	min	max
Carbon	0.38	0.43
Manganese	0.75	1.00
Silicon	0.20	0.35
Phosphorus	--	0.025
ø Sulfur	--	0.025
Chromium	0.40	0.60
Nickel	0.40	0.70
Molybdenum	0.20	0.30
Copper	--	0.35

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

ø 4. CONDITION: Unless otherwise specified, the product shall be supplied in the following condition:

4.1 Sheet and Strip: Cold finished, bright or atmosphere annealed, and descaled if necessary, or hot ø rolled, annealed if necessary, and descaled; the product shall have hardness not higher than Rockwell B 98 or equivalent.

4.2 Plate: Hot rolled, annealed if necessary, and descaled, having hardness not higher than Rockwell C ø 24 or equivalent.

5. TECHNICAL REQUIREMENTS: When ASTM methods are specified for determined conformance to the ø following requirements, tests shall be conducted in accordance with the issue of the ASTM method listed in the latest issue of AMS 2350.

5.1 Grain Size: Predominantly 5 or finer with occasional grains as large as 3 permissible, ASTM E112, ø McQuaid-Ehn Test.

5.2 Decarburization:

5.2.1 Material Under 0.045 In. in Thickness: The method of test and the allowance shall be as agreed ø upon by purchaser and vendor.

5.2.2 Material 0.045 In. and Over in Thickness:

5.2.2.1 Specimens: Shall be the full thickness of the material except that specimens from plate over ø 0.250 in. thick shall be slices approximately 0.250 in. thick cut parallel to and preserving one original surface of the plate. Recommended specimen size is 1 x 4 inches.

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5.2.2.2 Procedure: Specimens shall be hardened by austenitizing and quenching; preferably they shall not be tempered but, if tempered, the tempering temperature shall be not higher than 300 F (149 C). During heat treatment, specimens shall be protected by suitable atmosphere or medium or by suitable plating to prevent carburization or further decarburization. Protective plating, if used, shall then be removed from specimens of material 0.045 to 0.250 in., excl in thickness and a portion of the specimen shall be step ground to a depth of 0.050 in. or half thickness, whichever is less. Specimens from material 0.250 in. and over in thickness shall be ground to remove from the original surface of the plate the amount of metal shown below and a portion of the specimen shall be further ground to a depth of at least 1/3 the original thickness of the specimen. At least three Rockwell hardness readings shall be taken on each prepared step and each group of readings averaged.

Nominal Original Thickness Inches	Surface Depth Removal Inch
0.250 to 0.375, incl	0.020
Over 0.375 to 0.500, incl	0.025
Over 0.500 to 0.750, incl	0.030
Over 0.750 to 1.000, incl	0.035
Over 1.000 to 2.000, incl	0.040

Ø 5.2.2.3 Allowance:

5.2.2.3.1 Material 0.045 to 0.250 In., Excl, Thick: Shall be free from complete decarburization and free Ø from partial decarburization to the extent that the difference in hardness between the surface and the nondecarburized depth below the surface shall be not greater than 2 points on the Rockwell A scale.

5.2.2.3.2 Material 0.250 In. and Over Thick: The difference in hardness between the two prepared steps Ø shall be not greater than 2 points on the Rockwell C scale.

5.3 Bending: Material shall withstand, without cracking, bending at room temperature through the angle Ø indicated below around a diameter equal to the nominal thickness of the material with axis of bend parallel to the direction of rolling.

Nominal Thickness Inch	Angle Deg, min
Up to 0.249, incl	180
Over 0.249 to 0.749, incl	90

6. QUALITY: Steel shall be aircraft quality and shall conform to the latest issue of AMS 2301. The product Ø 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 Ø the latest issue of AMS 2252; for strip, tolerances for cold finished shall apply.

8. REPORTS:

8.1 Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a Ø report of the results of tests for chemical composition, grain size, and AMS 2301 frequency-severity rating for each heat in the shipment. This report shall include the purchase order number, heat number, material specification number, thickness, size, and quantity from each heat.