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

AMS 6437A

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STEEL SHEET, STRIP, AND PLATE
5.0Cr - 1.3Mo - 0.5V (0.38 - 0.43C)

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 parts requiring relatively high levels of strength, fatigue resistance, toughness, ductility, and thermal stability for operation up to 1000 F (540 C), and where such parts may require welding.

3. COMPOSITION:

	min	max
Carbon	0.38	0.43
Manganese	0.20	0.40
Silicon	0.80	1.00
Phosphorus	--	0.020
Sulfur	--	0.020
Chromium	4.75	5.25
Molybdenum	1.20	1.40
Vanadium	0.40	0.60

3.1 Check Analysis: Composition variations shall meet the requirements of the latest issue of AMS 2248; check analysis tolerance for vanadium shall be 0.04 under min or over maximum.

4. CONDITION:

Ø 4.1 Sheet and Strip: Hot or cold rolled, annealed, descaled, and oiled.

Ø 4.2 Plate: Hot rolled, annealed, descaled, and oiled, unless otherwise ordered.

5. TECHNICAL REQUIREMENTS: When ASTM test methods are specified for determining conformance to the 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 Tensile Strength: Not higher than 125,000 psi, unless otherwise ordered.

5.2 Decarburization: Product shall be free from complete decarburization. Partial decarburization shall not exceed the following when measured microscopically:

Nominal Thickness Inches	Depth of Decarburization Inch, Product Width, Inches	
	Up to 48, incl	Over 48
Up to 0.040, incl	0.001	0.002
Over 0.040 to 0.065, incl	0.001	0.003
Over 0.065 to 0.090, incl	0.002	0.004
Over 0.090 to 0.125, incl	0.003	0.005
Over 0.125 to 0.250, incl	0.006	0.006
Over 0.250 to 0.375, incl	0.010	0.012
Over 0.375 to 0.500, incl	0.015	0.015
Over 0.500 to 1.000, incl	0.025	0.025
Over 1.000 to 2.000, incl	0.035	0.035

5.3 Bend Test: Material shall withstand, without cracking, bending at room temperature ø through the angle indicated below around a diameter equal to three times the nominal thickness of the material with axes of bend both perpendicular and parallel to the direction of rolling.

Nominal Thickness Inch	Angle (Free Bend) Degrees, min
Up to 0.250, incl	180
Over 0.250 to 0.437, incl	90

5.4 Properties After Heat Treatment: Specimens austenitized by heating to 1850 F ± 25 (1010 C ± 14), holding at heat for 15 - 25 min., and cooling in air to room temperature ø and then tempered three times by heating to not lower than 1000 F (538 C), holding at heat for 2 - 3 hr, and cooling in air shall conform to the following requirements:

5.4.1 Tensile Properties:

Tensile Strength, psi	260,000 min
Yield Strength at 0.2% Offset or at 0.0185 in. in 2 in. Extension Under Load (E = 30,400,000), psi	220,000 min
Elongation, % in 2 in. or 4D	5 min

5.4.1.1 For widths 9 in. and over, tensile specimens shall be taken with the axis perpendicular to the direction of rolling. For widths less than 9 in., tensile specimens shall be taken with the axis parallel to the direction of rolling.

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

5.4.3 Grain Size: Predominantly 7 or finer with occasional grains as large as 5 permissible, ASTM E112; the procedure used shall be as agreed upon by purchaser and vendor.