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

AEROSPACE MATERIAL SPECIFICATIONS

AMS 4916A
Superseding AMS 4916
Issued 3-15-66
Revised 9-30-66

TITANIUM ALLOY SHEET, STRIP, AND PLATE
8Al - 1Mo - 1V
Duplex Annealed

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 good strength and high fracture toughness up to 800 F (427 C).

3. COMPOSITION: The product shall conform to the following:

	min	max
Aluminum	7.35	8.35
Molybdenum	0.75	1.25
Vanadium	0.75	1.25
Iron	--	0.30
Oxygen	--	0.12
Carbon	--	0.08
Nitrogen	--	0.05 (500 ppm)
Hydrogen	--	0.015 (150 ppm)
Other Elements, each (1)	--	0.10
Other Elements, total (1)	--	0.40
Titanium	remainder	

(1) Need not be reported.

3.1 Check Analysis: Composition variations shall meet the requirements of the latest issue of AMS 2249.

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

4.1 Sheet and Strip: Hot rolled, with or without subsequent cold reduction, annealed, descaled, and cleaned free of surface contamination, having a surface appearance comparable to a commercial corrosion resistant steel No. 2D Finish.

4.2 Plate: Hot rolled, annealed, and descaled.

5. TECHNICAL REQUIREMENTS:

5.1 Annealing: Unless otherwise specified, material shall be duplex annealed by heating to 1450 F ± 25 (787.8 C ± 14), holding at heat for 8 hr, cooling at a rate not faster than 100 F (56 C) degrees per hr to below 900 F (482 C), and cooling to room temperature, then reheating to 1450 F ± 25 (787.8 C ± 14), holding at heat for 15 min., and air cooling to room temperature.

5.2 Tensile Properties: These properties apply when the rate of strain is maintained at 0.003 - 0.007 in. per in. per min. through the yield strength and then is increased so as to produce failure in approximately one additional minute. When a dispute occurs between purchaser and vendor over the yield strength values, a referee test shall be performed on a machine having a strain rate pacer, using a rate of 0.005 in. per in. per min. through the yield strength.

Nominal Thickness Inches	Specimen Orientation to Rolling Direction	Tensile Strength psi, min	Yield Strength at 0.2% Offset psi, min	Elongation % in 2 in. or 4D min
0.016 - 0.024, incl	Long. (L)	135,000	125,000	8
0.016 - 0.024, incl	Trans. (T)	130,000	120,000	8
Over 0.024 - 0.187, incl	Long.	135,000	125,000	10
Over 0.024 - 0.187, incl	Trans.	130,000	120,000	10
Over 0.187 - 1.000, incl	L & T	130,000	120,000	10
Over 1.000 - 2.000, incl	L & T	125,000	115,000	10
Over 2.000 - 4.000, incl	L & T	120,000	110,000	8

5.3 Bending: Material shall withstand, without evidence of cracking when examined at 20X magnification, bending in a V-block fixture at room temperature through an angle of 105 deg around a diameter equal to the bend factor times the nominal thickness of the material. Unless otherwise specified, the axis of bend shall be parallel to the direction of rolling. Bend specimen width shall be not less than 10 times the nominal thickness.

Nominal Thickness Inch	Bend Factor
Up to 0.070, excl	8
0.070 to 0.187, incl	9

6. QUALITY: Unless otherwise specified, material shall be produced by multiple melting using consumable electrode practice; at least one of the melting cycles shall be under vacuum. The product shall be uniform in quality and condition, clean, sound, and free from "oil cans" of depth in excess of the flatness tolerance, ripples, and foreign materials and from internal and external imperfections detrimental to fabrication or to performance of parts.

Note. An "oil can" is defined as an excess of material in a localized area of a sheet which causes the sheet to buckle in that area. When the sheet is placed on a flat surface and hand pressure applied to the buckle, the buckle will spring through to the opposite surface or spring up in another area of the sheet.

7. TOLERANCES: Unless otherwise specified, tolerances for material 1.500 in. and under in thickness shall conform to the following; tolerances for material over 1.500 in. thick shall be as agreed upon by purchaser and vendor.

7.1 Thickness, Width, Length, and Straightness: The latest issue of AMS 2242; thickness tolerances shall conform to Tables I and III.

7.2 Flatness:

Ø	Nominal Width Inches	Flatness Tolerance, % For Thickness Ranges Shown, Inches	
		Up to 0.025, excl	0.025 and over
	Up to 36, incl	5	3
	Over 36	As agreed upon by purchaser and vendor	

7.2.1 Flatness shall be determined from the expression 100H/L, where H is the distance from the straight edge to the material at the point of greatest separation, and L is the distance between contact points of a straight edge laid in any direction on the material.

7.2.2 Flatness tolerances do not apply to coiled products.