Society of Automotive Engineers, Inc.
TWO PENNSYLVANIA PLAZA, NEW YORK, N.Y. 10001

AEROSPACE MATERIAL SPECIFICATION

AMS 5536G
Superseding AMS 5536F
Issued 5/1/54
Revised 5/1/70

ALLOY SHEET AND PLATE, CORROSION AND HEAT RESISTANT
Nickel Base - 22Cr - 1.50Co - 9.0Mo - 0.60W - 18.5Fe

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 such as welded nozzle diaphragm assemblies, burner liner parts, tail pipes, exhaust cone assemblies, and other parts requiring oxidation resistance up to 2200 F (1204 C) and relatively high strength above 1500 F (816 C).

3. COMPOSITION:

	min	max
Carbon	0.05	0.15
Manganese	--	1.00
Silicon	--	1.00
Phosphorus	--	0.040
Sulfur	--	0.030
Chromium	20.50	23.00
Cobalt	0.50	2.50
Molybdenum	8.00	10.00
Tungsten	0.20	1.00
Boron	Present but not exceeding	0.010
Iron	17.00	20.00
Nickel	remainder	

3.1 Check Analysis: Composition variations shall meet the requirements of the latest issue of AMS 2269.

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

4.1 Sheet and Strip: Hot or cold rolled, solution heat treated, and descaled unless solution heat treatment is performed in an atmosphere yielding a bright finish, having a surface appearance as close Ø as possible to a commercial corrosion resistant steel No. 2D finish; standards for acceptance and rejection shall be as agreed upon by purchaser and vendor.

4.2 Plate: Hot rolled, solution heat treated, and descaled.

5. TECHNICAL REQUIREMENTS: When ASTM 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 Heat Treatment: Material shall be solution heat treated by heating to 2150 F ± 25 (1176.7 C ± 14), except that sheet and strip up to 0.030 in. thick may be heated to temperatures as low as Ø 2100 F ± 25 (1148.9 C ± 14), holding at heat for a time commensurate with the thickness, and rapidly cooling.

5.2 Tensile Properties:

Nominal Thickness Inches	Tensile Strength psi, min	Yield Strength at 0.2% Offset or at Extension Indicated (E = 30,000,000) psi, min	Extension Under Load in. in 2 in.	Elongation % in 2 in. or 4D, min
Up to 0.010, excl	105,000	45,000	0.0070	--
0.010 to 0.020, excl	105,000	45,000	0.0070	29
0.020 to 0.187, incl	105,000	45,000	0.0070	35
Over 0.187 to 2.000, incl	100,000	40,000	0.0067	35
Over 2.000	95,000	40,000	0.0067	35

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

5.3 Bending: Material shall withstand, without cracking, bending at room temperature through an angle of 180 deg around a diameter equal to the bend factor times the nominal thickness of the material, with axis of bend parallel to the direction of rolling.

Nominal Thickness Inch	Bend Factor
Up to 0.050, excl	1.5
0.050 to 0.187, incl	2

5.4 Stress-Rupture Test at 1500 F (815.6 C): Material shall be capable of meeting the following requirements; tests shall be conducted in accordance with ASTM E139:

5.4.1 A tensile test specimen, maintained at 1500 F ± 5 (815.6 C ± 2.8) while a load sufficient to produce an initial axial stress of 16,000 psi is applied continuously, shall not rupture in less than the time indicated. The elongation after rupture, measured at room temperature, shall be not less than shown below:

Nominal Thickness Inches	Time to Rupture hr, min	Elongation % in 2 in. or 4D, min
0.010 to 0.020, excl	15	3
0.020 and over	24	8

5.4.1.1 The test of 5.4.1 may be conducted at a stress higher than 16,000 psi but stress shall not be changed while test is in process except that for material 0.020 in. and over in thickness, when permitted by purchaser, after 48 hr and at intervals of 8 - 16 hr, preferably 8 - 10 hr, thereafter, the stress may be increased in increments of 2000 psi. Time to rupture and elongation requirements shall be as specified in 5.4.1.

5.5 Grain Size: Sheet and strip 0.125 in. and under in thickness shall have average grain size of 4 or finer, determined in accordance with ASTM E112.

6. QUALITY: The product 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. SAMPLING: Shall be in accordance with all applicable requirements of AMS 2371 and as specified herein.