AEROSPACE
MATERIAL SPECIFICATIONS

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

AMS 5536D

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ALLOY SHEET AND PLATE, CORROSION AND HEAT RESISTANT
Nickel Base - 22Cr - 1.5Co - 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 (1203 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
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 specified, sheet shall be hot or cold rolled, solution heat treated, and descaled, having a surface appearance as close as possible to a commercial corrosion resistant steel
Ø No. 1 finish; actual acceptance and rejection standards shall be as agreed upon by purchaser and vendor. Plate shall be hot rolled, solution heat treated, and descaled.

5. TECHNICAL REQUIREMENTS:

5.1 Heat Treatment: Unless otherwise specified, material shall be solution heat treated by heating to
Ø 2150 F ± 25 (1176.7 C ± 14), holding at heat for a time commensurate with the thickness, and rapidly cooling.

5.2 Tensile Properties:

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Nominal Thickness Inches	Tensile Strength psi, min	Yield Strength at 0.2% Offset or at Extension Indicated (E = 30,000,000)		Elongation % in 2 in. or 4D, min
		psi, min	Extension Under Load in. in 2 in.	
Up to 0.187, incl	100,000	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

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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 the angle indicated below 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	Angle deg, min	Bend Factor
Up to 0.050, excl	180	1.5
0.050 to 0.187, incl	180	2

5.4 Stress-Rupture Test at 1500 F (815.6 C): Material shall be capable of meeting the following requirements:

5.4.1 A tensile test specimen, maintained at 1500 F ± 5 (815.6 C ± 2.8) while an axial stress of 15,000 psi is applied continuously, shall not rupture in less than 24 hours. The test shall be continued, after the 24 hr, until the specimen ruptures, either maintaining the same stress or increasing the stress to not over 25,000 psi as necessary to produce rupture. In either case, the elongation after rupture, measured at room temperature, shall be not less than 8% in 2 inches.

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. TOLERANCES: Unless otherwise specified, tolerances shall conform to all applicable requirements of the latest issue of AMS 2262.

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 of each heat in the shipment and the results of tests on each thickness from each lot to determine conformance to the tensile and bending requirements of this specification. This report shall include the purchase order number, lot number, material specification number, nominal thickness, size, and quantity from each lot. A lot shall be considered to be any number of individual furnace heats of approximately the same composition which are processed as a unit.

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.

9. IDENTIFICATION: Unless otherwise specified, each sheet and plate shall be marked, in the respective location indicated below, with AMS 5536D, heat number, manufacturer's identification, and nominal thickness in inches. The characters shall be not less than 3/8 in. in height, shall be applied using a suitable marking fluid, and shall be capable of being removed in hot alkaline cleaning solution without rubbing. The markings shall have no deleterious effect on the material or its performance. The characters shall be sufficiently stable to withstand normal handling.