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

AMS 5540F

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ALLOY SHEET, STRIP AND PLATE, CORROSION AND HEAT RESISTANT
Nickel Base - 15.5Cr - 8Fe

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

2. APPLICATION: Parts and assemblies requiring oxidation resistance up to approximately 2000 F, but useful at the higher temperatures only when stresses are low, where such parts may require welding during fabrication. Strength at elevated temperatures is similar to that of the 18-8 type of steel.

3. COMPOSITION:

Carbon	0.15 max
Manganese	1.00 max
Silicon	0.50 max
Sulfur	0.015 max
Chromium	14.0 - 17.0
Nickel + Cobalt	72.0 min
Cobalt, if determined	1.0 max
Iron	6.0 - 10.0
Copper	0.50 max

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

4. CONDITION:

4.1 Sheet: Cold rolled, annealed, and descaled.

4.2 Strip: Cold rolled and annealed, and descaled if necessary.

4.3 Plate: Hot rolled, annealed, and descaled, unless otherwise specified.

5. TECHNICAL REQUIREMENTS:

5.1 Tensile Properties:

Tensile Strength, psi	80,000 - 100,000
Yield Strength at 0.2% Offset or at 0.0059 in. in 2 in. Extension Under Load (E = 31,000,000), psi	30,000 min
Elongation, % in 2 in.	
Nominal Thickness in.	
0.010 to 0.017, incl	30 min
Over 0.017 to 0.037, incl	38 min
Over 0.037	40 min

ø5.1.1 Yield strength does not apply to sheet or strip under 0.020 in. in thickness.

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5.1.2 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.

5.2 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:

Form	Nominal Thickness Inch	Bend Factor
Sheet	0.010 to 0.250, incl	1
Strip	0.125 and under	1
Plate	0.187 to 0.750, incl	2

5.3 Grain Size: Shall be not larger than the following when determined in accordance with ASTM E112-60T:

Form	Nominal Thickness Inch	Average Grain Dia. Inch	ASTM Grain Size No.
Sheet	0.050 and under	0.0030	4.5
	Over 0.050 to 0.250, incl	0.0040	3.5
Strip	0.125 and under	0.0030	4.5

5.3.1 Grain size requirements do not apply to sheet in widths over 56 in.

6. QUALITY: Material 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 heat to determine conformance to the technical requirements of this specification. This report shall include the purchase order number, heat number, material specification number, thickness, size, and quantity from each heat.

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