AERONAUTICAL MATERIAL SPECIFICATION

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STEEL SHEET AND STRIP, CORROSION RESISTANT
12.5Cr (SAE 51410)

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

2. FORM: Sheet, strip, and plate.

3. APPLICATION: Primarily for parts and assemblies, such as compressor shrouds, requiring oxidation resistance up to 1000 F, but useful at the higher temperatures only when stresses are low.

4. COMPOSITION:

		Check Analysis Under Min or Over Max	
Carbon	0.15 max	--	0.01
Manganese	1.00 max	--	0.03
Silicon	1.00 max	--	0.05
Phosphorus	0.040 max	--	0.005
Sulfur	0.030 max	--	0.005
Chromium	11.50 - 13.50	0.15	0.15
Nickel	0.75 max	--	0.03
Molybdenum	0.50 max	--	0.03
Aluminum	0.05 max	--	--
Copper	0.50 max	--	0.03
Tin	0.05 max	--	--

5. CONDITION:

5.1 Sheet: Cold rolled, annealed, and descaled (No. 2D Finish).

5.2 Strip: Cold rolled, annealed, and descaled (No. 1 Strip Finish).

5.3 Plate: Hot rolled, annealed, and descaled.

6. TECHNICAL REQUIREMENTS:

6.1 Tensile Properties:

Tensile Strength, psi	95,000 max
Elongation, % in 2 in.	
Thickness, up to 0.030 in., incl	15 min
Over 0.030 in.	20 min

6.1.1 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.

6.2 Hardenability: Material 3/8 in. and under in thickness and 3/8 in. thick specimens from heavier material shall be capable of meeting the following test:

6.2.1 Specimens shall be heated to 1750 F ± 10, held at heat for 15-30 min., and cooled in still air. Hardness of such specimens shall be Rockwell C 35-45 or equivalent.

6.3 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 axes of bends both perpendicular and parallel to the direction of rolling.

Nominal Thickness Inch	Type of Bend	Angle deg, min	Bend Factor
0.375 and under	Free Bend	180	1
0.375 and under	V-Block	135	2
Over 0.375 to 0.500, incl	Free Bend	180	2
Over 0.375 to 0.500, incl	V-Block	135	4

6.4 Grain Size: Sheet and strip shall have grain size of 5 or finer, as determined ø by comparison of polished and etched specimens with the chart in ASTM E19.

7. QUALITY: Material shall be uniform in quality and condition, clean, sound, and free from foreign materials and from internal and external defects detrimental to fabrication or to performance of parts.

8. TOLERANCES: Unless otherwise specified, tolerances shall conform to the latest issue of AMS 2242 as applicable.

9. REPORTS:

9.1 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.

9.2 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.