

# AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.  
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## AMS5504A

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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:** 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
Copper	0.50	max	---	0.03
Tin	0.05	max		
Aluminum	0.05	max		

#### 5. CONDITION:

- 5.1 **Sheet:** Hot rolled, annealed and pickled (No. 1 Finish).
- 5.2 **Strip:** Cold rolled, annealed and pickled (No. 1 Strip Finish).
- 5.3 **Plate:** Hot rolled, annealed and pickled.

#### 6. TECHNICAL REQUIREMENTS:

##### 6.1 Tensile Properties:

Tensile Strength, psi	85,000 max
Elongation, % in 2 in.	
Thickness, up to 0.025 in.	15 min
0.025 - 0.050 in., incl	20 min
Over 0.050 in.	25 min

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

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6.2 Hardenability: Material  $3/8$  in. and less 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  $1750\text{ F} \pm 10$ , held for 30 minutes and cooled in still air. Hardness of such specimens shall be Rockwell C 35-45.

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	Angle, Degrees		Bend Factor
	Min		
0.375 and under	180		1
Over 0.375 to 0.500, incl	180		2

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 for sheet and strip 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 physical property, hardenability, and bending 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.

10. IDENTIFICATION: Unless otherwise specified, each sheet, strip and plate shall be marked, in the respective location indicated below, with AMS 5504A, 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 characters shall be sufficiently stable to withstand ordinary handling.

10.1 Plate, Flat Sheet, and Flat Strip Over 6 in. in Width: Shall be marked in lengthwise rows of characters, recurring at intervals not greater than 2 ft, the rows being spaced not more than 3 in. apart and alternately staggered.