

# AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.  
29 West 39th Street  
New York City

## AMS 5502

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Revised

STEEL SHEET AND STRIP, LOW HEAT RESISTANT  
5Cr - 0.5Mo

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1. ACKNOWLEDGMENT: A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.
2. FORM: Sheet, strip, and plate.
3. APPLICATION: Parts and assemblies requiring good oxidation resistance and good physical properties up to 800 F. The material is weldable with great care and should be handled carefully during any thermal treatment, to avoid cracking.

4. COMPOSITION:

		Check Analysis	
		Under Min	or Over Max
Carbon	0.10 - 0.20	0.00	0.00
Manganese	1.00 max	--	0.04
Silicon	1.00 max	--	0.05
Phosphorus	0.040 max	--	0.005
Sulfur	0.030 max	--	0.005
Chromium	4.00 - 6.00	0.10	0.10
Molybdenum	0.40 - 0.60	0.03	0.03

5. CONDITION: Unless otherwise specified, the material shall be furnished in the following condition:
  - (a) Sheet. - Hot rolled, annealed, pickled and oiled (No. 1 Finish).
  - (b) Strip. - Cold rolled, annealed, pickled and oiled (No. 1 Strip Finish).
  - (c) Plate. - Hot rolled, annealed, pickled and oiled.
6. TECHNICAL REQUIREMENTS: (a) Physical Properties.- Material shall conform to the following requirements:

Tensile Strength, psi	75,000 max
Elongation, % in 2 in.	
Thickness up to 0.050 in.	25 min
Over 0.050 in.	30 min
Hardness, Rockwell	B 90 max

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.

(b) Bending.- Material shall withstand, without cracking, bending at room temperature through an angle of 180 degrees around a diameter equal to the nominal thickness of the material, with axes of bends both perpendicular and parallel to the direction of rolling.

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(c) Physical Properties after Heat Treatment.- Material which has been heated to 1650 F + 10, cooled in still air to room temperature and tempered at 1000 F + 10 for one hour shall conform to the following requirements:

Tensile Strength, psi	170,000 min
Yield Strength at 0.2% offset, or at 0.0136 inch in 2 in. extension under load, psi	140,000 min
Elongation, % in 2 in.	10 min

7. **QUALITY:** The product 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:** (a) Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a notarized report of the results of tests for chemical composition of each heat in each shipment and the results of tests on each thickness from each heat to determine conformance to the physical property 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.
- (b) Unless otherwise specified, the vendor of finished or semi-finished parts shall furnish with each shipment three copies of a notarized 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 certification that the material conforms, or shall include copies of laboratory reports showing the results of tests to determine conformance.
10. **IDENTIFICATION:** (a) Unless otherwise specified, each sheet, strip and plate shall be marked with AMS 5502, manufacturer's identification, and nominal thickness in inches. The characters shall be not less than 3/8 in. in height, and shall be applied using a suitable marking fluid. Marking fluid used shall be capable of being removed in hot alkaline cleaning solution without rubbing. The characters shall be legible upon receipt of material by purchaser, and shall be sufficiently stable to withstand ordinary handling.

(1) Plate, flat sheet, and flat strip over 6 in. in width shall be marked in rows of recurring characters with rows parallel to the direction of rolling and spaced approximately 3 in. apart with alternate rows staggered.

(2) Flat strip 6 in. and under in width shall be marked near one end.

(3) Coiled sheet and strip shall be marked near the outside end of the coil and, if practicable, near the inside end also.