

# AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.  
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New York City

AMS 5521

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Revised

## STEEL SHEET AND STRIP, CORROSION AND HEAT RESISTANT 25Cr - 20Ni (Deep Drawing and Spinning)

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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 requiring both corrosion and heat resistance, and where such parts may require welding during fabrication. Parts and assemblies requiring oxidation resistance up to approximately 2000 F, but useful at the higher temperatures only when stresses are very low. Strength at elevated temperatures is similar to that of the 18-8 types.
4. **COMPOSITION:**

Check Analysis  
Under Min or Over Max

Carbon	0.12 max	—	0.01
Manganese	2.00 max	—	0.04
Silicon	0.30 - 0.80	0.05	0.05
Phosphorus	0.040 max	—	0.005
Sulfur	0.030 max	—	0.005
Chromium	24.00 - 26.00	0.25	0.25
Nickel	19.00 - 22.00	0.15	0.15
Molybdenum	0.50 max	—	0.03
Copper	0.50 max	—	0.03

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

Tensile Strength, psi	100,000 max
Elongation, % in 2 in.	40 min
Rockwell Hardness	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 the angle indicated below around a diameter equal to the thickness of the material, with axes of bends both perpendicular and parallel to the direction of rolling:

Nominal Thickness Inch	Angle, Degrees min
0.249 and under	180
Over 0.249 to 0.749, incl	90

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 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 5521, manufacturer's identification, and nominal thickness in inches. The characters shall be not less than 3/8 in. in height, shall be applied to the material by suitable marking fluid and 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, on the inside end also.