

AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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AMS5526 B

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STEEL SHEET AND STRIP, CORROSION AND HEAT RESISTANT 20Cr - 9Ni - 1.4Mo - 1.4W - Cb - Ti

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 welded assemblies, such as turbine nozzles, tail pipes, and exhaust cones, requiring high strength up to 1150 F and oxidation resistance up to 1600 F.

4. **COMPOSITION:**

| | | Check Analysis | |
|----------------------|---------------|----------------|----------|
| | | Under Min | Over Max |
| Carbon | 0.28 - 0.35 | 0.02 | 0.02 |
| Manganese | 0.75 - 1.50 | 0.04 | 0.04 |
| Silicon | 0.30 - 0.80 | 0.05 | 0.05 |
| Phosphorus | 0.040 max | -- | 0.005 |
| Sulfur | 0.030 max | -- | 0.005 |
| Chromium | 18.00 - 21.00 | 0.25 | 0.25 |
| Nickel | 8.00 - 11.00 | 0.15 | 0.15 |
| Molybdenum | 1.00 - 1.75 | 0.05 | 0.05 |
| Tungsten | 1.00 - 1.75 | 0.05 | 0.05 |
| Columbium + Tantalum | 0.25 - 0.60 | 0.05 | 0.05 |
| Titanium | 0.10 - 0.35 | 0.00 | 0.05 |
| Copper | 0.50 max | -- | 0.03 |

5. **CONDITION:**

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

6. **TECHNICAL REQUIREMENTS:**

- 6.1 **Solution Heat Treatment:** Unless otherwise specified, solution shall be accomplished by heating to 1800 F \pm 25, followed by air cooling.

6.2 **Physical Properties:**

| | |
|---|-------------------|
| Tensile Strength, psi | 95,000 to 120,000 |
| Yield Strength at 0.2% offset or at 0.0071 inch in 2 in. extension under load, psi | 45,000 min |
| Elongation, % in 2 in. | 30 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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- 6.3 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, min | Bend Factor |
|---------------------------|-----------------------|-------------|
| Under 0.050 | 180 | 1 |
| 0.050 and over | 90 | 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. Thickness and flatness tolerances shall be as specified below:

- 8.1 Thickness: Tables I and III.

- 8.2 Flatness: Sheet and strip, Table VI.

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 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 part 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 with AMS 5526B, 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 markings shall have no deleterious effect on the material or its performance. The characters shall be sufficiently stable to withstand ordinary handling.