AERONAUTICAL
MATERIAL SPECIFICATIONS
SOCIETY OF AUTOMOTIVE ENGINEERS, Inc. 485 Lexington Ave., New York 17, N.Y.

AMS 5526C

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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:

| | |
|---|---|
| Carbon | 0.28 - 0.35 |
| Manganese | 0.75 - 1.50 |
| Silicon | 0.30 - 0.80 |
| Phosphorus | 0.040 max |
| Sulfur | 0.030 max |
| Chromium | 18.00 - 21.00 |
| Nickel | 8.00 - 11.00 |
| Molybdenum | 1.00 - 1.75 |
| Tungsten | 1.00 - 1.75 |
| Columbium + Tantalum | 0.25 - 0.60 |
| Titanium | 0.10 - 0.35 |
| Copper | 0.50 max |

4.1 Check Analysis: Composition variations shall meet the requirements of the latest issue of AMS 2248.

5. CONDITION: Unless otherwise specified, material shall be supplied in the following condition:

5.1 Sheet and Strip: Hot or cold rolled, annealed, and descaled, having a surface appearance as close as possible to a commercial corrosion resistant steel No. 2D finish; standards for acceptance and rejection shall be as agreed upon by purchaser and vendor.

5.2 Plate: Hot rolled, annealed, and descaled.

6. TECHNICAL REQUIREMENTS:

6.1 Annealing: Unless otherwise specified, the product shall be annealed by heating to 1800 F ± 25, followed by air cooling.

6.2 Tensile Properties:

| | |
|---|---|
| Tensile Strength, psi | 95,000 - 120,000 |
| Yield Strength at 0.2% offset or at 0.0071 in. in 2 in. Extension Under Load (E = 29,000,000), psi | 45,000 min |
| Elongation, % in 2 in. | 30 min |







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6.2.1 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.

6.3 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 axis of bend parallel to the direction of rolling:

| Nominal Thickness Inch | Type of Bend | Angle deg, min | Bend Factor |
|---|---|---|---|
| Under 0.050 | Free Bend | 180 | 2 |
| Ø Under 0.050 | V-Block | 135 | 2 |
| 0.050 and over | Free Bend | 90 | 2 |
| 0.050 and over | V-Block | 135 | 4 |

7. QUALITY: Material shall be uniform in quality and condition, clean, sound, and free from foreign materials and from internal and external imperfections 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. Thickness and flatness tolerances shall be as specified below:

Ø8.1 Thickness: Tables I, II, and III.

Ø8.2 Flatness: Sheet and strip, Table VI; plate, 7.4.

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.

10. IDENTIFICATION: Unless otherwise specified, each sheet, strip, and plate shall be marked with AMS 5526C, heat number, manufacturer's identification, and nominal thickness in inches. The characters shall be not less than 3/8 in. in height, Ø 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.