AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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AMS 5540C

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ALLOY SHEET AND STRIP, CORROSION AND HEAT RESISTANT
Nickel Base - 15.5Cr - 8Fe

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 requiring both corrosion and oxidation 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 low. Strength at elevated temperatures is similar to that of the 18-8 type of steel.

4. COMPOSITION:

	Type A	Type B
Carbon	0.15 max	0.15 max
Manganese	1.00 max	1.00 max
Silicon	0.50 max	0.50 max
Chromium	12.00 - 15.00	14.00 - 17.00
Nickel + Cobalt	75.00 min	72.00 min
Cobalt, if determined	1.00 max	1.00 max
Iron	9.00 max	6.00 - 10.00
Copper	0.50 max	0.50 max

Note: Type B shall be supplied, unless otherwise agreed upon by purchaser and vendor.

5. CONDITION: Unless otherwise specified, the product shall be furnished in the following conditions:

5.1 Sheet and Strip: Cold rolled, annealed, pickled, and roller- or stretcher-leveled.

5.2 Plate: Hot rolled, annealed, pickled, and commercially flat.

6. TECHNICAL REQUIREMENTS:

6.1 Physical Properties: Material shall conform to the following requirements:

Tensile Strength, psi	80,000 - 100,000
Yield Strength at 0.2% offset or at 0.0059 inch in 2 in. extension under load, psi	30,000 min
Elongation, % in 2 in.	40 min

Note 1: Yield strength at elongation requirements do not apply to sheet or strip under 0.020 in. in thickness.

Note 2: 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.

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

6.3 Grain Size: The grain size shall be fine to medium and shall average not over 0.0028 in. in diameter when determined in accordance with ASTM E2-44T.

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 2262 as applicable.

9. REPORTS:

9.1 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 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 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 orpurchased 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:

10.1 Unless otherwise specified, each sheet, strip, and plate shall be marked with AMS 5540C, 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 effects on the material or its performance. The characters shall be sufficiently stable to withstand ordinary handling and shall not interfere with welding procedures.

10.1.1 Plate, Sheet, and Flat Strip over 6 in. in width: Shall be marked in rows of recurring symbols, with rows parallel to the direction of rolling and spaced approximately 3 in. apart with alternate rows staggered.

10.1.2 Flat Strip 6 in. and under in width: Shall be marked near each end.

10.1.3 Coiled Strip: Shall be marked near the outside end of the coil, and , if practicable, near the inside end also.