AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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AMS 5510C

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STEEL SHEET AND STRIP, CORROSION AND HEAT RESISTANT
18Cr - 10Ni

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: This material is intended for parts which will be subjected to high temperatures during fabrication or in service.

4. COMPOSITION:

		Check Analysis	
		Under Min	or Over Max
Carbon	0.08 max	---	0.01
Manganese	1.0 - 2.0	0.03	0.04
Silicon	1.0 max	---	0.05
Phosphorus	0.04 max	---	0.005
Sulfur	0.03 max	---	0.005
Chromium	17.0 - 19.0	0.20	0.20
Nickel	9.0 - 12.0	0.10	0.15
Columbium or Titanium	10xC - 1.0 (Columbium) or 0.40 min (Titanium)	0.05	0.05
Copper	0.50 max	---	0.03
Molybdenum	0.50 max	---	0.03

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

(a) Sheet. - Solution heat treated, pickled, and dull cold rolled (No. 2D Finish),

(b) Strip. - Cold rolled, solution heat treated, and pickled (No. 1 Strip Finish),

(c) Plate. - Solution heat treated, and pickled (No. 1 Finish).

6. TECHNICAL REQUIREMENTS: (a) Physical Properties. - Material shall have the following physical properties:

Tensile Strength, psi	100,000 max
Elongation, % in 2 in.	40 min

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

(c) Embrittlement. - Material shall be capable of meeting the following test:

After being heated to 1200 F. for two hours and air cooled, embrittlement test specimens shall withstand immersion for 48 hours in a boiling aqueous solution containing 100 g of $CuSO_4.5H_2O$ and 100 ml of H_2SO_4 (sp gr 1.84) per liter of solution under a reflux condenser without evidence of intercrystalline surface attack. After such immersion, the specimens shall withstand the bend test of paragraph 6(b).

7. QUALITY: The product shall be uniform in quality and condition, clean, sound, and free from foreign material and from internal and external defects detrimental to fabrication or to performance of parts. Material in which defects are revealed during fabrication will be subject to rejection.

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 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.