

AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
29 West 39th Street
New York City

AMS5530A

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ALLOY SHEET, CORROSION AND HEAT RESISTANT Nickel Base - 17Mo - 16.5Cr - 6Fe - 5W

1. **ACKNOWLEDGMENT:** A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.
2. **APPLICATION:** Primarily for parts such as welded nozzle diaphragm assemblies, burner liner parts, tail pipes, exhaust cone assemblies, and other parts requiring high strength up to approximately 1500 F, and oxidation resistance up to 2000 F.
3. **COMPOSITION:**

		Check Analysis	
		Under Min	or Over Max
Carbon	0.15 max	----	0.01
Manganese	1.00 max	----	0.03
Silicon	1.00 max	----	0.05
Phosphorus	0.04 max	----	0.005
Sulfur	0.03 max	----	0.005
Molybdenum	16.00 - 18.00	0.15	0.15
Chromium	15.50 - 17.50	0.20	0.20
Iron	4.50 - 7.00	0.10	0.15
Tungsten	3.75 - 5.25	0.10	0.15
Vanadium	0.20 - 0.60	0.04	0.04
Nickel	Remainder		

4. **CONDITION:** Unless otherwise specified, material shall be hot rolled, annealed, and pickled, having a surface appearance as close as possible to a commercial corrosion resistant steel No. 2D finish; actual acceptance and rejection standards shall be as agreed upon by purchaser and vendor.

5. **TECHNICAL REQUIREMENTS:**

5.1 **Physical Properties:**

Tensile strength, psi	100,000 - 135,000
Elongation, % in 2 in.	30 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.

- 5.2 **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.

Section 5 of the SAE Technical Board rules provides that: "All technical reports, including standards, are advisory only. Their use by one engaged in industry or trade is entirely voluntary. There is no agreement to adhere to a SAE standard or recommended practice, and no commitment to conform to or be guided by any technical report. In formulating and approving technical reports, the Board and its Committees will not investigate or consider patents which may apply to the subject matter. Prospective users of the report are responsible for protecting themselves against liability for infringement of patents."

Nominal Thickness Inch	Angle, Degrees Min	Bend Factor
Under 0.050	180	1
0.050 and over	120	2

6. 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.

7. TOLERANCES: Unless otherwise specified, tolerances shall conform to the latest issue of AMS 2242 as applicable.

8. REPORTS:

8.1 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 each shipment and the results of tests on each thickness from each lot to determine conformance to the physical property and bending requirements of this specification. This report shall include the purchase order number, lot number, material specification number, thickness, size, and quantity from each lot. A lot shall be considered to be any number of individual furnace heats of approximately the same composition which are processed as a unit.

8.2 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 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.

9. IDENTIFICATION: Unless otherwise specified, each sheet shall be marked with AMS 5530A, manufacturer's identification, lot number, and nominal thickness in inches. The characters shall be not less than 0.375 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.

9.1 Flat Sheet 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.

9.2 Flat Sheet 6 In. and Under in Width: Shall be marked near each end.