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INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

AEROSPACE MATERIAL SPECIFICATION

SAE AMS 5879A

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Superseding AMS 5879

Submitted for recognition as an American National Standard

NICKEL ALLOY, CORROSION AND HEAT RESISTANT, SHEET, STRIP, AND FOIL
62Ni - 21.5Cr - 9.0Mo - 3.7Cb
Cold Rolled and Annealed

UNS N06626

1. SCOPE:

1.1 Form:

This specification covers a corrosion and heat resistant nickel alloy in the form of sheet, strip, and foil 0.100 inch (2.54 mm) and under in nominal thickness.

1.2 Application:

These products have been used typically for the fabrication of high-quality bellows and other applications requiring low-cycle fatigue life, high strength, resistance to corrosion, and excellent formability and weldability, but usage is not limited to such applications.

2. APPLICABLE DOCUMENTS:

The following publications form a part of this specification to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order.

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

AMS 2262	Tolerances, Nickel, Nickel Alloy, and Cobalt Alloy Sheet, Strip, and Plate
MAM 2262	Tolerances, Metric, Nickel, Nickel Alloy, and Cobalt Alloy Sheet, Strip, and Plate
AMS 2269	Chemical Check Analysis Limits, Nickel, Nickel Alloys, and Cobalt Alloys
AMS 2371	Quality Assurance Sampling and Testing, Corrosion and Heat Resistant Steels and Alloys, Wrought Products and Forging Stock
AMS 2807	Identification, Carbon and Low-Alloy Steels, Corrosion and Heat Resistant Steels and Alloys, Sheet, Strip, Plate, and Aircraft Tubing

2.2 ASTM Publications:

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM E 8 Tension Testing of Metallic Materials
ASTM E 8M Tension Testing of Metallic Materials (Metric)
ASTM E 112 Determining the Average Grain Size
ASTM E 290 Semi-Guided Bend Test for Ductility of Metallic Materials
ASTM E 354 Chemical Analysis of High-Temperature, Electrical, Magnetic, and Other Similar Iron, Nickel, and Cobalt Alloys

2.3 U.S. Government Publications:

Available from DODSSP, Subscription Services Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

MIL-STD-163 Steel Mill Products, Preparation for Shipment and Storage

3. TECHNICAL REQUIREMENTS:

3.1 Composition:

(R)

Shall conform to the percentages by weight shown in Table 1, determined by wet chemical methods in accordance with ASTM E 354, by spectrochemical methods, or by other analytical methods acceptable to purchaser.

TABLE 1 - Composition

Element	min	max
Carbon	--	0.03
Manganese	--	0.50
Silicon	--	0.15
Phosphorus	--	0.015
Sulfur	--	0.015
Chromium	20.00	23.00
Molybdenum	8.00	10.00
Columbium	3.15	4.15
Cobalt	--	1.00
Titanium	--	0.40
Tantalum (3.1.1)	--	0.05
Aluminum	--	0.40
Iron	--	5.00
Nitrogen	--	0.02
Nickel	remainder	

3.1.1 Determination not required for routine acceptance.

3.1.2 Check Analysis: Composition variations shall meet the requirements of AMS 2269.

3.2 Melting Practice:

Alloy shall be multiple melted using consumable electrode practice in the remelt cycle. If consumable electrode remelting is not performed in vacuum, electrodes which have been produced by vacuum induction melting shall be used for remelting.

3.3 Condition:

Cold rolled, annealed, and, unless annealing is performed in an atmosphere yielding a bright finish, descaled having a surface appearance comparable to the following commercial corrosion-resistant steel finishes, as applicable (See 8.2). Overall grinding of the final product is not permitted.

3.3.1 Sheet: No. 2D finish or bright annealed finish.
(R)

3.3.2 Strip: No. 1 strip finish or bright annealed finish.
(R)

3.3.3 Foil: As ordered.

3.4 Heat Treatment:
(R)

The product shall be annealed by heating to a temperature not lower than 1600 °F (871 °C), holding at the selected temperature within ±25 °F (±14 °C) for a time commensurate with section thickness, and cooling at a rate equivalent to an air cool or faster. The use of dissociated ammonia atmosphere is prohibited.

3.5 Properties:

Product, 0.100 inch (2.54 mm) and under in nominal thickness, shall conform to the following requirements:

3.5.1 Tensile Properties: Except as specified in 3.5.1.1 and 3.5.1.2, tensile properties shall be as
(R) shown in Table 2, determined in accordance with ASTM E 8 or ASTM E 8M.

TABLE 2 - Minimum Tensile Properties

Property	Value
Tensile Strength	120 ksi (827 MPa)
Yield Strength at 0.2% Offset	60.0 ksi (414 MPa)
Elongation in 2 Inches (50.8 mm)	40%

3.5.1.1 Yield strength requirements of Table 2 do not apply to product under 0.010 inch (0.25 mm) in nominal thickness.

3.5.1.2 Elongation requirements of Table 2 do not apply to product under 0.005 inch (0.13 mm) in nominal thickness.

3.5.2 Bending: The product shall withstand, without cracking, bending at room temperature in accordance with ASTM E 290 through an angle of 180 degrees around a diameter equal to the bend factor shown in Table 3 times the nominal thickness of the product with the axis of the bend parallel to the direction of rolling.

TABLE 3 - Bending Parameters

Nominal Thickness Inch	Nominal Thickness Millimeters	Bend Factor
Up to 0.050, incl	Up to 1.27, incl	1
Over 0.050 to 0.100, incl	Over 1.27 to 2.54, incl	2

3.5.2.1 ASTM E 290 is not applicable to product thicknesses under 0.010 inch (0.25 mm).

3.5.3 (R) Average Grain Size: Shall be not coarser than shown in Table 4, determined in accordance with ASTM E 112.

TABLE 4 - Maximum Average Grain Size

Nominal Thickness Inch	Nominal Thickness Millimeters	ASTM Grain Size No.
Up to 0.010, incl	Up to 0.25, incl	8
Over 0.010 to 0.050, incl	Over 0.25 to 1.27, incl	6
Over 0.050 to 0.100, incl	Over 1.27 to 2.54, incl	5

3.6 Quality:

The product, as received by purchaser, shall be uniform in quality and condition, sound, and free from foreign materials and from imperfections detrimental to usage of the product.

3.7 Tolerances:

Shall conform to all applicable requirements of AMS 2262 or MAM 2262.