



AEROSPACE MATERIAL SPECIFICATION

AMS5878™**REV. F**Issued 1990-01
Revised 2025-12

Superseding AMS5878E

(R) Nickel Alloy, Corrosion- and Heat-Resistant, Sheet, Strip, and Plate,
59Ni - 22Cr - 2Mo - 14W - 0.35Al - 0.03La (Alloy No. 230®),
Solution Heat Treated
(Composition similar to UNS N06230)

RATIONALE

AMS5878F is the result of a Five-Year Review and update of the specification. The revision updates the Title with the trade name (see 8.7), revises composition testing and reporting (see 3.1 and 3.1.1), updates surface finish requirements (see 3.2.1), adds strain rate requirements (see 3.4.2.1), updates hardness (see 3.4.3), clarifies bending requirements (see 3.4.6), adds MMPDS reporting (see 3.7 and 8.6), and updates the exception requirements (see 8.5).

1. SCOPE

1.1 Form

This specification covers a corrosion- and heat-resistant nickel alloy in the form of sheet, strip, and plate 0.015 to 1.5 inches (0.38 to 38 mm) in nominal thickness.

1.2 Application

These products have been used typically for parts requiring oxidation resistance up to 2100 °F (1149 °C) and relatively high strength up to 1800 °F (982 °C), but usage is not limited to such applications.

2. APPLICABLE DOCUMENTS

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (U.S. and Canada only) or +1 724-776-4970 (outside U.S. and Canada), www.sae.org.

AMS2262 Tolerances, Nickel, Nickel Alloy, and Cobalt Alloy Sheet, Strip, and Plate

AMS2269 Chemical Check Analysis Limits, Nickel, Nickel Alloys, and Cobalt Alloys

AMS2283 Composition Testing Methods for Nickel- and Cobalt-Based Alloys

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Documents

Standard, visit Sharing Hub

AMS2371	Quality Assurance Sampling and Testing, Corrosion and Heat-Resistant Steels and Alloys, Wrought Products and Forging Stock
AMS2750	Pyrometry
AMS2807	Identification, Carbon and Low-Alloy Steels, Corrosion- and Heat-Resistant Steels and Alloys, Sheet, Strip, Plate, and Aircraft Tubing
AS7766	Terms Used in Aerospace Metals Specifications

2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM E8/E8M	Tension Testing of Metallic Materials
ASTM E18	Rockwell Hardness of Metallic Materials
ASTM E112	Determining Average Grain Size
ASTM E139	Conducting Creep, Creep-Rupture, and Stress-Rupture Tests of Metallic Materials
ASTM E140	Hardness Conversion Tables for Metals Relationship Among Brinell Hardness, Vickers Hardness, Rockwell Hardness, Superficial Hardness, Knoop Hardness, Scleroscope Hardness, and Leeb Hardness
ASTM E290	Bend Test of Materials for Ductility

3. TECHNICAL REQUIREMENTS

3.1 Composition

Composition shall conform to the percentages by weight shown in Table 1, determined in accordance with AMS2283 or by other analytical methods acceptable to the purchaser.

Table 1 - Composition

Element	Min	Max
Carbon	0.05	0.15
Manganese	0.30	1.00
Silicon	0.25	0.75
Phosphorus	--	0.03
Sulfur	--	0.015
Chromium	20.00	24.00
Molybdenum	1.00	3.00
Tungsten	13.00	15.00
Aluminum	0.20	0.50
Lanthanum	0.005	0.05
Cobalt	--	5.00
Titanium	--	0.10
Boron	--	0.015
Iron	--	3.00
Copper	--	0.50
Nickel	remainder	

3.1.1 The producer may test for any element not listed in Table 1 and include this analysis in the report of 4.4. Reporting of any element not listed in the composition table is not a basis for rejection unless limits of acceptability are specified by the purchaser.

3.1.2 Check Analysis

Composition variations shall meet the applicable requirements of AMS2269.

3.2 Condition

The product shall be supplied in the following condition:

3.2.1 Sheet and Strip

Sheet and strip shall be hot or cold rolled, solution heat treated, and, unless solution heat treatment is performed in an atmosphere yielding a bright finish, descaled producing a uniform finish.

3.2.2 Plate

Plate shall be hot rolled, solution heat treated, and descaled.

3.3 Heat Treatment

Pyrometry shall be in accordance with AMS2750. Except as specified in 3.3.1, the product shall be solution heat treated by heating to a temperature within the range 2150 to 2275 °F (1177 to 1246 °C), holding at the selected temperature within ± 25 °F (± 14 °C) for a time commensurate with section thickness, and cooling rapidly.

3.3.1 Continuous Heat Treating

Process parameters (e.g., furnace temperature set points, heat input, travel rate, etc.) for continuous heat-treating lines shall be established by the material producer and validated by testing of product to the other requirements of this specification.

3.4 Properties

Product 0.015 to 1.5 inches (0.38 to 38 mm) in nominal thickness shall conform to the following requirements:

3.4.1 Mechanical property requirements for product outside of the range covered by 1.1 shall be agreed upon between the purchaser and producer.

3.4.2 Tensile Properties

Tensile properties shall be as shown in Table 2, determined in accordance with ASTM E8/E8M.

Table 2 - Minimum tensile properties

Property	Value
Tensile Strength	115 ksi (793 MPa)
Yield Strength at 0.2% Offset	50 ksi (345 MPa)
Elongation in 2 Inches (50 mm) or 4D	40%

3.4.2.1 Unless otherwise specified, the strain rate for all tensile tests shall be set at 0.005 in/in/min (0.005 mm/mm/min) and maintained within a tolerance of ± 0.002 in/in/min (± 0.002 mm/mm/min) through 0.2% offset yield strain. The requirement for compliance becomes effective for material produced 1 year after the publication date of this specification.