



400 Commonwealth Drive, Warrendale, PA 15096-0001

# AEROSPACE MATERIAL SPECIFICATION

**SAE****AMS 5871C**

Issued MAY 1972  
Revised AUG 1994  
Superseding AMS 5871B

Submitted for recognition as an American National Standard

ALLOY, CORROSION AND HEAT RESISTANT, SHEET, STRIP AND PLATE  
21Cr - 32.5Ni - 0.38Ti - 0.38Al - 45Fe  
Solution Heat Treated

UNS N08800

**1. SCOPE:****1.1 Form:**

This specification covers a corrosion and heat resistant iron-nickel-chromium alloy in the form of sheet, strip, and plate.

**1.2 Application:**

These products have been used typically for low-stressed parts requiring corrosion and oxidation resistance particularly where such parts may require welding during fabrication, 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.

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## 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, Wrought 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, 1916 Race Street, Philadelphia, PA 19103-1187.

- ASTM E 8 Tension Testing of Metallic Materials
- ASTM E 8M Tension Testing of Metallic Materials (Metric)
- 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.

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TABLE 1 - Composition

Element	min	max
Carbon	--	0.10
Manganese	--	1.50
Silicon	--	1.00
Phosphorus	--	0.035
Sulfur	--	0.015
Chromium	19.00	23.00
Nickel	30.00	35.00
Titanium	0.15	0.60
Aluminum	0.15	0.60
Copper	--	0.75
Iron	remainder	

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

### 3.2 Condition:

The product shall be supplied in the following condition:

3.2.1 Sheet and Strip: Cold rolled, solution heat treated, and, unless solution heat treatment 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):

3.2.1.1 Sheet: Shall be No. 2D finish.

3.2.1.2 Strip: Shall be No. 1 strip finish.

3.2.2 Plate: Hot rolled and solution heat treated; when so ordered, plate shall be descaled.

### 3.3 Properties:

The product shall conform to the following requirements:

3.3.1 Tensile Properties: Shall be as specified in Table 2 for product 0.010 to 2.00 inches (0.25 to 50.8 mm), inclusive, in nominal thickness, determined in accordance with ASTM E 8 or ASTM E 8M.

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TABLE 2 - Minimum Tensile Properties

Property	Value
Tensile Strength	65.0 ksi (448 MPa)
Yield Strength at 0.2% Offset	25.0 ksi (172 MPa)
Elongation in 2 inches (50.8) or 4D	30%

- 3.3.2 Bending: 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 axis of 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 0.1875, excl	Over 1.27 to 4.762, excl	2

#### 3.4 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.

#### 3.5 Tolerances:

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

#### 4. QUALITY ASSURANCE PROVISIONS:

##### 4.1 Responsibility for Inspection:

(R)

The vendor of the product shall supply all samples for vendor's tests and shall be responsible for performing all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the product conforms to the requirements of this specification.

##### 4.2 Classification of Tests:

Tests for all technical requirements are acceptance tests and shall be performed on each heat or lot as applicable.