SAE Aerospace
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AEROSPACE MATERIAL SPECIFICATION

SAE AMS5871E

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Superseding AMS5871D

Alloy, Corrosion and Heat-Resistant, Sheet, Strip and Plate
21Cr - 32.5Ni - 0.38Ti - 0.38Al - 45Fe
Solution Heat Treated

(Composition similar to UNS N08800)

RATIONALE

AMS5871E revises condition (3.2.1), bending (3.3.2), reports (4.4) and is a Five Year Review and update of this specification.

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 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 (inside USA and Canada) or 724-776-4970 (outside USA), 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
AMS2371	Quality Assurance Sampling and Testing, Corrosion and Heat-Resistant Steels and Alloys, Wrought Products and Forging Stock
AMS2807	Identification, Carbon and Low-Alloy Steels, Corrosion and Heat-Resistant Steels and Alloys, Sheet, Strip, Plate, and Aircraft Tubing
AS4194	Sheet and Strip Surface Finish Nomenclature

TO PLACE A DOCUMENT ORDER: Tel: 877-606-7323 (inside USA and Canada)
Tel: 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
SAE WEB ADDRESS: http://www.sae.org

SAE values your input. To provide feedback on this Technical Report, please visit
http://www.sae.org/technical/standards/AMS5871E

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 A 480/A 480M	Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip
ASTM E 8/ E 8M	Tension Testing of Metallic Materials
ASTM E 290	Bend Testing of Material for Ductility
ASTM E 354	Chemical Analysis of High-Temperature, Electrical, Magnetic, and Other Similar Iron, Nickel, and Cobalt Alloys

3. TECHNICAL REQUIREMENTS

3.1 Composition

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	--	0.10
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 applicable requirements of AMS2269.

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 in accordance with ASTM A 480/A 480M and AS4194 and 3.2.1.1 or 3.2.1.2, as applicable:

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; 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/E 8M.

TABLE 2 - MINIMUM TENSILE PROPERTIES

Property	Value
Tensile Strength	65 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 be tested in accordance with ASTM E 290 using a specimen prepared nominally 0.75 inch (19.0 mm) in width with the axis of bend parallel to the direction of rolling, and shall withstand, without cracking, when bending at room temperature 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. In case of dispute, the results of tests using the guided bend test of ASTM E 290 shall govern.

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 AMS2262.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection

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

4.2 Classification of Tests

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