AEROSPACE MATERIAL SPECIFICATION

AMS5501	REV. E

Issued 1967-11
Revised 2002-11
Reaffirmed 2013-08

Superseding AMS5501D

Steel, Corrosion Resistant, Sheet, Strip, and Foil
19Cr – 9.5Ni (304)
Cold Rolled, 125 ksi (862 MPa) Tensile Strength
(Composition similar to UNS S30400)

RATIONALE

AMS5501E has been reaffirmed to comply with the SAE 5-year Review policy.

1. SCOPE:

1.1 Form:

This specification covers a corrosion-resistant steel in the form of sheet, strip, and foil.

1.2 Application:

These products have been used typically for parts requiring moderate drawing or forming, 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, 400 Commonwealth Drive, Warrendale, PA 15096-0001 or www.sae.org.

AMS 2242 Tolerances, Corrosion and Heat-Resistant Steel, Iron Alloy, Titanium, and Titanium Alloy Sheet, Strip, and Plate

MAM 2242 Tolerances, Metric, Corrosion and Heat-Resistant Steel, Iron Alloy, Titanium, and Titanium Alloy Sheet, Strip, and Plate

AMS 2248 Chemical Check Analysis Limits, Corrosion and Heat-Resistant Steels and Alloys, Maraging and other Highly Alloyed Steels, and Iron Alloys

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
Tel: +1 724-776-4970 (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/AMS5501E

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

AS4194 Sheet and Strip Surface Finish Nomenclature

2.2 ASTM Publications:

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959 or www.astm.org.

ASTM A 370 Mechanical Testing of Steel Products

ASTM A 480/ Flat-Rolled Stainless and Heat-Resisting Steel

ASTM A 480M Plate, Sheet, and Strip

ASTM E 290 Semi-Guided Bend Test for Ductility of Metallic Materials

ASTM E 353 Chemical Analysis of Stainless, Heat-Resisting, Maraging, and Other Similar Chromium-Nickel-Iron 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 353, by spectrochemical methods, or by other analytical methods acceptable to purchaser.

TABLE 1 – COMPOSITION

Element	min	max
Carbon	--	0.08
Manganese	--	2.00
Silicon	--	1.00
Phosphorus	--	0.040
Sulfur	--	0.030
Chromium	18.00	20.00
Nickel	8.00	11.00
Molybdenum		0.75
Copper		0.75

3.1.1 Check Analysis: Composition variations shall meet the applicable requirements of AMS 2248.

3.2 Condition:

Solution heat treated and temper cold rolled in accordance with ASTM A 480/A 480M, Condition TR and, unless solution heat treatment is performed in an atmosphere yielding a bright finish, descaled, with sheet having a surface appearance comparable to a 2D finish in ASTM A 480/A 480M and AS4194.

3.3 Properties:

Product shall conform to the following requirements; tensile and bend testing shall be performed in accordance with ASTM A 370.

3.3.1 Tensile Properties: Product, 0.005 inch (0.13 mm) and over in nominal thickness, shall have the properties shown in Table 2.

TABLE 2 - MINIMUM TENSILE PROPERTIES

Property	Value
Tensile Strength	125 ksi (862 MPa)
Yield Strength at 0.2% Offset	75 ksi (517 MPa)
Elongation in 2 Inches (50.8 mm)	15%

3.3.2 Bending: Product 0.010 inch (0.25 mm) and under in nominal thickness, tested with specimens nominally 0.750 inch (19.06 mm) in width, shall withstand without cracking when examined using at least 20X magnification, bending in accordance with ASTM E 290 through a minimum angle of 180 degrees around a diameter equal to the nominal thickness of the product, with axis of bending parallel to direction of rolling. In case of dispute, results of tests using the guided bend test shall govern.

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:

Product, 0.005 inch (0.13 mm) and over in nominal thickness, shall conform to all applicable requirements of AMS 2242 or MAM 2242.

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.

4.3 Sampling and Testing:

Shall be in accordance with AMS 2371.

4.4 Reports:

The vendor of the product shall furnish with each shipment a report showing the results of tests for composition of each heat and for tensile and bending properties of each lot, and stating that the product conforms to the other technical requirements. This report shall include the purchase order number, heat and lot numbers, AMS 5501E, size, and quantity.

4.5 Resampling and Retesting:

Shall be in accordance with AMS 2371.

5. PREPARATION FOR DELIVERY:

5.1 Identification:

Shall be in accordance with AMS 2807.

5.2 Packaging:

Product shall be prepared for shipment in accordance with commercial practice and in compliance with applicable rules and regulations pertaining to the handling, packaging, and transportation of the product to ensure carrier acceptance and safe delivery.

6. ACKNOWLEDGMENT:

A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.