

AEROSPACE MATERIAL SPECIFICATION



AMS 5911A

Issued JAN 1992
Revised MAR 2001
Reaffirmed APR 2006

Superseding AMS 5911

Steel, Corrosion Resistant, Sheet and Strip
19Cr - 9.2Ni (SAE 30304)
Cold Rolled, 1/2 Hard, 150 ksi (1034 MPa) Tensile Strength
(Composition similar to UNS S30400)

1. SCOPE:

1.1 Form:

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

1.2 Application:

These products have been used typically for applications requiring moderate forming and bending, but usage is not limited to such applications.

1.2.1 Mechanical properties specified herein are obtained by cold working (strain hardening), and not by heat treatment. Therefore, the cold-worked product should not be heated to a temperature which adversely affects the mechanical properties or corrosion-resistance before, during, or after fabrication.

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 canceled 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.

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

SAE Technical Standards Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be reaffirmed, revised, or cancelled. SAE invites your written comments and suggestions.

Copyright © 2006 SAE International

All rights reserved.

Printed in U.S.A.

QUESTIONS REGARDING THIS DOCUMENT:

TO PLACE A DOCUMENT ORDER:

SAE WEB ADDRESS:

(724) 772-7161
(724) 776-4970
<http://www.sae.org>

FAX: (724) 776-0243
FAX: (724) 776-0790

2.1 (Continued):

- AMS 2248 Chemical Check Analysis Limits, Corrosion and Heat Resistant Steels and Alloys, Maraging and Other Highly-Alloyed Steels, and Iron 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 A 370 Mechanical Testing of Steel Products
- ASTM E 353 Chemical Analysis of Stainless, Heat-Resisting, Maraging, and Other Similar Chromium-Nickel-Iron Alloys
- ASTM E 384 Microindentation Hardness of Materials

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	10.50
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, descaled unless solution heat treatment is performed in an atmosphere yielding a bright finish, and cold rolled.

3.3 Properties:

The product shall conform to the following requirements, determined in accordance with ASTM A 370:

3.3.1 Tensile Properties: Shall be as shown in Table 2 for product over 0.005 inch (0.13 mm) in nominal thickness.

TABLE 2A - Minimum Tensile Properties, Inch/Pound Units

Property	Value
Tensile Strength	150 ksi
Yield Strength at 0.2% Offset	110 ksi
Elongation in 2 Inches or 4D	
Nominal Thickness	
Over 0.005 to 0.015 inch, incl	6%
Over 0.015 inch	7%

TABLE 2B - Minimum Tensile Properties, SI Units

Property	Value
Tensile Strength	1034 MPa
Yield Strength at 0.2% Offset	758 MPa
Elongation in 50.8 mm or 4D	
Nominal Thickness	
Over 0.13 to 0.38 mm, inch, incl	6%
Over 0.38 mm	7%

3.3.2 Hardness: Shall be not lower than 32 HRC, or equivalent (See 8.2). Product shall not be rejected on the basis of hardness if the tensile properties of 3.3.1 are acceptable, determined on specimens taken from the same sample as that with nonconforming hardness or from another sample with similar nonconforming hardness.

3.3.2.1 Microhardness testing in accordance with ASTM E 384 may be used for thin gages where superficial hardness testing is impractical.

- 3.3.3 Bending: Product shall withstand, without cracking, bending through the angle indicated in Table 3 around a diameter equal to the bend factor times the nominal thickness of the product, with axis of bend parallel to the direction of rolling. Only one type of test will be required in routine inspection; in case of dispute, results of tests using the V-block procedure shall govern.

TABLE 3A - Bending, Inch/Pound Units

Nominal Thickness Inch	Type of Bend	Angle degrees, min	Bend Factor
Up to 0.050, incl	Free Bend	180	2
Up to 0.050, incl	V-Block	135	4
Over 0.050 to 0.187, incl	Free-Bend	90	2
Over 0.050 to 0.187, incl	V-Block	135	4

TABLE 3B - Bending, SI Units

Nominal Thickness Millimeters	Type of Bend	Angle degrees, min	Bend Factor
Up to 1.27, incl	Free Bend	180	2
Up to 1.27, incl	V-Block	135	4
Over 1.27 to 4.75, incl	Free-Bend	90	2
Over 1.27 to 4.75, incl	V-Block	135	4

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 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.