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INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

AEROSPACE MATERIAL SPECIFICATION

SAE AMS 5516M

Issued JAN 1940
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Superseding AMS 5516L

Steel, Corrosion Resistant, Sheet, Strip, and Plate
18Cr - 9.0Ni (SAE 30302)
Solution Heat Treated

UNS S30200

1. SCOPE:

1.1 Form:

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

1.2 Application:

These products have been used typically for formed and drawn parts requiring corrosion resistance up to 800 °F (427 °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 form 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
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

QUESTIONS REGARDING THIS DOCUMENT: (724) 772-7161 FAX: (724) 776-0243
TO PLACE A DOCUMENT ORDER: (724) 776-4970 FAX: (724) 776-0790
SAE WEB ADDRESS: http://www.sae.org

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

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	--	0.15
Manganese	--	2.00
Silicon	--	1.00
Phosphorus	--	0.040
Sulfur	--	0.030
Chromium	17.00	19.00
Nickel	8.00	10.00
Molybdenum	--	0.75
Copper	--	0.75

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

3.2 Condition:

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 conforming to 3.2.1.1 or 3.2.1.2 as applicable (See 8.2).

3.2.1.1 Sheet: No. 2D finish, except 2B may be supplied if acceptable to purchaser (See 8.4.1).

3.2.1.2 Strip: No. 1 strip finish.

3.2.1.2.1 Strip under 0.007 inch (0.18 mm) in nominal thickness shall be bright annealed.

3.2.2 Plate: Hot rolled, solution heat treated, and descaled.

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 specified in Table 2.

TABLE 2A - Tensile Properties, Inch/Pound Units

Nominal Thickness Inch	Tensile Strength ksi	Yield Strength at 0.2% Offset ksi	Elongation in 2 Inches or 4D %, min
0.002 to 0.003, incl	75.0 - 110.0	36.0 - 60.0	30
Over 0.003 to 0.004, incl	75.0 - 105.0	36.0 - 60.0	35
Over 0.004 to 0.176, incl	75.0 - 100.0	36.0 - 60.0	40
Over 0.176	75.0 - 100.0	30.0 minimum	40

TABLE 2B - Tensile Properties, SI Units

Nominal Thickness Millimeters	Tensile Strength MPa	Yield Strength at 0.2% Offset MPa	Elongation in 50.8 mm or 4D %, min
0.05 to 0.08, incl	517 - 758	248 - 414	30
Over 0.08 to 0.10, incl	517 - 724	248 - 414	35
Over 0.10 to 4.47, incl	517 - 689	248 - 414	40
Over 4.47	517 - 689	207 minimum	40

3.3.2 Hardness: Shall be not higher than 92 HRB, 192 HB, or equivalent (See 8.3).

3.3.3 Bending: Product 0.749 inch (19.02 mm) and under in nominal thickness 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 3 - Bending Parameters

Nominal Thickness Inch	Nominal Thickness Millimeters	Type of Bend	Angle deg, min	Bend Factor
Up to 0.249, incl	Up to 6.32, incl	Free Bend	180	1
Up to 0.249, incl	Up to 6.32, incl	V-Block	135	1
Over 0.249 to 0.749, incl	Over 6.32 to 19.02, incl	Free Bend	90	1
Over 0.249 to 0.749, incl	Over 6.32 to 19.02, incl	V-Block	135	2

3.3.3.1 Bending requirements do not apply for plate over 0.749 inch (19.02 mm) in nominal thickness.

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.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Composition (3.1), tensile properties (3.3.1), bending (3.3.3 - only for product 0.1874 inch (4.76 mm) and under in nominal thickness), and tolerances (3.5) are acceptance tests and shall be performed on each heat or lot as applicable.

4.2.2 Periodic Tests: Bending (3.3.3 - for product over 0.1874 inch (4.76 mm) in nominal thickness) is a periodic test and shall be performed at a frequency selected by the vendor unless frequency of testing is specified by purchaser.

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 chemical composition of each heat and for tensile, hardness, and bending properties of each lot, and stating that the product conforms to the other technical requirements. This report shall include the purchase order numbers, heat and lot numbers, AMS 5516M, size, and quantity.

4.5 Resampling and Retesting:

Shall be in accordance with AMS 2371.