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INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

AEROSPACE MATERIAL SPECIFICATION

SAE AMS 5515K

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Superseding AMS 5515J

Steel, Corrosion Resistant, Sheet, Strip, and Plate
18Cr - 8.5Ni (302)
Solution Heat Treated, High Ductility

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 deep and shallow formed parts, operating below 700 °F (371 °C), requiring corrosion resistance, but usage is not limited to such applications.

1.2.1 This alloy is satisfactory for use up to 1500 °F (816 °C) at low stress levels. However, the corrosion resistance is appreciably reduced when exposed to temperatures in the range 800 to 1100 °F (427 to 593 °C) for an extended time.

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.

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

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

2.1 (Continued):

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

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:

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	0.15
Manganese	--	2.00
Silicon	--	1.00
Phosphorus	--	0.040
Sulfur	--	0.030
Chromium	17.00	19.00
Nickel	7.00	10.00
Molybdenum	--	0.75
Copper	--	0.75

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

3.2 Condition:

The product shall be supplied in the following condition:

3.2.1 Sheet: Hot or 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). Cold rolling after solution heat treatment for any purpose (flattening, finishing, polishing, etc) is not permitted.

3.2.1.1 Hot Rolled: No. 1 finish.

3.2.1.2 Cold Rolled: No. 2D finish or bright annealed.

3.2.2 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 a No. 1 strip finish (See 8.2). Cold rolling after solution heat treatment for any purpose (flattening, finishing, polishing, etc) is not permitted.

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

3.3 Properties:

The 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: Shall be as shown in Table 2 for product over 0.005 inch (0.13 mm) in nominal thickness:

TABLE 2 - Tensile Properties

Property	Value
Tensile Strength, maximum	120 ksi (827 MPa)
Elongation in 2 Inches (50.8 mm) or 4D, minimum	
Nominal Thickness	
Up to 0.025 inch (0.64 mm), excl	50%
0.025 inch (0.64 mm) and over	55%

3.3.2 Bending: Product shall withstand, without cracking, bending through the angle shown 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 0.1874, incl	Up to 4.760, incl	Free Bend	180	1
Up to 0.1874, incl	Up to 4.760, incl	V-Block	135	1
Over 0.1874 to 0.749, incl	Over 4.760 to 19.02, incl	Free Bend	90	1
Over 0.1874 to 0.749, incl	Over 4.760 to 19.02, incl	V-Block	135	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 2242 or MAM 2242 except flatness tolerances are waived for sheet and strip.

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), and tolerance (3.5) are acceptance tests and shall be performed on each heat or lot as applicable.

4.2.2 Periodic Tests: Bending (3.3.2) 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 properties of each lot and, when performed, the results of tests to determine conformance to the periodic test requirements. This report shall include the purchase order number, heat and lot numbers, AMS 5515K, size, and quantity.