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INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

AEROSPACE MATERIAL SPECIFICATION

SAE AMS-5515 REV J

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Superseding AMS-5515H

Submitted for recognition as an American National Standard

STEEL SHEET, STRIP, AND PLATE, CORROSION RESISTANT 18Cr - 8.5Ni (SAE 30302) 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: Primarily for deep and shallow formed parts operating below 700°F (371°C) requiring corrosion resistance. 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° - 1100°F (427° - 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.

2.1.1 Aerospace Material Specifications:

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, Wrought Corrosion and Heat Resistant Steels and Alloys, Maraging and Other Highly-Alloyed Steels, and Iron Alloys
AMS-2371 - Quality Assurance Sampling of Corrosion and Heat Resistant Steels and Alloys, Wrought Products Except Forgings and Forging Stock

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2.2 ASTM Publications: Available from ASTM, 1916 Race Street, Philadelphia, PA 19103-1187.

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 Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

2.3.1 Military Standards:

MIL-STD-163 - Steel Mill Products, Preparation for Shipment and Storage

3. TECHNICAL REQUIREMENTS:

3.1 Composition: Shall conform to the following percentages by weight, Ø determined by wet chemical methods in accordance with ASTM E 353, by spectrochemical methods, or by other analytical methods acceptable to purchaser:

	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 Ø 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.

3.2.2 Strip: Cold rolled, solution heat treated, and unless solution heat Ø 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 follows for product over 0.005 inch (0.13 mm) in nominal thickness: Ø

Tensile Strength, maximum	120,000 psi (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%

3.3.1.1 Tensile property requirements for product 0.005 inch (0.13 mm) and under in nominal thickness shall be as agreed upon by purchaser and vendor. Ø

3.3.2 Bending: Product 0.749 inch (19.02 mm) and under in nominal thickness shall withstand, without cracking, bending through the angle indicated below 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.

Nominal Thickness		Type of Bend	Angle deg, min	Bend Factor
Inch	Millimetres			
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

3.3.2.1 Bending requirements for plate over 0.749 inch (19.02 mm) in nominal thickness shall be as agreed upon by purchaser and vendor.

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 performing all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the product conforms to the requirements of this specification. Ø

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Tests for composition (3.1), tensile properties Ø (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: Tests for bending (3.3.2) are periodic tests and shall be Ø 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. Ø

4.4 Reports: The vendor of the product shall furnish with each shipment a Ø 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 periodic test requirements. This report shall include the purchase order number, lot number, AMS-5515J, size, and quantity.

4.5 Resampling and Retesting: Shall be in accordance with AMS-2371.

5. PREPARATION FOR DELIVERY:

5.1 Identification: Each sheet, strip, and plate shall be legibly marked on one face, in the respective location indicated below, with AMS-5515J, lot number, manufacturer's identification, and nominal thickness. The characters shall be applied using a suitable marking fluid removable in hot alkaline cleaning solution without rubbing. The markings shall have no deleterious effect on the product or its performance and shall be sufficiently stable to withstand normal handling.

5.1.1 Flat Strip 6 Inches (152 mm) and Under in Width: Shall be marked in one or more lengthwise rows of characters recurring at intervals not greater than 3 feet (914 mm).

5.1.2 Flat Sheet, Flat Strip Over 6 Inches (152 mm) in Width, and Plate: Shall be marked in lengthwise rows of characters recurring at intervals not greater than 3 feet (914 mm), the rows being spaced not more than 6 inches (152 mm) apart and alternately staggered.

5.1.3 Coiled Sheet and Strip: Shall be marked near both the outside and inside ends of the coil; the markings shall be applied as in 5.1 or shall appear on a durable tag or label attached to the coil and marked with the information of 5.1. When the product is wound on cores, the tag or label may be attached to the core.

5.2 Packaging:

5.2.1 The product shall be prepared for shipment in accordance with commercial Ø 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.