Society of Automotive Engineers, Inc.
400 COMMONWEALTH DRIVE, WARRENDALE, PA. 15096

AEROSPACE MATERIAL SPECIFICATION

AMS 5515F
Superseding AMS 5515E
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UNS S30200

STEEL SHEET, STRIP, AND PLATE, CORROSION RESISTANT
18Cr - 8.5Ni (SAE 30302)

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 (370° 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 (425° - 595° 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 Aerospace Material Specifications (AMS) shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications: Available from Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2242 - Tolerances, Corrosion and Heat Resistant Steel and Iron Base Alloy Sheet, Strip, and Plate and Titanium and Titanium Alloy Sheet, Strip, and Plate
AMS 2248 - Chemical Check Analysis Limits, Wrought Heat and Corrosion Resistant Steels and Alloys
AMS 2350 - Standards and Test Methods
AMS 2371 - Quality Assurance Sampling of Corrosion and Heat Resistant Alloys, Wrought Products Except Forgings

2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM A370 - Mechanical Testing of Steel Products
ASTM E353 - Chemical Analysis of Stainless, Heat-Resisting, Maraging, and Other Similar Chromium-Nickel-Iron Alloys

2.3 Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.3.1 Federal Standards:

Federal Test Method Standard No. 151 - Metals; Test Methods

2.3.2 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, determined by wet chemical methods in accordance with ASTM E353, by spectrographic methods in accordance with Federal Test Method Standard No. 151, Method 112, or by other approved analytical methods:

	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 rolled, solution heat treated, and descaled (No. 1 Finish) or cold rolled, solution heat treated, and descaled (No. 2D Finish). Cold rolling after solution heat treatment for any purpose (flattening, finishing, polishing, etc.) is not permitted.

3.2.2 Strip: Cold rolled, solution heat treated, and descaled (No. 1 Strip Finish). 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 A370:

3.3.1 Tensile Properties: Shall be as follows:

Tensile Strength, max	120,000 psi (827 MPa)
Elongation in 2 in. (50 mm) or 4D, min	
Nominal Thickness	
Up to 0.025 in. (0.64 mm), incl	50%
0.025 in. (0.64 mm) and over	55%

3.3.2 Bending: Product 0.749 in. (19.02 mm) and under in nominal thickness shall withstand, with 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			Angle	
Inch	(Millimetres)	Type of Bend	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

3.3.2.1 Bending requirements for plate over 0.749 in. (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 internal and external imperfections detrimental to usage of the product.

3.5 Tolerances: Unless otherwise specified, tolerances shall conform to all applicable requirements of AMS 2242.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of the product shall supply all samples and shall be responsible for performing all required tests. Results of such tests shall be reported to the purchaser as required by 4.4. Purchaser reserves the right to perform such confirmatory testing as he deems necessary to ensure that the product conforms to the requirements of this specification.

4.2 Classification of Tests: Tests to determine conformance to all technical requirements of this specification are classified as acceptance tests.

4.3 Sampling: Shall be in accordance with AMS 2371 and the following:

4.3.1 Specimens for tensile tests of widths 9 in. (229 mm) and over shall be taken with the axis of the specimen perpendicular to the direction of rolling; for widths less than 9 in. (229 mm), specimens shall be taken with the axis parallel to the direction of rolling.

4.4 Reports:

4.4.1 The vendor of the product shall furnish with each shipment three copies of a report showing the results of tests for chemical composition of each heat and for tensile and bending properties of each size from each heat. This report shall include the purchase order number, heat number, material specification number and its revision letter, size, and quantity from each heat.

4.4.2 The vendor of finished or semi-finished parts shall furnish with each shipment three copies of a report showing the purchase order number, material specification number and its revision letter, contractor or other direct supplier of material, part number, and quantity. When material for making parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of material to determine conformance to the requirements of this specification, and shall include in the report a statement that the material conforms, or shall include copies of laboratory reports showing the results of tests to determine conformance.

Ø 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 marked on one face, in the respective location indicated below, with AMS 5515F, heat number, manufacturer's identification, and nominal thickness. The characters shall be of such size as to be clearly legible, shall be applied using a suitable marking fluid, and shall be removable in hot alkaline cleaning solution without rubbing. The markings shall have no deleterious effect on the product or its performance shall be sufficiently stable to withstand normal handling.