Society of Automotive Engineers, Inc.
TWO PENNSYLVANIA PLAZA, NEW YORK, N.Y. 10001

AEROSPACE MATERIAL SPECIFICATION

AMS 5516G
Superseding AMS 5516F
Issued 1-23-40
Revised 5-15-71

STEEL SHEET, STRIP, AND PLATE, CORROSION RESISTANT
18Cr - 9.0Ni (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 formed and drawn parts requiring corrosion resistance up to 800 F (427 C).

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., Two Pennsylvania Plaza, New York, New York 10001.

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, Pennsylvania 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 Superintendent of Documents, Government Printing Office, Washington, D. C. 20402.

2.3.1 Federal Standards:

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

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	--	0.15
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 requirements of AMS 2248.

3.2 Condition: The product shall be supplied in the following condition:

3.2.1 Sheet: Cold rolled, solution heat treated, and descaled (No. 2D Finish).

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

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

3.3 Properties:

3.3.1 Tensile Properties: Shall be as specified in Table I, determined in accordance with ASTM A370:

TABLE I

Nominal Thickness Inches	Tensile Strength psi		Yield Strength at 0.2% Offset psi		Elongation % in 2 in. or 4D, min
0.002 to 0.003, incl	75,000	110,000	36,000	60,000	30
Over 0.003 to 0.004, incl	75,000	105,000	36,000	60,000	35
Over 0.004 to 0.176, incl	75,000	100,000	36,000	60,000	40
Over 0.176	75,000	100,000	--	--	40

TABLE I (SI)

Nominal Thickness Millimeters	Tensile Strength MN/m^2		Yield Strength at 0.2% Offset MN/m^2		Elongation, % in 50.8 mm or 4D, min
0.051 to 0.076, incl	517	765	248	414	30
Over 0.076 to 0.102, incl	517	724	248	414	35
Over 0.102 to 4.47, incl	517	690	248	414	40
Over 4.47	517	690	--	--	40

3.3.1.1 For widths 9 in. (229 mm) and over, tensile test specimens shall be taken with the axis perpendicular to the direction of rolling. For widths less than 9 in. (229 mm), tensile test specimens shall be taken with the axis parallel to the direction of rolling.

3.3.2 Bending: Material shall withstand, without cracking, bending in accordance with ASTM A370 at room temperature through the angle indicated in Table II around a diameter equal to the bend factor times the nominal thickness of the material with axis of bend parallel to the direction of rolling.

TABLE II

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

TABLE II (SI)

Nominal Thickness Millimeters	Type of Bend	Angle rad, min	Bend Factor
Up to 6.325, incl	Free Bend	3.14	1
Up to 6.325, incl	V-Block	2.36	1
Over 6.325 to 19.024, incl	Free Bend	1.57	1
Over 6.325 to 19.024, incl	V-Block	2.36	2

3.4 Quality: The product shall be uniform in quality and condition, clean, sound, and free from foreign materials and from internal and external imperfections detrimental to fabrication or to performance of parts.

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 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 assure that material 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 routine control tests.

4.3 Sampling: Shall be in accordance with AMS 2371.

4.4 Reports:

4.4.1 The vendor of the product shall furnish with each shipment three copies of a report of the results of tests for chemical composition of each heat in the shipment 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.

4.5 Resampling and Retesting: If any specimen used in the above tests fails to meet the specified requirements, disposition of the product may be based on the testing of three additional specimens for each original nonconforming specimen. Failure of any retest specimen to meet the specified requirements shall be cause for rejection of the material represented and no additional testing shall be permitted. Results of all tests shall be reported.