

NOTICE OF
ADOPTION

ADOPTION NOTICE
20 December 1991
AMS 5506
1 April 1991
SUPERSEDING
AMS 5506D
1 August 1986

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Title of Document: Steel, Corrosion and Heat Resistant, Sheet, Strip, and Plate
13Cr (0.30 - 0.40C) (SAE 51420)
Annealed

Date of Specific Issue Adopted: 1 April 1991

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AEROSPACE MATERIAL SPECIFICATION

An American National Standard

SAE

AMS 5506E

Issued 1 NOV 1952

Revised 1 APR 1991

Superseding AMS 5506D

STEEL, CORROSION AND HEAT RESISTANT, SHEET, STRIP, AND PLATE
13Cr (0.30 - 0.40C (SAE 51420)
Annealed

UNS S42000

1. SCOPE:

1.1 Form: This specification covers a corrosion and moderate heat resistant steel in the form of sheet, strip, and plate.

1.2 Application: Primarily for parts, such as snap rings and flat springs, requiring corrosion and oxidation resistance up to 800° (427°C).

2. APPLICABLE DOCUMENT: 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. 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 E 353, by spectrochemical methods, or by other analytical methods acceptable to purchaser :

	min	max
Carbon	0.30	0.40
Manganese	--	1.00
Silicon	--	1.00
Phosphorus	--	0.040
Sulfur	--	0.030
Chromium	12.00	14.00
Nickel	--	0.50
Molybdenum	--	0.50
Aluminum	--	0.15
Copper	--	0.50
Tin	--	0.05

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, annealed, and, unless annealing 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 annealing 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, annealed, and, unless annealing 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 annealing for any purpose (flattening, finishing, polishing, etc) is not permitted.

3.2.3 Plate: Hot rolled or cold rolled, annealed, and descaled.

3.3 Properties: The product shall conform to the following requirements; tensile, hardness, and bend testing shall be performed in accordance with ASTM A 370:

3.3.1 Tensile Properties: Shall be as follows:

Tensile Strength, maximum	100 ksi (689 MPa)
Elongation in 2 Inches (50.8 mm) or 4D, Minimum	
Nominal Thickness	
Up to 0.030 inch (0.76 mm), excl	12%
0.030 inch (0.76 mm) and over	15%

3.3.2 Bending: Product 0.500 inch (12.70 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 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	Millimeters			
Up to 0.375, incl	Up to 9.52, incl	Free Bend	180	2
Up to 0.375, incl	Up to 9.52, incl	V-Block	135	4
Over 0.375 to 0.500, incl	Over 9.52 to 12.70, incl	Free Bend	180	3
Over 0.375 to 0.500, incl	Over 9.52 to 12.70, incl	V-Block	135	6

3.3.2.1 Bending requirements for plate over 0.500 inch (12.70 mm) in nominal thickness shall be as agreed upon by purchaser and vendor.

3.3.3 Response to Heat Treatment: Product 0.500 inch (12.70 mm) and under in nominal thickness and specimens 0.500 inch $\pm$ 0.010 (12.70 mm $\pm$ 0.25) thick cut from heavier product shall have hardness not lower than 50 HRC, or equivalent, after being heated to 1825°F $\pm$ 10 (996°C $\pm$ 6), held at heat for 25 minutes $\pm$ 2, and cooled in air.

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.