



AEROSPACE MATERIAL SPECIFICATION	AMS5523™	REV. H
	Issued 195211 Reaffirmed 2000-09 Revised 2012-01 Stabilized 2019-03 Superseding AMS5523G	
Steel, Corrosion and Heat-Resistant, Sheet, Strip, and Plate 23Cr - 13.5Ni (309S) Solution Heat Treated (Composition similar to UNS S30908)		

RATIONALE

AMS5523H stabilizes this document because it contains mature technology that is not expected to change and thus no further revisions are anticipated.

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AMS5523H has been declared "STABILIZED" by SAE AMS Committee "F" Corrosion Heat Resistant Alloys and will no longer be subjected to periodic reviews for currency. Users are responsible for verifying references and continued suitability of technical requirements. Newer technology may exist.

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1. SCOPE

1.1 Form

This specification covers a corrosion and heat-resistant steel in the form of sheet, strip, and plate.

1.2 Application

These products have been used typically for parts requiring both corrosion and heat resistance and oxidation resistance up to 2000 °F (1093 °C), but usage is not limited to such applications. Strength at elevated temperatures is similar to the room temperature strength of 18-8 type steels.

2. APPLICABLE DOCUMENTS

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

AMS2242	Tolerances, Corrosion and Heat Resistant Steel, Iron Alloy, Titanium, and Titanium Alloy Sheet, Strip, and Plate
AMS2248	Chemical Check Analysis Limits, Corrosion and Heat-Resistant Steels and Alloys, Maraging and Other Highly-Alloyed Steels, and Iron Alloys

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- AMS2371 Quality Assurance Sampling and Testing, Corrosion and Heat-Resistant Steels and Alloys, Wrought Products and Forging Stock
- AMS2807 Identification, Carbon and Low-Alloy Steels, Corrosion and Heat-Resistant Steels and Alloys, Sheet, Strip, Plate, and Aircraft Tubing
- AS4194 Sheet and Strip Surface Finish Nomenclature

2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

- ASTM A 370 Mechanical Testing of Steel Products
- ASTM A 480/A 480M Flat Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip
- ASTM E 290 Bend Testing of Material for Ductility
- ASTM E 353 Chemical Analysis of Stainless, Heat Resisting, Maraging, and Other Similar Chromium-Nickel-Iron Alloys

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
Manganese	--	2.00
Silicon	--	1.00
Phosphorous	--	0.040
Sulfur	--	0.030
Chromium	22.00	24.00
Nickel	12.00	15.00
Molybdenum	--	0.75
Copper	--	0.75

3.1.1 Check Analysis

Composition variations shall meet the applicable requirements of AMS2248.

3.2 Condition

The product shall be supplied in the following condition:

3.2.1 Sheet and Strip

Cold rolled, solution heat treated free from continuous carbide network, and, unless solution heat treatment is performed in an atmosphere yielding a bright finish, descaled having a surface finish comparable to the following commercial corrosion resistant steel finishes as described in ASTM A 480/A 480M and AS4194 and the following:

3.2.1.1 Sheet

No. 2D finish.

3.2.1.2 Strip

No. 1 strip finish.

3.2.2 Plate

Hot rolled, solution heat treated free from continuous carbide network, and descaled.

3.3 Properties

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

3.3.1 Tensile Properties

Shall be as shown in Table 2.

TABLE 2A - TENSILE PROPERTIES, INCH/POUND UNITS

Nominal Thickness Inches	Tensile Strength ksi	Yield Strength at 0.2% Offset ksi, min	Elongation in 2 inches or 4D %, min
Over 0.002 to 0.003, incl	110 max	--	20
Over 0.003 to 0.004, incl	105 max	--	30
Over 0.004	75 - 100	30.0	40

TABLE 2B - TENSILE PROPERTIES, SI UNITS

Nominal Thickness mm	Tensile Strength MPa	Yield Strength at 0.2% Offset MPa, min	Elongation in 50.8 mm or 4D %, min
Over 0.051 to 0.076, incl	758 max	--	20
Over 0.076 to 0.102, incl	724 max	--	30
Over 0.102	517 - 689	207	40

3.3.2 Hardness

Shall not be higher than 95 HRB, or equivalent (See 8.2).

3.3.3 Bending

Product 0.749 inch (19.02 mm) and under in nominal thickness shall be tested in accordance with ASTM E 290 using a sample prepared nominally 0.75 inch (19.0 mm) in width with its axis of bending parallel to the direction of rolling and shall withstand, without cracking, when bending at room temperature through the angle indicated in Table 3 around a diameter equal to the bend factor times the nominal thickness of the product. In case of dispute, the results of tests using the guided bend test of ASTM E 290 shall govern.

TABLE 3 - BENDING REQUIREMENTS

Nominal Thickness Inch	Nominal Thickness mm	Angle deg, min	Bend Factor
Up to 0.249, incl	Up to 6.32, incl	180	1
Over 0.249 to 0.749, incl	Over 6.32 to 19.02, incl	90	1