



AEROSPACE MATERIAL SPECIFICATION	AMS5508™	REV. G
	Issued 1957-01 Reaffirmed 2014-10 Revised 2021-03 Superseding AMS5508F	
Steel, Corrosion and Heat Resistant, Sheet, Strip, and Plate 13Cr - 2.0Ni - 3.0W Annealed (Composition similar to UNS S41800)		

RATIONALE

AMS5508G prohibits unauthorized exceptions (3.6, 4.4.1, 5.1.1, 8.6), updates composition (3.1) to replace obsolete chemical analysis standards, updates condition (3.2.1), defines bend testing (3.3.2), revises cooling rate requirements (3.3.3), allows prior revision (8.5), and results from a Five-Year Review and update of this specification.

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, such as shrouds, ducts, and cases, requiring oxidation resistance up to 1000 °F (538 °C), but usage is not limited to such applications. Strength at higher temperatures is superior to that of the standard 12Cr type steel.

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 +1 724-776-4970 (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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For more information on this standard, visit
<https://www.sae.org/standards/content/AMS5508G>

- 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
- ARP1917 Clarification of Terms Used in Aerospace Metals Specifications
- 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 A480/A480M Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip
- ASTM A751 Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products
- ASTM E140 Hardness Conversion Tables for Metals Relationship Among Brinell Hardness, Vickers Hardness, Rockwell Hardness, Superficial Hardness, Knoop Hardness, Scleroscope Hardness, and Leeb Hardness
- ASTM E290 Bend Test of Materials for Ductility

3. TECHNICAL REQUIREMENTS

3.1 Composition

Shall conform to the percentages by weight shown in Table 1, determined in accordance with ASTM A751, or by other analytical methods acceptable to purchaser.

Table 1 - Composition

Element	Min	Max
Carbon	0.15	0.20
Manganese	-	0.50
Silicon	-	0.50
Phosphorus	-	0.040
Sulfur	-	0.030
Chromium	12.00	14.00
Nickel	1.80	2.20
Tungsten	2.50	3.50
Molybdenum	-	0.50
Aluminum	-	0.15
Copper	-	0.50
Tin	-	0.05
Nitrogen	-	0.08

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

Hot rolled or cold rolled, annealed, and, unless annealing is performed in an atmosphere yielding a bright finish, descaled having a surface finish in accordance with ASTM A480/A480M and AS4194 comparable to 3.2.1.1 or 3.2.1.2, as applicable.

3.2.1.1 Sheet

No. 2D finish.

3.2.1.2 Strip

No. 1 strip finish.

3.2.2 Plate

Hot rolled or cold rolled, annealed, and descaled.

3.3 Properties

The product shall conform to the following requirements; tensile and hardness testing shall be performed in accordance with ASTM A370:

3.3.1 Tensile Properties

Shall be as shown in Table 2:

Table 2 - Tensile properties

Property	Value
Tensile Strength, maximum	150 ksi (1034 MPa)
Elongation in 2 Inches (50.8 mm) or 4D, minimum	10%

3.3.2 Bending

Product under 0.1875 inch (4.762 mm) in nominal thickness shall be tested in accordance with ASTM E290 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, free bending through an angle of 105 degrees around a diameter equal to four times the nominal thickness of the product. In cases of dispute, the results of tests using the guided bend test of ASTM E290 shall govern.

3.3.3 Response to Heat Treatment

Product 0.375 inch (9.52 mm) and under in nominal thickness and 0.375 inch \pm 0.010 inch (9.52 mm \pm 0.25 mm) thick specimens cut from thicker product shall have hardness not lower than 42 HRC, or equivalent (see 8.3), after being heat treated by heating to 1800 °F \pm 25 °F (982 °C \pm 14 °C), holding at heat for 15 to 30 minutes, and cooling at a rate equivalent to an air cool or faster.

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 AMS2242.

3.6 Exceptions

Any exception shall be authorized by purchaser and reported as in 4.4.1.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection

The producer of the product shall supply all samples for producer's tests and shall be responsible for the performance of all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the product conforms to specified requirements.

4.2 Classification of Tests

All technical requirements are acceptance tests and shall be performed on each heat or lot as applicable.

4.3 Sampling and Testing

Shall be in accordance with AMS2371.

4.4 Reports

The producer of the product shall furnish with each shipment a report showing the producer's name and country where the metal was melted (e.g., final melt in the case of metal processed by multiple melting operations) and the results of tests for chemical composition of each heat and for tensile and bending properties and response to heat treatment of each lot and stating that the product conforms to the other technical requirements. This report shall include the purchase order number, heat and lot numbers, AMS5508G, size, and quantity.

4.4.1 When material produced to this specification has exceptions authorized by purchaser taken to the technical requirements listed in Section 3 (see 5.1.1), the report shall contain a statement "This material is certified as AMS5508G(EXC) because of the following exceptions:" and the specific exceptions shall be listed.

4.5 Resampling and Retesting

Shall be in accordance with AMS2371.

5. PREPARATION FOR DELIVERY

5.1 Identification

Shall be in accordance with AMS2807.

5.1.1 When technical exceptions are taken (see 4.4.1), the material shall be marked with AMS5508G(EXC).

5.2 Packaging

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

6. ACKNOWLEDGMENT

A producer shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

7. REJECTIONS

Product not conforming to this specification, or to modifications authorized by purchaser, will be subject to rejection.