



AEROSPACE MATERIAL SPECIFICATION

AMS5525™

REV. L

Issued	1953-12
Reaffirmed	2012-10
Revised	2021-09

Superseding AMS5525K

Steel, Corrosion and Heat-Resistant, Sheet, Strip, and Plate
15Cr - 25.5Ni - 1.2Mo - 2.1Ti - 0.006B - 0.30V
1800 °F (982 °C) Solution Heat Treated

(Composition similar to UNS S66286)

RATIONALE

AMS5525L is updated based on an omission in the bend test. This revision updates the bend test requirements (3.4.1.3).

1. SCOPE

1.1 Form

This specification covers a corrosion and heat-resistant steel in the form of sheet, strip, and plate 0.0010 inch (0.025 mm) and above in nominal thickness (see 8.6).

1.2 Application

These products have been used typically for parts, such as turbine cases, requiring high strength up to 1300 °F (704 °C) and oxidation resistance up to 1500 °F (816 °C) and which may be welded during fabrication and subsequently precipitation heat treated, but usage is not limited to such applications.

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/AMS5525L/>

AMS2371	Quality Assurance Sampling and Testing, Corrosion and Heat-Resistant Steels and Alloys, Wrought Products and Forging Stock
AMS2750	Pyrometry
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 A370	Mechanical Testing of Steel Products
ASTM A480/A480M	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 E112	Determining Average Grain Size
ASTM E139	Conducting Creep, Creep Rupture, and Stress-Rupture Tests of Metallic Materials
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
ASTM E384	Microindentation Hardness of Materials

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	--	0.08
Manganese	--	2.00
Silicon	--	1.00
Phosphorous	--	0.025
Sulfur	--	0.025
Chromium	13.50	16.00
Nickel	24.00	27.00
Molybdenum	1.00	1.50
Titanium	1.90	2.35
Boron	0.003	0.010
Vanadium	0.10	0.50
Cobalt	--	1.00
Aluminum	--	0.35

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, solution heat treated, and, unless solution heat treatment is performed in an atmosphere yielding a bright finish, descaled having a surface appearance 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, solution heat treated, and descaled.

3.3 Heat Treatment

Except as specified in 3.3.1, the product shall be solution heat treated by heating to 1800 °F ± 25 °F (982 °C ± 14 °C), holding at heat for a time commensurate with section thickness, and cooling as required. Pyrometry shall be in accordance with AMS2750.

3.3.1 Continuous Heat Treating

Process parameters (e.g., furnace temperature set points, heat input, travel rate, etc.) for continuous heat treating lines shall be established by the material producer and validated by testing of product to specified requirements.

3.4 Properties

The product shall conform to the following requirements: tensile, hardness, and bend testing shall be performed in accordance with ASTM A370, except as specified in 3.4.1.2 and 3.4.2.2:

3.4.1 As Solution Heat Treated

3.4.1.1 Tensile Properties

Shall be as shown in Table 2:

Table 2A - Tensile properties, inch/pound units

Nominal Thickness Inches	Tensile Strength ksi, Max	Elongation in 2 Inches or 4D %, Min
0.0010 to 0.0015, incl	105	10
Over 0.0015 to 0.002, incl	105	12
Over 0.002 to 0.004, incl	105	20
Over 0.004	105	25