



# AEROSPACE MATERIAL SPECIFICATION

AMS5515

REV. L

Issued 1941-11  
Revised 2002-08  
Reaffirmed 2013-08

Superseding AMS5515K

Steel, Corrosion Resistant, Sheet, Strip, and Plate  
18Cr - 8.5Ni (302)  
Solution Heat Treated, High Ductility  
(Composition similar to UNS S30200)

## RATIONALE

AMS5515L has been reaffirmed to comply with the SAE 5-year Review policy.

### 1. SCOPE:

#### 1.1 Form:

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

#### 1.2 Application:

These products have been used typically for deep and shallow formed parts, operating below 700 °F (371 °C), requiring corrosion resistance, but usage is not limited to such applications.

1.2.1 This alloy is satisfactory for use up to 1500 °F (816 °C) at low stress levels. However, the corrosion resistance is appreciably reduced when exposed to temperatures in the range 800 to 1100 °F (427 to 593 °C) for an extended time.

### 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.

SAE Technical Standards Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be revised, reaffirmed, stabilized, or cancelled. SAE invites your written comments and suggestions.

Copyright © 2013 SAE International

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of SAE.

TO PLACE A DOCUMENT ORDER: Tel: 877-606-7323 (inside USA and Canada)  
Tel: +1 724-776-4970 (outside USA)  
Fax: 724-776-0790  
Email: CustomerService@sae.org  
http://www.sae.org

SAE values your input. To provide feedback on this Technical Report, please visit <http://www.sae.org/technical/standards/AMS5515L>

SAE WEB ADDRESS:

## 2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001 or [www.sae.org](http://www.sae.org).

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, Corrosion and Heat-Resistant Steels and Alloys, Maraging and Other Highly-Alloyed Steels, and Iron Alloys
AMS 2371	Quality Assurance Sampling and Testing, Corrosion and Heat-Resistant Steels and Alloys, Wrought Products and Forging Stock
AMS 2807	Identification, Carbon and Low-Alloy Steels, Corrosion and Heat-Resistant Steels and Alloys, Sheet, Strip, Plate, and Aircraft Tubing
AS 4194	Sheet and Strip Surface Finish Nomenclature

## 2.2 ASTM Publications:

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959 or [www.astm.org](http://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 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	0.15
Manganese	--	2.00
Silicon	--	1.00
Phosphorus	--	0.040
Sulfur	--	0.030
Chromium	17.00	19.00
Nickel	7.00	10.00
Molybdenum	--	0.75
Copper	--	0.75

3.1.1 Check Analysis: Composition variations shall meet the applicable requirements of AMS 2248.

3.2 Condition:

The product shall be supplied in the following condition:

3.2.1 Sheet: Hot 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 A 480/A 480M and AS4194 comparable to 3.2.1.1 or 3.2.1.2 as applicable. Cold rolling after solution heat treatment 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 or bright annealed.

3.2.2 Strip: 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 A 480/A 480M and AS4194 conforming to a No. 1 strip finish. Cold rolling after solution heat treatment for any purpose (flattening, finishing, polishing, etc.) is not permitted.

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

3.3 Properties:

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

3.3.1 Tensile Properties: Shall be as shown in Table 2 for product over 0.005 inch (0.13 mm) in nominal thickness:

TABLE 2 - TENSILE PROPERTIES

Property	Value
Tensile Strength, maximum	120 ksi (827 MPa)
Elongation in 2 Inches (50.8 mm) or 4D, minimum Nominal Thickness	
Up to 0.025 inch (0.64 mm), excl	50%
0.025 inch (0.64 mm) and over	55%

- 3.3.2 Bending: Product shall withstand, without cracking, bending through the angle shown in Table 3 around a diameter equal to the bend factor times the nominal thickness of the product with axis of bend parallel to the direction of rolling.

TABLE 3 - BENDING PARAMETERS

Nominal Thickness Inch	Nominal Thickness Millimeters	Type of Bend	Angle deg, min	Bend Factor
Up to 0.1874, incl	Up to 4.760, incl	Free Bend	180	1
Over 0.1874 to 0.749, incl	Over 4.760 to 19.02, incl	Free Bend	90	1

- 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 except flatness tolerances are waived for sheet and strip.

#### 4. QUALITY ASSURANCE PROVISIONS:

- 4.1 Responsibility for Inspection:

The vendor of the product shall supply all samples for vendor'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:

4.2.1 Acceptance Tests: Composition (3.1), tensile properties (3.3.1), and tolerance (3.5) are acceptance tests and shall be performed on each heat or lot as applicable.

4.2.2 Periodic Tests: Bending (3.3.2) is a periodic test and shall be performed at a frequency selected by the vendor unless frequency of testing is specified by purchaser.

- 4.3 Sampling and Testing:

Shall be in accordance with AMS 2371.

- 4.4 Reports:

The vendor of the product shall furnish with each shipment a report showing the results of tests for composition of each heat and for tensile properties 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, AMS 5515L, size, and quantity.