



AEROSPACE MATERIAL SPECIFICATION

AMS5859™**REV. G**

Issued 1977-01
Reaffirmed 2012-10
Revised 2026-03

Superseding AMS5859F

Steel, Corrosion-Resistant, Sheet, Strip, and Plate,
15Cr - 6.5Ni - 0.75Mo - 0.30Cb - 1.5Cu (Custom 450),
Consumable Electrode Melted, Solution Heat Treated,
Precipitation Hardenable
(Composition similar to UNS S45000)

RATIONALE

AMS5859G is the result of a Five-Year Review and update of the specification. The revision adds the trade name to the Title (see 8.6), updates the stress corrosion note (see 1.2.1), clarifies composition testing and reporting (see 3.1 and 3.1.1), revises sheet finish (see 3.3.1), adds strain rate control during tensile testing (see 3.5.1.1.1 and 3.5.2.1.1), clarifies bending (see 3.5.1.3), adds pyrometry controls (see 3.5.2), and updates the exclusion requirements (see 8.5).

1. SCOPE

1.1 Form

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

1.2 Application

These products have been used typically for parts requiring corrosion resistance approximating that of 18-8 type steels and strength exceeding that of 12Cr martensitic-type steels up to 700 °F (371 °C), but usage is not limited to such applications. This steel can be used in the solution heat-treated condition and can be precipitation heat treated to tensile strengths as high as 180 ksi (1241 MPa).

1.2.1 Certain design, processing procedures, or environmental conditions may cause these products to become susceptible to stress-corrosion cracking; ARP1110 recommends practices to minimize such conditions.

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 Executive Standards Committee 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 © 2026 SAE International

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, or used for text and data mining, AI training, or similar technologies, without the prior written permission of SAE.

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

SAE WEB ADDRESS:

Full document details: SAE AMS5859G

For more information on this standard, visit <https://www.sae.org/standards/content/AMS5859G/>

Documents

Standard, visit Sharing Hub

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (U.S. and Canada only) or +1 724-776-4970 (outside U.S. and Canada), 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
AMS2300	Steel Cleanliness, Premium Aircraft-Quality, Magnetic Particle Inspection Procedure
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
ARP1110	Minimizing Stress Corrosion Cracking in Wrought Forms of Steels and Corrosion Resistant Steels and Alloys
AS7766	Terms Used in Aerospace Metals Specifications
HS-1086	Metals & Alloys in the Unified Numbering System

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 A751	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 Testing of Materials for Ductility

2.3 Definitions

Terms used in AMS are defined in AS7766.

3. TECHNICAL REQUIREMENTS

3.1 Composition

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 the purchaser.

Table 1 - Composition

Element	Min	Max
Carbon	--	0.05
Manganese	--	1.00
Silicon	--	1.00
Phosphorus	--	0.020
Sulfur	--	0.015
Chromium	14.00	16.00
Nickel	6.00	7.00
Molybdenum	0.50	1.00
Columbium	8xC	--
Copper	1.25	1.75

3.1.1 The producer may test for any element not listed in Table 1 and include this analysis in the report of 4.4. Reporting of any element not listed in the composition table is not a basis for rejection, unless limits of acceptability are specified by the purchaser.

3.1.2 Check Analysis

Composition variations shall meet the applicable requirements of AMS2248.

3.2 Melting Practice

Steel shall be multiple melted using consumable electrode practice in the remelt cycle.

3.3 Condition

The product shall be supplied in the following condition:

3.3.1 Sheet and Strip

Sheet and strip shall be hot or cold rolled, solution heat treated, and, unless solution heat treatment is performed in an atmosphere yielding a bright finish, descaled producing a uniform surface finish.

3.3.2 Plate

Plate shall be hot rolled, solution heat treated, and descaled.

3.4 Solution Heat Treatment

The product, except as specified in 3.4.2, shall be solution heat treated as follows; pyrometry shall be in accordance with AMS2750:

3.4.1 Solution heat treat by heating to 1900 °F ± 25 °F (1038 °C ± 14 °C), holding at heat for 5 to 30 minutes, and quenching rapidly, such as in water, oil, or forced air.

3.4.2 Continuous Heat Treatment of Sheet and Strip

When continuous heat treatment is used, 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 the requirements of 3.5.