



AEROSPACE MATERIAL SPECIFICATION

AMS5610™

REV. R

Issued 1939-12
Reaffirmed 2012-02
Revised 2023-06

Superseding AMS5610P

Steel, Corrosion- and Heat-Resistant, Bars, Wire, Forgings, and Forging Stock
12.5Cr - Low Carbon (SAE 51416, 51416Se)
Free-Machining
(Composition similar to UNS S41600 and UNS S41623)

RATIONALE

AMS5610R is the result of a Five-Year Review and update of the specification. The revision includes updates to composition testing and reporting (3.1, 3.1.1), an update to the relevant heat-treatment specifications (3.2.3, 3.3.1), an update to the quality requirements for bars (3.4.1, 8.6), addresses additional properties that may be requested by the purchaser (4.4.3, 8.7), updates packaging consistent with similar material specifications (5.3), updates exception requirements (8.5), and adds Type as an ordering option (8.7).

1. SCOPE

1.1 Form

This specification covers two types of free-machining, corrosion- and heat-resistant steel in the form of bars, wire, forgings, and forging stock.

1.2 Application

These products have been used typically for parts requiring hardness up to 35 HRC on which the amount of machining warrants use of a free-machining grade of steel with oxidation resistance up to 1000 °F (538 °C), but usage is not limited to such applications. The product is useful at the higher temperatures only when stresses are low.

1.3 Classification

The steels covered by this specification are classified as follows:

Type 1 - 12.5Cr - 0.27Se (UNS S41623)

Type 2 - 12.5Cr - 0.28S (UNS S41600)

1.3.1 Unless a specific type is ordered, either type may be supplied.

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 © 2023 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 WEB ADDRESS:

For more information on this standard, visit
<https://www.sae.org/standards/content/AMS5610R>

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.

AMS2241	Tolerances, Corrosion- and Heat-Resistant Steel, Iron Alloy, Titanium, and Titanium Alloy Bars and Wire
AMS2248	Chemical Check Analysis Limits, Corrosion- and Heat-Resistant Steels and Alloys, Maraging and Other Highly Alloyed Steels, and Iron Alloys
AMS2371	Quality Assurance Sampling and Testing, Corrosion and Heat-Resistant Steels and Alloys, Wrought Products and Forging Stock
AMS2374	Quality Assurance Sampling and Testing, Corrosion and Heat-Resistant Steel and Alloy Forgings
AMS2750	Pyrometry
AMS2761	Heat Treatment of Steel Raw Materials
AMS2806	Identification Bars, Wire, Mechanical Tubing, and Extrusions, Carbon and Alloy Steels, and Corrosion and Heat-Resistant Steels and Alloys
AMS2808	Identification, Forgings
AS1182	Standard Stock Removal Allowance, Aircraft-Quality and Premium Aircraft-Quality Steel, Bars and Mechanical Tubing
AS7766	Terms Used in Aerospace Metals Specifications

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

2.3 Definitions

Terms used in AMS are defined in AS7766.

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 the purchaser.