



# AEROSPACE MATERIAL SPECIFICATION

AMS5680™

REV. K

Issued 1939-12  
Reaffirmed 2018-05  
Revised 2023-05

Superseding AMS5680J

Steel, Corrosion- and Heat-Resistant, Welding Wire  
18.5Cr - 11Ni - 0.40Cb (Nb) (SAE 30347)  
(Composition similar to UNS S34781)

## RATIONALE

AMS5680K is the result of a Five-Year Review and update of the specification. The revision updated composition and reporting (3.1, 3.1.3), adds winding requirements (3.4.2.1), prohibits unauthorized exceptions (3.7, 4.4.1, 5.3.1, and 8.3), and requires reporting of the country of origin (4.4).

### 1. SCOPE

#### 1.1 Form

This specification covers a corrosion- and heat-resistant steel in the form of welding wire.

#### 1.2 Application

This wire has been used typically as filler metal for gas-tungsten-arc or gas-metal-arc welding of corrosion- and heat-resistant steels and alloys, 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](http://www.sae.org).

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
AMS2813	Packaging and Marking of Packages of Welding Wire, Standard Method
AMS2814	Packaging and Marking of Packages of Welding Wire, Premium Quality

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](mailto:CustomerService@sae.org)  
**SAE WEB ADDRESS:** <http://www.sae.org>

**For more information on this standard, visit**

<https://www.sae.org/standards/content/AMS5680K/>

AMS2816	Identification, Welding Wire, Tab Marking Method
AMS2819	Identification, Welding Wire, Direct Color Code System
ARP1876	Weldability Test for Weld Filler Metal Wire
ARP4926	Alloy Verification and Chemical Composition, Inspection of Welding Wire
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](http://www.astm.org).

ASTM A751 Chemical Analysis of Steel Products

## 2.3 Definitions

Terms used in AMS are defined in AS7766.

## 3. TECHNICAL REQUIREMENTS

### 3.1 Composition

Wire 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 (3.1.1.1)	--	0.07
Manganese	1.00	2.00
Silicon	0.30	1.00
Phosphorus	--	0.030
Sulfur	--	0.030
Chromium	17.00	20.00
Nickel	9.00	13.00
Columbium (Niobium)	12xC	--
Molybdenum	--	0.75
Copper	--	0.75

#### 3.1.1 Check Analysis

Composition variations shall meet the applicable requirements of AMS2248.

3.1.1.1 Carbon shall also be determined periodically on finished wire (see 4.2.2).

3.1.2 Chemical analysis of initial ingot, bar, or rod stock before drawing, other than those analyses required to be done on the finished wire, is acceptable provided the processes used for drawing or rolling, annealing, and cleaning, are controlled to insure continued conformance to chemical composition requirements.

3.1.3 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.