



# AEROSPACE MATERIAL SPECIFICATION

AMS6468™

REV. F

Issued	1978-04
Revised	2018-07

Superseding AMS6468E

Steel, Welding Wire  
 1.0Cr - 10Ni - 3.8Co - 0.45Mo - 0.08V (0.14 - 0.17C)  
 Vacuum Melted, Environment Controlled Packaging  
 (Composition Similar to UNS K91461)

## RATIONALE

AMS6468F results from a Five-Year Review and update of this document that revises composition analytical methods (3.1), adds no unauthorized exceptions (3.8) and revises reporting (4.4).

### 1. SCOPE

#### 1.1 Form

This specification covers an alloy steel in the form of welding wire.

#### 1.2 Application

This wire has been used typically as filler metal for gas-tungsten-arc and gas-metal-arc welding of low-alloy steels having similar composition and requiring a combination of high strength and high notch toughness without the need for post-weld heat treatment, 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).

AMS2259	Chemical Check Analysis Limits, Wrought Low-Alloy and Carbon Steels
AMS2300	Steel Cleanliness, Premium Aircraft-Quality, Magnetic Particle Inspection Procedure
AMS2370	Quality Assurance Sampling and Testing, Carbon and Low-Alloy Steel Wrought Products and Forging Stock
AMS2813	Packaging and Marking of Packages of Welding Wire, Standard Method

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AMS2814	Packaging and Marking of Packages of Welding Wire, Premium Quality
AMS2816	Identification, Welding Wire, Tab Marking Method
AMS2819	Identification, Welding Wire, Direct Color Code System
AMS6523	Steel, Sheet, Strip, and Plate, 0.75Cr - 9.0Ni - 4.5Co - 1.0Mo - 0.09V (0.17 - 0.23C), Vacuum Consumable Electrode Melted, Annealed
ARP1876	Weldability Test for Weld Filler Metal Wire
ARP1917	Clarification of Terms Used in Aerospace Metals Specifications
ARP4926	Alloy Verification and Chemical Composition Inspection of Welding Wire

## 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	Standard Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products
ASTM D2650	Chemical Composition of Gases by Mass Spectrometry
ASTM E1032	Radiographic Examination of Weldments
ASTM E1820	Measurement of Fracture Toughness

## 3. TECHNICAL REQUIREMENTS

### 3.1 Wire 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 (3.1.1.1)	0.14	0.17
Manganese	0.40	0.55
Silicon	0.15	0.25
Phosphorus	--	0.006
Sulfur	--	0.005
Chromium	0.90	1.05
Nickel	9.75	10.25
Cobalt	3.50	4.00
Molybdenum	0.40	0.50
Vanadium	0.06	0.10
Copper	--	0.10
Oxygen (3.1.1.1)	--	0.0025 (25 ppm)
Nitrogen (3.1.1.1)	--	0.0050 (50 ppm)
Hydrogen (3.1.1.1)	--	0.0005 ( 5 ppm)

3.1.1 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 ensure continued conformance to requirements.

3.1.1.1 Carbon, oxygen, nitrogen, and hydrogen shall also be determined periodically on finished wire (see 4.2.2).

3.1.1.2 The hydrogen content of the wire shall be determined at final diameter in accordance with ASTM D2650.

### 3.1.2 Check Analysis

Composition variations shall meet the applicable requirements of AMS2259.

### 3.2 Melting Practice

Steel shall be vacuum induction melted; it may be re-melted using consumable electrode vacuum practice (VAR) in the remelt cycle, but remelting is not required.

3.2.1 Steel shall be premium aircraft-quality conforming to AMS2300.

### 3.3 Condition

Cold worked, bright finish, in a temper and with a surface finish which will provide proper feeding of the wire in machine welding equipment.

### 3.4 Fabrication

3.4.1 In-process annealing, if required between cold rolling or drawing operations, shall be performed in vacuum or protective atmosphere to avoid surface oxidation and adsorption of other extraneous elements.

3.4.2 Butt welding is permissible provided both ends to be joined are either alloy verified using a method or methods capable of distinguishing the alloy from all other alloys processed in the facility, or the repair is made at the wire processing station. The butt weld shall not interfere with uniform, uninterrupted feeding of the wire in machine welding equipment.

3.4.3 Drawing compounds, oxides, dirt, oil, and other foreign materials shall be removed by cleaning processes which will neither result in pitting nor cause gas absorption by the wire or deposition of substances harmful to welding operations.

3.4.4 Residual elements and dissolved gasses picked up during wire processing that can adversely affect the welding characteristics, the operation of the equipment, or the properties of weld metal shall be removed.

### 3.5 Properties

Wire shall conform to the following requirements:

#### 3.5.1 Weldability

Melted wire shall flow smoothly and evenly during welding and shall produce acceptable welds. ARP1876 may be used to resolve disputes.

#### 3.5.2 Spooled Wire

Shall conform to 3.5.2.1 and 3.5.2.2.

##### 3.5.2.1 Cast

Wire, wound on standard 12-inch (305-mm) diameter spools, shall have imparted to it a curvature such that a specimen sufficient in length to form one loop with a 1-inch (25-mm) overlap, when cut from the spool and laid on a flat surface, shall form a circle 15 to 50 inches (381 to 1270 mm) in diameter.