SAE Aerospace
An SAE International Group

AEROSPACE MATERIAL SPECIFICATION

SAE AMS5788 | REV. F

Issued 1950-06
Revised 2006-06
Reaffirmed 2012-04

Superseding AMS5788E

Cobalt Alloy, Corrosion and Heat-Resistant, Hard Facing Rods and Wire
62Co - 29Cr - 4.5W - 1.2C
(Composition similar to UNS R30006)

RATIONALE

AMS5788F has been reaffirmed to comply with the SAE five-year review policy.

1. SCOPE

1.1 Form

This specification covers a corrosion and heat-resistant cobalt alloy in the form of welding rods, coating rods, or wrought wire.

1.2 Application

This wire has been used typically as bare wire filler metal for application of a heat and corrosion resistant hard coating, 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 724-776-4970 (outside USA), www.sae.org.

AMS 2269	Chemical Check Analysis Limits, Nickel, Nickel Alloys, and Cobalt Alloys
AMS 2813	Packaging and Marking of Packaging of Welding Wire, Standard Method
AMS 2814	Packaging and Marking of Packaging of Welding Wire, Premium Quality
AMS 2816	Identification, Welding Wire, Tab Marking Method
AMS 2819	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

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
SAE WEB ADDRESS: **http://www.sae.org**

SAE values your input. To provide feedback on this Technical Report, please visit
http://www.sae.org/technical/standards/AMS5788F

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 E 354 Chemical Analysis of High Temperature, Electrical, Magnetic, and Other Similar Iron, Nickel, and Cobalt Alloys

3. TECHNICAL REQUIREMENTS

3.1 Composition

Wire shall conform to the percentages by weight shown in Table 1, determined by wet chemical methods in accordance with ASTM E 354, by spectrochemical methods, or by other analytical methods acceptable to purchaser.

TABLE 1 - COMPOSITION

Element	min	max
Carbon	0.90	1.40
Manganese	--	0.50
Silicon	--	2.00
Phosphorus	--	0.025
Sulfur	--	0.025
Chromium	26.00	32.00
Tungsten	3.00	6.00
Nickel	--	3.00
Molybdenum	--	1.00
Iron	--	3.00
Cobalt	remainder	

3.1.1 Check Analysis

Composition variations shall meet the applicable requirements of AMS 2269.

3.1.2 For wrought material, chemical analysis of initial ingot, bar, or rod stock before drawing or rolling, is acceptable provided the processes used for drawing or rolling, annealing, and cleaning, are controlled to ensure continued conformance to chemical composition requirements.

3.2 Condition

3.2.1 Material shall be supplied as cast, cast and centerless ground, or wrought wire, as specified.

3.2.2 Material shall be cleaned and have surfaces free from mold materials, grinding dust, drawing compounds, and other extraneous compounds that can affect composition of the welded deposit or usability of the product.

3.3 Properties

The product shall melt quickly, shall flow freely without bubbling or boiling, and shall produce an adherent deposit free from porosity due to blowholes, gas cavities, or slag inclusions. ARP1876 may be used to resolve disputes.

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 coating operations or properties of the deposited alloy.

3.5 Sizes and Tolerances

The product shall be supplied in the sizes and to the tolerances shown in 3.5.1 and 3.5.2.

3.5.1 Diameter

Shall be as shown in Table 2.

3.5.1.1 Cast and Centerless Ground, or Wrought Wire

Shall be as shown in Table 2.

TABLE 2 - STANDARD SIZES AND DIAMETER TOLERANCES

Nominal Diameter Inch	Nominal Diameter Millimeters	Tolerances Plus and Minus Inch	Tolerances Plus and Minus Millimeter
0.030, 0.045, 0.062	0.76, 1.14, 1.57	0.005	0.13
0.078, 0.094, 0.125	1.98, 2.39, 3.18	0.010	0.25
0.156, 0.188, and over	3.96, 4.78, and over	0.031	0.79

3.5.1.2 As Cast

Shall be as shown in Table 3.

TABLE 3 - AS CAST TOLERANCES

Nominal Diameter Inch	Nominal Diameter Millimeters	Tolerances Plus and Minus Inch	Tolerances Plus and Minus Millimeter
1/16 and over	1.6 and over	1/32	0.8

3.5.2 Concentricity

When lengths are supplied as welded composites of cast lengths, the diameters of adjacent sections shall be concentric within the diametral tolerances specified in Table 2.

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 conform to specified requirements.

4.2 Classification of Tests

All technical requirements are acceptance tests and shall be performed on each heat or lot as applicable.

4.3 Sampling and Testing

Shall be in accordance with the following:

4.3.1 One chemical analysis specimen from each melt, representative of the product at final diameter.

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 stating that the product conforms to the other technical requirements. This report shall include the purchase order number, heat and lot numbers, AMS 5788F, size, and quantity.