The Engineering Society For Advancing Mobility Land Sea Air and Space®
INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

AEROSPACE MATERIAL SPECIFICATION

SAE AMS 5788D

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Submitted for recognition as an American National Standard

Superseding AMS 5788C

COBALT ALLOY, CORROSION AND HEAT RESISTANT, HARD FACING RODS AND WIRE
62Co - 29Cr - 4.5W

UNS R30006

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:

These products have been used typically as a corrosion and heat resistant hard coating, but usage is not limited to such applications.

2. APPLICABLE DOCUMENTS:

The following publications form a part of this specification to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order.

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

AMS 2269 Chemical Check Analysis Limits, Wrought 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

2.2 ASTM Publications:

Available from ASTM, 1916 Race Street, Philadelphia, PA 19103-1187.

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

3. TECHNICAL REQUIREMENTS:

3.1 Composition:

(R)

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.

3.2 Condition:

As cast, cast and centerless ground, or wrought wire, as specified.

3.3 Properties:

Rods and wire 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.

3.4 Quality:

Rods and wire, 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:

Rods and wire 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: (R)

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 rods and wire shall supply all samples for vendor's tests and shall be responsible for performing all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the rods and wire conform to the requirements of this specification.

4.2 Classification of Tests:

Tests for 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 (R) 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 chemical composition of each heat and stating that the rods and wire conform to the other technical requirements. This report shall include the purchase order number, heat and lot number, AMS 5788D, size, and quantity.

5. PREPARATION FOR DELIVERY:

5.1 (R) Identification:

Shall be by tab marking in accordance with AMS 2816 unless color coding in accordance with AMS 2819 or other method is specified by purchaser.

5.1.1 (R) An 8-inch (203-mm) length of wire shall be made accessible at both ends of each spool for alloy verification. Alloy verification shall be performed by a method acceptable to purchaser.

5.2 (R) Packaging and Marking:

Shall be by standard method in accordance with AMS 2813 unless premium quality method in accordance with AMS 2814 or other method is specified by purchaser.

6. ACKNOWLEDGMENT:

A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

7. REJECTIONS:

Product not conforming to this specification, or to modifications authorized by purchaser, will be subject to rejection.

8. NOTES:

8.1 The (R) symbol is for the convenience of the user in locating areas where technical revisions, not editorial changes, have been made to the previous issue of this specification. If the symbol is next to the specification title, it indicates a complete revision of the specification.

8.2 Definitions of terms used in AMS are presented in ARP1917.

8.3 Dimensions in inch/pound units are primary; dimensions in SI units are shown as the approximate equivalents of the primary units and are presented only for information.