



AEROSPACE MATERIAL SPECIFICATION

AMS4783™**REV. H**

Issued 1971-05
Reaffirmed 2008-05
Revised 2021-07

Superseding AMS4783G

Cobalt Alloy, High Temperature Brazing Filler Metal
50Co - 8.0Si - 19Cr - 17Ni - 4.0W - 0.80B
2050 to 2100 °F (1121 to 1149 °C) Solidus-Liquidus Range
(Composition similar to UNS R30040)

RATIONALE

AMS4783H prohibits unauthorized exceptions (3.4, 4.4.1, 5.1.3, 8.5), updates burn-off requirements (3.3.2.2), updates powder size (3.6.1.1), allows prior revisions (8.4), and is the result of a Five-Year Review and update of the specification.

1. SCOPE

1.1 Form

This specification covers a cobalt alloy in the form of wire, rod, strip, foil, and powder and a viscous mixture (paste) of the powder in a suitable binder.

1.2 Application

This filler metal has been used typically for joining cobalt alloys requiring corrosion and oxidation resistant joints with good strength at elevated temperatures, 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.

ARP1917 Clarification of 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 or www.astm.org.

ASTM B214 Sieve Analysis of Granular Metal Powders

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For more information on this standard, visit
<https://www.sae.org/standards/content/AMS4783H>

SAE WEB ADDRESS:

2.3 AWS Publications

Available from American Welding Society, 8669 NW 36 St, # 130, Miami, FL 33166-6672, Tel: 1-800-443-9353 or 305-443-9353, www.aws.org.

AWS A5.01 Welding and Brazing Consumables - Procurement of Filler Materials and Fluxes

AWS A5.8 Specification for Filler Metals for Brazing and Braze Welding

3. TECHNICAL REQUIREMENTS

3.1 Product shall meet the requirements of AWS A5.8 BCo-1 and the following:

3.2 Condition

The product shall be supplied in the following condition:

3.2.1 Wire, Strip, and Foil

Powder bonded in a suitable binder.

3.2.2 Rod

As cast, with fins and projections removed.

3.2.3 Powder

As fabricated.

3.2.4 Paste

Shall consist of 84 to 90% by weight powder in a suitable binder and, unless otherwise ordered, shall not contain flux.

3.3 Properties

Filler metal shall conform to the following requirements:

3.3.1 Wire, Strip, and Foil

3.3.1.1 Burn-Off of Binder

The binder used for bonding powder to form wire, strip, and foil shall burn off, leaving no adherent residue, when the product is heated in a protective atmosphere to a temperature of 1000 °F (538 °C) or higher.

3.3.2 Paste

3.3.2.1 Paste shall have a shelf life of not less than six months; not more than thorough mixing shall be required to restore paste for use during that time.

3.3.2.2 The binder used shall leave no adherent residue when heated in a protective atmosphere to a temperature 1000 °F (538 °C) or higher.

3.4 Exceptions

Any exceptions shall be authorized by the purchaser and reported as in 4.4.1.

3.5 Quality

The product, as received by purchaser, shall be uniform in color, quality, and condition and free from foreign materials and from imperfections detrimental to its working qualities. Rod and powder shall have a metallic luster. Wire, strip, and foil shall be clean, sound, smooth, and free from ragged edges, splitting, damaged ends, and other imperfections detrimental to usage of the products.

3.6 Sizes and Tolerances

3.6.1 Powder

3.6.1.1 Mesh Designation shall be 140F in accordance with AWS A5.8 limits on particle size distribution.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection

The producer of the product shall supply all samples for producer'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 conforms to specified requirements.

4.2 Classification of Tests

4.2.1 Acceptance Tests

All technical requirements, other than shelf life of paste (3.3.2.1), are acceptance tests and shall be performed on each lot.

4.2.2 Periodic Tests

Shelf life of paste (3.3.2.1) is a periodic test and shall be performed at a frequency selected by the producer unless frequency of testing is specified by purchaser.

4.3 Sampling and Testing

Shall be in accordance with the following:

4.3.1 Composition

One sample shall be taken from each furnace charge except that powder produced from consecutive furnace charges and collected together, without teardown of the atomizing equipment, shall constitute a batch, from which one or more samples shall be taken.

4.3.2 Properties Except Shelf Life of Paste

One sample from each lot.

4.3.2.1 A lot shall be all product, other than powder or paste, as defined by AWS A5.01 Lot Class S3.

4.3.2.2 A lot of powder shall be a uniform blend of powder produced from one or more furnace charges, except as modified by 4.3.1, each meeting the chemical composition requirements of AWS A5.8 and presented for producer's inspection at one time.

4.3.2.3 A lot of paste shall be that paste produced from a single lot of powder, combined with binder from the same manufacturing batch, and presented for producer's inspection at one time.

4.4 Reports

The producer of the product shall furnish with each shipment a report showing the producer's name and the country where the metal was melted (e.g., final melt in the case of metal processed by multiple melting operations) and the composition of each lot, and stating that the product conforms to the other technical requirements. This report shall include the purchase order number, lot number or numbers, AMS4783H, form, size, and quantity.

4.4.1 When material produced to this specification has exceptions taken to the technical requirements listed in Section 3, the report shall contain a statement "This material is certified as AMS4783H(EXC) because of the following exceptions:" and the specific exceptions shall be listed (also see 5.1.3).

4.5 Resampling and Retesting

Not applicable.

5. PREPARATION FOR DELIVERY

5.1 Identification

5.1.1 Shall be as agreed upon by purchaser and producer.

5.1.2 Each exterior container or package shall be permanently and legibly marked with not less than AMS4783H, lot number, manufacturer's identification, form, nominal size, and weight.

5.1.2.1 Each container and package of paste shall also be marked with the date of manufacture.

5.1.3 When technical exceptions are taken (see 4.4.1), the material shall be identified with AMS4783H(EXC).

5.2 Packaging

5.2.1 The product shall be suitably wrapped, sealed, and boxed or otherwise packaged for protection against injury and contamination during shipment and under normal dry storage conditions.

5.2.2 Packages of filler metal shall be prepared for shipment in accordance with commercial practice and in compliance with applicable rules and regulations pertaining to the handling, packaging, and transportation of the filler metal to ensure carrier acceptance and safe delivery.

6. ACKNOWLEDGMENT

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

7. REJECTIONS

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

8. NOTES

8.1 Revision Indicator

A change bar (I) located in the left margin 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 document. An (R) symbol to the left of the document title indicates a complete revision of the document, including technical revisions. Change bars and (R) are not used in original publications, nor in documents that contain editorial changes only.

8.2 This filler metal has an approximate solidus temperature of 2050 °F (1121 °C) and an approximate liquidus temperature of 2100 °F (1149 °C).

8.3 Terms used in AMS are clarified in ARP1917.