AEROSPACE MATERIAL SPECIFICATION

AMS4780™	REV. H

Issued 1962-06
Reaffirmed 2007-01
Revised 2021-06

Superseding AMS4780G

Manganese Alloy, Brazing Filler Metal
66Mn - 16Ni - 16Co - 0.80B
1770 to 1875 °F (966 to 1024 °C) Solidus-Liquidus Range
(Similar to UNS M26800)

RATIONALE

AMS4780H is an update of table formatting to accommodate the new digital data system and allows the use of the two prior revisions (8.5) because of the non-technical update.

1. SCOPE

1.1 Form

This specification covers a manganese alloy in the form of powder, preforms, and a viscous mixture (paste) of the powder in a suitable binder.

1.2 Application

This filler metal has been used typically for joining corrosion and heat resistant steels and alloys where good ductility and moderate heat resistance are required, 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.

ARP1917 Clarification of Terms Used in Aerospace Metals Specifications

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**

For more information on this standard, visit
https://www.sae.org/standards/content/AMS4780H/

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 B214 Sieve Analysis of Metal Powders

ASTM E354 Chemical Analysis of High-Temperature, Electrical, Magnetic, and Other Similar Iron, Nickel, and Cobalt Alloys

3. TECHNICAL REQUIREMENTS

3.1 Composition

Shall conform to the percentages by weight shown in Table 1, determined by wet chemical methods in accordance with ASTM E354, by spectrochemical methods, or by other analytical methods acceptable to purchaser.

Table 1 - Composition

Element	Min	Max
Carbon	--	0.06
Silicon	--	1.00
Nickel	14.00	18.00
Cobalt	14.00	18.00
Boron	0.50	1.10
Other Elements, each (3.1.1)	--	0.10
Other Elements, total (3.1.1)	--	1.00
Manganese	remainder	

3.1.1 Determination not required for routine acceptance.

3.2 Condition

The product shall be supplied in the following condition:

3.2.1 Powder

As fabricated.

3.2.2 Paste

Unless otherwise specified by the purchaser, shall consist of 84 to 90% by weight powder in a suitable binder and shall not contain flux.

3.2.3 Preforms

As fabricated.

3.3 Properties of Paste

3.3.1 Paste shall have a shelf life of not less than 6 months from date of manufacture; not more than thorough mixing shall be required to restore paste for use during that time.

3.3.2 Paste without flux shall leave no adherent residue when heated in a protective atmosphere to a temperature of 1200 °F (649 °C) or higher.

3.4 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.

3.5 Sizes and Tolerances

3.5.1 Powder

3.5.1.1 Mesh Designation

140F (106F).

3.5.1.2 Powder shall be supplied in accordance with the limits on particle size distribution shown in Table 2, unless some other distribution is specified. Tests shall be in accordance with ASTM B214.

Table 2A - Particle size distribution - US standard sieve no.

Mesh Designation	Sieve	Distribution, Percent
140F	On a 100 sieve	0.5 max
	On a 140 sieve	10 max
	Through 325 sieve	55 max

Table 2B - Particle size distribution - µm sieve no.[1]

Mesh Designation	Sieve	Distribution, Percent
106F	On a 150 sieve	0.5 max
	On a 106 sieve	10 max
	Through a 45 sieve	55 max

[1]µm mesh sieve opening size.

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

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 (3.3.1), are acceptance tests and shall be performed on each lot.

4.2.2 Periodic Tests

Shelf life of paste (3.3.1) 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.

4.3.2 Properties Except Shelf Life of Paste

One sample from each lot.

4.3.3 A lot of powder shall be a uniform blend of powder produced from one or more furnace charges, each meeting the requirements of Table 1, and presented for producer's inspection at one time.

4.3.4 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 results of tests on each lot to determine conformance to the composition requirements and stating that the product conforms to the other technical requirements. This report shall include the purchase order number, lot number or numbers, AMS4780H, form, and quantity.

4.4.1 When material produced to this specification has exceptions taken to the technical requirements listed in Section 3 (see 5.1.3), the report shall contain a statement, "This material is certified as AMS4780H(EXC) because of the following exceptions:" and the specific exceptions shall be listed.

4.5 Resampling and Retesting

Not applicable.

5. PREPARATION FOR DELIVERY

5.1 Identification and Packaging

5.1.1 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.

5.1.2 Each exterior container or package shall be permanently and legibly marked with not less than the lot number, AMS4780H, manufacturer's identification, 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 marked with AMS4780H(EXC).

5.1.4 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.