SAE Aerospace
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AEROSPACE MATERIAL SPECIFICATION

SAE AMS 4780E

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Revised NOV 1998
Reaffirmed JAN 2007

Superseding AMS 4780D

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

UNS M26800

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RATIONALE

This document has been reaffirmed to comply with the SAE 5-year Review policy.

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 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 ASTM Publications:

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM B 214	Sieve Analysis of Granular Metal Powders
ASTM E 354	Chemical Analysis of High-Temperature, Electrical, Magnetic, and Other Similar Iron, Nickel, and Cobalt Alloys

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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 E 354, 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 six 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 higher than 1000 °F (538 °C).

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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: 140.

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 B 214.

TABLE 2 - Particle Size Distribution

Mesh Designation	U.S. Standard Sieve	
140F	On a No. 100 sieve -	0.5% maximum
	On a No. 140 sieve -	10% maximum
	Through a No. 325 sieve -	55% maximum

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 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 vendor unless frequency of testing is specified by purchaser.

4.3 Sampling and Testing:

Shall be in accordance with the following:

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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 vendor'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 vendor's inspection at one time.

4.4 Reports:

The vendor of the product shall furnish with each shipment a report showing 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, AMS 4780E, form and quantity.

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, AMS 4780E, 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 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 vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

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