

**AEROSPACE
MATERIAL
SPECIFICATION**

AMS 4780B
Superseding AMS 4780A

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Revised 4-1-85

BRAZING FILLER METAL, MANGANESE

66Mn - 16Ni - 16Co - 0.80B

1770° - 1875°F (965° - 1025°C) Solidus-Liquidus Range

UNS M26800

1. SCOPE:

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

1.2 Application: Primarily for joining corrosion and heat resistant steels and alloys where good ductility and moderate heat resistance are required.

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications: Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods

2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM B214 - Sieve Analysis of Granular Metal Powders

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

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2.3 U.S. Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.3.1 Military Standards:

MIL-STD-794 - Parts and Equipment, Procedures for Packaging and Packing of

3. TECHNICAL REQUIREMENTS:

3.1 Composition: Shall conform to the following percentages by weight, determined by wet chemical methods in accordance with ASTM E354 or by spectrographic or other analytical methods approved by purchaser:

	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.

3.1.2 The requirements of 3.1 apply to paste after removal of the binder.
Ø

3.2 Condition: The product shall be supplied in the following condition:

3.2.1 Powder: As fabricated.

3.2.2 Paste: Shall consist of 84 - 90% by volume powder in a suitable binder
Ø and, unless otherwise agreed upon by purchaser and vendor, shall not contain flux.

3.3 Properties of Paste:

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

3.3.2 Paste shall leave no undesirable residue when heated in a protective
Ø atmosphere to 1000°F (540°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 Nominal Size: -140, U.S. Standard (-150, Tyler).

Ø

3.5.1.2 Tolerances: Powder shall be of such fineness that not more than a trace
Ø will be retained on a No. 120 (125 µm) U.S. Standard or Tyler sieve, not less than 90% will pass through a No. 140 (106 µm) U.S. Standard (No. 150 (104 µm) Tyler) sieve, and not more than 50% will pass through a No. 325 (44 µm) U.S. Standard or Tyler sieve, tested in accordance with ASTM B214.

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 performing all required tests. Results of such tests shall be reported to the purchaser as required by 4.4. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the product conforms to the requirements of this specification.

4.2 Classification of Tests: Tests to determine conformance to all technical requirements of this specification are classified as acceptance tests and shall be performed on each lot.

4.3 Sampling: Shall be in accordance with the following; a lot of powder shall
Ø be a uniform blend of powder produced from one or more furnace charges and presented for vendor's inspection at one time and a lot of paste shall be that produced from a single lot of powder combined with binder from the same manufacturing batch and presented for vendor's inspection at one time.

4.3.1 Composition: One sample from each lot.

4.3.2 Other Technical Requirements: As agreed upon by purchaser and vendor.

4.4 Reports:

4.4.1 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 of this specification. This report shall include the purchase order number, lot number, AMS 4780B, form, and quantity.

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4.4.2 When parts or assemblies requiring use of this filler metal are supplied, the part or assembly manufacturer shall inspect each lot of filler metal to determine conformance to the technical requirements of this specification and shall furnish with each shipment a report stating that the filler metal conforms. This report shall include the purchase order number, AMS 4780B, part or assembly number, and quantity.

4.5 Resampling and Retesting: If any specimen used in the above tests fails to meet the specified requirements, disposition of the product may be based on the results of testing three additional specimens for each original nonconforming specimen. Failure of any retest specimen to meet the specified requirements shall be cause for rejection of the product represented and no additional testing shall be permitted. Results of all tests shall be reported.

5. PREPARATION FOR DELIVERY:

5.1 Identification and Packaging:

5.1.1 The product shall be suitable 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 following information:

BRAZING FILLER METAL, MANGANESE

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LOT NUMBER _____

MANUFACTURER'S IDENTIFICATION _____

WEIGHT _____

5.1.2.1 For paste, each container and package shall also be marked with the
Ø 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. Packaging shall conform to carrier rules and regulations applicable to the mode of transportation.

5.1.4 For direct U.S. Military procurement, packaging shall be in accordance with MIL-STD-794, Level A or Level C, as specified in the request for procurement. Commercial packaging as in 5.1.1 and 5.1.3 will be acceptable if it meets the requirements of Level C.