SAE Aerospace
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AEROSPACE MATERIAL SPECIFICATION

SAE AMS4184 REV. G

Issued 1948-05
Cancelled 2007-10
Revised 2010-11

Superseding AMS4184F

Filler Metal, Aluminum Brazing
10Si - 4.0Cu (4145)

(Composition similar to UNS A94145)

RATIONALE

AMS4184G restores this document to active status.

1. SCOPE

1.1 Form

This specification covers an aluminum alloy in the form of wire, sheet, foil, pig, grains, shot, and chips.

1.2 Application

This material has been used typically for joining aluminum by brazing, 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 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 B 660 Packaging/Packing of Aluminum and Magnesium Product

ASTM E 34 Chemical Analysis of Aluminum and Aluminum Alloys

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

SAE values your input. To provide feedback on this Technical Report, please visit
http://www.sae.org/technical/standards/AMS4184G

2.2 ANSI Publications

Available from American National Standards Institute, 25 West 43rd Street, New York, NY 10036-8002, Tel: 212-642-4900, www.ansi.org.

ANSI H35.2 Dimensional Tolerances for Aluminum Mill Products

ANSI H35.2(M) Dimensional Tolerances for Aluminum Mill Products (Metric)

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 34, by spectrochemical methods, or by other analytical methods acceptable to purchaser.

TABLE 1 - COMPOSITION

Element	min	max
Silicon	9.3	10.7
Iron	--	0.8
Copper	3.3	4.7
Manganese	--	0.15
Magnesium	--	0.15
Zinc	--	0.20
Beryllium (3.1.1)	--	0.0008
Other Elements, each	--	0.05
Other Elements, total	--	0.15
Aluminum	remainder	

3.1.1 Beryllium 0.0008 maximum for welding electrode and welding rod only.

3.2 Condition

Filler metal shall be furnished in the following condition:

3.2.1 Round Wire, Flattened and Slit Wire, and Sheet

Annealed.

3.2.2 Pig, Grains, Shot, and Chips

As fabricated.

3.2.3 Foil

As ordered.

3.3 Quality

Filler metal, as received by purchaser, shall be uniform in quality and condition, sound, and free from foreign materials and from imperfections detrimental to usage of the filler metal.

3.4 Standard Sizes and Tolerances

Filler metal shall be supplied in the following standard sizes and to the tolerances shown.

3.4.1 Round Wire

Shall conform to Table 2.

TABLE 2 - TOLERANCES, ROUND WIRE

Nominal Diameters Inch	Nominal Diameters Millimeters	Tolerances, Plus and Minus Inch	Tolerances, Plus and Minus Millimeters
1/32	0.8	0.001	0.025
1/16	1.6	0.001	0.025
3/32	2.4	0.0015	0.038
1/8	3.2	0.0015	0.038
3/16	4.8	0.0015	0.038
1/4	6.4	0.0015	0.038

3.4.2 Flattened and Slit Wire

Cross-section 0.020 inch ± 0.001 x 2 inches ± 0.006 (0.51 mm ± 0.03 x 51 mm ± 0.15).

3.4.3 Sheet

Tolerances for nominal thicknesses 0.010, 0.015, and 0.020 inch (0.25, 0.38, and 0.51 mm) shall be as specified in ANSI H35.2 or ANSI H35.2M.

3.4.4 Foil

For coil widths up to 8 inches (203 mm).

3.4.4.1 For thickness 0.006 to 0.99 inch (0.15 to 2.51 mm) inclusive, thickness tolerance shall be ±0.0010 inch (0.025 mm).

3.4.4.2 For thickness 0.0059 and under, thickness tolerance shall be +15 percent of the nominal thickness.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection

The vendor of filler metal 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 filler metal conforms to the specified requirements.

4.2 Classification of Tests

All technical requirements are acceptance tests and, except for composition, shall be performed on each lot.

4.3 Sampling and Testing

Shall be in accordance with the following; a lot shall be all filler metal produced from a single furnace charge:

4.3.1 Composition

At least one sample from each group of ingots poured simultaneously from the same source of molten metal.

4.3.1.1 Unless compliance with 4.3.1 is established, an analysis shall be made for each 6000 pounds (2722 kg) or less of filler metal comprising a lot.

4.4 Reports

The vendor of filler metal shall furnish with each shipment a report stating that the filler metal conforms to the composition and other technical requirements. This report shall include the purchase order number, lot number, AMS4184G, form and size or part number, and quantity.

5. PREPARATION FOR DELIVERY

5.1 Identification

5.1.1 Filler metal shall be identified as agreed upon by purchaser and vendor.

5.1.2 Each container or package shall be permanently and legibly marked with not less than the following information:

FILLER METAL, ALUMINUM BRAZING
AMS4184G
LOT NUMBER _____
MANUFACTURER'S IDENTIFICATION _____
NOMINAL DIMENSIONS _____
WEIGHT _____

5.2 Packaging

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

5.2.2 Packages of filler metal shall be prepared for shipment in accordance with ASTM B 660, 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.

7. REJECTIONS

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

8. NOTES

8.1 A change bar (l) 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 970 °F (521 °C) and an approximate liquidus temperature of 1085 °F (585 °C).

8.3 Dimensions and properties in inch/pound units and the Fahrenheit temperatures are primary: dimensions and properties in SI units and the Celsius temperatures are shown as the approximate equivalents of the primary units and are presented only for information.

8.4 Terms used in AMS are clarified in ARP1917.