AEROSPACE MATERIAL SPECIFICATION

AMS4184™	REV. H

Issued 1948-05
Cancelled 2007-10
Reaffirmed 2016-09
Revised 2023-11

Superseding AMS4184G

Filler Metal, Aluminum Brazing
10Si - 4.0Cu (4145)
(Composition similar to UNS A94145)

RATIONALE

AMS4184H results from a Five-Year Review and update of this specification. with changes to prohibit unauthorized exceptions (see 3.5, 4.4.1, 5.1.3, and 8.5), relocate Definitions (see 2.3), update Composition (see Table 1 and 3.1.1), update Applicable Documents (see Section 2 and 3.1), Ordering Information (see 8.6), and restrict use of the immediate prior specification revision (see 8.4).

1. SCOPE

1.1 Form

This specification covers an aluminum alloy in the form of wire, sheet, foil, pig, grains, shot, and chips (see 8.6).

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 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.

AS7766 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/AMS4184H

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 B660 Packaging/Packing of Aluminum and Magnesium Product

ASTM E1251 Analysis of Aluminum and Aluminum Alloy by Spark Atomic Emission Spectrometry

ASTM E3061 Analysis of Aluminum and Aluminum Alloys by Inductively Coupled Plasma Atomic Emission Spectrometry (Performance Based Method)

2.3 ANSI Accredited Publications

Copies of these documents are available online at https://webstore.ansi.org/.

ANSI H35.2 Dimensional Tolerances for Aluminum Mill Products

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

2.4 Definitions

Terms used in AMS are defined in AS7766.

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 E3061, ASTM E1251, by spectrochemical methods, or by other analytical methods acceptable to the 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
Chromium		0.15
Zinc	--	0.20
Beryllium (3.1.1)	--	0.0003
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 (see 8.6).

3.3 Quality

Filler metal, as received by the 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 Inches	Nominal Diameters Millimeters	Tolerances, Plus and Minus Inches	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 inches (0.51 mm ± 0.03 x 51 mm ± 0.15 mm).

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% of the nominal thickness.

3.5 Exceptions

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

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection

The producer of filler metal shall supply all samples for the producer's tests and shall be responsible for the performance of all required tests. The 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 producer 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, AMS4184H, form and size or part number, and quantity.

4.4.1 When material produced to this specification is beyond the sizes allowed in the scope or tables, or other exceptions are taken to the technical requirements listed in Section 3, the report shall contain a statement "This material is certified as AMS4184H(EXC) because of the following exceptions:" and the specific exceptions shall be listed (see 5.1.3)

5. PREPARATION FOR DELIVERY

5.1 Identification

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

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

FILLER METAL, ALUMINUM BRAZING
AMS4184H
LOT NUMBER _____
MANUFACTURER'S IDENTIFICATION _____
NOMINAL DIMENSIONS _____
WEIGHT _____

5.1.3 When technical exceptions are taken (see 4.4.1), the material shall be identified with AMS4184H(EXC).

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 B660, 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.