



AEROSPACE MATERIAL SPECIFICATION	AMS4766™	REV. H
	Issued 1954-11 Reaffirmed 2009-06 Revised 2015-11 Superseding AMS4766G	
Silver Alloy, Brazing Filler Metal 85Ag - 15Mn 1760 to 1780 °F (960 to 971 °C) Solidus-Liquidus Range UNS P07850		

RATIONALE

AMS4766H revises permissible methods for determining Composition (3.1), Condition (3.2), Classification of Tests (4.2) and Sampling and Testing (4.3), and is a Five Year Review and update of this specification.

1. SCOPE

1.1 Form

This specification covers a silver alloy in the form of wire, rod, sheet, strip, foil, pig, powder, shot, and chips and a viscous mixture (paste) of powder in a suitable binder.

1.2 Application

This material has been used typically for joining ferrous metals where strength up to 800 °F (427 °C) for short-time service or up to 500 °F (260 °C) for long-time service is required, or for nonferrous metals except those having a base of titanium, aluminum or magnesium, 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.

AMS2222 Tolerances, Copper and Copper Alloy Sheet, Strip, and Plate

AMS2224 Tolerances, Copper and Copper Alloy Wire

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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 Granular Metal Powders

3. TECHNICAL REQUIREMENTS

3.1 Composition

Shall conform to the percentages by weight shown in Table 1. Methods for analysis shall be by spectrochemical methods or by other methods acceptable to purchaser (see 8.6).

Table 1 - Composition

Element	min	max
Silver	84.0	86.0
Manganese	14.0	16.0
Other Elements, total (3.1.1)	-	0.15

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.

3.2 Condition

3.2.1 As fabricated unless otherwise specified. Paste not containing flux (3.2.1.1) shall be supplied unless paste containing flux (3.2.1.2) is specified.

3.2.1.1 Paste Not Containing Flux

Shall consist of 84 to 90% by weight powder in a suitable binder, unless otherwise specified by purchaser.

3.2.1.2 Paste Containing Flux

Shall consist of 55 to 80% by weight powder in a suitable binder and flux combination, unless otherwise specified by purchaser.

3.3 Properties

Filler metal shall conform to the following requirements:

3.3.1 Color

Shall be white.

3.3.2 Flatness

When unrolled, strip and foil shall lie flat with no undue tendency to recoil.

3.3.3 Paste

3.3.3.1 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.

3.3.3.2 Paste without flux shall leave no adherent residue when heated in a protective atmosphere to 1000 °F (538 °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 usage of the filler metal. Wire, rod, sheet, strip, and foil shall be clean, sound, bright, and free from slivers, splitting, ragged edges, damaged ends, and other injurious imperfections. Pig, powder, shot, and chips shall have a metallic luster.

3.5 Sizes and Tolerances

Shall be supplied in the following standard sizes and to the tolerances shown:

3.5.1 Wire and Rod

3.5.1.1 Nominal Diameters

Table 2 - Standard diameter sizes

Inch		Millimeters	
0.005	0.062	0.13	1.57
0.007	0.094	0.18	2.39
0.010	0.125	0.25	3.18
0.015	0.175	0.38	4.44
0.025	0.188	0.64	4.78
0.031	0.225	0.79	5.72
0.040	0.250	1.02	6.35
0.047		1.19	

3.5.1.2 Diameter Tolerance for Drawn Wire and Rod

AMS2224 as applicable to refractory alloys.

3.5.1.3 Diameter Tolerance for Rolled or Extruded Wire and Rod

Table 3A - Diameter tolerances, inch/pound units

Nominal Diameter or Distance Between Parallel Sides Inch	Tolerance, Inch Plus and Minus Rounds	Tolerance, Inch Plus and Minus Squares
0.031 to 0.062, incl	0.005	0.008
Over 0.062 to 0.125, incl	0.006	0.009
Over 0.125 to 0.188, incl	0.007	0.009
Over 0.188 to 0.250, incl	0.008	0.010

Table 3B - Diameter tolerances, SI units

Nominal Diameter or Distance Between Parallel Sides Millimeters	Tolerance, Millimeter Plus and Minus Rounds	Tolerance, Millimeter Plus and Minus Squares
0.79 to 1.57, incl	0.13	0.20
Over 1.57 to 3.18, incl	0.15	0.23
Over 3.18 to 4.78, incl	0.18	0.23
Over 4.78 to 6.35, incl	0.20	0.25

3.5.2 Sheet, Strip, and Foil

3.5.2.1 Nominal Thicknesses

Table 4 - Standard thicknesses

Inch		Millimeter	
0.001	0.006	0.025	0.15
0.0015	0.008	0.038	0.20
0.002	0.010	0.05	0.25
0.003	0.014	0.08	0.36
0.004	0.020	0.10	0.51
0.005	0.030	0.13	0.76

3.5.2.2 Tolerances

3.5.2.2.1 Thickness

Nominal thicknesses under 0.002 inch (0.05 mm) shall have a tolerance of ± 0.0002 inch (± 5 μm); nominal thicknesses 0.002 inch (0.05 mm) and over shall have tolerances conforming to AMS2222 as applicable to refractory alloys.

3.5.2.2.2 Width of Individual Rolls

Nominal widths under 6 inches (152 mm) shall vary not more than ± 0.010 inch (± 0.25 mm) from the width ordered. Nominal widths 6 inches (152 mm) and over shall vary not more than ± 0.015 inch (± 0.38 mm) from the width ordered.

3.5.2.2.3 Length in Individual Roll

Shall not be limited except that no roll shall weigh more than 75 pounds (34 kg).

3.5.3 Powder Sizes

3.5.3.1 Nominal Sizes

60, 100, 140, 200, and 325.

3.5.3.2 Tolerances

Powder shall be supplied in accordance with the limits on particle size distribution shown in Table 5 unless some other distribution is specified. Tests shall be in accordance with ASTM B214.

Table 5 - Particle size distribution

Mesh Designation	U.S. Standard Sieve	
60	Through a No. 40 sieve -	100%
	Through a No. 60 sieve -	95% minimum
	Through a No. 325 sieve -	10% maximum
100	Through a No. 60 sieve -	100%
	Through a No. 100 sieve -	95% minimum
	Through a No. 325 sieve -	15% maximum
140C	On a No. 100 sieve -	0.5% maximum
	On a No. 140 sieve -	10% maximum
	Through a No. 325 sieve -	20% maximum
140F	On a No. 100 sieve -	0.5% maximum
	On a No. 140 sieve -	10% maximum
	Through a No. 325 sieve -	55% maximum
200	On a No. 140 sieve -	0.5% maximum
	On a No. 200 sieve -	10% maximum
	Through a No. 325 sieve -	65% maximum
325	On a No. 200 sieve -	0.5% maximum
	On a No. 325 sieve -	10% maximum
	Through a No. 325 sieve -	90% minimum

3.5.3.2.1 When mesh designation is not specified, 140F mesh shall be supplied.

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 the specified requirements.

4.2 Classification of Tests

4.2.1 Acceptance Tests

All technical requirements, except properties (3.3), are acceptance tests and shall be performed on each lot.

4.2.2 Periodic Tests

Properties are periodic tests 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

For all product except powder, one sample from each lot; for powder, one sample from each furnace charge.

4.3.2 Other Technical Requirements

As agreed upon by purchaser and producer.