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INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

AEROSPACE MATERIAL SPECIFICATION

SAE AMS 4767D

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Superseding AMS 4767C

Submitted for recognition as an American National Standard

BRAZING, FILLER METAL, SILVER
92.5Ag - 7.2Cu - 0.22Li
1435° - 1635°F (779° - 891°C) Solidus-Liquidus Range

UNS P07925

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: Primarily for brazing corrosion-resistant honeycomb structures where service temperature will not exceed 900°F (482°C). Oxidation of the brazed alloy may occur during long-time exposure to such temperatures.

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 SAE Publications: Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

2.1.1 Aerospace Material Specifications:

AMS 2222 - Tolerances, Copper and Copper Alloy Sheet, Strip, and Plate
MAM 2222 - Tolerances, Metric, Copper and Copper Alloy Sheet, Strip, and Plate
AMS 2224 - Tolerances, Copper and Copper Alloy Wire
MAM 2224 - Tolerances, Metric, Copper and Copper Alloy Wire

2.2 ASTM Publications: Available from ASTM, 1916 Race Street, Philadelphia, PA 19103-1187.

ASTM B 214 - Sieve Analysis of Granular Metal Powders
ASTM E 56 - Chemical Analysis of Silver Brazing Alloys

2.3 U.S. Government Publications: Available from Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

2.3.1 Military Standards:

MIL-STD-2073-1 - DOD Materiel, Procedures for Development and Application of Packaging Requirements

3. TECHNICAL REQUIREMENTS:

3.1 Composition: Shall conform to the following percentages by weight, Ø determined by wet chemical methods in accordance with ASTM E 56, by spectrochemical methods, or by other analytical methods acceptable to purchaser:

	min	max
Silver	92.0	93.0
Copper	6.6	7.8
Lithium	0.15	0.30
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: The product shall be supplied in the following condition:

3.2.1 Wire: Cold drawn or cold rolled, as ordered, in annealed temper, and cleaned.

3.2.2 Rod: Cold drawn, cold rolled, or extruded, as ordered, in hard temper, and cleaned.

3.2.3 Sheet, Strip, and Foil: Cold rolled, in hard temper. Ø

3.2.4 Pig, Powder, Shot, and Chips: As fabricated.

3.2.5 Paste: Shall consist of 84 - 90% by weight powder in a suitable binder Ø and shall not contain flux.

3.3 Properties: Filler metal shall conform to the following requirements:

3.3.1 Color: Shall be a silvery metallic luster.

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 shall leave no adherent residue when heated in a protective Ø 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 its working qualities. 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: The product 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:

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 Tolerances for Drawn Wire and Rod: AMS 2224 or MAM 2224 as applicable to refractory alloys.

3.5.1.3 Diameter Tolerance for Rolled or Extruded Wire and Rod:

TABLE I

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

TABLE I (SI)

Nominal Diameter or Distance Between Parallel Sides Millimeters	Tolerance, Millimeter Plus and Minus	
	Rounds	Squares
0.79 to 1.57, incl	0.13	--
Over 1.57 to 3.18, incl	0.15	--
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:

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 AMS 2222 or MAM 2222 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 width 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 Size:
Ø

3.5.3.1 Nominal Sizes: -60, -100, -140, -200, and -325.
Ø

3.5.3.2 Ø Powder shall be supplied in accordance with the following limits on particle size distribution unless some other distribution is specified. Tests shall be in accordance with ASTM B 214.

Nominal Size	U.S. Standard Sieve
-60 mesh	Through a No. 40 sieve - 100% Through a No. 60 sieve - 95% minimum Through a No. 325 sieve - 10% maximum
-100 mesh	Through a No. 60 sieve - 100% Through a No. 100 sieve - 95% minimum Through a No. 325 sieve - 15% maximum
-140C mesh	On a No. 100 sieve - 0.5% maximum On a No. 140 sieve - 10% maximum Through a No. 325 sieve - 20% maximum
-140F mesh	On a No. 100 sieve - 0.5% maximum On a No. 140 sieve - 10% maximum Through a No. 325 sieve - 55% maximum
-200 mesh	On a No. 140 sieve - 0.5% maximum On a No. 200 sieve - 10% maximum Through a No. 325 sieve - 65% maximum
-325 mesh	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 Ø When a nominal size is not specified, -140F mesh shall be supplied.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Ø 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. 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 for all technical requirements are acceptance tests and shall be performed on each lot.

4.3 Ø Sampling and Testing: Shall be in accordance with the following:

4.3.1 Composition: One sample from each lot.

4.3.2 Properties: One sample from each lot.

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