

Submitted for recognition as an American National Standard

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Superseding AMS-4787B

**BRAZING FILLER METAL, HIGH TEMPERATURE
82Au - 18Ni
1740°F (949°C) Solidus-Liquidus Temperature**

UNS P00820

1. SCOPE:

- 1.1 Form: This specification covers a gold-nickel 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 joining corrosion and heat resistant steels and alloys requiring corrosion and oxidation resistant joints with good strength up to 1300°F (704°C). This filler metal is normally used for brazing, without flux, using a protective atmosphere.
- 1.3 Safety - Hazardous Materials: While the materials, methods, applications, and processes described or referenced in this specification may involve the use of hazardous materials, this specification does not address the hazards which may be involved in such use. It is the sole responsibility of the user to ensure familiarity with the safe and proper use of any hazardous materials and to take necessary precautionary measures to ensure the health and safety of all personnel involved.

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.

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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

2.3 U.S. Government Publications: Available from Naval Publications and Forms Center, Attn: NPODS, 5801 Tabor Avenue, Philadelphia, PA 19120-5099.

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,
 0 determined by spectrochemical methods or other analytical methods acceptable to purchaser:

	min	max
Gold	81.50	82.50
Nickel	17.50	18.50
Other Elements, total (3.1.2)	--	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, annealed, and pickled clean or bright annealed.

3.2.2 Rod: Cold drawn, cold rolled, or extruded, as ordered, annealed, and pickled clean or bright annealed.

3.2.3 Sheet, Strip, and Foil: Cold rolled, hard.

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
 0 and shall not contain flux.

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

3.3.1 Color: Shall be as follows:

3.3.1.1 Wire, Rod, Sheet, Strip, and Pig: Gold to yellow-white.

3.3.1.2 Powder, Shot, and Chips: Nickel gray.

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 undesirable 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 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		Millimetres	
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	Tolerances, 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 Millimetres	Tolerances, Millimetre 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		Millimetre	
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 ($\pm 5 \mu\text{m}$); 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 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: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 following limits on particle size distribution unless some other distribution is specified. Tests shall be in accordance with ASTM B 214.

<u>Nominal Size</u>	<u>U.S. Standard Sieve</u>
-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 When a nominal size is not specified, -140C mesh shall be supplied.

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. 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.