

AEROSPACE MATERIAL SPECIFICATION

Submitted for recognition as an American National Standard

SAE AMS 7735B

Issued 11-1-70
Revised 10-1-86

Superseding AMS 7735A

ALLOY WIRE, ROUND
35Pd - 30Ag - 14Cu - 10Au - 10Pt - 0.85Zn
Solution Heat Treated

UNS P03300

1. SCOPE:

1.1 Form: This specification covers a palladium-silver alloy in the form of round wire.

1.2 Application: Primarily for electrical contacts or bearing surfaces requiring high hardness, low contact resistance, and good corrosion resistance.

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

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

2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods

2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM E8 - Tension Testing of Metallic Materials

ASTM E384 - Microhardness of Materials

2.3 U.S. Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.3.1 Military Standards:

MIL-STD-794 - Parts and Equipment, Procedures for Packaging and Packing of

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3. TECHNICAL REQUIREMENTS:

- 3.1 Composition: Shall conform to the following percentages by weight, determined by spectrographic or other analytical methods approved by purchaser:

	min	max
Palladium	34.0	36.0
Silver	29.0	31.0
Copper	13.5	14.5
Gold	9.5	10.5
Platinum	9.5	10.5
Zinc	0.5	1.2
Other Elements, total	--	0.1

- 3.2 Condition: Solution heat treated.

- 3.3 Properties: Wire shall conform to the following requirements:

- 3.3.1 As Solution Heat Treated:

- 3.3.1.1 Tensile Properties: Shall be as specified in Table I, determined in accordance with ASTM E8.

TABLE I

Nominal Diameter Inch	Tensile Strength psi	Elongation % in 2 in.
0.004 to 0.020, incl	110,000 - 135,000	20 - 40
Over 0.020 to 0.040, incl	100,000 - 125,000	15 - 35
Over 0.040 to 0.080, incl	95,000 - 120,000	15 - 35

TABLE I (SI)

Nominal Diameter Millimetres	Tensile Strength MPa	Elongation % in 50 mm
0.10 to 0.50, incl	760 - 930	20 - 40
Over 0.50 to 1.00, incl	690 - 860	15 - 35
Over 1.00 to 2.00, incl	655 - 825	15 - 35

- 3.3.1.2 Hardness: Shall be as follows, determined in accordance with ASTM E384:

Nominal Diameter		Knoop Hardness
Inch	Millimetres	
0.004 to 0.005, incl	0.10 to 0.12, incl	200 - 250 HK/50
Over 0.005 to 0.010, incl	Over 0.12 to 0.25, incl	200 - 250 HK/100
Over 0.010 to 0.080, incl	Over 0.25 to 2.00, incl	210 - 260 HK/100

3.3.2 After Precipitation Heat Treatment: Wire shall have the following properties after being precipitation heat treated by heating to 900°F + 10 (480°C + 5), holding at heat for 45 min. + 5, and cooling in air to room temperature:

3.3.2.1 Tensile Properties: Shall be as specified in Table II, determined in accordance with ASTM E8.

TABLE II

Nominal Diameter Inch	Tensile Strength psi	Elongation % in 2 in.
0.004 to 0.020, incl	165,000 - 205,000	2 - 10
Over 0.020 to 0.040, incl	160,000 - 195,000	1 - 10
Over 0.040 to 0.080, incl	155,000 - 190,000	1 - 10

TABLE II (SI)

Nominal Diameter Millimetres	Tensile Strength MPa	Elongation % in 50 mm
0.10 to 0.50, incl	1140 - 1415	2 - 10
Over 0.50 to 1.00, incl	1105 - 1345	1 - 10
Over 1.00 to 2.00, incl	1070 - 1310	1 - 10

3.3.2.2 Hardness: Shall be as follows, determined in accordance with ASTM E384:

Nominal Diameter		Knoop Hardness
Inch	Millimetres	
0.004 to 0.005, incl	0.10 to 0.12, incl	350 - 410 HK/50
Over 0.005 to 0.040, incl	Over 0.12 to 1.00, incl	350 - 410 HK/100
Over 0.040 to 0.080, incl	Over 1.00 to 2.00, incl	340 - 410 HK/100

3.4 Quality: Wire, 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 wire.

3.5 Tolerances: Shall be as follows:

3.5.1 Diameter: Wire shall be supplied in diameters of 0.004 to 0.080 in. (0.10 to 2.00 mm), incl, and to the diameter tolerances shown in Table III, 3.5.2, and 3.5.3.

3.5.1 (Cont'd.):

TABLE III

Nominal Diameter Inch	Tolerance, Inch plus and minus
0.004 to 0.010, incl	0.0001
Over 0.010 to 0.020, incl	0.0002
Over 0.020 to 0.030, incl	0.0003
Over 0.030 to 0.040, incl	0.0004
Over 0.040 to 0.080, incl	0.0005

TABLE III (SI)

Nominal Diameter Millimetres	Tolerance, Millimetre plus and minus
0.10 to 0.25, incl	0.003
Over 0.25 to 0.50, incl	0.005
Over 0.50 to 0.75, incl	0.008
Over 0.75 to 1.00, incl	0.010
Over 1.00 to 2.00, incl	0.012

3.5.2 Roundness: Wire shall not be out-of-round by more than one-half the total tolerance specified in 3.5.1 for the nominal diameter.

3.5.3 Length (Cut Lengths): $\pm 1/4$ in. (± 6 mm) or $\pm 1\%$, whichever is greater.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of wire shall supply all samples for vendor's tests and shall be responsible for performing all required tests. Results of such tests shall be reported to the purchaser as required by 4.4. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the wire conforms to the requirements of this specification.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Tests to determine conformance to requirements for composition (3.1), tensile properties (3.3.1.1) and hardness (3.3.1.2) as solution heat treated, and tolerances (3.5) are classified as acceptance tests and shall be performed on each heat or lot as applicable.

4.2.2 Periodic Tests: Tests to determine conformance to requirements for tensile properties (3.3.2.1) and hardness (3.3.2.2) after precipitation heat treatment are classified as periodic tests and shall be performed at a frequency selected by the vendor unless frequency of testing is specified by purchaser.