Designation: B 522 – 90 (Reapproved 1995)ε1

An American National Standard

Standard Specification for Gold-Silver-Platinum Electrical Contact Alloy [1]

This standard is issued under the fixed designation B 522; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

ε[1] NOTE—Section 8 was added editorially in June 1995.

1. Scope

1.1 This specification covers 69 % gold, 25 % silver, 6 % platinum alloy tubing, rod, wire, and sheet material for sliding electrical contacts.

1.2 The values stated in inch-pound units are to be regarded as the standard. The metric equivalents of inch-pound units may be approximate.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

1.4 It is the responsibility of the user to become familiar with all hazards including those identified in the appropriate Material Safety Data Sheet for this product/material as provided by the manufacturer.

2. Referenced Documents

2.1 *ASTM Standards:*

B 476 Specification for General Requirements for Wrought Precious Metal Electrical Contact Materials [2]

3. Manufacture

3.1 Raw materials shall be of such quality and purity that the finished product will have the properties and characteristics prescribed in this specification.

3.2 The material shall be finished by such operations (cold working, annealing, turning, grinding, pickling) as are required to produce the prescribed properties.

4. Chemical Composition

4.1 Material produced under the specification shall meet the requirements for chemical composition prescribed in Table 1.

TABLE 1 Chemical Requirements

Element	Composition, weight %	
	Class I	Class II
Gold	68.0–70.0	68.5–69.5
Silver	23.5–26.5	24.5–25.5
Platinum	5.0–7.0	5.5–6.5
Selected base metals (Pb, Sb, Bi, Sn, As, Cd, Ge, Ti, and Ga), max	...	0.01
Sulfur, max	...	0.01
Total platinum group metal impurities, max	0.15	0.15
Total base metal impurities, max	0.20	0.1

5. Mechanical and Electrical Requirements

5.1 The criterion for temper designation shall be Knoop hardness or tensile strength (but not both) as defined in the contract or order.

5.1.1 Knoop hardness indentations shall be made so that the long axis of the indenter is parallel to the rolling or drawing direction of the material.

5.2 Mechanical and electrical properties shall conform to the requirements of Table 2 and Table 3.

5.3 All test specimens shall be the supplied size when practical.

5.4 All tests are to be conducted at room temperature (65 to 80°F) (18 to 27°C).

6. General Requirements

6.1 Specification B 476 shall apply to all materials produced to this specification.

7. Inspection and Testing

7.1 Material furnished under this specification shall be inspected by the manufacturer as follows:

7.1.1 Visual inspection of 10×,

7.1.2 Temper test (hardness or tensile),

7.1.3 Dimensional tests, and

7.1.4 Spectrographic or chemical analysis when indicated by the purchase order.

7.2 The purchaser shall perform such tests as are required to verify the quality of material procured under this specification.

[1] This test method is under the jurisdiction of ASTM Committee B-2 on Nonferrous Metals and Alloys and is the direct responsibility of Subcommittee B2.05 on Precious Metals.

Current edition approved May 25, 1990. Published August 1990. Originally published as B 522 – 70. Last previous edition B 522 – 75.

[2] *Annual Book of ASTM Standards*, Vol 03.04.

TABLE 2 Mechanical Properties, Wire 0.010 to 0.020-in. (0.25 to 0.51-mm) Diameter Strip 0.003 to 0.020 in. (0.08 to 0.51 mm) thick

Properties	Temper	
	Annealed	Work-Hardened
Knoop hardness, 100-gf load (50 gf below 0.005 in. (0.13 mm) thick), HK	70 to 105	120 to 170
Ultimate tensile strength, psi, MPa	35 000 to 45 000 240 to 310	60 000 to 85 000 410 to 590
Elongation in 2 in. or 50 mm, %	25 min	1 min

TABLE 3 Mechanical Properties, Wire over 0.020 to 0.060-in. (0.51 to 1.52-mm) Diameter

Properties	Temper	
	Annealed	Work-Hardened
Knoop hardness, 100-gf load, HK	70 to 105	125 to 170
Ultimate tensile strength, psi, MPa	35 000 to 45 000 240 to 310	55 000 to 75 000 380 to 520
Elongation in 2 in. or 50 mm, %	25 min	1 min

8. Keywords

8.1 contact alloy; electrical contact alloy; gold-silver-platinum