Designation: B 541 – 95

An American National Standard

Standard Specification for Gold Electrical Contact Alloy [1]

This standard is issued under the fixed designation B 541; 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.

1. Scope

1.1 This specification covers a gold-rich, age-hardenable alloy in rod, wire, and strip form applicable to electrical contacts.

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

1.3 The following precautionary statement pertains to the test method portion only, Section 7, of this specification. *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.*

2. Referenced Documents

2.1 *ASTM Standards:*

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

E 8 Test Methods of Tension Testing of Metallic Materials [3]

E 384 Test Method for Microhardness of Materials [3]

3. Materials and 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, age hardening, etc.) as are required to produce the prescribed properties.

4. Chemical Composition

4.1 Material produced under this specification shall meet the requirements of Table 1 for chemical composition.

TABLE 1 Chemical Requirements

Element	Composition, Weight %	
	Nominal	Range
Gold	71.5	70.5–72.5
Platinum	8.5	8.0–9.0
Silver	4.5	4.0–5.0
Copper	14.5	13.5–15.5
Zinc	1.0	0.7–1.3
Total base metal impurities	...	0.2 max
Total platinum group metal impurities	...	0.2 max

5. Condition

5.1 This specification covers the conditions and forms listed in Table 2.

TABLE 2 Conditions and Forms

Process	Symbol	Form		
		Wire	Strip	Rod
Annealed	A	X	X	X
Stress relieved	S-R	X	X	
Age hardened from solution annealed condition	HT-A	X	X	X
Age hardened from solution annealed and cold-worked condition	HT-CW	X	X	X

6. Mechanical Properties

6.1 Mechanical properties shall conform to Table 3 and Table 4 as appropriate.

6.2 The criteria for temper designation shall be Knoop hardness or tensile properties (ultimate tensile strength and elongation) or both, as specified in the contract or order.

6.3 Mechanical properties of flattened wire, less than 0.012 in. (0.30 mm) thick shall conform to 6.1 (Table 5).

7. Test Methods

7.1 Test methods are in accordance with Specification B 476.

[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 Aug. 15, 1995. Published October 1995. Originally published as B 541 – 70. Last previous edition B 541 – 89.

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

[3] *Annual Book of ASTM Standards*, Vol 03.01.