Designation: B685 – 20

Standard Specification for Palladium-Copper Electrical Contact Material[1]

This standard is issued under the fixed designation B685; 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 U.S. Department of Defense.

1. Scope*

1.1 This specification covers a 60 % palladium-40 % copper alloy in the form of rod, wire, strip, and sheet material for electrical contacts.

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

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 become familiar with all hazards including those identified in the appropriate Material Safety Data Sheet (MSDS) for this product/material as provided by the manufacturer, to establish appropriate safety, health, and environmental practices, and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

B476 Specification for General Requirements for Wrought Precious Metal Electrical Contact Materials

B542 Terminology Relating to Electrical Contacts and Their Use

3. Terminology

3.1 For terms related to electrical contacts and their use, refer to Terminology B542.

4. General Requirements

4.1 The requirements of Specification B476 shall apply to all materials produced to this specification.

5. Ordering Information

5.1 Include the following information when placing orders for product under this specification:

5.1.1 *Dimensions*—Thickness, width, length, diameter, coil size, or other pertinent sizes;

5.1.2 Alloy composition;

5.1.3 Physical and mechanical properties;

5.1.4 Certification; and

5.1.5 Other features as agreed upon between the seller and the user.

6. Materials and Manufacture

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

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

7. Chemical Composition

7.1 Material produced under the specification shall meet the chemical composition requirements specified in Table 1.

7.2 By agreement between purchaser and manufacturer, analysis may be required and limits established for elements or compounds not specified in Table 1.

8. Mechanical Property Requirements

8.1 The contract or order may specify ultimate tensile strength, elongation, microhardness (Knoop or Vickers), hardness (Rockwell or Rockwell Superficial), or a combination of these mechanical properties as temper criterion. If the contract or order does not specify a temper criterion, then the criterion for temper designation will be ultimate tensile strength and elongation as listed in Table 2 and Table 3.

8.2 Mechanical properties shall conform to the listings of Table 3.

8.3 All test specimens shall be full size when practical.

[1] This specification is under the jurisdiction of ASTM Committee B02 on Nonferrous Metals and Alloys and is the direct responsibility of Subcommittee B02.05 on Precious Metals and Electrical Contact Materials.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

***A Summary of Changes section appears at the end of this standard**