



Standard Specification for Silver-Tungsten Carbide Electrical Contact Material ¹

This standard is issued under the fixed designation B 663; 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.

1. Scope

1.1 This specification covers electrical contact components made from silver-tungsten carbide by powder metallurgical procedures.

1.2 This specification covers compositions within the silver-tungsten carbide system normally specified by users of contacts.

1.3 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

2. Referenced Documents

2.1 ASTM Standards:

B 328 Test Method for Density, Oil Content, and Interconnected Porosity of Sintered Metal Structural Parts and Oil-Impregnated Bearings ²

3. Significance and Use

3.1 Proprietary methods for the manufacture of these materials vary significantly among suppliers, and these methods influence such properties as arc erosion, contact resistance, and the tendency to weld in service. Since the performance of contacts in a device depends on numerous factors outside the contact itself (opening speed, closing speed, contact pressure, contact bounce, environmental variations, assembly technique and variations, etc.), this specification cannot ensure performance control in the application. As part of the qualification on initial samples, it is recommended that the user functionally and electrically test the materials for all devices applicable to the material's use. This specification will provide a means for the contact manufacturer and contact user to reach agreement on the details of the material to be supplied for a specific use, and reasonable assurance that future lots will be similar in properties and microstructure to the initial test or sample contacts supplied.

4. Ordering Information

4.1 Orders for this material under this specification shall include the following information:

4.1.1 Dimensions (see Section 10),

4.1.2 Chemical composition (see tables in the appendix as a possible guideline),

4.1.3 Physical properties (see Section 6 and appendix as a guideline),

4.1.4 Certification (see Section 13), and

4.1.5 Other features as agreed upon between the manufacturer and purchaser.

5. Chemical Composition

5.1 The material shall conform to composition limits as agreed upon between the manufacturer and the purchaser.

5.2 The chemical analysis shall be made in accordance with the methods prescribed in the newest edition of Volume 01.02 of the *Annual Book of ASTM Standards* or by any other approved method agreed upon between the manufacturer and the purchaser.

6. Physical Properties

6.1 The manufacturer and the purchaser shall agree on qualification tests for determination of physical properties.

6.2 The tests shall be performed on production parts, wherever practical or applicable. (Small size contacts do not lend themselves to accurate conductivity measurement.)

6.3 The tests shall be determined after consideration of the function of the part.

6.4 The typical properties of three most common types of silver-tungsten contacts are given in the appendix.

7. Dimensions, Mass, and Permissible Variations

7.1 Permissible variations in dimensions shall be within the limits specified on drawings describing the contacts and accompanying the order, or shall be within the limits specified in the purchase order.

8. Finishing of Contacts

8.1 The material shall be finished by such operations as necessary to meet requirements agreed upon between the manufacturer and the purchaser of the contacts (brazing alloy

¹ This test method is under the jurisdiction of ASTM Committee B02 on Nonferrous Metals and Alloys and is the direct responsibility of Subcommittee B2.05 on Precious Metals.

Current edition approved April 15, 1994. Published June 1994. Originally published as B 663 – 79. Last previous edition B 663 – 89.

² *Annual Book of ASTM Standards*, Vol 02.05.