Designation: B663/B663M – 16

Standard Specification for Silver-Tungsten Carbide Electrical Contact Material[1]

This standard is issued under the fixed designation B663/B663M; 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 electrical contact components made from silver-tungsten carbide materials by powder metallurgical processes.

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

NOTE 1—Table X1.1 and Table X1.2 in Appendix X1 provide a list of typical compositions used for various applications.

1.3 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.4 *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 Safety Data Sheet (SDS) for this product/material as provided by the manufacturer, to establish appropriate safety and health practices, and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

B328 Test Method for Density, Oil Content, and Interconnected Porosity of Sintered Metal Structural Parts and Oil-Impregnated Bearings (Withdrawn 2009)[3]

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 Table X1.1 and Table X1.2 in Appendix X1 as a guideline),

4.1.3 Physical properties (see Section 6 and Appendix X1 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.

[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.

Current edition approved May 1, 2016. Published May 2016. Originally approved in 1979. Last previous edition approved in 2012 as B663 – 94 (2012). DOI: 10.1520/B0663/B0663M-16.

[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.

[3] The last approved version of this historical standard is referenced on www.astm.org.