Standard Specification for
60 % Palladium-40 % Silver Electrical Contact Material

This standard is issued under the fixed designation B731; 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 60 % palladium-40 % silver 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 and health practices, and determine the applicability of regulatory limitations prior to use.

2. Referenced Documents

2.1 ASTM Standards:

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

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, heat treating, annealing, turning, grinding, or pickling) as are required to produce the prescribed properties.

4. Chemical Requirements

4.1 Material produced under this specification shall meet the requirements for chemical composition prescribed in Table 1, in accordance with the practices prescribed in Specification B476

4.2 Uniformity of composition shall be assured by the use of good commercial preparation practices.

5. Mechanical Requirements

5.1 The contract or order may specify ultimate tensile strength, elongation, microhardness (Knoop or Vickers), or a combination of these mechanical properties (as listed in Table 2 or Table 3) 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.

5.2 All test specimens shall be full thickness or diameter when practical.

5.3 All tests are to be conducted at room temperature, about 68°F (20°C).

6. Inspection and Testing

6.1 Material furnished under this specification shall be inspected by the manufacturer in accordance with Specification B476.

7. Keywords

7.1 clad materials; contact material; palladium alloy; precious metal; silver alloy
APPENDIX

X1. TYPICAL PROPERTY VALUES

X1.1 The following is a list of typical property values that are useful for engineering calculations in electrical contact design and application.

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical conductivity, % IACS</td>
<td>4</td>
</tr>
<tr>
<td>Resistivity, Ω · cmil/ft</td>
<td>258</td>
</tr>
<tr>
<td>Microhm·cm</td>
<td>43</td>
</tr>
<tr>
<td>Solidus temperature, °C</td>
<td>1290</td>
</tr>
<tr>
<td>Liquidus temperature, °C</td>
<td>1340</td>
</tr>
<tr>
<td>Density, g/cm³</td>
<td>11.35</td>
</tr>
<tr>
<td>tr oz/in.³</td>
<td>5.98</td>
</tr>
</tbody>
</table>

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