Material Data Sheet
for: Ceradelta®

This metal-ceramic alloy corresponds to the standards ISO 22674/Type 4 and ISO 9693.

1. Composition
Pt group-metals 57.50%
Pd 57.45%
Ag 32.00%
In 6.00%
Sn 2.00%
Ga 1.50%
Zn 1.00%
Ru 0.05%

2. Physical Properties
- Melting range: 1135-1275°C
- Density: 11.3 g/cm³
- Young's Modulus: 110 GPa
- Linear Coeff. of thermal expansion (25-500°C): 14.6 x 10⁻⁶ K⁻¹
- Linear Coeff. of thermal expansion (25-600°C): 14.9 x 10⁻⁶ K⁻¹
- Colour: white

3. Mechanical Properties

<table>
<thead>
<tr>
<th>Condition</th>
<th>as cast</th>
<th>hardened</th>
<th>after firing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardness HV5</td>
<td>255</td>
<td>305</td>
<td>250</td>
</tr>
<tr>
<td>Tensile strength (Rm)</td>
<td>965 MPa</td>
<td>780 MPa</td>
<td></td>
</tr>
<tr>
<td>0.2% Proof stress (Rp 0.2%)</td>
<td>490 MPa</td>
<td>565 MPa</td>
<td></td>
</tr>
<tr>
<td>Elongation</td>
<td>19 %</td>
<td>13 %</td>
<td></td>
</tr>
<tr>
<td>Schwickerath crack initiation test</td>
<td></td>
<td></td>
<td>37 MPa</td>
</tr>
</tbody>
</table>

4. Biological tests

Cytotoxicity test according to ISO 10993-5:
The cytotoxic effect of the alloy was tested with the extract test.
(Project, 100559C, 24.02.2010, BSL Bioservice, DE-82152 Planegg, FRG)

Sensitization test according to ISO 10993-10:
The sensitization test has not been realised.

Mutagenicity test (AMES) according to ISO 10993-3:
The AMES test has not been realised.

Results:
The alloy did not show any cytotoxic potential.
5. **Certification**
This metal-ceramic alloy corresponds to the standards ISO 22674/Type 4 and ISO 9693.

Corrosion testing according to standard ISO 10271 showed that a total of 0.58μg/cm²×7d was released (limit: 200μg/cm²×7d).

Manufacture, packing and delivery are constantly monitored according to the quality management system standards according to ISO 9001 and ISO 13485.

**Cendres+Métaux SA**

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