

Material Data Sheet

for: V-Delta® Special

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

1. Composition

Au + Pt group-metals	78.10%
Au	52.50%
Pd	25.54%
Ag	17.00%
Sn	3.50%
In	1.00%
Zn	0.20%
Cu	0.20%
Ru	0.04%
Ir	0.02%

2. Physical Properties

Melting range	1155-1265°C
Density	14.4 g/cm ³
Young's Modulus	115 GPa
Linear Coeff. of thermal expansion (25-500°C)	14.7 x10 ⁻⁶ K ⁻¹
Linear Coeff. of thermal expansion (25-600°C)	14.9 x10 ⁻⁶ K ⁻¹
Colour	white

3. Mechanical Properties

	as cast	hardened	after firing
Condition		600°C/15/air	ISO 22674: 950°C/10/air & Geller Creation CC
Hardness HV5	205	235	250
Tensile strength (Rm)		755 MPa	705 MPa
0.2% Proof stress (Rp 0.2%)		555 MPa	510 MPa
Elongation		11 %.	7 %.
Schwickerath crack initiation test			40 MPa

4. Biological tests

Cytotoxicity test according to ISO 10993-5:

The cytotoxic effect of the alloy was tested with the extract test.
(Project, 1005590, 04.03.2010, BSL Bioservice, DE-82152 Planegg, FRG)

Sensitization test according to ISO 10993-10:

The allergic sensitization of the alloy was tested with the maximization test.
(Project 100759E, 23.04.2010, BSL Bioservice, DE-82152 Planegg, FRG)

Mutagenicity test (AMES) according to ISO 10993-3:

The mutagenicity was tested with the «Reverse Mutation Assay» using bacteria Salmonella typhimurium.
(Project 101039, 15.04.2010, BSL Bioservice, DE-82152 Planegg, FRG)

Results:

The alloy showed neither a cytotoxic nor a mutagenic potential nor did it cause any allergic sensitization.

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 $0.11\mu\text{g}/\text{cm}^2 \times 7\text{d}$ was released (limit: $200\mu\text{g}/\text{cm}^2 \times 7\text{d}$).

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

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