d.SIGN® 59

Palladium-silver ceramic alloy

Its mechanical and physical properties are coordinated with the d.SIGN fluorapatite-leucite glass-ceramic material.

Pd	Ag	Pt	In	Sn	Zn	Re	Ru	Li
59.2	27.9	< 1.0	2.7	8.2	1.3	< 1.0	< 1.0	< 1.0

Advantages

- **Excellent high temperature strength**
- **Economical, low density**
- **Light oxide**
- **Easy processing and polishing**
- **Certified biocompatibility**

Indication

Inlays, onlays, ¾ crowns, PFM Crowns, crowns, telescopic and conus crowns, implant superstructures, posts, long and short span bridges, partial dentures

Technical data

Color	white
Type	4
Density (g/cm³)	10,7
Melting range (°C)	1230 – 1310
Casting temperature (°C)	1365 – 1425
Oxide firing °C / minutes / vacuum	1010 / 10 / no vacuum
CTE 25 – 500 °C	14,5
CTE 20 – 600 °C	14,8
Elongation (%)	14,0
Modulus of elasticity (MPa/Nmm²)	139,000
Vickers hardness	230
Proof stress (0.2 % MPa/Nmm²)	490

ivoclar vivadent®
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Certificate

Test material: d.SIGN alloys

Composition in % weight	Au	Pt	Pd	Ag	Ga	In	Re	Ru	Sn	Zn	Other
d.SIGN® 98	85.9	12.1	–	–	–	<1.0	–	–	–	1.5	Fe<1.0, Mn<1.0, Ta<1.0 Ir<1.0
d.SIGN® 96	73.8	8.5	5.4	9.0	–	1.9	<1.0	<1.0	–	–	Fe<1.0, Li<1.0, Mn<1.0 Nb<1.0, Ta<1.0
d.SIGN® 91	60.0	–	30.6	–	1.0	8.4	<1.0	<1.0	–	–	–
d.SIGN® 84	9.0	–	75.2	3.0	6.0	6.5	<1.0	<1.0	–	–	Li<1.0
d.SIGN® 67	4.0	–	62.7	20.0	1.7	1.5	<1.0	<1.0	10.0	–	Li<1.0, Ir<1.0
d.SIGN® 59	–	<1.0	59.2	27.9	–	2.7	<1.0	<1.0	8.2	1.3	Li<1.0
d.SIGN® 53	–	<1.0	53.8	34.9	–	1.7	<1.0	<1.0	7.7	1.2	Li<1.0

Composition in % weight	Ni	Co	Cr	Mo	Al	Si	Fe	Ga	Nb	B	Other
d.SIGN® 30	–	60.2	30.1	<1.0	<1.0	<1.0	<1.0	3.9	3.2	<1.0	Li<1.0

Manufacturer

Ivoclar Vivadent Inc., 175 Pineview Drive, Amherst, NY 14228, USA

Corrosion resistance

The test was conducted according to the international regulations of ISO 1562 and ISO 6871–1: static immersion test through analytical determination of the metal ion release after a 7-day immersion.

Test results: The metal ion release after 7 days of immersion was not significant.

Testing facility: Louisiana State University, Dr. Sakar

Cytotoxicity

The Agar Diffusion test determines the biological reactivity of cell culture on test material.

Test results: The test material is considered non-cytotoxic and meets the requirements of the Agar Diffusion test according to ISO 10993–5.

Mutagenicity

An Ames assay was conducted to determine any possible cancer potential.

Test results: No mutagenicity potential was found to exist in these alloys.

Kligman Maximization

This test evaluated the allergenic potential and/or sensitizing capacity of these alloys.

Test results: Based on the standards set by the study protocol, these alloys exhibited no reaction to the challenge (0 % sensitization).

Sensitivity of oral mucosa

Test to determine the contact sensitivity of the alloys at the buccal oral mucosa.

Test results: No reactions were noted in conjunction with these alloys.

Testing facility: Toxikon Corporation, 15 Wiggins Avenue, Bedford, Massachusetts

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