

# d.SIGN<sup>®</sup> 84



## Palladium-based ceramic alloy

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

|                  |                   |                  |                  |                  |                   |                   |                   |
|------------------|-------------------|------------------|------------------|------------------|-------------------|-------------------|-------------------|
| <b>Au</b><br>9,0 | <b>Pd</b><br>75,2 | <b>Ag</b><br>3,0 | <b>In</b><br>6,5 | <b>Ga</b><br>6,0 | <b>Li</b><br><1,0 | <b>Ru</b><br><1,0 | <b>Re</b><br><1,0 |
|------------------|-------------------|------------------|------------------|------------------|-------------------|-------------------|-------------------|

### Advantages

- Outstanding high temperature strength
- Excellent melting and flow properties
- Easy processing and polishing
- Wide range of indications
- Certified biocompatibility

### Indication

Inlays, onlays,  $\frac{3}{4}$  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/cm <sup>3</sup> )       | 11,3              |
| Melting range (°C)                 | 1140 – 1335       |
| Casting temperature (°C)           | 1390 – 1450       |
| CTE 25 – 500°C                     | 13,8              |
| CTE 20 – 600°C                     | 14,0              |
| Elongation (%)                     | 29,0              |
| Modulus of elasticity (MPa)        | 117,000           |
| Oxide firing °C / minutes / vacuum | 1010 / 5 / vacuum |
| Vickers hardness                   | 295               |
| Proof stress (0.2 % ofset) (MPa)   | 495               |



# Certificate

## Test material: d.SIGN alloys

| Composition in % weight | Au   | Pt   | Pd   | Ag   | Ga  | In   | Re   | Ru   | Sn   | Zn  | Other                                    |
|-------------------------|------|------|------|------|-----|------|------|------|------|-----|--|
| <b>d.SIGN® 98</b>       | 85.9 | 12.1 | –    | –    | –   | <1.0 | –    | –    | –    | 1.5 | Fe<1.0, Mn<1.0, Ta<1.0<br>Ir<1.0         |
| <b>d.SIGN® 96</b>       | 73.8 | 8.5  | 5.4  | 9.0  | –   | 1.9  | <1.0 | <1.0 | –    | –   | Fe<1.0, Li<1.0, Mn<1.0<br>Nb<1.0, Ta<1.0 |
| <b>d.SIGN® 91</b>       | 60.0 | –    | 30.6 | –    | 1.0 | 8.4  | <1.0 | <1.0 | –    | –   | –  |
| <b>d.SIGN® 84</b>       | 9.0  | –    | 75.2 | 3.0  | 6.0 | 6.5  | <1.0 | <1.0 | –    | –   | Li<1.0                                   |
| <b>d.SIGN® 67</b>       | 4.0  | –    | 62.7 | 20.0 | 1.7 | 1.5  | <1.0 | <1.0 | 10.0 | –   | Li<1.0, Ir<1.0                           |
| <b>d.SIGN® 59</b>       | –    | <1.0 | 59.2 | 27.9 | –   | 2.7  | <1.0 | <1.0 | 8.2  | 1.3 | Li<1.0                                   |
| <b>d.SIGN® 53</b>       | –    | <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  |
|-------------------------|----|------|------|------|------|------|------|-----|-----|------|--------|
| <b>d.SIGN® 30</b>       | –  | 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

Amherst, May 2010

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