**Pontor® 2**

**Instructions for use**

**Medium-Gold dental casting Alloy, extra hard, Type 4, yellow**

### Indication

Conventional crowns and bridges, C&B technique, inlays, onlays, milling work, cast partial denture-frames.

- a) Inlays, onlays, crowns ¾
- b) Single crowns
- c) Short-span bridgework
- d) Long-span bridge-work
- e) Milled work
- f) Clasps, lingual bars, palatinal plates

### Physical properties

**Composition in weight %**

<p>| | | | |</p>
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<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Au + Pt group metals</td>
<td>66.50</td>
<td>Au</td>
<td>63.00</td>
</tr>
<tr>
<td>Au</td>
<td>63.00</td>
<td>Pt</td>
<td>0.50</td>
</tr>
<tr>
<td>Pt</td>
<td>0.50</td>
<td>Pd</td>
<td>3.00</td>
</tr>
<tr>
<td>Ru</td>
<td>&lt; 1.00</td>
<td>Ag</td>
<td>20.00</td>
</tr>
<tr>
<td>Ru</td>
<td>&lt; 1.00</td>
<td>Cu</td>
<td>12.00</td>
</tr>
<tr>
<td>Re</td>
<td>&lt; 1.00</td>
<td>Zn</td>
<td>1.50</td>
</tr>
</tbody>
</table>

**Density g/cm³**

14.2

**Melting range °C**

870 – 915

**Young's Modulus GPa**

115

### Mechanical properties

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<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
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</thead>
<tbody>
<tr>
<td>Hardness HV5 *</td>
<td>150</td>
<td>255</td>
<td>245</td>
</tr>
<tr>
<td>0.2 % Proof stress, Rp 0.2 % MPa *</td>
<td>350</td>
<td>730</td>
<td>700</td>
</tr>
<tr>
<td>Elongation A5 % *</td>
<td>39</td>
<td>9</td>
<td>11</td>
</tr>
</tbody>
</table>

### State

1. soft
2. as cast
3. hardened

### Solders & Melting range

<p>| | |</p>
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<tr>
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<tbody>
<tr>
<td>S.G 810</td>
<td>750 – 810 °C</td>
</tr>
<tr>
<td>S.G 750</td>
<td>695 – 750 °C</td>
</tr>
</tbody>
</table>

* The values indicated result from measurements obtained under exactly defined conditions. Individual deviations of ± 10 % are possible and to be considered as normal.

### Preventive measure (contraindication) and important notes

These instructions for use must be precisely followed. It has been suggested in specialized literature that some of its components can, in extremely rare cases, have allergy effects. The choice of the material is the decision of the practitioner based on his knowledge of the sensitivity of the patient.

### Corrosion resistance and biocompatibility

Pontor® 2 has been submitted to the following tests:

**Corrosion resistance** according to ISO 22674

**Cytotoxicity** test according to ISO 10993-5

**Sensitization** test according to ISO 10993-10

**Mutagenicity** test (AMES) according to 10993-3

The alloy is considered to be highly corrosion resistant and showed neither a cytotoxic nor a mutagenic potential nor did it cause any allergic sensitization.

### Launch year 1961

Pontor® 2 corresponds to the standards EN ISO 22674.

Pontor® 2 has been manufactured according to the quality standards ISO 9001 / ISO 13485.

Rx only

The products carry the CE sign.
See packaging for details.
**Waxing up**
The ultimate thickness of the cast metal coping should not be less than 0.3 mm. Therefore: Consideration must be given to this fact at the wax-up stage, long span frameworks require structural reinforcement to ensure stability and anticipated solder joints should be of adequate surface area to provide sufficient stability to the frame.

**Spruing**
Wax sprues of no less than \( \Omega \ 3.5 \text{ mm} \) are required. Direct \( \Omega \ 3.5 \text{ mm} \) and cross bar \( \Omega \ 5 \text{ mm} \) spruing produce excellent results. Feeder sprues to heavy pontics should be of at least \( \Omega \ 4 \text{ mm} \). Air vents \( \Omega \ 1 \text{ mm} \) may be used to advantage. Wax patterns should be set outside the thermal centre, i.e. near the casting ring wall and about 5 mm from the end. For individual copings and small bridges (up to three units), use of the circular sprue provides ideal positioning of the wax patterns and ensures controlled solidification of the frameworks.

**Investing**
When using steel casting rings always use refractory liner in order to allow free expansion of the investment. All regular or phosphate-bonded (e.g. Univest\textsuperscript{®} Plus or Univest\textsuperscript{®} Rapid) investments for precious metal alloys may be used. Follow the procedures recommended by the manufacturer.

**Preheating**
Observe manufacturer’s recommendations with regard to setting times, temperature levels etc. On reaching the end temperature a soaking period of 20 to 45 min. is advisable depending on the size of the cylinder.

Preheating temperature: 630°C – 680°C

**Crucibles**
Glaze the crucible before first use with a recommended flux (e.g. Borax/Boric acid). The following crucibles can be used:

- Graphite crucible: Casting temperature 1065°C
- Ceramic crucible: Casting temperature 1115°C
- Vitreous carbon crucible: Casting temperature 1095°C

**Re-melting**
When melting down thoroughly cleaned casting buttons, add at least \( \frac{1}{3} \) of new alloy. The used copings have to be clean, free of investment and flux residue.

**Melting**
It is important, when using a torch for melting (for inst. Meteor type «O») that the recommended propane (approx. 0.5 bar or 7.25 psi) / oxygen (approx. 1.0 bar or 14.5 psi) mixture and pressure is observed. Before melting add a pinch of flux to the alloy. Once the alloy has completely melted, continue heating for a further approx. 5 sec. before releasing the casting machine arm.
When melting by resistance heating, the power must be maintained for an additional 20–40 sec. before casting. Always ensure that both furnace and crucible have reached this temperature before adding the alloy.

**Cooling**
Bench cool the casting ring.

**Devesting/Cleaning**
Clean by blasting with glass beads or pure aluminium oxide (Al\textsubscript{2}O\textsubscript{3}) particle size (50μm to 125μm) at 1.5 to 2.0 bar (21.7 to 29 psi) pressure.

**Pickling**
Following casting or soldering, the frame at room temperature may be pickled in hot Desoxid for at least 2 min. – Desoxid I (75%).

**Finishing**
Use abrasive grinding points of your choice.

**Preparation for resin bonding**
Blast with aluminium oxid (Al\textsubscript{2}O\textsubscript{3}), particles size approx. 110μm and steam clean. Follow manufacturers recommendations when bonding resin veneers.

**Soldering/Laser**
We recommend using a propane/oxygen torch (Meteor Type «L») for soldering and a flux like Fluxor. During soldering wear dark goggles for protection. The design of the soldering block is a compromise between minimising its thermal mass whilst retaining sufficient strength to avoid its fracturing during soldering. Leave a parallel gap of 0.1 – 0.2 mm between surfaces to be soldered and sufficient area to ensure adequate strength of the joint.

**Laser welding wire:** LW No. 6

**Heat treatments**
Annealed 700°C/10 min. – quench in water
Self-hardened by slow (bench-) cooling of the casting ring
Hardened (only after annealing) 350°C/15 min. – let bench-cool

**Polishing**
Thorough rubberwheeling ensures easy prepolishing. For best polishing results, soft brushes, felts and cotton wheels are employed using Legabrill Diamond diamond-paste. «Whiting chalk» (chalk powder) mixed with water on soft brushes or cotton wheels may be used for final high polish.