Esteticor® Blancor
Instructions for use
Pd-based dental casting alloy for metal-ceramic work according to
ISO 22674 and ISO 9693, Type 4.

Indications
– The alloy is suitable for accurately fitting work of up to 7 units on natural abutment teeth.
– Excellent melting and casting properties.
– High corrosion resistance.
– Compatible with ceramic compounds having a medium CTE.

Physical properties
Composition in weight %

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Au + Pt group metals</td>
<td>58.49</td>
</tr>
<tr>
<td>Pd</td>
<td>57.29</td>
</tr>
<tr>
<td>Ag</td>
<td>29.00</td>
</tr>
<tr>
<td>In</td>
<td>11.00</td>
</tr>
<tr>
<td>Au</td>
<td>1.00</td>
</tr>
<tr>
<td>Sn</td>
<td>1.00</td>
</tr>
<tr>
<td>Ga</td>
<td>0.50</td>
</tr>
<tr>
<td>Ru</td>
<td>0.20</td>
</tr>
<tr>
<td>B</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Colour: white
Density g/cm³: 11.3
Melting range °C: 1205 – 1310
CTE (25 – 500 °C) 10⁻⁶ K⁻¹: 14.3
CTE (25 – 600 °C) 10⁻⁶ K⁻¹: 14.6
Young’s Modulus GPa *: 140

Mechanical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardness HV5 *</td>
<td>1 300</td>
</tr>
<tr>
<td></td>
<td>2 260</td>
</tr>
<tr>
<td>0.2 % Proof stress, Rp 0.2 % MPa *</td>
<td>1 720</td>
</tr>
<tr>
<td></td>
<td>2 605</td>
</tr>
<tr>
<td>Yield strength (Rm) MPa *</td>
<td>1 955</td>
</tr>
<tr>
<td></td>
<td>2 845</td>
</tr>
<tr>
<td>Elongation A5 % *</td>
<td>1 6</td>
</tr>
<tr>
<td></td>
<td>2 13</td>
</tr>
</tbody>
</table>

State

<table>
<thead>
<tr>
<th>State</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>as cast</td>
</tr>
<tr>
<td>2</td>
<td>after firing</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.

Traceability of lot numbers
If different lots of an alloy are being used for the realisation of a work, all lot numbers concerned must be noted in order to assure traceability.

Rx only

The products carry the CE sign. See packaging for details.
3. Investing

3.1 Investments

The following investments are recommended for this type of alloy:

- CM Ceramicor® (containing graphite) recommended for the conventional preheating technique and particularly for implant work.
- CM-20 (without graphite and for the rapid preheating technique).

Not recommended for implant bridges with plastic parts capable of being burnt out or for cast-on high-fusing alloys in combination with the rapid preheating technique.

3.2 Mixing ratio for the investment

Further information can be obtained in the instructions for use of the investment.

4. Preheating of the casting cylinders

Final temperature: 850 °C

Further information on the preheating technique can be obtained in the instructions for use of the CM Ceramicor® or CM-20 investment.

4.1 Holding times at final temperature (investment CM Ceramicor®)

- 30 – 50 min. at 850 °C
- 60 min. at 850 °C for large cylinders

4.2 Holding times at final temperature with rapid preheating technique

- size 3 cylinder  30 – 45 min. at 850 °C
- size 6 cylinder  40 – 60 min. at 850 °C
- size 9 cylinder  not recommended

For other brands of investment, follow the preheating instructions of the relevant manufacturer.

5. Re-use alloy

Only use perfectly cleaned (by sandblasting with aluminium oxide) buttons and sprues and add at least 1/3 of new alloy.

6. Melting and casting

Recommended casting temperatures and systems (not binding)

- Propane-oxygen flame
- High frequency induction in atmosphere or in protective gas atmosphere
- Vacuum-pressure casting with electric resistance furnace (ca. 150 °C above TL)

7. Melting

If the alloy is molten in atmosphere in a ceramic crucible, the addition of a minimal amount of melting powder (borax) may suppress the oxidation of the alloy surface and thus allow for a better determination of the correct starting of the casting procedure.

When using a propane-oxygen flame, the addition of melting powder is not necessary, if the ceramic crucible has been coated with a borax layer prior to its first use.
8. Continued heating time in seconds
As soon as the alloy reaches at the liquid state, the following continued heating times apply prior to start the casting procedure:

- Propane-oxygen flame 5–10 s
- High frequency induction in atmosphere or in protective gas atmosphere 5–10 s
- Vacuum-pressure casting with electric resistance furnace 40–60 s

9. Cooling and devesting of cast objects
Do not quench the casting cylinder after casting, but bench cool to room temperature. Never use a hammer, but remove the investment by carefully using plaster-tweezers or a pneumatic hand-chisel. An ultrasonic bath, water jet or sandblasting with glass beads should be used to remove investment from the functional insides of the cast-on gold caps or the cast plastic parts.

10. Conditioning of the framework for veneering with ceramic
Trim the frameworks with tungsten cutters, then fine trim the surfaces to be veneered using ceramically bonded grinding stones. Always maintain the same grinding direction in order to avoid overlaps on the surface. Don’t use diamond coated grinders!

11. Sandblasting
Sandblast the trimmed framework with non-recycled aluminium oxide (Al₂O₃). Then clean thoroughly with a steam jet.

- Grain size 50 μm
- Pressure 2–4 bar

12. Cleaning
Steam-jet.

13. Oxide firing
960 °C / 5 min. / without vacuum

14. Oxide removal
The oxide resulting from the oxide firing can be blasted off with aluminium oxide, then clean thoroughly with a steam jet.

- Grain size 50 μm
- Pressure 2–4 bar

The removal of residues of flux after firing can be done by pickling in a warm and clean bath of 10 Vol.-% sulphuric acid (H₂SO₄) or in a pickling agent.

Note: When using other pickling agents follow the instructions for use of the respective manufacturer. The flux can also be sandblasted off with a fine-grain abrasive.

15. Veneering with ceramic
Compatible, tested ceramics (ISO 9693): IPS d’SIGN, Noritake Ex-3, Willi Geller Creation CC

16. Gilding of frameworks
Gilding is carried out at the users own risk.

17. Joining techniques
17.1 Soldering before firing to connect several individually cast bridge segments
CM-solder S.W 1100, for the joining of bridgework. If possible, prepare the soldering-areas already at the modelling stage and ensure, that the width of the soldering gap does not exceed 0.2 mm. In case of unplanned soldering before firing, separate the framework by cutting through an intermediary element in order to obtain a large and stable soldering area.

17.2 Repair soldering prior to firing in order to seal holes
CM-solder S.W 1100.

17.3 Soldering after firing
First brazing material CM-solder S.G 750, for furnace soldering after firing. Prepare the soldering areas so that the solder strip has contact with both metallic parts. The width of the soldering gap must not exceed 0.2 mm. After the hardening of the soldering block and the removal of the fixations of sticky wax or modelling resin, the now accessible soldering gap must be filled with soldering flux (Flux C of Cendres+Métaux), then placed in a preheating furnace at 500 °C and held at this temperature for 10–20 minutes, depending on the size of the bridgework.

17.4 Laser welding
Esteticor® Blancor can be laser-welded with the laser welding wire LW N° 3, Ø 0.4 mm, as filler metal. The following laser parameters should be set: focus 0.9 mm / voltage 260 V / pulse duration 8.0 ms / frequency 2.5 Hz. The ideal welding-parameters (basic values for connecting and filling of an x-shaped joint) can be found in the instructions for use of the laser welding wire. Further information on laser welding can be obtained from the Cendres+Métaux website www.cmsa.ch/dental (Interesting Facts / Laser welding).

18. Polishing
After the last firing free metal surfaces must be polished to a high shine in order to completely remove the oxide layer.

19. Further information
This alloy is resistant to tarnishing. We reserve the right to improve the product or adapt these instructions for use.

20. Storage conditions
Store in a dry place.