High-gold Veneering Alloy, Type 4

**Item no.**
7305 3 001

**Delivery form**
Casting plates

**Indication**
inlays, crown technique
longer span bridges,
milling-, conus- and telescope technique
model casting

**Alloy: Au 77 Pt 10 Pd 9**

<table>
<thead>
<tr>
<th>Type</th>
<th>Colour</th>
<th>Density g/cm³</th>
<th>Composition content in % (m/m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>white</td>
<td>17.6</td>
<td>Au + Pt metals</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Au</td>
</tr>
<tr>
<td>4</td>
<td>white</td>
<td>95.9</td>
<td>95.9</td>
</tr>
</tbody>
</table>

The alloy is free of Ni, Co, Cr, Be, Cd.

**Technical data**

<table>
<thead>
<tr>
<th>Vickers hardness HV 5/30</th>
<th>Proof stress MPa</th>
<th>Elongation %</th>
<th>Modulus of elasticity MPa</th>
<th>Average linear CTE μm/m·K</th>
<th>Melting range °C</th>
<th>Preheating temp. °C</th>
<th>Casting temp. °C</th>
<th>Annealing °C min</th>
<th>Hardening °C min</th>
</tr>
</thead>
<tbody>
<tr>
<td>g</td>
<td>n</td>
<td>a</td>
<td>n</td>
<td>a</td>
<td>n</td>
<td>a</td>
<td>25-500 °C</td>
<td>25-600 °C</td>
<td>1150-1265</td>
</tr>
<tr>
<td>200</td>
<td>210</td>
<td>235</td>
<td>445</td>
<td>510</td>
<td>12</td>
<td>11</td>
<td>100.000</td>
<td>14.2</td>
<td>14.4</td>
</tr>
</tbody>
</table>

g = after casting, n = after firing, a = hardened

**Solders**

<table>
<thead>
<tr>
<th>Application</th>
<th>Solder</th>
<th>Working temp. °C</th>
<th>Composition content in % (m/m) (x=0.1%)</th>
<th>Colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary solder/ before firing</td>
<td>PLATINOR® AM-Lot</td>
<td>1070</td>
<td>Au</td>
<td>Pt</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>80.0</td>
<td>-</td>
</tr>
<tr>
<td>Secondary solder/ after firing</td>
<td>PLATINOR® Lot 1</td>
<td>810</td>
<td>70.0</td>
<td>0.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>70.0</td>
<td>0.9</td>
</tr>
<tr>
<td>Secondary solder/ after firing</td>
<td>PLATINOR® Lot 2</td>
<td>760</td>
<td>70.0</td>
<td>0.9</td>
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<td></td>
<td></td>
<td>70.0</td>
<td>0.9</td>
</tr>
</tbody>
</table>

**Instruction for use**

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Instruction for use BEDRA DENT® AL-5

1. Modelling
   Create an anatomically reduced wax model, considering the planned veneering. Sharp edges are to be avoided, soft level crossings are to be striven at.
   Due to stability reasons, care has to be taken that bridge frames to achieve solid modulation of the connections and in the case of larger spans to create palatinal and interdental strength of the connecting parts. Wall thickness of the modelled (waxed) single crowns at least 0.4 (0.3) mm, bridge pillar crowns at least 0.5 (0.4) mm.

2. Spruing System
   Single crown:
   Direct spruing with casting channel at least Ø 3.5 mm
   From 2 single crowns on and bridges:
   Running bars or rings with object spruing 3.0 x Ø 3.0 mm
   running bars/rings Ø 4.0 – Ø 5.0 mm
   casting channels Ø 3.5 – Ø 4.0 mm

3. Position of the Wax Model in the Investment Mould
   Distance from the mould wall:
   The units should have at least 5-10 mm distance from the mould wall.
   Distance from the mould bottom:
   Direct spruing between wax units and mould bottom a distance of 10 – 15 mm has to be kept. Investment of running bars or rings: the middle of the running bar or ring should cover the middle of the mould.

4. Investment
   Cover investment mould with investment ring spacer.
   Investment mould X 1 / X 3: 1 layer
   Investment mould X 6 / X 9: 1 – 2 layers
   Phosphate bonded investment material is required.
   The investment material manufacturer’s instructions for use have to be complied with strictly.

5. Burnout / Preheating
   Burnout immediately after drying time of the investment material at 290-300° C according to the mould size for respectively 30/40/50/60 min.
   Preheating time is according to the mould size for respectively 20/30/40/50 min. at 850°C. If handling a greater number of mould, the preheating time has to be extended respectively. The preheating time is specific to the alloy and should be observed.

6. Crucible Material
   Ceramic and graphite crucibles can be used.

7. Casting Units
   All common melting and casting units can be used.

8. Casting
   Further heating times after reaching the liquidus temperature according to the quantity of material used and unit output.
   Resistance heating 60 – 120 sec.
   High frequency 5 – 10 sec.
   Propane / Oxygen torch 5 – 10 sec.
   In the case of torch melting, pay attention to the correct setting of the torch (danger of carbon damage) and melt with the reduced zone.

9. Casting Residues
   In order to preserve the alloy characteristics and the casting quality, no more than 35 % cleaned casting residues should be used.
   The weight used is calculated from: wax weight x alloy density (see Heimerle + Meule calculation sheet).

10. Cooling and Divestment
    Let mould cool down to hand temperature and carefully divest.
    This avoids deviations in fitting, change of alloy characteristics, and not fissures. Sandblast with high grade corundum (approx. 100 µm) or with a market pickling agent to remove the investment material.

11. Finishing and Cleaning
    Finish frame with tungsten carbide burs and ceramic bonded milling tools with only little pressure; then sandblast surface with aluminium oxide (approx. 100 µm) at low pressure (max.2 bar).
    Then steamclean the frame and degrease it with a suitable pickling agent (e.g. AMISUL). During grinding sufficient protection against dust inhalation has to be taken.

12. Oxidation
    5 min at 930° C without vacuum.
    If the oxide layer shows spots, grind the frame again and repeat the work steps (see point 11). Thereafter we recommend pickling the object with AMUSUL (12 -15 min, at 70° C)

13. Firing of the Ceramic
    The alloy is suited for conventional ceramics, max. firing temperature 950° C, like INSPIRATION.
    Firing cycles should be performed in compliance with the manufacturer’s recommendations.

14. Firing Process
    After each firing cycle, the object is to be cooled down according to the CTE of 14.5µm/m K at a middle speed. Ensure secure support of the frame during firing by pins or casted loops; otherwise individual firing supports (fireproof stamp mass) must be used.

15. Soldering
    Soldering areas have to be sufficiently big and should already be considered during modelling.
    Soldering areas have to be metallically blank.
    The solder gap should be 0.05 – 0.2 mm.
    Recommended soldering
    Solder before firing: PLATINOR® AM-Lot 1070 °C
    Solders after firing: PLATINOR® Lot 1 810 °C
    PLATINOR® Lot 2 760 °C
    Slowly cool down the soldering object.

16. Hardening
    After casting/firing BEDRA DENT AL-5 shows a sufficiently high density for its area of indication. If required, the maximum hardening can be reached through final tempering at 500° C / 5 min.

17. Pickling and Polishing
    Remove flux residues or oxides by pickling in AMISUL at about 80 °C or by sandblasting. Rubber-wheel the frame; final polishing can be accomplished with pastes, brushes, buffing wheels, and felt.