Heimerle + Meule
Heimerle + Meule Group

High-gold Veneering Alloy, Type 4
free of palladium and silver

BEDRA DENT® AL-3 BIO

acc. to DIN EN ISO 9693
acc. to DIN EN ISO 22674

Item no.	7301 3 001
Delivery form	Casting plates
Indication	Classic ceramic inlays, onlays, crown technique longer span bridges, milling technique

QM-System certified
according to DIN EN ISO 46001
for medical products

CE 0483

Alloy: Au 86 Pt 11

Type	Colour	Density g/cm³	Composition content in % (m/m)									
			Au + Pt metals	Au	Pt	Zn	Mn	Ru	Ta			
4	yellow	19.0	97.9	86.4	11.1	1.7	0.1	0.4	0.3			

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

Technical data

Vickers hardness HV 5/30			Proof stress MPa		Elongation %		Modulus of elasticity MPa	Average linear CTE µm/m·K		Melting range °C	Preheating temp. °C	Casting temp. °C	Annealing °C min	Hardening °C min
g	n	a	n	a	n	a		25-500 °C	25-600 °C					
175	215	225	525	570	4	3	90.000	14.3	14.5	1020-1130	800	1270	- -	450 15

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

Solders

Application	Solder	Working temp. °C	Composition content in % (m/m) (x=<0.1%)								Colour
			Au	Pt	Ir	Ag	Zn	In	Cu		
Primary solder/ before firing	PLATINOR® APF-Lot	1010	62.0	1.0	x	36.0	-	0.5	0.5		yellow
Secondary solder/ after firing	PLATINOR® CPF-Lot 2	710	73.0	0.5	x	12.5	14.0	-			yellow

Instruction for use

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Instruction for use BEDRA DENT® AL-3 BIO

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 at bridge frames to achieve solid modulation of the connections and in the case of larger spans to create palatal 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. IInvestment 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 X1 / 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 280-300° C according to the mould size for respectively 30/40/50/60 min. Preheating time is according to the mould size 20/30/45/60 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 hot fissures. Sandblast with high grade corundum (approx. 100 µm) or with an 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

10 min at 930° C with 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 stump 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® APF-Lot	1010 °C
Solders after firing:	PLATINOR® CPF-Lot 2	710 °C

Slowly cool down the soldering object.

16. Hardening

After casting/firing BEDRA DENT AL-3 BIO 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.