Heimerle + Meule
Heimerle + Meule Group

High Gold Content Universal Alloy, Type 4

BEDRA DENT® UL-12 BIO

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

Item no.	7382 3 001
Delivery form	Casting plates
Indication	Special ceramics veneering and plastic veneering, inlays, onlays, crowns, large span bridges, milling-, conus and telescope technique model casting

QM-System certified according to DIN EN ISO 13485 for medical products

CE 0483

Alloy: Au 72 Ag 14 Pt 10

Type	Colour	Density g/cm³	Composition content in % (m/m)									
			Au + Pt metals	Au	Pt	Ir	Rh	Ag	Zn	Ta		
4	yellow	16.7	82.5	72.2	9.7	0.3	0.3	13.7	3.4	0.4		

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

Technical data

Vickers hardeness HV 5/30				0.2 % proof stress MPa			Elongation %			Modulus of elasticity MPa	Average linear CTE µm/m·K 25-500 °C	Melting range °C	Pre-heating temp. °C	Casting temp. °C	Ann-Ealing °C min	Hard-Ening °C min
g	n	w	a	n	w	a	n	w	a							
140	150	125	190	285	220	350	13	15	11	90.000	16.0	950-1030	700	1180	800 10	500 15

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

Solders

Application	Solder	Working temp. °C	Composition content in % (x = < 0,1 %)							Colour
			Au	Pt	Ir	Ag	Cu	Zn		
Primary solder/ before firing	PLATINOR® M-Lot 910	910	88.7	2.0	0.1	4.0	-	5.2		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® UL-12 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 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

Conventional heating: the first preheating step at approx. 280 °C has to be hold according to the mould size for respectively 30/40/50/60 min.; further heating steps in compliance with the investment material manufacturer's instruction for use. After reaching the final temperature (see data sheet), the holding time is according to the mould size respectively 20/30/45/60 min. If handling a greater number of moulds, the preheating time has to be extended accordingly.
Speed heating: the instructions of the manufacturer of the investment material have to be complied with strictly.

6. Crucible Material

Ceramic and graphite crucibles can be used.

7. Casting Units

All common melting and casting units can be used.

8. Casting

Check data sheet for casting temperatures.
Further heating times after reaching the liquid temperature according to the quantity of material used and unit output.

Resistance heating	20 – 60 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 50 % 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). For frame parts which will not be veneered high gloss polishing is recommended. 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

Ensure sufficient support of the frame. 5 min. at 820 °C without vacuum.
If the oxide layer shows spots, grind the frame again and repeat the work steps (see point 11). For conditioning of the surface, sandblast the frame with aluminum oxide (approx. 100 µm, max. pressure 2 bar) again and pickle it with AMISUL. Thoroughly steamclean the object thereafter.

13. Firing of the Ceramic

Low fusing high-expanding ceramics are suitable for veneering. Veneering should be performed in compliance with the manufacturer' s recommendations.
Perfectly suited is for example the veneering ceramic PLATINAm or other marketable high-expanding ceramics.
Ensure secure support of the frame during firing.

14. Firing Process

In regard to the firing process the indications of the respective ceramic manufacturer have to be complied with strictly.

15. Soldering

Soldering areas have to be sufficiently big and should be considered during modulation already.
Soldering areas have to be metallically blank.
The solder gap should be 0.05 – 0.2 mm.

Primary Solder before firing:	PLATINOR® M-Lot 910	910 °C
Secondary Solder after firing:	PLATINOR® CPF-Lot 2	710 °C

Slowly cool down the soldering object.

16. Hardening

After casting / firing the alloy shows a sufficiently high density for lis area of indication. If required, the maximum hardening after veneering can be reached through final tempering in accordance to the data sheet.

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.