

High-gold Veneering Alloy, Type 4

BEDRA DENT® AL-5

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

Item no. 7305 3 001

Delivery form Casting plates

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

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



Alloy: Au 77 Pt 10 Pd 9

Type	Colour	Density g/cm ³	Composition content in % (m/m)										
			Au + Pt metals	Au	Pt	Pd	Ir	Ag	Cu	Sn	In	Fe	Re
4	white	17.6	95.9	76.6	9.9	9.3	0.1	1.2	0.3	0.5	1.7	0.2	0.2

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					
200	210	235	445	510	12	11	100.000	14.2	14.4	1150-1265	900	1415	- -	550 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	Pd	Ir	Ag	Cu	Zn		
Primary solder/ before firing	PLATINOR® AM-Lot	1070	80.0	-	7.5	-	8.0	3.9	0.6	yellow	
Secondary solder/ after firing	PLATINOR® Lot 1	810	70.0	0.9	1.0	0.1	11.0	7.0	10.0	yellow	
	PLATINOR® Lot 2	760	70.0	0.9	0.5	0.1	12.0	4.5	12.0		

Instruction for use

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 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. 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 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

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 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® 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.