

Instructions for use

Palladium-based Alloys for the Ceramic-fused-to-metal Technique

Mixing of different alloys or alloys of similar types is not allowed!
Wear darkened eye protection and protective gloves when melting.

Protect eyes, hands and breathing when pickling.

Protect eyes and breathing during processing with rotating instruments with an aspirator device.

With the publication of these instructions for use all previous editions are no longer valid.

The manufacturer refuses any liability for damages due to disregard of the instructions for use below.

Directions for palladium-based Alloys for the ceramic-fused-to-metal Technique

Because of their low density and the high palladium or palladium-silver content these alloys are of especially good value, but have a tighter processing tolerance than high gold or gold reduced metal alloys. They are suited for short- and long-span bridgework, for milled and combined work as well as for the casting-on technique. The high Pd content gives good corrosion resistance. Pd-Ag alloys can be soldered without problems before and/or after firing.

General instructions for use

Modelling

Usual modelling technique for ceramic-fused-to-metal works. Minimal wall thickness 0.4 mm. With bridgework the connections must have a minimum section of 6–9 mm². Modelling of garlands or inlay-shaped reinforcements in the palatal region will give added stability. The application of air and cooling vents improves casting results.

Investing

The following investments are recommended for this type of alloys: Cendres+Métaux-Ceramicor® (phosphate-based, containing graphite)

CM-20 (based on quartz and cristobalite without graphite for the rapid preheating technique).

Plaster-based investments must not be used for these types of alloys!

Re-use of alloy

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

Traceability of lot numbers

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

Surface quality of cast objects

In order to prevent corrosion the cast object must have a surface free of shrink holes and porosities after trimming and polishing.

Cooling of castings

Do not quench the casting cylinder after casting, but bench cool to room temperature.

Removal of oxide layers

Oxides due to casting, firing or soldering can be removed by sandblasting.

Thermal treatments

A simulation firing of the work in the as cast condition (cleaned frameworks, sprues not yet removed) in the ceramic furnace will have the following advantage: Possible tensions due to the casting process are reduced (consult table «Particular instructions for use» overleaf).

Gilding of frameworks

Gilding is carried out at the user's own risk.

Polishing

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

Rx only

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

Disinfection

Each prosthetic restoration must be cleaned and disinfected before try-in or definite insertion in the mouth of the patient.

Additional directions for use

On processing of precious metal alloys, soldering and the casting-on technique are provided in the Dental documentation of Cendres+Métaux.

Allergies

With patients having an existing allergy to one or several elements contained in any one alloy, this particular alloy must not be used. With patients suspected of having an allergy to one or several elements contained in any one alloy, this alloy can only be used after preliminary allergological testing and proof of a non-existing allergy.

Physical and mechanical properties

Alloys	Indications						Colour	Composition in weight %													Solder ① Before firing	Solders ① After firing		
	a	b	c	d	e	f		Au- + Pt- Met.	Au	Pt	Pd	Ag	Cu	Sn	Zn	In	Ga	Ir	Ru	Re			Fe	B
Estetitor Biennor CF®		✓	✓	✓	✓		White	80.00	2.00		77.60	5.00		6.40	4.60		4.00		0.40				S.G 1055	
Estetitor® Actual		✓	✓	✓	✓		White	53.80			53.60	37.59		8.60					0.20			0.01	S.W 1100	S.G 810/S.G 750

ISO 22674 / ISO 9693

Indications	 a	Inlays, onlays, crowns ¾	 b	Single crowns	 c	Short-span bridgework	 d	Long-span bridgework	 e	Milled work	 f	Clasps, lingual bars, palatal plates
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① The use of solders not mentioned in the table is subject to the user's risk. In case of uncertainties, consult the instructions of the manufacturer involved.

Alloys	Density	Melting range	Casting temp.	Crucible	Hardness		Young's Modulus	0.2 % proof stress, Rp 0.2%		Elongation A5		Linear coefficient of thermal expansion CTE	
	g/cm³	°C	°C		as cast HV5 *	after firing HV5 *		GPa *	as cast MPa *	after firing MPa *	as cast % *	after firing % *	(25–500°C) 10⁻⁶ K⁻¹
Estetitor Biennor CF®	11.4	1145–1305	1365–1415	② ③	245	235	125	535	510	35	37	13.8	14.2
Estetitor® Actual	11.2	1190–1270	1430–1460	② ③	240	225	120	525	520	17	25	14.8	15.1

② Universal ceramic crucible ③ Vitrified carbon crucible

* The values indicated result from measurements obtained under exactly defined conditions. Individual deviations of ± 10% are possible and to be considered as normal.

Particular instructions for use

Alloys	Preheating temperature	Recommended casting systems (not compulsory)					Hardening the framework before surface treatment	Trimming of the framework surface with ceramically bonded grinding stones	Sandblasting with non-recycled aluminium oxide (Al ₂ O ₃) 50 μm
		Propane-oxygen flame	Vacuum-pressure casting with electric resistance furnace	Centrifugal casting with electric resistance furnace	High frequency induction in atmosphere	High frequency induction in protective gas atmosphere			
Estetitor Biennor CF®	850 °C	✓			✓	✓		✓	
Estetitor® Actual	850 °C	✓			✓	✓	950 °C / 10 min	✓	

Alloys	Cleaning with steam jet	Oxide firing with vacuum		Not recommendable for ceramic compounds with sensible reaction on silver oxides	Sandblasting after oxide firing with non recycled aluminium oxide (Al ₂ O ₃) 50 μm
		with vacuum	without vacuum		
Estetitor Biennor CF®	✓		980 °C / 10 min		✓
Estetitor® Actual	✓	960 °C / 5 min		✓	✓

Alloys	Special indications for veneering with ceramic compounds				Tested compatible ceramic compound	Other ceramic compounds
	Slow cooling	Normal cooling	Rapid cooling	Heating rate max.		
Estetitor Biennor CF®		✓			VITA VMK 95	The alloys are compatible with the usual high fusing ceramic compounds. In case of doubt, consult the instructions of the ceramic manufacturer concerned.
Estetitor® Actual	✓				VITA VMK 95	