

Instructions for use

Precious Metal 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With the publication of these instructions for use all previous editions are no longer valid.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 High Noble Metal Alloys for the ceramic-fused-to-metal Technique

These gold reduced alloys are also known as economical alloys. When processed according to instructions these alloys have a fine-grained, homogenous cast structure, good corrosion resistance and are biocompatible. They are suited for short- and long-span bridgework, for milled and combined work. These alloys can be soldered before and after firing without problems. They are also applicable for the casting-on technique with root canal posts and prosthetic attachments.

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 (not compulsory)

After casting, some of the high gold metal alloys have not yet obtained their maximal mechanical properties. For long-span bridgework and for works with attachments in combustible plastic or ceramic spacer technique which will not be veneered with ceramic, a simulation firing of the work in the as cast condition (cleaned frameworks, sprues not yet removed) in the ceramic furnace can be done.

This procedure has the following advantages:

The hardness increase allows easier and faster trimming of the frameworks. Grinding overlaps are prevented. Possible tensions due to the casting process are reduced.

(Firing data see table overleaf).

Gilding of frameworks

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

Rx only

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

Polishing

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

Disinfection

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

Further information

On processing precious metal alloys, soldering and casting-on are included 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	Ta
Esteticor® Economic		✓	✓	✓	✓		White	75.50	50.00	0.45	25.00	19.00		1.00	1.00	3.50		0.05					S.W 1100	S.G 810/S.G 750
Esteticor® Plus		✓	✓	✓	✓		White	84.10	45.00		38.90	5.00	0.40	0.50		8.60	1.40		0.20				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 g/cm³	Melting range °C	Casting temp. °C	Crucible	Hardness		Young's Modulus GPa *	0.2 % proof stress, Rp 0.2 %		Elongation A5		Linear coefficient of thermal expansion CTE (25–500°C) 10⁻⁶ K⁻¹	
					as cast HV5 *	after firing HV5 *		as cast MPa *	after firing MPa *	as cast % *	after firing % *	(25–600°C) 10⁻⁶ K⁻¹	(25–600°C) 10⁻⁶ K⁻¹
Esteticor® Economic	14.2	1145–1255	1390–1420	② ③	205	235	115	445	535	15	16	14.8	15.1
Esteticor® Plus	13.8	1115–1285	1430–1460	② ③	245	250	110	550	580	19	24	13.9	14.2

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)					Thermal treatment of the framework before surface treatment (not compulsory)	Trimming of the framework surface with ceramically bonded grinding stones	Sandblasting with non-recycled aluminium oxide (Al ₂ O ₃) 50µm
		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® Economic	850°C	✓	✓	✓	✓	✓	950°C / 10 min	✓	✓
Estetitor® Plus	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) 50µm
		with vacuum	without vacuum		
Estetitor® Economic	✓		960°C / 5 min	✓	
Estetitor® Plus	✓		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® Economic	✓				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® Plus		✓			VITA VMK 95	