

Instructions for use

High Gold Metal Alloy for Metal-ceramic dental restorative systems

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

With the publication of these instructions of use all previous editions are no longer valid.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 Gold Metal Alloys for the Ceramic-fused-to-metal-Technique

These alloys have been proven for years and are distinguished by their fine-grained cast structure, their excellent corrosion resistance, their biocompatibility and their ease of processing. The high Au and Pt-group metal contents of the alloys in this group allow problem-free soldering; they are also well suited for the casting-on technique incorporating prefabricated attachments for combined work.

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 gar-lands 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 cristo-balite 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 work, 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.

Pickling

After firing or soldering pickle in a warm, freshly prepared (clean) solution of 10 vol. % sulphuric acid (H₂SO₄).

Note: When using other pickling agents follow the instructions for use of the respective manufacturer.

Contraindications:

Do not remove the oxide after oxide firing by sandblasting.

Thermal treatments

After casting, Esteticor Lumina PF® has not yet obtained its 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).

Rx only

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

Gilding of frameworks

Gilding is carried out at the users 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.

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 and in the website www.cmsa.ch/dental.

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

Alloy	Indications						Colour	Composition in weight %						Solders ① ② Before firing	Solders ① ② After firing	
	a	b	c	d	e	f		Au- + Pt- Met.	Au	Pt	Zn	Rh	Ir			Fe
Esteticor Lumina PF®	✓	✓	✓	(✓) ③	✓		Pale yellow	98.00	84.50	13.30	1.90	0.10	0.10	0.10	S.G 975 ④ / S.G 1030 ⑤	S.G 750 ⑥

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.

④ S.G 975 solderings before firing only when using ceramics with firing temperatures < 900 °C

⑤ S.G 1030 solderings before firing when using ceramics with firing temperatures with max. 950 °C

⑥ Soldering after firing with the solder S.G 750: Adjust the temperature of the furnace to 810 °C maximum. Warning: Check before the last firing temperature of the porcelain used

Alloy	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) (25–600 °C)	
					as cast HV5*	annealed HV5*	after firing HV5*	hardened HV5*		as cast MPa*	annealed MPa*	after firing MPa*	hardened MPa*	as cast %*	annealed %*	after firing %*	hardened %*	10 ⁻⁶ K ⁻¹	10 ⁻⁶ K ⁻¹
Esteticor Lumina PF®	18.9	1045–1205	1305–1355	① ② ③	200		250		90	465		640		6		5		14.2	14.6

① Graphite crucible 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

Alloy	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
		Propane-oxygen flame	Vacuum-pressure casting with electric resistance furnace	Centrifugal casting with electric resistance furnace	High frequency induction in atmosphere		
Esteticor Lumina PF®	800 °C	✓	✓	✓	✓	900 °C / 10 min / air	✓

Alloy	Sandblasting with non-recycled aluminium oxide (Al ₂ O ₃) 50µm	Cleaning with steam jet	Oxide firing with vacuum	Pickling after oxide firing in a warm and clean solution of 10 vol. % sulphuric acid (H ₂ SO ₄)	Cleaning with steam jet

Alloy	Special indications for veneering with ceramic compounds having a medium CTE and low firing temperatures					Following a correction firing with low firing add-on material below 820 °C or a soldering after firing , additional hardening is needed! ⑦	Compatible ceramics tested with firing temperatures up to max 930 °C	Attention: Firing temperatures < 820 °C = insufficient hardening, which demands an obligatory hardening
	Slow cooling	Normal cooling	Rapid cooling	Heating rate max.				
Esteticor Lumina PF®		✓			✓	IPS d'SIGN (Ivoclar Vivadent)	500 °C / 15 min / air ⑦	
		✓			✓	VITA Omega 900 (Vita Zahnfabrik)		
		✓			✓	Imagine REFLEX (Wieland Dental)		

following a **correction firing with low firing add-on material below 820 °C** or a **soldering after firing**, additional hardening is needed! ⑦

Alloy	Special indications for veneering with ceramic compounds having a medium CTE and high firing temperatures					Following a correction firing with low firing add-on material below 820 °C or a soldering after firing , additional hardening is needed! ⑦	Compatible ceramics tested with firing temperatures up to max 950 °C	Attention: When firing this type of ceramic compounds on long-span bridgeworks, deformations of the framework may occur
	Slow cooling	Normal cooling	Rapid cooling	Heating rate max.				
Esteticor Lumina PF®		✓		50 °C	✓	IPS Classic (Ivoclar Vivadent)		
		✓		50 °C	✓	VITA VMK 95 (Vita Zahnfabrik)		
		✓		50 °C	✓	CREATION (Geller)		
		✓		50 °C	✓	SHOFU HALO (SHOFU)		

Other ceramic compounds

The alloy is compatible with the usual ceramic compounds **with a medium CTE**. In case of doubt, consult the instructions of the ceramic manufacturer concerned.