L7 Instructions for use

Universal alloys

(Products with catalogue numbers in the appendix)

Preventive measures

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With the publication of these instructions for use all previous editions are no longer valid.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

Intended use

Fixed and removable dentures.

Product description

The alloys for universal use (Type 4 according to ISO 22674) can be veneered with low-melting, highly expanding ceramics as well as with resins. The alloys are Cu-free and therefore resistant to tarnishing.

Expected clinical benefit

Restoration of chewing function and improved aesthetics.

Qualification

Professional dentist and dental technician know-how is required. The instructions for use must be available and understood before the first application. The manufacturing work must be carried out by qualified specialists. For information and additional details, please contact your Cendres+Métaux representative.

Side effects

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.

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.

Disinfection

All the parts must be disinfected before use with a high-level disinfectant. Follow the instructions of the manufacturer regarding dosage and exposure time.

When choosing the disinfectant, ensure that:

– it is suitable for the cleaning and disinfection of dental prosthetic components,
– it is compatible with the materials of the products to be cleaned and disinfected, and
– it has proven efficacy in disinfection.

We recommend using an ortho-phthaldehyde (OPA) solution like the Cidex® OPA Solution. Strictly follow the manufacturer's instructions.

General instrucions

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 mm^2. Modelling of garlands or inlay shaped reinforcements in the palatinal region will give added stability. The application of air and cooling vents improves casting results.

Spruing

Wax sprues of no less than Ø 3.5 mm are required. Direct (Ø 3.5 mm) and cross bar (Ø 5 mm) spruing produce excellent results. Feeder sprues to heavy pontics should be of at least Ø 4 mm. Air vents (Ø 1 mm) may be used to advantage.

Wax patterns should be set outside the thermal centre, i.e. near the casting ring wall and about 5 mm from the end. For individual copings and small bridges (up to three units), use of the circular sprue provides ideal positioning of the wax patterns and ensure controlled solidification of the frameworks.

Investing
When using steel casting rings always use refractory liner in order to allow free expansion of the investment.

The following investment materials from Cendres+Métaux are suitable for this alloy type:
uniVest Plus: universal phosphate-bonded, graphite- and gypsum-free investment material
CM-20: graphite-free investment material based on quartz and cristobalite
uniVest Rapid: graphite-free, phosphate-bonded investment material

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

Rapid preheating technique: the use of burn-out plastic parts can lead to spalling in the investment material.

Preheating
Observe manufacturer's recommendations with regard to setting times, temperature levels etc. On reaching the end temperature a soaking period of 20 to 45 min. is advisable depending on the size of the cylinder.

Re-use of alloy
Only use perfectly cleaned (by sand-blasting with aluminium oxide) buttons and sprues and add at least ⅓ of new alloy.

Melting
It is important, when using a torch for melting that the recommended propane (approx. 0.5 bar or 7.25 psi) / oxygen (approx. 1.0 bar or 14.5 psi) mixture and pressure are observed. Before melting add a pinch of flux to the alloy.
Flux: boric acid

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.

Finishing
Trim the framework first preferably using carbide burs and then fine grinding points at low speed.

Soldering
We recommend using a propane/oxygen torch for soldering and a flux like CM soldering paste. During soldering wear dark goggles for protection.The design of the soldering block is a compromise between minimising its thermal mass whilst retaining sufficient strength to avoid its fracturing during soldering. Leave a parallel gap of 0.1–0.2 mm between surfaces to be soldered and sufficient area to ensure adequate strength of the joint.

Pickling
After firing or soldering pickle in a warm, freshly prepared (clean) solution of 10 vol. % sulphuric acid (H_2SO_4)
Note: When using other pickling agents follow the instructions for use of the respective manufacturer.

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 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.

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

Labeling on packaging/symbols	
	Date of manufacture
	Manufacturer
REF	Catalogue number
LOT	Batch code
QTY	Quantity
	Consult instructions for use URL: cmsa.ch/docs
Rx only	Attention: According to US federal law, this product may only be sold by or on behalf of a physician.
CE 0483 CE	Cendres+Métaux products with CE labelling meet the requirements of the relevant European requirements.

Instructions for use

Alloys	Cat. No.	Indication						Composition %													
		a	b	c	d	e	f	Au + Pt group metals	Au	Pt	Pd	Ag	Cu	Sn	Zn	In	Ga	Ir	Ru	Rh	Fe	Others
BioEthic	010923	■	■	■	■	■	■	97.87	86.70	10.75		0.03		0.10	1.50	0.20		0.02		0.40		Ta 0.30
DGVO8 H	010922	■	■	■	■	■	■	80.50	73.10	1.50	5.80	16.00		0.50	2.80	0.20		0.10				
Esteticor® Ecologic	010994	■	■	■	■	■	■	49.00	32.00	2.00	15.00	42.00				9.00						

a
Inlays, onlays, crowns ¾

b
Single crowns

c
Short-span bridgework

d
Long-span bridgework

e
Milled work

f
Clasps, lingual bars, palatinal plates

Alloys	Physical properties					Mechanical properties												
	CTE | $10^{-6}K^{-1}$		Density	Melting range	Young's Modulus	Hardness HV5				Proof stress Rp 0.2% MPa				Tensile strength (Rm) MPa				Elongation A5 %			
	(25–500 °C)	(25–600 °C)	g/cm³	°C	GPa	As cast	After firing	Soft	Hardened	As cast	After firing	Soft	Hardened	As cast	After firing	Soft	Hardened	As cast	After firing	Soft	Hardened
BioEthic	14.5	14.8	19.0	1025–1145	90	185	220	95	210	435	525	180	575	550	655	350	660	5	6	29	5
DGVO8 H	16.0	16.4	15.8	960–1065	105	230	240	180	265	620	675	335	720	695	745	475	795	4	5	21	5
Esteticor® Ecologic	17.0	17.5	12.7	990–1065	95	190	220	180	220	435	515	360	535	625	685	580	690	7	8	12	6

Alloys	Solders				Laser welding wire	Instructions for use		
	Pre-Solder		Post Solder			Preheating °C	Crucible	Casting temperature °C
BioEthic	S.G 1030		S.G 810	S.G 750	LW N° 1	850	❶❷❸	1250–1300
DGVO8 H	S.G 880		S.G 700		LW N° 4	700	❶❷❸	1165–1215
Esteticor® Ecologic	S.G 920		S.G 700		LW N° 4	800	❷❸	1250–1300

❶ = Graphite crucible = Universal ceramic crucible = Vitrified carbon crucible

Alloys	Recommended casting systems (not compulsory)								
	Propane-oxygen flame Post-melting time 5–10 s	Vacuum-pressure casting with electric resistance furnace Post-melting time 30–45 s	Centrifugal casting with electric resistance furnace Post-melting time 30–45 s	High frequency induction in atmosphere Post-melting time 5–10 s	High frequency induction in protective gas atmosphere Post-melting time 5–10 s	Thermal treatment of the framework before surface treatment (not compulsory)	Annealing	Hardening	Trimming of the framework surface with ceramically bonded grinding stones
BioEthic	✔	✔	✔	✔	✔	900 °C / 15 min / air	900 °C / 15 min / H_2O	450 °C / 15 min / air*	✔
DGVO8 H	✔	✔	✔	✔	✔		800 °C / 15 min / H_2O	400 °C / 15 / air*	✔
Esteticor® Ecologic	✔	✔	✔	✔	✔	820 °C / 15 / air	850 °C / 30 min / H_2O	820 °C / 15 / air* + 400 °C / 15 / air*	✔

* Annealing before hardening

Alloys						
	Sandblasting with non-recycled aluminium oxide (Al_2O_3) 50 μm	Cleaning with steam jet	Oxide firing		Pickling after oxide firing in a warm and clean solution of 10 vol. % sulphuric acid (H_2SO_4)	Sandblasting after oxide firing with non recycled aluminium oxide (Al_2O_3) 50 μm
			with vacuum	without vacuum		
BioEthic	✔	✔	900 °C / 10 min		✔	
DGVO8 H	✔	✔	860 °C / 5 min		✔	
Esteticor® Ecologic	✔	✔	860 °C / 10 min			

Alloys		Ceramic veneer: cooling cycle after firing		
	Heating rate max.	Low-melting, highly expanding ceramics		
		Long-term	Normal	Rapid
BioEthic	60 °C / min	■	■	
DGVO8 H	60 °C / min		■	■
Esteticor® Ecologic	60 °C / min	■	■	

Not binding, please also observe the instructions of the ceramic manufacturer!

CENDRES+ MÉTAUX

Cendres+Métaux SA
Rue de Boujean 122
CH-2501 Biel/Bienne
Phone +41 58 360 20 00
Fax +41 58 360 20 10
info@cmsa.ch
www.cmsa.ch

CE 0483 CE Rx only

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