L5 Instructions for use

Precious Metal Alloys for Inlays, Crown and Bridgework

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With the publication of these instructions for use all previous editions are no longer valid.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

Due to the lower gold and platinum content and the lower density, these casting alloys with a high precious metal content are less expensive than alloys with a high gold content. If processed as specified, these alloys have a fine-grained structure and good corrosion resistance and biocompatibility. The alloys can be soldered without difficulties and are also suitable for the cast-on technique. Most alloys in this group are self-curing when cooled to room temperature in the cylinder or in the soldering base.

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

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 casting 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 1250	Cendres+Métaux products with CE labeling meet the requirements of the Medical Device Directive 93/42/EEC.

Instructions for use

Alloys	Cat. No.	Indication							Composition %													
		Type (ISO 22674)	a	b	c	d	e	f	Au + Pt group metals	Au	Pt	Pd	Ag	Cu	Sn	Zn	In	Ga	Ir	Ru	Rh	Fe
Pontor 2	01050022	4	■	■	■	■	■	■	66.50	63.00	0.50	3.00	20.00	12.00		1.50				< 1.00		
Dentalor 60	010636	4	■	■	■	■	■	■	63.50	60.00	0.45	3.00	22.50	12.50		1.50			0.05			
Solaro 3	01050007	4	■	■	■	■	■	■	61.50	56.00	0.40	5.00	25.00	11.80		1.70			0.10			
Medior 3	010641	4	■	■	■	■	■	■	61.00	55.00		5.95	26.00	10.90		2.10				0.05		
Solaro 4	01000114	4	■	■	■	■	■	■	49.50	45.00		4.48	41.00	9.50						0.02		
Yellow Special	01050026	4	■	■	■	■			43.20	41.00	0.45	1.70	44.90	11.00	0.20	0.70				0.05		


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											
	Density	Melting range	Young's Modulus	Hardness HV5			Proof stress Rp 0.2 % MPa			Tensile strength (Rm) MPa			Elongation A5 %		
	g/cm³	°C	GPa	As cast	Soft	Hardened	As cast	Soft	Hardened	As cast	Soft	Hardened	As cast	Soft	Hardened
Pontor 2	14.2	870–920	115	265	160	260*	730	365	690*	810	475	740*	9	42	15*
Dentalor 60	13.8	860–900	95	265	170	250*	830	475	845*	895	580	890*	12	48	10*
Solaro 3	13.7	875–935	110	295	175	260*	885	350	600*	980			5	30	10*
Medior 3	13.4	870–925	105	295	170	280*	865	435	815*	930	560	905*	4	35	5*
Solaro 4	12.9	885–945	85	170	120	215*	435	245	610*	595	415	755*	19	38	12*
Yellow Special	12.5	825–900	90	160	130	260*	400	275	440*	515	450	670*	20	31	13*

* 100% selfhardening after cooling in the cylinder or soldering block, otherwise particular instructions for use.

Alloys	Solders		Laser welding wire	Instructions for use		
	Pre-Solder	Post Solder		Preheating °C	Crucible	Casting temperature °C
Pontor 2	S.G 810	S.G 750	LW N° 6	630–680	❶❷❸	1065–1115
Dentalor 60	S.G 810	S.G 750	LW N° 6	650	❶❷❸	1000–1050
Solaro 3	S.G 810	S.G 750	LW N° 6	630–680	❶❷❸	1085–1135
Medior 3	S.G 810	S.G 750	LW N° 6	650	❶❷❸	1020–1070
Solaro 4	S.G 810	S.G 750	LW N° 6	680	❶❷❸	1045–1095
Yellow Special	S.G 750	S.G 700	LW N° 6	550–650	❶❷❸	1050–1100

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

Alloys	Recommended casting systems (not compulsory)					Particular instructions for use		
	Propane-oxygen flame Post-melting time 5–10 s	Vacuum-pressure casting with electric resistance furnace Post-melting time 20–40 s	Centrifugal casting with electric resistance furnace Post-melting time 20–40 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	Annealing	Hardening	Sandblasting with glass beads 50 µm
Pontor 2	✔	✔	✔			700 °C / 10 min / H_2O	350 °C / 15 / air*	✔
Dentalor 60	✔	✔	✔			700 °C / 10 min / H_2O	400 °C / 15 / air*	✔
Solaro 3	✔	✔	✔			700 °C / 10 min / H_2O	400 °C / 15 / air*	✔
Medior 3	✔	✔	✔			700 °C / 10 min / H_2O	400 °C / 15 / air*	✔
Solaro 4	✔	✔	✔			700 °C / 10 min / H_2O	350 °C / 15 / air*	✔
Yellow Special	✔	✔	✔			650 °C / 10 min / H_2O	400 °C / 15 / air*	✔

* Annealing before hardening

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 1250

1021.03.00.01 | 02.2019