L4 Instructions for use

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With the publication of these instructions for use all previous editions are no longer valid.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

This group casting alloys with a high gold content includes alloys with different mechanical and physical properties. This allows a wide scope of application. Type 2 alloys (high strength) are particularly suitable for inlays and bridges with short spans. Alloys of Type 4 (extra-high strength) were developed in particular for bridges with large span widths, for milling work as well as for work combined with structural elements. These alloys can be soldered without any difficulties and are suitable for the cast-on technique. They are self-curing when slowly cooled to room temperature in the cylinder or soldering base. Therefore additional thermal treatment is superfluous.

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
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.

Product list		Cat. No.	
Colour	Alloys	10 g	25 g
	Opticast	01000325	01000326
	Aurofluid 2 PF	01000317	01000318
	Pontor MPF	01000293	01000294
	Neocast 3	01000285	01000286
	Protor 3	01000280	01000281

Labelling on packaging/symbols	
	Date of manufacture
	Manufacturer
REF	Catalogue number
LOT	Batch code
QTY	Quantity
www.cmsa.ch/docs	Observe the Instructions for Use, which are available in electronic form at the address specified.
Rx only	Attention: According to US federal law, this product may only be sold by or on behalf of a physician.
CE 0483	Cendres+Métaux products with CE labelling meet the requirements of the relevant European requirements.
UDI	Unique Device Identification – UDI
EC REP	European Authorised Representative
	Importer in EU
MD	Medical device

Instructions for use

Alloys	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
Opticast	2	■						83.30	83.20			8.00	8.50		0.20			0.10			
Aurofluid 2 PF	2	■	■	■				79.06	78.05	0.99		11.50	8.50		0.94			0.02			
Pontor MPF	4	■	■	■	■	■	■	75.62	72.00	3.60		13.70	9.78		0.90			0.02			
Neocast 3	4	■	■	■	■	■	■	75.40	71.60	3.75		12.70	10.80		1.10			0.05			
Protor 3	4	■	■	■	■	■	■	75.35	68.60	2.45	3.95	11.85	10.60		2.50			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
Opticast	16.4	915–935	90	115	115		215	245		395	355		41	56	
Aurofluid 2 PF	15.9	895–960	90	140	125	135*	280	245	320*	425			48	40	30*
Pontor MPF	15.5	895–940	90	240	150	220*	545	320	490*	685	465	580*	17	38	19*
Neocast 3	15.5	890–935	90	245	180	240*	610	405	635*	725	535	750*	17	33	14*
Protor 3	15.0	895–960	135	270	175	275*	685	410	680*	850	535	780*	13	35	12*

* 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
Opticast	S.G 810	S.G 750	LW N° 5	650	❶❷❸	1035–1085
Aurofluid 2 PF	S.G 810	S.G 750	LW N° 5	630–680	❶❷❸	1110–1160
Pontor MPF	S.G 810	S.G 750	LW N° 5	630–680	❶❷❸	1090–1140
Neocast 3	S.G 810	S.G 750	LW N° 5	650	❶❷❸	1020–1070
Protor 3	S.G 810	S.G 750	LW N° 5	700	❶❷❸	1040–1090

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
Opticast	✔	✔	✔			700 °C / 10 min / H_2O	–	✔
Aurofluid 2 PF	✔	✔	✔			700 °C / 10 min / H_2O	250 °C / 15 / air*	✔
Pontor MPF	✔	✔	✔			750 °C / 10 min / H_2O	350 °C / 15 / air*	✔
Neocast 3	✔	✔	✔			700 °C / 10 min / H_2O	400 °C / 15 / air*	✔
Protor 3	✔	✔	✔			700 °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 0483 Rx only

1106.00.01.01 | 10.2021