Ceradelta®

Instructions for use

Palladium-based dental Alloy for Porcelain bonding, extra hard, white, type 4

Indication

Porcelain-to-metal applications, C&B technique, crowns and bridges.

b  Single crowns

c  Short-span bridgework

d  Long-span bridgework

e  Milled work

f  Clasps, lingual bars, palatinal plates

Physical properties

Composition in weight %

Au + Pt group metals	57.50
Pd	57.45
Ru	0.05
Ag	32.00
In	6.00
Ga	1.50
Sn	2.00
Zn	1.00
Density g/cm³	11.3
Melting range °C	1135–1275
CTE (25–500 °C) $10^{-6}K^{-1}$ (25–600 °C) $10^{-6}K^{-1}$	14.6 14.9
Young's Modulus GPa*	110

Mechanical properties

	1	2	3
Hardness HV5*	255	250	305
0.2 % Proof stress Rp 0.2 % MPa*		565	490
Elongation A5 %*		13	19

State

1	as cast
2	after firing
3	hardened

Solders before bonding	Melting range
S.G 1120	1040–1120 °C

Solders after bonding	Melting range
S.G 750	695–750 °C

* The values indicated result from measurements obtained under exactly defined conditions. Individual deviations of ± 10 % are possible and to be considered as normal.

Preventive measure (contraindication) and important notes

These instructions for use must be precisely followed. It has been suggested in specialized literature that some of its components can, in extremely rare cases, have allergy effects. The choice of the material is the decision of the practitioner based on his knowledge of the sensitivity of the patient.

Corrosion resistance and biocompatibility

Ceradelta® has been submitted to the following tests:
Corrosion resistance according to ISO 22674
Cytotoxicity test according to ISO 10993-5
Mutagenicity test no component is considered as mutagen according to the specialized literature.

The alloy is considered to be highly corrosion resistant and showed no cytotoxic potential.

Launch year 1986

Ceradelta® corresponds to the standards EN ISO 22674 / EN ISO 9693

Ceradelta® has been manufactured according to the quality standards ISO 9001 / ISO 13485.

Rx only

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

CENDRES+ MÉTAUX

Cendres+Métaux SA
Rue de Boujean 122
CH-2501 Biel/Bienne

Phone +41 58 360 20 00
Fax +41 58 360 20 11
info@cmsa.ch

www.cmsa.ch/dental

Waxing up
The ultimate thickness of the cast metal coping should not be less than **0.3 mm**.
Therefore: Consideration must be given to this fact at the wax-up stage, long span frameworks require structural reinforcement to ensure stability and anticipated solder joints should be of adequate surface area to provide sufficient stability to the frame.

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. Waxpatterns 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. All regular or phosphate-bonded (e.g. **Univest®Plus** or **Univest®Rapid**) investments for precious metal alloys may be used. Follow the procedures recommended by the manufacturer.

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.
Preheating temperature: 850 °C

Crucibles
Glaze the crucible before first use with a recommended flux (e.g. Borax/Boric acid). The following crucibles can be used:

Ceramic crucible:	Casting temperature	1450 °C

Re-melting
When melting down thoroughly cleaned casting buttons, add at least **⅓ of new alloy**. The used copings have to be clean, free of investment and flux residue.

Melting
It is important, when using a torch for melting (for inst. **Meteor type «O»**) 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. Once the alloy has completely melted, continue heating for a further approx. **5 sec.** before releasing the casting machine arm. When melting by induction or resistance heating, the power must be maintained for an additional approx. **5 sec.**
Flux: boric acid

Cooling
Bench cool the casting ring.

Devesting/Cleaning
Clean by blasting with glass beads or pure aluminium oxide (Al_2O_3) particle size (**50 µm** to **125 µm**) at **1.5** to **2.0 bar** (**21.7** to **29 psi**) pressure.

Pickling
Following casting or soldering, the frame at room temperature may be pickled in hot **Desoxid II** (63 %) for at least **2 min.**

Finishing
Trim the framework first preferably using carbide burs and then fine grinding points at low speed. Blasting is done using pure aluminium oxide (approx. **110 µm**).
Recommended grinding points: Cerasiv Blue (5'000 – 10'000 rpm)
Pressure: **1.0 – 2.0 bar**

Cleaning
Frameworks must be cleaned preceding oxidation either in boiling water for **10 min.** (distilled water is recommended) – in an ultrasonic unit for **5 min.** – or with a steam cleaner.

Gilding (Aurofilm® 2000)
The application of a gilding layer of Aurofilm is possible according to the instructions for use. Aurofilm should be fired in aceramic oven.
Firing temperature: 920 °C – 940 °C

Oxidation
10 min. without vacuum to 950 °C and bench cool.
The framework should have a grey appearance. After oxidation frames should be cleaned in hot, diluted (10 %) sulphuric acid (H_2SO_4) or in a hot pickling solution of **Desoxid II** for **10 min.** Use this solution just for this alloy. Then thoroughly clean frameworks.

Porcelain application
Porcelain or resin applications are subject to the manufacturers instructions. The alloy is compatible with most known porcelain brands. Consider the CTE of the alloy in conjunction with the cooling recommendation of the porcelain manufacturer. Paste opaques should be pre-dried for approx. **10 min.** before firing at manufacturers recommendation.
Pre-drying temperature: 300 °C – 400 °C.

Excellent results have been obtained with the following porcelains (in alphabetical order), with a normal cooling cycle:
Ceramco II, VMK-95

Excellent results have been obtained with the following porcelains (in alphabetical order), with a slow cooling cycle:
Carat, Duceram, IPS Classic, Omega 900, Super Porcelain EX-3, Vintage Halo

To avoid greening of the porcelain, which can occur in the use of the alloy a number of anti-greening products from porcelain manufacturers are available. Regard the respective instructions.
A solution to avoid greening all together is to use a surface treatment with **Aurofilm® 2000**. Graphite supports are best used to protect the muffle during firing providing a diminishing deterrent against possible greening. It is recommended to purge the furnace using a graphite rod, at approximately 1000 °C for **20 min.** under vacuum.

Soldering/Laser
We recommend using a propane/oxygen torch (**Meteor Type «L»**) for soldering and a flux like **Fluxor**. During soldering weardark 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.
Laser welding wire: LW No. 2

Heat treatments
Self-hardened by slow (bench-) cooling of the casting ring
Hardened 600 °C/15 min. – let bench-cool

Polishing
The oxide layer may be removed in **Desoxid**. Thorough rubber-wheeling ensures easy polishing. For best prepolishing results, soft brushes, felts and cotton wheels are employed using **Legabril Diamond** diamond-paste. «Whiting chalk» (chalk-powder) mixed with water on soft brushes or cotton wheels may be used for final high polish.