

### Preventive measure 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.

### Biocompatibility and corrosion resistance

Ceradelta® 2 has been submitted to the following tests :

Cytotoxicity test according to ISO 10993/5.  
Mutagenicity no component is considered as mutagen according to the specialized literature.

Corrosion resistance according to standard ISO 10271:2001.

Launch year 1992

Ceradelta® 2 corresponds to the standards EN ISO 9693

Ceradelta® 2 has been manufactured according to the quality standards ISO 9001:2000 / ISO 13485:2000.



#### Distributed by :

#### metalordental ag

Bittertenstrasse 15  
CH-4702 Oensingen

Tel: +41 (0) 62 388 6969

Fax: +41 (0) 62 388 6970

#### Made by :

#### Metalor Technologies SA

CH-2009 Neuchâtel SUISSE

# Ceradelta® 2

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

**Pd 61.5%, Ru, Ag 24.5%, In 2%, Sn 10%, Zn 2%,**

### Indication

Porcelain-to-metal applications, C&B technique, crowns and bridges suprastructures on implants, milling works, cast partial dental frames

### Technical data and properties

Density g/cm<sup>3</sup> 11.3  
Melting range 1185 - 1230 °C  
Coefficient of thermal expansion 14.5 (25 - 500°C)  
14.9 (20 - 600°C)

* Modulus of elasticity MPa	124'000		
		after casting	after bonding

* Vickers hardness HV5	295	265	305
* 0.2% Yield strength MPa		660	700
* Elongation %		10	6

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

### Solders before bonding

VS 1 A 1030 - 1100 °C

### Working Temperature

1100 °C

### Solders after bonding

Vacu PF 750 - 800 °C

850 °C

# INSTRUCTIONS FOR USE

## 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  $\varnothing$  3.5 mm are required. Direct ( $\varnothing$  3.5 mm) and cross bar ( $\varnothing$  5 mm) spruing produce excellent results. Feeder sprues to heavy pontics should be of at least  $\varnothing$  4 mm. Air vents ( $\varnothing$  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. All regular or phosphate-bonded (e.g. Uninvest@Plus) 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

## Re-melting

When melting down thoroughly cleaned casting buttons, add at least 1/3 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

Ceramic crucible : Casting temperature 1430°C

## Cooling

Bench cool the casting ring.

## Devesting / Cleaning

Clean by blasting with glass beads or pure aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) particle size (50  $\mu$ m to 125  $\mu$ m) 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 for at least 2 min. - Desoxid II (63%).

## Ceradelta® 2

## 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 $\mu$ m).

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 a ceramic oven.

Firing temperature : 920°C - 940°C

## Oxidation

10 min. without vacuum to 950°C and bench cool.

The framework should have a uniform grey appearance.

After oxidation frames should be cleaned in hot, diluted (10 %) sulphuric acid (H<sub>2</sub>SO<sub>4</sub>) or in a hot pickling solution of Desoxid I 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 - 400°C.

Excellent results have been obtained with the following porcelains (in alphabetical order), with a normal cooling cycle : Carat, Ceramco II, Creation &, Duceram Plus, Finesse, IPS Classic, MagicCeram, Omega, Omega 900, Super Porcelain EX-3, Symbio Ceram, Vintage Halo, VMK-95, Excellent results have been obtained with the following porcelains (in alphabetical order), with a slow cooling cycle : dSign,

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 altogether 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 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.

## Heat treatments

Self-hardened by slow (bench-) cooling of the casting ring

Hardened 600°C / 20 min. - let bench-cool

## Polishing

The oxide layer may be removed in Desoxid. Thorough rubberwheeling 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.