

Instructions for use

**Palladium-based metal ceramic alloy, white, Platinum and Copper free,
corresponds to the standards EN ISO 22674/EN ISO 9693 type 4**

Indications

- | | |
|---|---|
| b  Single crowns | e  Milled work |
| c  Short-span bridgework | f  Clasps, lingual bars,
palatal plates |
| d  Long-span bridgework | |

Physical properties

Composition in weight %

Au + Pt group metals	64.49
Au	12.00
Pd	52.29
Ag	23.00
Sn	2.00
In	10.00
Ga	0.50
Ru	0.20
B	0.01
Colour	white
Density g/cm ³	11.8
Melting range °C	1200–1305
CET (25–500 °C) 10 ⁻⁶ K ⁻¹	14.2
(25–600 °C) 10 ⁻⁶ K ⁻¹	14.6
Young's Modulus GPa *	130

Mechanical properties

Hardness HV5 *	1	305
	2	260
0.2 % Proof stress, Rp 0.2 % MPa *	1	710
	2	645
Yield strength (Rm) MPa *	1	935
	2	865
Elongation A5 % *	1	5
	2	9

State

1	after cast
2	after firing

Solders before bonding

S.W 1125

Melting range

1050–1125 °C

Solders after bonding

S.G 750

Melting range

695–750 °C

Laser welding

Fil de laser

LW 2

* 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

Esteticor® CC has been submitted to the following tests:
Corrosion resistance according to ISO 22674
Cytotoxicity test according to ISO 10993-5
Sensitization test according to ISO 10993-10

The alloy is considered to be highly corrosion resistant and showed neither a cytotoxic nor a mutagenic potential nor did it cause any allergic sensitization.

The biological compatibility of the alloy has been demonstrated by in vivo and in vitro testing and supported in technical literature according to ISO 10993-1/ISO 7405.

Traceability of lot numbers

If different lots of an alloy are being used for the realisation of a work, all lot numbers concerned must be noted in order to assure traceability.

Disclaimer

Upon publication, these instructions for use supersede all previous editions.

The manufacturer is not liable for any damages due to the user disregarding the instructions for use below.

Launch year 2012

Esteticor® CC corresponds to the standards
EN ISO 22674/EN ISO 9693.

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

Rx only



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

Preventive measure

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 during pickling.
Protect eyes and breathing during processing with rotating instruments with an aspirator device.

1. Modelling

Usual modeling technique for the construction of frameworks.
Minimum wax thickness with abutment crowns 0.4 mm and with single crowns 0.3 mm. With bridgework care has to be taken, that the connections have a surface of at least 6–9 mm². By modeling garlands and inlay-like reinforcements in the palatal region the stability can be further increased. By attaching vents and cooling sprues casting quality will be improved.

2. Spruing system**2.1 Single crowns**

These can be directly connected at the thickest part with a wax sprue of \varnothing 3.0–3.5 mm.

2.2 Frameworks

The modeled frameworks must be sprued with a sufficiently dimensioned and stable spruing system. When connecting the sprues, make sure that the wax parts have as few contractions as possible. Connect the sprues with a \varnothing of 3.0–3.5 mm to the thickest parts of the cast object. The cross bar must have a \varnothing of 5.0–6.0 mm depending on the size of the bridgework. The distances of the cast object to the cross-bar and from the cross-bar to the button must be specifically adapted in order to maintain the correct positioning of the cast object outside of the heat-centre in the cylinder. The connectors between cross-bar and button must have a minimum \varnothing of at least 4.0 mm.

3. Investing

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

3.1 Investments

All regular or phosphate-bonded (e.g. Ceramicor®, CM-20, uniVest® Plus or uniVest® Rapid, multiVest®) investments for precious metal alloys may be used. Follow the procedures recommended by the manufacturer.

For implant bridges with gold caps, the use of debubbler surfactants should be dispensed with so that the investment is able to cover the entire functional inner surface of the gold cap, which greatly minimizes the risk of unwanted inflow of the casting alloy.

4. Preheating

Preheating temperature: 850 °C

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.

5. 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 1455 °C

Vitrified carbon crucible:

Casting temperature 1405 °C

6. 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.

7. Melting

Observe manufacturer's recommendations with regard to the casting temperature of the alloy. The alloy can be molten with regular casting systems.

If the alloy is molten in atmosphere in a ceramic or vitrified carbon crucible, the addition of a minimal amount of melting powder (acid boric or borax) may suppress the oxidation of the alloy surface and thus allow for a better determination of the correct starting of the casting procedure.

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. 1.5 bar or 21.75 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. Once the alloy has completely melted, the heat must be maintained for an additional approx. 5 sec. for torch casting and high-frequency melting.

Centrifugal casting with electric resistance furnace

(100–150 °C above the liquidus point)

Vacuum-pressure casting with electric resistance furnace

(100–150 °C above the liquidus point)

7.1 Continued heating time in seconds (depending on the casting equipment and the crucible)

As soon as the alloy reaches at the liquid state, the following continued heating times apply prior to start the casting procedure:

Propane-oxygen flame 5–10 s

High frequency induction 5–10 s

Centrifugal casting with electric resistance furnace 40–60 s

Vacuum-pressure casting with electric resistance furnace 40–60 s

8. Cooling and divesting of cast objects

Do not quench the casting cylinder after casting, but bench cool to room temperature. Never use a hammer, but remove the investment by carefully using plaster-tweezers or a pneumatic handchisel.

An ultrasonic bath, water jet or sandblasting with glass beads should be used to remove investment from the functional insides of the cast-on gold caps or the cast plastic parts.

9. Conditioning of the framework for veneering with ceramic

Trim the frameworks with tungsten cutters, then fine trim the surfaces to be veneered using ceramically bonded grinding stones. Always maintain the same grinding direction in order to avoid overlaps on the surface. Don't use diamond coated grinders!

10. Sandblasting

Sandblast the trimmed framework with non-recycled aluminium oxide (Al₂O₃).

Grain size **50 µm**
Pressure **2–4 bar**

11. Cleaning

Clean the sandblasted frameworks thoroughly with a steam-jet.

12. Gilding (Aurofilm 2000)

The application of a gilding layer of Aurofilm 2000 is possible according to the instructions for use. Aurofilm 2000 should be fired in a ceramic oven.

Firing temperature: **920°C–940°C**

13. Oxide firing

5 min. with vacuum to 980°C and bench cool.

The framework should have a uniform grey appearance.

Massive-sized (heavy) cast frameworks require a general reduction of the heat rate to 40–50°C/min. in order to ensure a regular heat soaking of the framework.

14. Oxide removal

The oxide resulting from the oxide firing can be blasted off with aluminium oxide, then clean thoroughly with a steam jet.

Grain size **50 µm**
Pressure **2–4 bar**

15. 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**

After ceramic firing, oxide can only be removed in the area of the functional inner surface of the cast crown volume by careful blasting with **non-abrasive** grit (glass beads) at a maximum pressure of 2 bar.

Compatible, tested ceramics (ISO 9693):

Creation Willi Geller

16. Soldering before firing

Solder: **S.W 1125**

Solder testing is carried out according to ISO 9333.

We recommend using a propane/oxygen torch (Meteor Type «L») for soldering and the soldering paste CM. During soldering wear dark goggles for protection.

If possible, prepare the soldering-areas already at the modeling stage and ensure, that the width of the soldering gap does not exceed 0.2 mm. In case of unplanned soldering before firing, separate the framework by cutting through an intermediary element in order to obtain a large and stable soldering area.

16.1 Soldering after firing

Solder S.G 750 for soldering after firing.

Solder testing is carried out according to ISO 9333.

Prepare the soldering areas so that the solder strip has contact with both metallic parts. The width of the soldering gap must not exceed 0.2 mm. After the hardening of the soldering block and the removal of the fixations of sticky wax or modelling resin, the now accessible soldering gap must be filled with soldering flux (Flux C of Cendres+Métaux), then placed in a preheating furnace at 500°C and held at this temperature for 20–40 minutes, depending on the size of the bridgework. Then remove the soldering block, wet the soldering gap and the solder again with soldering flux, then solder in a ceramic furnace. The operating temperature in the ceramic furnace must be set to 810°C for solder S.G 750 so that the solder flows.

The removal of residues of flux after soldering can be done by pickling in a warm and clean bath of 10 Vol.-% sulphuric acid (H₂SO₄) or in a pickling agent.

Note: When using other pickling agents follow the instructions for use of the respective manufacturer.

17. Laser welding

Esteticor® CC can be laser-welded with the laser welding wire LW 2, Ø 0.4 mm, as filler metal.

Laser weld testing is carried out according to ISO 28319.

The following laser parameters should be set:

Fokus	0.9 mm
Voltage	265 V
Puls duration	7.5 ms
Frequency	2.0 Hz

Further information on laser welding can be obtained from the Cendres+Métaux website www.cmsa.ch/dental (Interesting Facts/Laser welding).

18. Polishing

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

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.

19. Further information

We reserve the right to improve the product or adapt these instructions for use.

20. Disinfection

Each prosthetic restoration must be cleaned and disinfected before try-in or definite insertion in the mouth of the patient.