

ENGLISH - EN

CAD-CAM

Technical datasheet

Laboratory

Reference: *PRO-00010*

Version: *00*

IMPORTANT INFORMATION.

READ THIS DOCUMENT CAREFULLY BEFORE USING THE PRODUCT.

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DISCLAIMER

Before performing this dental procedure, it is mandatory to read and fully understand the Instructions for Use (IFU) provided with each product. Failure to follow the IFU may result in improper use, compromised patient safety, and potential procedural complications.

Use only by trained dental professionals familiar with the procedure and product specifications.

PRODUCT DESCRIPTION

This procedure applies to Custom-made structures manufactured using CAD/CAM technology for the production of personalized prostheses. These structures can be used for both cemented and screw-retained restorations—single and multiple and/or monolithic (structures without ceramic loading)—overdenture bars for removable prostheses, or hybrid structures in different materials.

These structures can be manufactured using the following materials:

- **Chromium-cobalt**



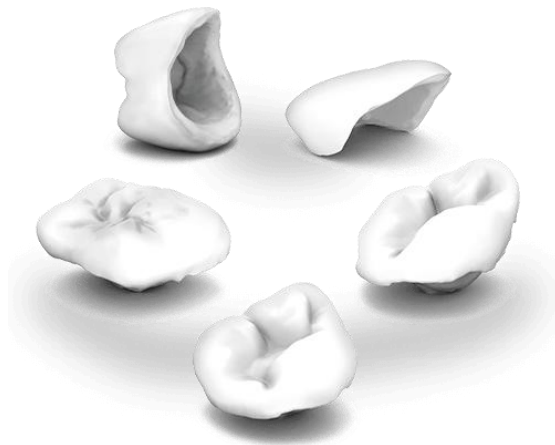
- **Titanium**



- **Zirconia**



- **E-max®**



- **PMMA**



PRECAUTIONS

Close collaboration between the clinician and the prosthodontist is essential to achieve successful comprehensive dental treatment. It is particularly important to achieve correct force distribution through passive adaptation and adjustment of the prosthesis, adjusting the occlusion to the opposing jaw and avoiding excessive transverse loading forces, especially in cases of immediate loading. In the case of crowns or monolithic structures in translucent zirconia, special attention must be paid to the design of the occlusal surface.

INFORMATION ON LIABILITY AND WARRANTY

These prosthetic components are part of an overall concept and should only be used in accordance with Phibodent Technologies's instructions and recommendations. These custom-made structures should only be used by professionals with specialized training in dental prosthetics. In order to obtain any type of warranty, the clinician and prosthodontist responsible for the treatment must provide the information required for this purpose by Phibodent Technologies. Please refer to the CAD/CAM warranty program available at www.phibodent.com.

The prosthetic laboratory is responsible for both the design of the custom-made structure and the finishing of the prosthesis. Phibodent Technologies declines any responsibility, whether implicit or explicit, and shall not be liable for any direct, indirect, punitive, or other damages arising out of or in connection with any error in the judgment or practice of the professional in the use of Phibodent Technologies products. The clinician is responsible for determining whether or not a product is indicated for each patient and each circumstance. Phibodent Technologies is responsible for manufacturing the custom-made structures designed by the prosthetic laboratory and prescribed by the clinician.

PROCEDURE

Design and production parameters

All Phibodent Technologies custom-made structures must meet minimum design parameters. Table 1 indicates these minimum parameters based on the type of material and renovation to be carried out.

Cementation spaces				
Structure	Cemented space [mm]	Additional cemented space [mm]	Remove undermining	Milling compensation
Cr-Co	0.030	0.050	Yes	-
Cr.Co 2-7	0.030	0.070	Yes	-
Cr-Co 8-14	0.030	0.100	Yes	-
Ti	0.030	0.050	Yes	Yes
Ti 2-7	0.030	0.070	Yes	Yes
Ti 8-14	0.030	0.100	Yes	Yes
Zr 1-3	0.020	0.070	Yes	Yes
Zr 4-7	0.020	0.090	Yes	Yes
Zr 8-14	0.020	0.120	Yes	Yes
E.Max Cad HT Coping Ant	0.030	0.100	Yes	Yes
E.Max Cad HT Coping Post	0.030	0.050	Yes	Yes
E.Max Cad LT Coping Ant	0.030	0.050	Yes	Yes
E.Max Cad LT Coping Post	0.030	0.050	Yes	Yes
E.Max MO Coping Ant	0.030	0.050	Yes	Yes
E.Max MO Coping Post	0.030	0.050	Yes	Yes

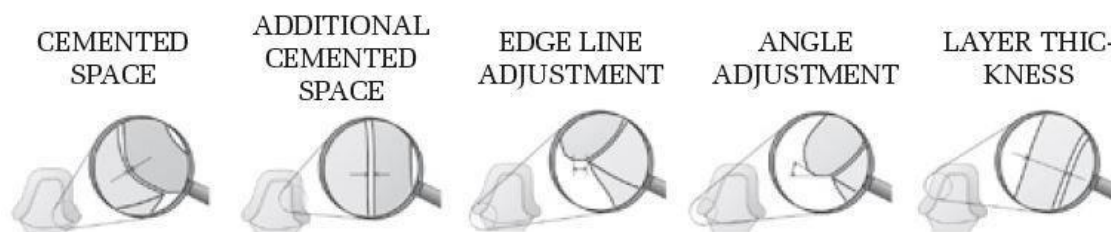
Table 1. Minimum design parameters according to material type and rehabilitation

For the design specifications of **coatings for** please follow Table 2.

Covering			
Structure	Edge line adjustment [mm]	Angle adjustment [deg]	Layer thickness [mm]
Cr-Co	0.200	65	0.300
Cr-Co 2-7	0.200	65	0.300

Covering			
Structure	Edge line adjustment [mm]	Angle adjustment [deg]	Layer thickness [mm]
Cr-Co 8-14	0.200	65	0.300
Ti	0.200	65	0.350
Ti 2-7	0.200	65	0.350
Ti 8-14	0.200	65	0.350
Zr 1-3	0.200	70	0.350
Zr 4-7	0.200	70	0.350
Zr 8-14	0.200	70	0.350
E.Max Cad HT Coping Ant	0.200	65	0.600
E.Max Cad HT Coping Post	0.200	65	0.600
E.Max Cad LT Coping Ant	0.200	65	0.600
E.Max Cad LT Coping Post	0.200	65	0.600
E.Max MO Coping Ant	0.200	65	0.600
E.Max MO Coping Post	0.200	65	0.600

Table 2. Coatings



Design limits

The number of pieces and/or connections in Phibodent Technologies CAD-CAM custom-made structures is unlimited for titanium, cobalt-chrome, and PMMA in all types of structures.

Chrome-cobalt:

The structure reproduces the final shape of the reduced piece; the design can influence the success or failure of ceramic restoration.

Structures to be coated with ceramic must be designed so that the wall thicknesses of the structure are at least **0.40 mm**.

The ceramic coating should be applied in a layer of uniform thickness of at least **0.8 mm** and a maximum of **2 mm**.

Avoid sharp or cutting angles and recessed areas in the design of the structure.

For the design of structures with more than one piece, stability must be ensured in the areas where the pillars and pontics of the multiple structure join. The minimum cross-section of the connectors must be **7 mm²**.

Zirconia:

In the case of **Multilayer Zirconia**, cemented and screw-retained restorations are limited to structures of up

to 4 units in the posterior region, with a maximum of one pontic between abutments or pillars. For anterior regions, restorations with structures of up to 6 units can be performed, without pontics.

In the case of **Single-Color Zirconia**, restorations have no unit limit, with a maximum of two pontics between stumps or abutments.

In either zirconia, structures with free ends are not recommended. To ensure the success of the restoration, the design specifications in Table 3 and Table 4 must be taken into account.

Minimum thickness and sections for Multilayer Zirconia		
Structure	Wall thickness [mm]	Connectors section [mm ²]
Single unit	0.5	-
2 to 3-unit anterior bridges	0.8	10
2 to 3-unit posterior bridges	0.8	13

Table 3. Minimum thicknesses and cross-sections for Multilayer Zirconia.

Minimum thicknesses and sections for single-color zirconia		
Structure	Wall thickness [mm]	Connectors section [mm ²]
Single unit	0.5	-
2 to 3-unit anterior bridges	0.5	7
2 to 3-unit posterior bridges	0.5	9
4 or more units anterior bridges	0.7	9
4 or more units posterior bridges	0.7	12

Table 4. Minimum thicknesses and cross-sections for Single-color zirconia.

In the case of **IPS e-max® CAD**, a maximum of one cemented piece can be made.

Custom abutments (for any material) must have a maximum height of 18 mm. In some specific cases, the maximum height will be 14 mm (these cases are indicated in the Dental System™ modeling software; when designing the custom abutment, the software will warn of the limitation).

FINISHING

Check the fit of the piece on the model.

For products that require a ceramic veneer, follow the following recommendations and use the appropriate materials according to prosthetic criteria and the ceramic manufacturer's instructions.

Special considerations must be taken into account for the following materials:

Titanium and Chrome-cobalt:

- For Chrome-cobalt and titanium must be verified that the TEC (thermal expansion coefficient) of the ceramic coating is similar to that of Phibodent Technologies
- The ceramic coating should be applied in a layer of uniform thickness of at least 0.8 mm and a maximum of 2 mm following these instructions:
 1. **Grind the structure** using clean tungsten carbide burs to remove the part identification and excess metal, if necessary. Do not use diamond instruments. Diamond particles may adhere to the metal and cause bubbles in the ceramic during firing.
 2. **Sandblast** the cobalt-chromium part with aluminum oxide (specifically for dental use) from 125 to 250 microns at 3-4 bar, avoiding the use of recycled oxide as it can contaminate the surface of the structure

(in screwed structures, the connection of the part must be protected).

3. **Clean** the structure with steam. Allow to dry thoroughly, avoiding the use of compressed air as it may contain impurities that contaminate the metal.
4. **First firing of opaque:** Apply a thin layer of opaque to the structure and fire according to the ceramic manufacturer's parameters.

The opaque can be applied using three different methods (depending on the manufacturer):

- a. **Paste:** can be applied with a brush or glass instrument.
 - b. **Powder:** Powdered opaque is mixed with opaque liquid and applied with a brush or glass instrument.
 - c. **Spray:** Powdered opaque is mixed with opaque liquid in the corresponding glass container and then sprayed evenly over the surface of the framework.
5. **Second firing of opaque:** Apply the opaque to the structure and fire according to the ceramic manufacturer's parameters.
 6. **First firing of dentine and incisal:** apply dentine and incisal and fire according to the ceramic manufacturer's parameters. After firing, make small shape corrections with a diamond bur. Clean the structure with steam and allow to dry, or dry with absorbent paper.
 7. **Second firing of dentine and incisal:** apply dentine and incisal and fire according to the ceramic manufacturer's parameters. After firing, go over the structure to create the final shape of the piece to be reconstructed.
 8. **Finishing:** Remove all dust produced when cleaning the structure with steam and dry. Apply glaze and makeup and fire according to the ceramic manufacturer's instructions.
 9. **Metal area finish:** perform a final sandblasting of the metal area with: Aluminum oxide (50µm) at 1.5 bar, for cemented prostheses, and glass beads at 1.5 bar, for screw-retained prostheses.
 10. **Final result:** The finished piece can be seen on the model.

Considerations for structures made of **Zirconia**:

- For monolithic products in translucent zirconia, use appropriate stains for the finishing of the prosthesis and follow the manufacturer's recommendations.
- When restoring screw-retained crowns/abutments in zirconia with a titanium base, ensure that it is positioned correctly (there is only one position) and that the cement has polymerized correctly before handling. It is recommended to check the fit of the prosthesis on the model before cementing the titanium base to the zirconia abutment or internal structure.

For detailed instructions consult the ceramic loading protocols available at www.phibodent.com