

Instructions for use & technical data

Copran Zirconium Group



Specifications

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Manufacturer:

Whitepeaks Dental Solutions GmbH & Co. KG
Langeheide 9 - 45239 Essen - Germany

Product / Product type:

Copran (presintered Y-TZP zirconia-blanks) for the production of dental prostheses: crowns, bridges up to 16 units with max. 2 pontics or cantilevered pontics between 2 crown teeth in the posterior area, with max. 4 pontics or cantilevered pontics between 2 crown teeth in the anterior area (exception: CopraSmile products up to 3 pontics in the anterior or posteroerior area) as well as inlays, onlays, primary telescopes, bar constructions

Product form:

Discs / variety of block & disc sizes, some with holder

Material Type:

ZrO₂ (Yttriumoxid-stabilised, tetragonal zirconium) / type 2, class 5
(exception: CopraSmile products type 2, class 4)

CE-mark:

☞ 0483 (medical device class IIa)

User group:

instructed user to produce zirconium constructions with manual or CAD-CAM milling machines.

Dental Ceramics:

all ZrO₂-ceramics

Specifications (standard after final sintering)

| | Zr / Zr Zr/ Zr UltraBleach | Zr / Zr A1 – D4 Light, Medium, Intense | Pretty |
|--------------------------------|-------------------------------|--|---------------|
| Zirconia: | Balance | Balance | Balance |
| Yttrium Oxide: | 4,95 – 5,35 % | 4,95 – 5,35 % | 4,95 – 5,35 % |
| Alumina: | 0,15 – 0,35 % | 0,15 – 0,35 % | 0 - 0,10 % |
| Iron hydroxide: | 0 – 0,01 % | 0,04 – 0,25 % | 0 - 0,01 % |
| ER ₃ O ₃ | 0 % | 0 % | 0 % |
| CO ₃ O ₄ | 0 % | 0 % | 0 % |
| Other Oxides: | 0 – 0,06 % | 0 – 0,06 % | 0 – 0,06 % |
| Density g/cm ³ : | 6,05 | 6,05 | 6,05 |
| Flexural strength: | 1400 MPa | 1250 - 1400 MPa | 1100 MPa |

| | Monolith HT | Monolith A1 – D4 A Group – D Group Bleach 0M1 – 0M3 Symphony A1 – D4 | Supreme | Supreme A1 – D4 A Group - D Group Bleach 0M1 – 0M3 Symphony A1 – D4 |
|--------------------------------|---------------|--|---------------|---|
| Zirconia: | Balance | Balance | Balance | Balance |
| Yttrium Oxide: | 5,15 – 5,55 % | 4,88 – 5,54 % | 6,93 – 6,97 % | 6,413 – 6,914 % |
| Alumina: | 0,03 – 0,07 % | 0,03 – 0,07 % | 0,04 – 0,06 % | 0,038 – 0,062 % |
| Iron hydroxide: | 0 – 0,01 % | 0,01 – 0,15 % | 0 – 0,01 % | 0,010 – 0,151 % |
| ER ₃ O ₃ | 0 % | 0 - 0,52 % | — | 0 – 0,564 % |
| CO ₃ O ₄ | 0 % | 0 – 0,0067 % | — | 0 – 0,008 % |
| Other Oxides: | 0 – 0,02 % | 0 – 0,02 % | 0 – 0,02 % | 0 – 0,020 % |
| Density g/cm ³ : | 6,09 | 6,08 – 6,33 | 6,07 | 6,07 – 6,33 |
| Flexural strength: | 1100 MPa | 1100 MPa | 1100 MPa | 1008 – 1100 MPa |

| | Smile (up to 3 elements in the anterior or posterior area) | Smile A1 – D4 A Group D Group Bleach 0M1 – 0M3 Symphony A1 – D4 (up to 3 elements in the anterior or posterior area) |
|--------------------------------|--|--|
| Zirconia: | Balance | Balance |
| Yttrium Oxide: | 9,32 % | 8,358 % – 9,155 % |
| Alumina: | 0,049 % | 0,046 % – 0,054 % |
| Iron hydroxide: | 0 – 0,002 % | 0,015% – 0,142 % |
| ER ₃ O ₃ | 0 % | 0 – 0,626 % |
| CO ₃ O ₄ | 0 % | 0 – 0,009 % |
| Other Oxides: | 0 – 0,002 % | 0 – 0,004 % |
| Density g/cm ³ : | 6,046 | 6,046 – 6,33 |
| Flexural strength: | 600 MPa | 600 - 641 MPa |

Specification

Copran blanks are made from biocompatible, tetragonal and polycrystalline zirconiumdioxide. The yttrium oxide stabilizing protects the material against cracks and increases the tensile and compressive strength. The special grain size allocation inside the material and the added aluminium oxide also result in extra strength during milling and subsequently in clinical use. The outstanding mechanical characteristics, excellent chemical durability and the unbeaten biocompatibility combined with the translucent colour predestine Copran as the ideal material for use in dental milling systems. Partial the blocks are delivered with connected holder/frame.

Instructions for use

The Copran blanks are milled into the required shape by CAD CAM systems or by manual methods. The shrinkage rate or expansion factor is given according to the milling system used. Shape the framework if necessary to the required shape.

Sintering

To archive the maximum translucency of the zirconium material, do not use a speed program!

| | Speed Program | Normal Program | Slow Program | Translucency Program |
|-------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------------|
| Heating rate | 50°C per minute to 1100°C | 10°C per minute to 950°C | 5°C per minute to 950°C | 5°C per minute to 950°C |
| Holding time | None | none | none | none |
| Heating rate | 20°C per minute to 1500°C | 6°C per minute to 1500°C | 2°C per minute to 1500°C | 2°C per minute to final temperature |
| Holding time | at final temperature 30min | at final temperature 90min | at final temperature 120min | at final temperature 120min |
| Final temperature | 1500°C | 1500°C | 1500°C | 1500°C - 1630°C |
| Cooling | unregulated in closed furnace | unregulated in closed furnace | unregulated in closed furnace | unregulated in closed furnace |

Finishing

After the final sintering the construction can be fitted to the model by a wet grinding process with diamond-coated burs if necessary. Sinter diamonds, corundum stones or hart metal milling burs must not be used. Overheating has to be avoided.

Porcelain bonding

All known brands of zirconium veneering ceramics can be used as long as their thermal expansion coefficient is between 10 and 10-10,6[°]/K. We generally advise you to: Clean the framework after final shaping with hot steam. Cover the zirconium frame completely with a layer of ceramic. Follow the instruction for use for the veneering material of your choice.

Storage conditions

Dry storage. Protect from moisture / humidity.