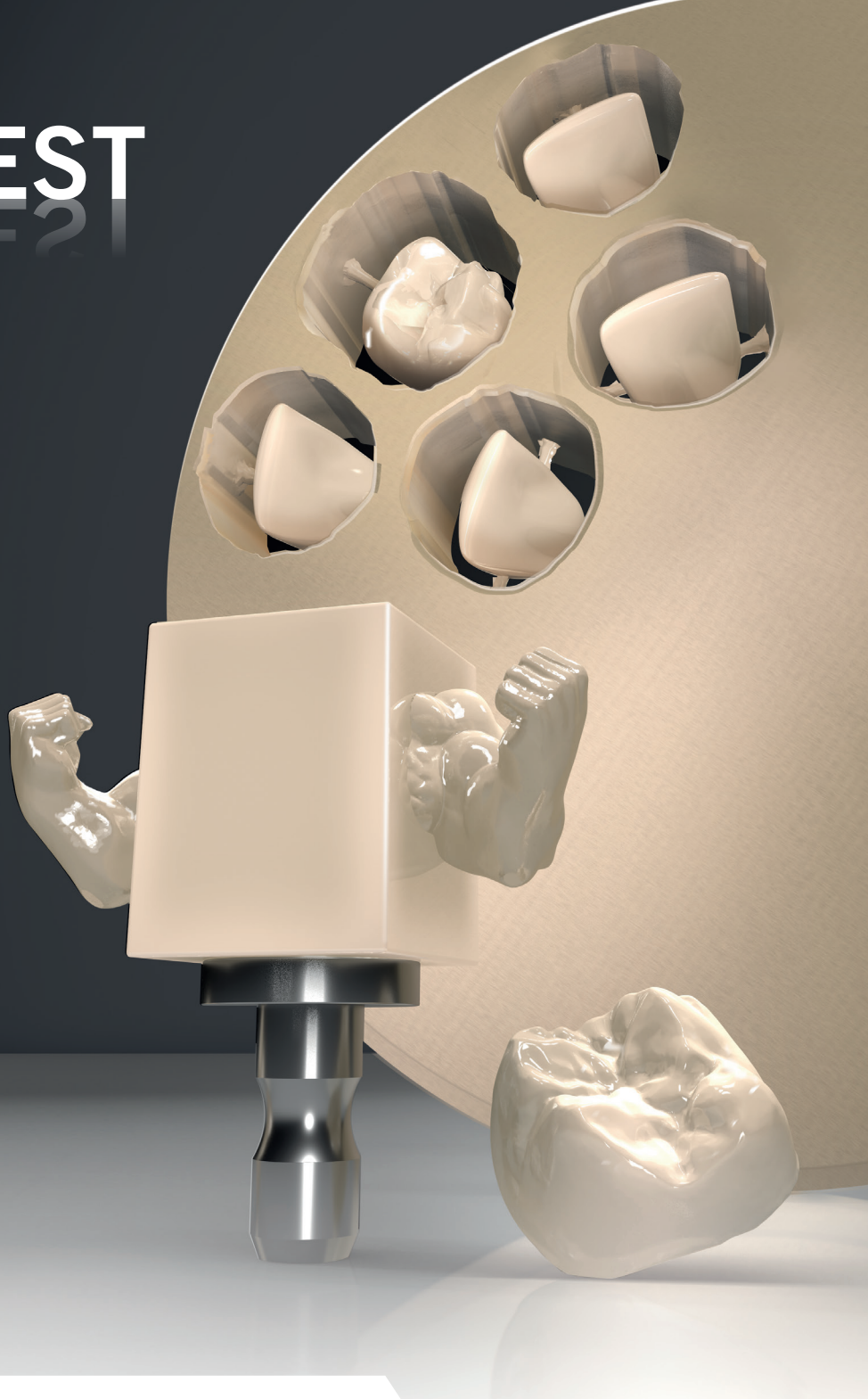


# STRONGEST IN ITS CLASS



Grandio blocs / Grandio disc

## Grandio blocs / Grandio disc

86% FILLED NANO-CERAMIC HYBRID CAD/CAM MATERIAL



**VOCO**  
THE DENTALISTS

# Grandio blocs/Grandio disc

## OPTIMAL TOOTHLIKE PHYSICAL PROPERTIES FOR ENHANCED PERFORMANCE

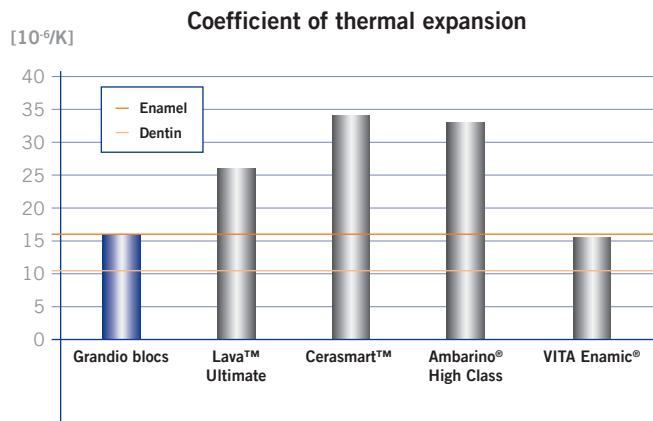
Resin-based restoratives have been employed for permanent restorations for many years, providing optimal properties for everyday use throughout the world and backed by a multitude of studies. In the realm of CAD/CAM restoratives, there is a wide variety of materials available for use, ranging from silicate ceramics and lithium disilicate to hybrid ceramics, zirconium dioxide and composite. Material characteristics similar to those of natural tooth structure such as dentin-like modulus of elasticity, low shrinkage, and high fill rates are proven to benefit current resin-based restorations in regards to marginal integrity and longevity. VOCO's Grandio blocs and Grandio disc, are a highly filled (86%) CAD/CAM restorative block and disc based on Nano-ceramic Hybrid technology. This technology offers these toothlike physical properties with maximum long-term strength as a restorative with benefits for the patient while also delivering key advantages to the practitioner.

### Similar to natural tooth structure

The modulus of elasticity is a measure of the resistance that a material exerts against its deformation. In the best case scenario, it should be the same as that of natural tooth structure.

Grandio blocs and Grandio disc also achieve this with ease, offering not only extremely high strength, but also the similarity to natural tooth structure that practitioners desire.

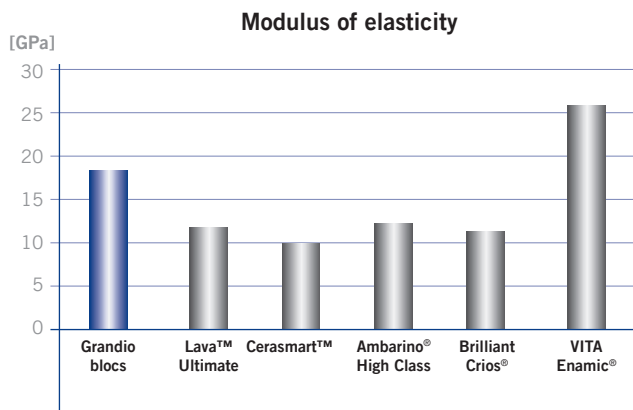
Like most materials, composite restoratives expand when heated and contract when they cool down. This behavior is also true of human dentition when one consumes, for example, warm/hot food followed by a cool drink. If the expansion of the restoration is greater than that of the tooth itself, a tensile force develops at the interface where tooth structure meets restorative – i.e. the adhesive layer. The study conducted by Wolter et al. revealed that Grandio blocs comes closer than any other blocks to the values recorded for natural tooth structure (cf. Xu et al., 1989).



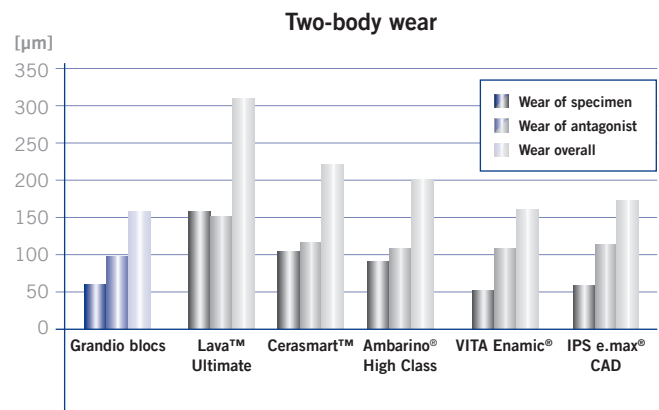
Source: H. Wolter et al., Fraunhofer ISC Würzburg, report to VOCO, 2016

### Antagonist-friendly

The two-body wear test shows that Grandio blocs demonstrates similarly low wear to lithium disilicate and is also antagonist-friendly.



Source: Spintzyk, S.; Geis-Gerstorfer, J. et al, 4th EuroBioMat, Weimar, 2017



Source: J. Geis Gerstorfer et al., University of Tübingen, report to VOCO, 2016

# Grandio blocs/Grandio disc

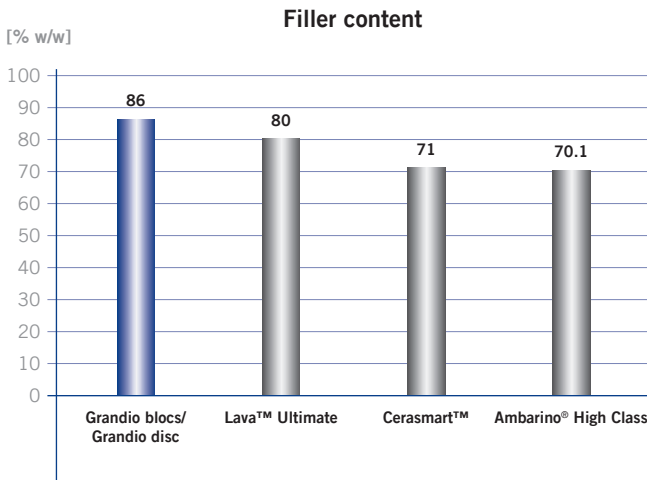
## HIGHLY FILLED FOR MAXIMIZED STRENGTH

### Strongest in its Class

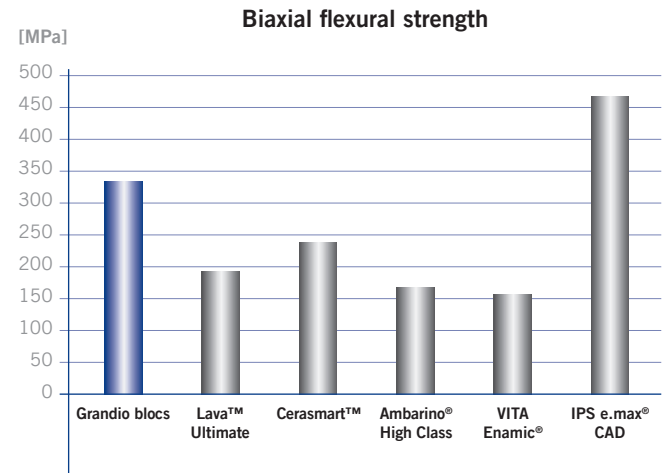
Overall, the study results presented within this brochure demonstrate that VOCO's Nano-ceramic Hybrid CAD/CAM material is stronger than the composite-based CAD/CAM materials currently available on the market.

### Extraordinary strength

In a study conducted by the University of Tübingen into biaxial flexural strength, a value of 333 MPa was recorded for Grandio blocs. This result was far superior to the composite-based blocks. With this extraordinary strength and the highest filler content, at 86% by weight, Grandio blocs maximizes its durability as a restoration.



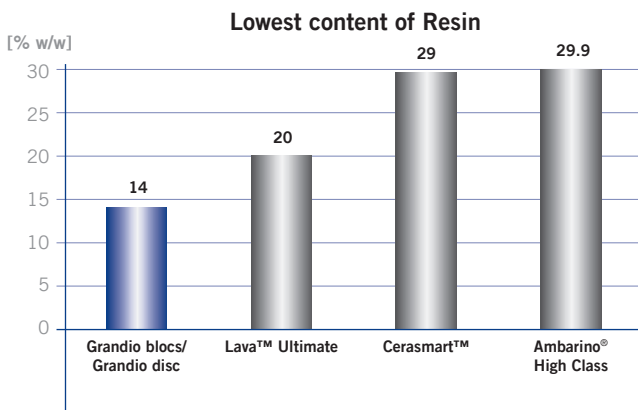
Source: Manufacturer's specifications



Source: J. Geis Gerstorfer et al., University of Tübingen, report to VOCO, 2016

At 86% by weight, our CAD/CAM material boasts the highest filler content compared to the composite-based blocks/discs listed below. This is achieved through VOCO's proprietary nano-technology and guarantees outstanding strength and stability.

Overall, Grandio blocs and Grandio disc, based on Nano-ceramic Hybrid technology, offer an optimized combination of strength and toothlike physical properties that make Grandio blocs and Grandio disc easier for practitioners to work with, saving time and money while offering the patient a long-lasting restoration with durability and uncompromised esthetics.



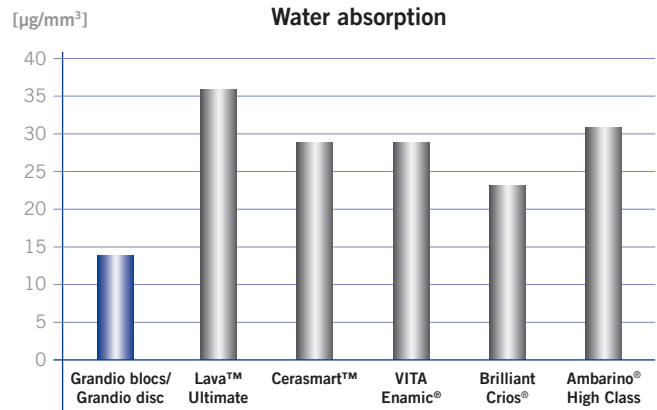
Source: in accordance with manufacturer information

# Grandio blocs/Grandio disc

## ENGINEERED PHYSICAL PROPERTIES FOR BETTER LONGEVITY AND ESTHETICS

### Water absorption

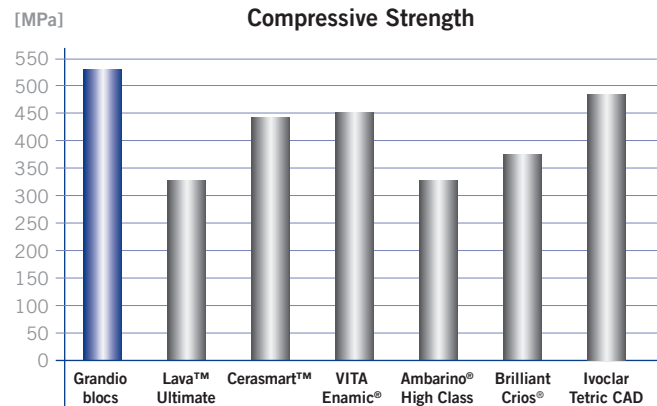
Comparatively, Grandio blocs and Grandio disc have extremely low water absorption which provides a higher quality of overall performance for better longevity, especially when combined with their enhanced toothlike physical properties.



Source: acc. ISO 4049, VOCO, 2017

### Compressive Strength

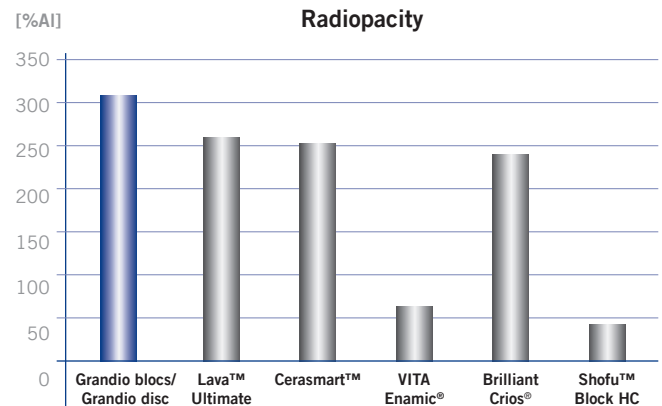
Grandio blocs and Grandio disc offer high compressive strength compared to other products. This is particularly important as compressive strength is a measure of how well a material will stand up to constant chewing forces in the oral environment.



Source: VOCO Internal Measurements, 2019

### High radiopacity for easy identification

Grandio blocs and Grandio disc offer very high radiopacity (308% Al) compared to other brands available on the market. This adds to Grandio blocs' and Grandio disc's ease-of-use in regards to identification during radiograph review.



Source: acc. ISO 4049, VOCO, 2017

## Grandio blocs/Grandio disc

### NANO-CERAMIC HYBRID – ADVANTAGES THAT MATTER

In addition to its outstanding physical properties, Grandio blocs/Grandio disc also offer a whole range of additional advantages, which makes these materials an ideal alternative to ceramics:

- **Thinner crown margins**

The use of VOCO's Nano-ceramic Hybrid materials make it possible to mill thin, even-tapered edges with precision and without the risk of chipping or breakages. This means precision-fit restorations that are also easy to polish both inside and outside of the mouth.

- **No firing saves time**

Compared to the use of lithium disilicate, VOCO's Nano-ceramic Hybrid materials eliminate the need for the firing process. As a completely polymerized Nano-ceramic Hybrid restoration, they can be immediately placed following the milling procedure, saving time and money. This enables you to truly offer your patients a complete restoration in just one simple visit.

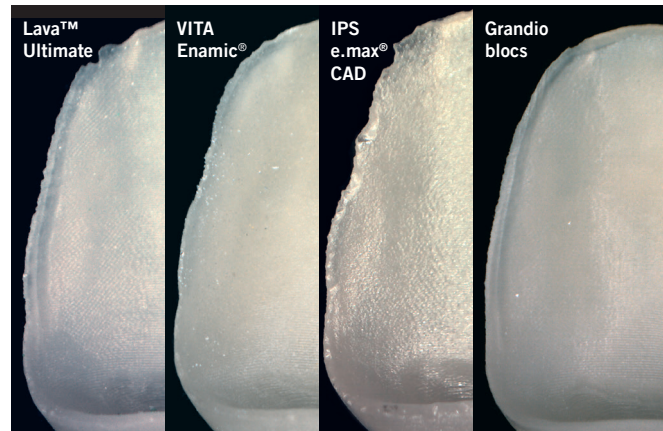
- **Simple characterization with standard composite**

Grandio blocs and Grandio discs can be customized just like ceramics. For this, the low-viscosity Nano-hybrid material GrandioSO Flow, and the high-viscosity Nano-hybrid GrandioSO Heavy Flow are particularly well suited, as they provide exact shade matching. Characterization can then follow based on the user's capabilities.

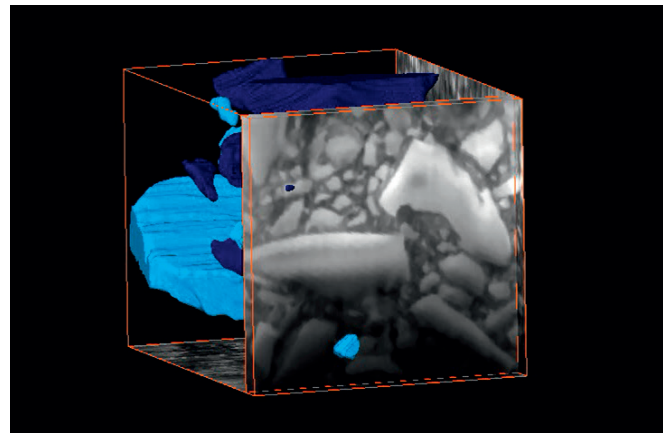
- **Easy intra-oral repair**

While chips in ceramic restorations require extensive treatment, any defects in VOCO's Nano-ceramic Hybrid materials can be quickly and easily repaired intraorally. This is done by roughening the surface of the defect, applying the adhesive and then correcting the situation with a composite restorative such as GrandioSO.

#### Edges after grinding



Source: Internal pictures, veneer 0.6 mm



Source: Department of Materials for Medical Technology, University of Rostock, 2016

**3D tomography visualization of the homogeneous distribution of fillers in Grandio blocs.** 50 nm sections were prepared using the dual beam technique, viewed under a microscope and combined to create a 3D image. The light blue and dark blue regions represent the glass fillers in 3D. They are surrounded by resin and nano-ceramic particles.

# Grandio blocs/Grandio disc

## NANO-CERAMIC SOLUTIONS TO RESTORATIONS FOR ESTHETICS AND STRENGTH

Nano-ceramic hybrid technology offers an optimal solution for practitioners in both the anterior (esthetics) and the posterior (strength) while delivering toothlike performance with the unique benefits Grandio blocs/discs have to offer as a polymer-based CAD/CAM restorative material: chairside repair and characterization without the need for firing, fewer steps, less time and therefore, more money.

### Case 1



Initial situation



Prepared cores



Adhesive cementation of Grandio blocs crowns



After cementation and polishing



View directly after insertion



Satisfied patient at the 6-month check-up

Source: Prof. Breno de Mont'Alverne, Brazil

### Case 2



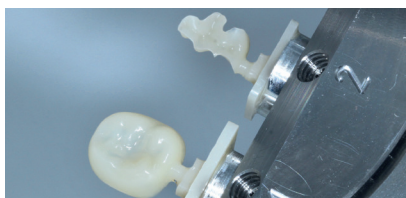
Initial situation teeth 18 and 19



Tooth 18 showing core preparation, tooth 36 with cavity awaiting inlay



Blocks in clamp



Restoration after completion of milling



Adhesively cemented restorations



Individualized fissures after characterization

Source: Dr. Jongki Hadi, Indonesia

## Grandio blocs

UP TO 50% FASTER THAN LITHIUM DISILICATE BLOCKS



### Grandio blocs Steps:

(Nano-ceramic Hybrid Block)

1	Milling	(5–12 mins*)
2	Sprue adjustment and rough finishing	(2 mins*)
3	Try in	(5 mins*)
4	Surface characterization (optional)	(8–10 mins*)
5	Crown Surface Treatment = sand blast and application of Ceramic Bond	(6–8 mins*)
6	Ready prep for cementation with dual-cure or universal adhesive. Dispense adhesive cement in crown	(approx. 2 mins*)
7	Seat restoration/clean-up	(approx. 6 mins*)
8	Final polish/finishing (if not done extraorally before seating)	(approx. 5 mins*)

Total time: (31–50 mins\*)

**TOTAL TIME SAVINGS  
USING GRANDIO BLOCS =**

**26–39 MINUTES\***

**NO FIRING OR SINTERING REQUIRED**

### Lithium disilicate Block Steps\*\*:

1	Milling	(8–15 mins*)
2	Sprue adjustment and rough finishing/glazing	(2 mins*)
3	Try in	(5 mins*)
4	Firing	(approx. 20 mins*)
5	Surface characterization (optional)	(8–10 mins*)
6	Firing (optional)	(approx. 12 mins*)
7	Try in	(1 min*)
8	Crown Surface Treatment based on manufacturer instructions (use of HF-acid)	(6–8 mins*)
9	Ready prep for cementation manufacturer's instructions for use. Dispense cement in crown	(approx. 2 mins*)
10	Seat restoration/clean-up	(approx. 6 mins*)
11	Final polish/finishing (optional if needed or not done extraorally before seating)	(approx. 8 mins*)

Total time: (57–89 mins\*)

### Other Grandio blocs Advantages:

- Burs last longer
- Better for antagonist teeth
- Easy intraoral repair
- Easy extra- and intraoral characterization

# Grandio disc MultiColor

## THE NATURAL COLOR GRADIENT OF THE TOOTH



Ideal color combination: Grandio disc (monochromatic) on the right side of the picture (tooth 21) and Grandio disc MultiColor on the left side of the picture (tooth 11).



### Invisible Layer Technology

Grandio disc MultiColor imitates the natural color gradient of natural tooth structure from the incisal edge to the tooth neck in three distinct shades. The special composition of the material reflects and absorbs light to create a particularly impressive chameleon effect, which allows the individual layers of the disc to blend seamlessly and produce a highly esthetic shade gradient.



### Clinical case



Initial situation



Prepared cores



Inserted crowns



Final view

Source: Dr. Carlos Pena, Brazil

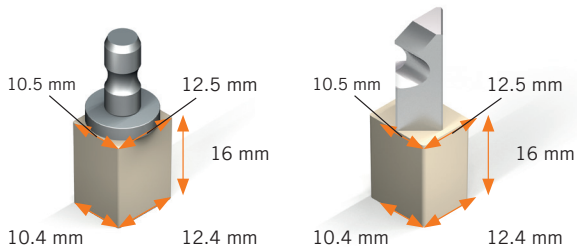


## Grandio blocs/Grandio disc – Sizes and Configuration

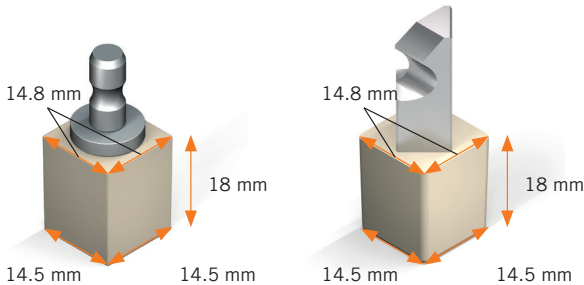
### ESTHETIC AND VERSATILE WITH EXCEPTIONAL LONGEVITY

**Grandio blocs Universal and PlanMill are available in two sizes**

**12** – for small restorations such as inlays

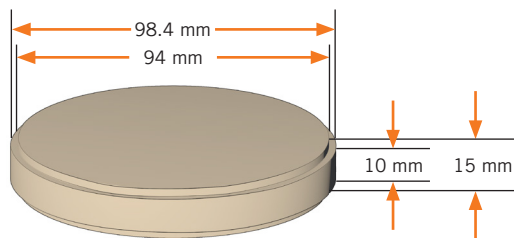


**14L** – for larger restorations such as crowns



#### Grandio disc

Average number of restorations per disc: 25–30



#### Two grades of translucency and MultiColor options for optimal esthetics

- LT – Ideal for the anterior region in the shades  
**Grandio blocs:** A1, A2, A3, A3.5, B1, C2, BL  
**Grandio disc:** A1, A2, A3, A3.5, B1, C2, BL
- HT – Ideal for the posterior region in the shades  
**Grandio blocs:** A1, A2, A3, A3.5,  
**Grandio disc:** A1, A2, A3, A3.5

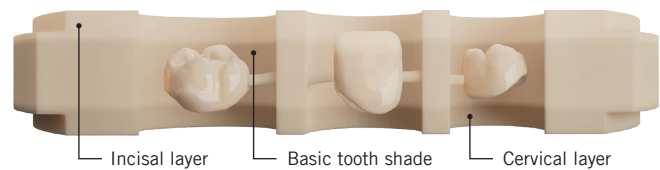
**The shade spectrum includes: Grandio blocs / Grandio disc (monochromatic) in two grades of translucency**

LT – ideal for the anterior region in the shades  
 A1, A2, A3, A3.5, B1, C2, BL

HT – ideal for the posterior region in the shades  
 A1, A2, A3, A3.5

#### Grandio disc MultiColor

A1, A2, A3, A3.5, B1, C2 (Basic tooth shade)



The different positioning of the restoration in the disc determines the individualization with optional emphasis on the incisal or the cervical area:



MC – Ideal for highly esthetic anterior restorations using Invisible Layer Technology in MultiColor shades:  
**Grandio disc:** A1, A2, A3, A3.5, B1, C2

17 shades ensure that your patient always receives the restoration that suits them best.

## Grandio blocs/Grandio disc – Bonding and Cementation

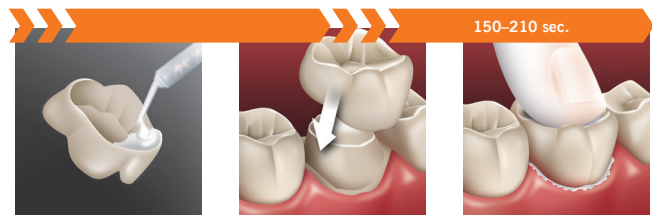
### FOR LONG-LASTING, ESTHETICS RESTORATIONS

#### Bonded-in Cementation

Cementation of Grandio blocs/disc is always carried out using a bonded-in cementation system. Bifix QM, in combination with Futurabond U and Ceramic Bond, is the system of choice for ensuring that the highest standards are also met in this respect.

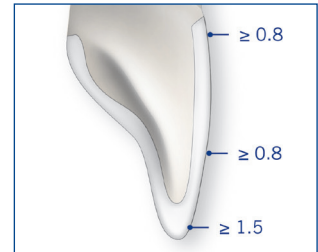
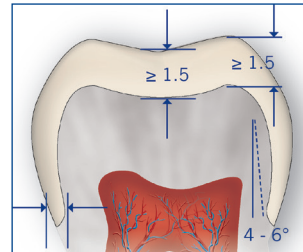
Bifix QM is a dual-cured, radiopaque, resin-based adhesive cement system, which, when used together with the state-of-the-art truly universal adhesive in a SingleDose delivery system, Futurabond U, and the silane coupling agent, Ceramic Bond, deliver both excellent mechanical retention and an adhesive interface that will provide extended longevity to the restoration.

As Bifix QM is dual-cured, it allows practitioners to determine the speed of the work with the light-cure option, while the self-cure feature ensures the complete polymerization of the material. The high bond strength of Bifix QM combined with Ceramic Bond, as well as that of Futurabond U, results in chemical and mechanical retention that will provide maximum long-term performance.

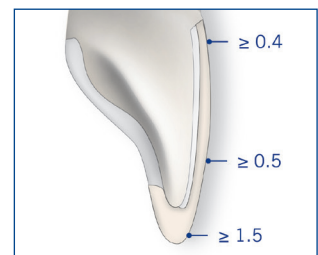
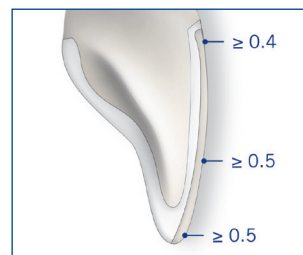


#### Minimum wall thickness

##### Crown



##### Veneer



Source: Dr. Jürgen Manhart, München

# Grandio blocs

## NANO-CERAMIC HYBRID CAD/CAM BLOCKS

### Advantages

- 86% filled for enhanced strength and excellent wear resistance
- Toothlike elasticity and thermal expansion allow for thinner crown margins
- Natural esthetics with enhanced color stability and polish retention
- No firing required for true one-appointment dentistry
- Easy intraoral polishability, characterization and repair

### Indications

Crowns, inlays, onlays, veneers

Implant supported crowns

### Presentation

Grandio blocs Universal		
Low translucent (LT)		
Shade	5 × No. 12	5 × No. 14L
A1 LT	REF 6003	REF 6018
A2 LT	REF 6004	REF 6019
A3 LT	REF 6005	REF 6020
A3.5 LT	REF 6006	REF 6021
B1 LT	REF 6007	REF 6022
C2 LT	REF 6008	REF 6023
BL LT	REF 6009	REF 6024
High translucent (HT)		
Shade	5 × No. 12	5 × No. 14L
A1 HT	REF 6012	REF 6027
A2 HT	REF 6013	REF 6028
A3 HT	REF 6014	REF 6029
A3.5 HT	REF 6015	REF 6030

Grandio blocs PlanMill®		
Low translucent (LT)		
Shade	5 × No. 12	5 × No. 14L
A1 LT	REF 6153	REF 6168
A2 LT	REF 6154	REF 6169
A3 LT	REF 6155	REF 6170
A3.5 LT	REF 6156	REF 6171
B1 LT	REF 6157	REF 6172
C2 LT	REF 6158	REF 6173
BL LT	REF 6159	REF 6174
High translucent (HT)		
Shade	5 × No. 12	5 × No. 14L
A1 HT	REF 6162	REF 6177
A2 HT	REF 6163	REF 6178
A3 HT	REF 6164	REF 6179
A3.5 HT	REF 6165	REF 6180



# Grandio disc

## NANO-CERAMIC HYBRID CAD/CAM DISCS WITH MULTICOLOR CAPABILITIES

### Advantages

- 86% filled for enhanced strength and excellent wear resistance
- Toothlike elasticity and thermal expansion allows for thinner crown margins
- Natural esthetics with enhanced color stability and polish retention
- No firing required for true one-appointment dentistry
- Easy intraoral polishability, characterization and repair
- Available in six MultiColor variations for enhanced, natural esthetics
- 98.4 mm x 15 mm size capable of up to 30 restorations per disc

### Presentation

#### Grandio disc

Low translucent (LT)		High translucent (HT)		MultiColor (MC)	
Ø 98.4 mm, 15 mm		Ø 98.4 mm, 15 mm		Ø 98.4 mm, 15 mm	
A1 LT	REF 6050	A1 HT	REF 6057	A1 MC	REF 6216
A2 LT	REF 6051	A2 HT	REF 6058	A2 MC	REF 6217
A3 LT	REF 6052	A3 HT	REF 6059	A3 MC	REF 6218
A3.5 LT	REF 6053	A3.5 HT	REF 6060	A3.5 MC	REF 6219
B1 LT	REF 6054			B1 MC	REF 6220
C2 LT	REF 6055			C2 MC	REF 6221
BL LT	REF 6056				

### Indications

Crowns, inlays, onlays, veneers

Implant supported crowns



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